SB

79

PLEASE NOTE: THE FOLLOWING PAGES WERE TREATED AS A UNIT IN THE ORIGINAL DOCUMENT

Sandra you may want to review - hold in any event SB 79

BILL SHEFFIELD, GOVERNOR

DEPARTMENT OF LABOR

BOX 1149
JUNEAU, ALASKA 99802
PHONE: (907) 465-2700

December 1, 1983

To All Interested Parties:

Enclosed is a copy of the federal Occupational Safety and Health Administration's final rule on Hazard Communication. It is my understanding that this regulation became effective November 25, 1983.

The regulation, however, is not effective in Alaska because the State operates its own occupational safety and health program. Our agreement with OSHA requires us to adopt a regulation as effective as OSHA's within six months of the date of the final rule. ✓ by May 25

Before the department formally proposes a regulation, we will be holding an informal workshop on the federal regulation to determine if changes or additions are needed to assure that the Alaska regulation that is adopted carries out the intent of Senate Bill 79.

We invite you to attend this workshop to be held on January 5, 1984 in Anchorage at the Department of Labor Building at 3301 Eagle Street, Room 308. Please contact Richard Arab in Juneau at 465-4856 or Max Andrews in Anchorage at 264-2599 if you have any questions. ✓

Sincerely,

for Jim Robison
Commissioner

Enclosure

cc: Eileen Plate, Special Assistant
Stan Godsoe, Chief, V.C.
Max Andrews, Industrial Hygienist
Steve Kadish, Alaska Health Project

work w/Kadish (V. Fischer) Who at AK Health Project? Porcho +

07-G6LH

BILL SHEFFIELD, GOVERNOR

DEPARTMENT OF LABOR

BOX 1149
JUNEAU, ALASKA 99802
PHONE: (907) 465-4856

November 28, 1983

Mr. Steve Kadish
Executive Director
Alaska Health Project
P.O. Box 10-1037
Anchorage, Alaska 99510

Dear Mr. Kadish:

Thank you for your letter of November 22, 1983 requesting clarification of certain provisions of S.B. 79.

The action that is required to respond to these concerns is the promulgation of regulations. The department is now ready to develop regulations because federal OSHA has, at long last, adopted a final rule on their Hazard Communication regulation.

I am enclosing three copies of these regulations for your review. The OSHA regulations may not be the total answer to Alaska's needs but it gives us a good starting point. As you know, Alaska's regulations have to be "at least as effective" as OSHA regulations.

I am sending copies of the OSHA regulations to the persons who helped draft S.B. 79 and would like to hold an informal workshop before the department formally proposes similar regulations. The timing of such a workshop may be a problem as the holiday season is approaching I will be in Anchorage December 5 through 7 and perhaps we can get together and come up with a plan of action.

Sincerely,

Richard Arab

Richard Arab, Deputy Director
Division of Labor Standards
and Safey

Enclosures

cc: Commissioner Jim Robison
Senator Fahrenkamp
Senator Vic Fisher
Senator Josephson
Senator Sturgulewski
Mick Hotrum
Art Robson
Kevin Dougherty
Stan Godsoe

07-G6LH

Subpart 1910 of Title 29 of the Code of Federal Regulations (CFR) is hereby amended by adding a new s1910.1200 to read as follows:

s1910.1200 Hazard communication.

(a) Purpose. The purpose of this section is to ensure that the hazards of all chemicals produced or imported by chemical manufacturers or importers are evaluated, and that information concerning their hazards is transmitted to affected employers and employees within the manufacturing sector. This transmittal of information is to be accomplished by means of comprenensive hazard communication programs, which are to include container labeling and other forms of warning, material safety data sheets and employee training.

This occupational safety and health standard is intended to address comprehensively the issue of evaluating and communicating chemical hazards to employees in the manufacturing sector, and to preempt any state law pertaining to this subject. Any state which desires to assume responsibility in this area may only do so under the provisions of s18 of the Occupational Safety and Health Act (29 U.S.C. 651 et. seq.) which deals with state jurisdiction and state plans.

(b) Scope and application. (1) This section requires chemical manufacturers or importers to assess the hazards of chemicals which they produce or import, and all employers in SIC Codes 20 through 39 (Division D, Standard Industrial

Classification Manual) to provide information to their employees about the hazardous chemicals to which they are exposed, by means of a hazard communication program, labels and other forms of warning, material safety data sheets, and information and training. In addition, this section requires distributors to transmit the required information to employers in SIC Codes 20-39.

(2) This section applies to any chemical which is known to be present in the workplace in such a manner that employees may be exposed under normal conditions of use or in a foreseeable emergency.

(3) This section applies to laboratories only as follows:

(i) Employers shall ensure that labels on incoming containers of hazardous chemicals are not removed or defaced;

(ii) Employers shall maintain any material safety data sheets that are received with incoming shipments of hazardous chemicals, and ensure that they are readily accessible to laboratory employees; and,

(iii) Employers shall ensure that laboratory employees are apprised of the hazards of the chemicals in their workplaces in accordance with paragraph (h) of this section.

(4) This section does not require labeling of the following chemicals:

(i) Any pesticide as such term is defined in the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. ss136 et seq.), when subject to the labeling requirements of that Act and labeling regulations issued under that Act by the Environmental Protection Agency;

(ii) Any food, food additive, color additive, drug, or cosmetic, including materials intended for use as ingredients in such products (e.g., flavors and fragrances), as such terms are defined in the Federal Food, Drug, and Cosmetic Act (21 U.S.C. ss301 et seq.) and regulations issued under that Act, when they are subject to the labeling requirements of that Act and labeling regulations issued under that Act by the Food and Drug Administration;

(iii) Any distilled spirits (beverage alcohols), wine, or malt beverage intended for nonindustrial use, as such terms are defined in the Federal Alcohol Administration Act (27 U.S.C. s201 et seq.) and regulations issued under that Act, when subject to the labeling requirements of that Act and labeling regulations issued under that Act by the Bureau of Alcohol Tobacco, and Firearms; and,

(iv) Any consumer product or hazardous substance as those terms are defined in the Consumer Product Safety Act (15 U.S.C. ss2051 et seq.) and Federal Hazardous Substances Act (15 U.S.C. ss1261 et seq.) respectively, when subject to a consumer product safety standard or labeling requirement of those Acts, or regulations issued under those Acts by the Consumer Product Safety Commission.

(5) This section does not apply to:

(i) Any hazardous waste as such term is defined by the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended (42 U.S.C. ss 6901 et seq.), when subject to regulations issued under that Act by the Environmental Protection Agency;

(ii) Tobacco or tobacco products;

(iii) Wood or wood products;

(iv) Articles; and,

(v) Foods, drugs, or cosmetics intended for personal consumption by employees while in the workplace.

(c) Definitions.

"Article" means a manufactured item (i) which is formed to a specific shape or design during manufacture, (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use, and (iii) which does not release, or otherwise result in exposure to, a hazardous chemical under normal conditions of use.

"Assistant Secretary" means the Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, or designee.

"Chemical" means any element, chemical compound or mixture of elements and/or compounds.

"Chemical manufacturer" means an employer in SIC Codes 20 through 39 with a workplace where chemical(s) are produced for use or distribution.

"Chemical name" means the scientific designation of a chemical in accordance with the nomenclature system developed by the International Union of Pure and Applied Chemistry (IUPAC) or the Chemical Abstracts Service (CAS) rules of nomenclature, or a name which will clearly identify the chemical for the purpose of conducting a hazard evaluation.

"Combustible liquid" means any liquid having a flashpoint at or above 100°F (37.8°C), but below 200° F (93.3° C), except any mixture having components with flashpoints of 200°F (93.3°C), or higher, the total volume of which make up 99 percent or more of the total volume of the mixture.

"Common name" means any designation or identification such as code name, code number, trade name, brand name or generic name used to identify a chemical other than by its chemical name.

"Compressed gas" means:

(i) A gas or mixture of gases having, in a container, an absolute pressure exceeding 40 psi at 70°F (21.1°C); or

(ii) A gas or mixture of gases having, in a container, an absolute pressure exceeding 104 psi at 130°F (54.4°C) regardless of the pressure at 70°F (21.1°C); or

(iii) A liquid having a vapor pressure exceeding 40 psi at 100°F (37.8°C) as determined by ASTM D-323-72.

"Container" means any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank, or the like that contains a hazardous chemical. For purposes of this section, pipes or piping systems are not considered to be containers.

"Designated representative" means any individual or organization to whom an employee gives written authorization to exercise such employee's rights under this section. A recognized or certified collective bargaining agent shall be treated automatically as a designated representative without regard to written employee authorization.

"Director" means the Director, National Institute for Occupational Safety and Health, U.S. Department of Health and Human Services, or designee.

"Distributor" means a business, other than a chemical manufacturer or importer, which supplies hazardous chemicals to other distributors or to manufacturing purchasers.

"Employee" means a worker employed by an employer in a workplace in SIC Codes 20 through 39 who may be exposed to hazardous chemicals under normal operating conditions or foreseeable emergencies, including, but not limited to production workers, line supervisors, and repair or maintenance personnel. Office workers, grounds maintenance personnel, security personnel or non-resident management are generally not included, unless their job performance routinely involves potential exposure to hazardous chemicals.

"Employer" means a person engaged in a business within SIC Codes 20 through 39 where chemicals are either used, or are produced for use or distribution.

"Explosive" means a chemical that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature.

"Exposure" or "exposed" means that an employee is subjected to a hazardous chemical in the course of employment through any route of entry (inhalation, ingestion, skin contact or absorption, etc.), and includes potential (e.g. accidental or possible) exposure.

"Flammable" means a chemical that falls into one of the following categories:

(i) "Aerosol, flammable" means an aerosol that, when tested by the method described in 16 CFR 1500.45, yields a flame projection exceeding 18 inches at full valve opening, or a flashback (a flame extending back to the valve) at any degree of valve opening;

(ii) "Gas, flammable" means:

(A) A gas that, at ambient temperature and pressure, forms a flammable mixture with air at a concentration of thirteen (13) percent by volume or less; or

(B) A gas that, at ambient temperature and pressure, forms a range of flammable mixtures with air wider than twelve (12) percent by volume, regardless of the lower limit;

(iii) "Liquid, flammable" means any liquid having a flashpoint below 100°F (37.8°C), except any mixture having components with flashpoints of 100°F (37.8°C) or higher, the total of which make up 99 percent or more of the total volume of the mixture.

(iv) "Solid, flammable" means a solid, other than a blasting agent or explosive as defined in s1910.109(a), that is liable to cause fire through friction, absorption of moisture, spontaneous chemical change, or retained heat from manufacturing or processing, or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious hazard. A chemical shall be considered to be a flammable solid if, when tested by the method described in 16 CFR 1500.44, it ignites and burns with a self-sustained flame at a rate greater than one-tenth of an inch per second along its major axis.

"Flashpoint" means the minimum temperature at which a liquid gives off a vapor in sufficient concentration to ignite when tested as follows:

(i) Tagliabue Closed Tester (See American National Standard Method of Test for Flash Point by Tag Closed Tester, Z11.24-1979 (ASTM D 56-79))-for liquids with a viscosity of less than 45 Saybolt Universal Seconds (SUS) at 100°F (37.8°C), that do not contain suspended solids and do not have a tendency to form a surface film under test; or

(ii) Pensky-Martens Closed Tester (see American National Standard Method of Test for Flash Point by Pensky-Martens Closed Tester, Z11.7-1979 (ASTM D 93-79))-for liquids with a viscosity equal to or greater than 45 SUS at 100°F (37.8°C), or that contain suspended solids, or that have a tendency to form a surface film under test; or

(iii) Setaflash Closed Tester (see American National Standard Method of Test for Flash Point by Setaflash Closed Tester (ASTM D 3278-78)).

Organic peroxides, which undergo autoaccelerating thermal decomposition, are excluded from any of the flashpoint determination methods specified above.

"Foreseeable emergency" means any potential occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment which could result in an uncontrolled release of a hazardous chemical into the workplace.

"Hazardous chemical" means any chemical which is a physical hazard or a health hazard.

"Hazard warning" means any words, pictures, symbols, or combination thereof appearing on a label or other appropriate form of warning which convey the hazards of the chemical(s) in the container(s).

"Health hazard" means a chemical for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees. The term "health hazard" includes chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic system and agents which damage the lungs, skin, eyes, or mucous membranes. Appendix A provides further definitions and explanations of the scope of health hazards covered by this section, and Appendix B describes the criteria to be used to determine whether or not a chemical is to be considered hazardous for purposes of this standard.

"Identity" means any chemical or common name which is indicated on the material safety data sheet (MSDS) for the chemical. The identity used shall permit cross-references to be made among the required list of hazardous chemicals, the label and the MSDS.

"Immediate use" means that the hazardous chemical will be under the control of and used only by the person who transfers it from a labeled container and only within the work shift in which it is transferred.

"Importer" means the first business with employees within the Customs Territory of the United States which receives hazardous chemicals produced in other countries, for the purpose of supplying them to distributors or manufacturing purchasers within the United States.

"Label" means any written, printed, or graphic material displayed on or affixed to containers of hazardous chemicals.

"Manufacturing purchaser" means an employer with a workplace classified in SIC Codes 20 through 39 who purchases a hazardous chemical for use within that workplace.

"Material safety data sheet (MSDS)" means written or printed material concerning a hazardous chemical which is prepared in accordance with paragraph (g) of this section.

"Mixture" means any combination of two or more chemicals if the combination is not, in whole or in part, the result of a chemical reaction.

"Organic peroxide" means an organic compound that contains the bivalent -O-O-structure and which may be considered to be a structural derivative of hydrogen peroxide where one or both of the hydrogen atoms has been replaced by an organic radical.

"Oxidizer" means a chemical other than a blasting agent or explosive as defined in s1910.109(a), that initiates or promotes combustion in other materials, thereby causing fire either of itself or through the release of oxygen or other gases.

"Physical hazard" means a chemical for which there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive) or water-reactive.

"Produce" means to manufacture, process, formulate, or repackage.

"Pyrophoric" means a chemical that will ignite spontaneously in air at a temperature of 130°F (54.4°C) or below.

"Responsible party" means someone who can provide additional information on the hazardous chemical and appropriate emergency procedures, if necessary.

"Specific chemical identity" means the chemical name, Chemical Abstracts Service (CAS) Registry Number, or any other information that reveals the precise chemical designation of the substance.

"Trade secret" means any confidential formula, pattern, process, device, information or compilation of information (including chemical name or other unique chemical identifier) that is used in an employer's business, and that gives the employer an opportunity to obtain an advantage over competitors who do not know or use it.

"Unstable (reactive)" means a chemical which in the pure state, or as produced or transported, will vigorously polymerize, decompose, condense, or will become self-reactive under conditions of shocks, pressure or temperature.

"Use" means to package, handle, react, or transfer.

"Water-reactive" means a chemical that reacts with water to release a gas that is either flammable or presents a health hazard.

"Work area" means a room or defined space in a workplace where hazardous chemicals are produced or used, and where employees are present.

"Workplace" means an establishment at one geographical location containing one or more work areas.

(d) Hazard determination. (1) Chemical manufacturers and importers shall evaluate chemicals produced in their workplaces or imported by them to determine if they are hazardous. Employers are not required to evaluate chemicals unless they choose not to rely on the evaluation performed by the chemical manufacturer or importer for the chemical to satisfy this requirement.

(2) Chemical manufacturers, importers or employers evaluating chemicals shall identify and consider the available scientific evidence concerning such hazards. For health hazards, evidence which is statistically significant and which

is based on at least one positive study conducted in accordance with established scientific principles is considered to be sufficient to establish a hazardous effect if the results of the study meet the definitions of health hazards in this section. Appendix A shall be consulted for the scope of health hazards covered, and Appendix B shall be consulted for the criteria to be followed with respect to the completeness of the evaluation, and the data to be reported.

(3) The chemical manufacturer, importer or employer evaluating chemicals shall treat the following sources as establishing that the chemicals listed in them are hazardous:

(i) 29 CFR Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA); or,

(ii) Threshold Limit Values for Chemical Substances and Physical Agents in the Work Environment, American Conference of Governmental Industrial Hygienists (ACGIH) (latest edition).

The chemical manufacturer, importer, or employer is still responsible for evaluating the hazards associated with the chemicals in these source lists in accordance with the requirements of this standard.

(4) Chemical manufacturers, importers and employers evaluating chemicals shall treat the following sources as establishing that a chemical is a carcinogen or potential carcinogen for hazard communication purposes:

(i) National Toxicology Program (NTP), Annual Report on Carcinogens (latest edition);

(ii) International Agency for Research on Cancer (IARC) Monographs (latest editions); or

(iii) 29 CFR Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration.

Note: The Registry of Toxic Effects of Chemical Substances published by the National Institute for Occupational Safety and Health indicates whether a chemical has been found by NTP or IARC to be a potential carcinogen.

(5) The chemical manufacturer, importer or employer shall determine the hazards of mixtures of chemicals as follows:

(i) If a mixture has been tested as a whole to determine its hazards, the results of such testing shall be used to determine whether the mixture is hazardous;

(ii) If a mixture has not been tested as a whole to determine whether the mixture is a health hazard, the mixture shall be assumed to present the same health hazards as do the components which comprise one percent (by weight or volume) or greater of the mixture, except that the mixture shall be assumed to present a carcinogenic hazard if it contains a

component in concentrations of 0.1 percent or greater which is considered to be a carcinogen under paragraph (d)(4) of this section;

(iii) If a mixture has not been tested as a whole to determine whether the mixture is a physical hazard, the chemical manufacturer, importer, or employer may use whatever scientifically valid data is available to evaluate the physical hazard potential of the mixture; and,

(iv) If the employer has evidence to indicate that a component present in the mixture in concentrations of less than one percent (or in the case of carcinogens, less than 0.1 percent) could be released in concentrations which would exceed an established OSHA permissible exposure limit or ACGIH Threshold Limit Value, or could present a health hazard to employees in those concentrations, the mixture shall be assumed to present the same hazard.

(6) Chemical manufacturers, importers, or employers evaluating chemicals shall describe in writing the procedures they use to determine the hazards of the chemical they evaluate. The written procedures are to be made available, upon request, to employees, their designated representatives, the Assistant Secretary and the Director. The written description may be incorporated into the written hazard communication program required under paragraph (e) of this section.

(e) Written hazard communication program.

(1) Employers shall develop and implement a written hazard communication program for their workplaces which at least describes how the criteria specified in paragraphs (f), (g), and (h) of this section for labels and other forms of warning, material safety data sheets, and employee information and training will be met, and which also includes the following:

(i) A list of the hazardous chemicals known to be present using an identity that is referenced on the appropriate material safety data sheet (the list may be compiled for the workplace as a whole or for individual work areas);

(ii) The methods the employer will use to inform employees of the hazards of non-routine tasks (for example, the cleaning of reactor vessels), and the hazards associated with chemicals contained in unlabeled pipes in their work areas; and,

(iii) The methods the employer will use to inform any contractor employers with employees working in the employer's workplace of the hazardous chemicals their employees may be exposed to while performing their work, and any suggestions for appropriate protective measures.

(2) The employer may rely on an existing hazard communication program to comply with these requirements, provided that it meets the criteria established in this paragraph (e).

(3) The employer shall make the written hazard communication program available, upon request, to employees, their designated representatives, the Assistant Secretary and the Director, in accordance with the requirements of 29 CFR 1910.20 (e).

(f) Labels and other forms of warning. (1) The chemical manufacturer, importer, or distributor shall ensure that each container of hazardous chemicals leaving the workplace is labeled, tagged or marked with the following information:

(i) Identity of the hazardous chemical(s);

(ii) Appropriate hazard warnings; and

(iii) Name and address of the chemical manufacturer, importer, or other responsible party.

(2) Chemical manufacturers, importers, or distributors shall ensure that each container of hazardous chemicals leaving the workplace is labeled, tagged, or marked in accordance with this section in a manner which does not conflict with the requirements of the Hazardous Materials Transportation Act (18 U.S.C. ss1801 et seq.) and regulations issued under that Act by the Department of Transportation.

(3) If the hazardous chemical is regulated by OSHA in a substance-specific health standard, the chemical manufacturer, importer, distributor or employer shall ensure that the labels or other forms of warning used are in accordance with the requirements of that standard.

(4) Except as provided in paragraphs (f)(5) and (f)(6) the employer shall ensure that each container of hazardous chemicals in the workplace is labeled, tagged, or marked with the following information:

(i) Identity of the hazardous chemical(s) contained therein; and

(ii) Appropriate hazard warnings.

(5) The employer may use signs, placards, process sheets, batch tickets, operating procedures, or other such written materials in lieu of affixing labels to individual stationary process containers, as long as the alternative method identifies the containers to which it is applicable and conveys the information required by paragraph (f)(4) of this section to be on a label. The written materials shall be readily accessible to the employees in their work area throughout each work shift.

(6) The employer is not required to label portable containers into which hazardous chemicals are transferred from labeled containers, and which are intended only for the immediate use of the employee who performs the transfer.

(7) The employer shall not remove or deface existing labels on incoming containers of hazardous chemicals, unless the container is immediately marked with the required information.

(8) The employer shall ensure that labels or other forms of warning are legible, in English, and prominently displayed on the container, or readily available in the work area throughout each work shift. Employers having employees who speak other languages may add the information in their language to the material presented, as long as the information is presented in English as well.

(9) The chemical manufacturer, importer, distributor or employer need not affix new labels to comply with this section if existing labels already convey the required information.

(g) Material safety data sheets. (1) Chemical manufacturers and importers shall obtain or develop a material safety data sheet for each hazardous chemical they produce or import. Employers shall have a material safety data sheet for each hazardous chemical which they use.

(2) Each material safety data sheet shall be in English and shall contain at least the following information:

(i) The identity used on the label, and, except as provided for in paragraph (i) of this section on trade secrets:

(A) If the hazardous chemical is a single substance, its chemical and common name (s);

(B) If the hazardous chemical is a mixture which has been tested as a whole to determine its hazards, the chemical and common name(s) of the ingredients which contribute to these known hazards, and the common name(s) of the mixture itself; or,

(C) If the hazardous chemical is a mixture which has not been tested as a whole:

(1) The chemical and common name(s) of all ingredients which have been determined to be health hazards, and which comprise 1% or greater of the composition, except that chemicals identified as carcinogens under paragraph (d)(4) of this section shall be listed if the concentrations are 0.1% or greater; and,

(2) The chemical and common name(s) of all ingredients which have been determined to present a physical hazard when present in the mixture;

(ii) Physical and chemical characteristics of the hazardous chemical (such as vapor pressure, flash point);

(iii) The physical hazards of the hazardous chemical, including the potential for fire, explosion, and reactivity;

(iv) The health hazards of the hazardous chemical, including signs and symptoms of exposure, and any medical conditions which are generally recognized as being aggravated by exposure to the chemical;

(v) The primary route(s) of entry;

(vi) The OSHA permissible exposure limit, ACGIH Threshold Limit Value, and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the material safety data sheet, where available;

(vii) Whether the hazardous chemical is listed in the National Toxicology Program (NTP) Annual Report on Carcinogens (latest edition) or has been found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest editions), or by OSHA;

(viii) Any generally applicable precautions for safe handling and use which are known to the chemical manufacturer, importer or employer preparing the material safety data sheet, including appropriate hygienic practices, protective measures during repair and maintenance of contaminated equipment, and procedures for clean-up of spills and leaks;

(ix) Any generally applicable control measures which are known to the chemical manufacturer, importer or employer preparing the material safety data sheet, such as appropriate engineering controls, work practices, or personal protective equipment;

(x) Emergency and first aid procedures;

(xi) The date of preparation of the material safety data sheet or the last change to it; and,

(xii) The name, address and telephone number of the chemical manufacturer, importer, employer or other responsible party preparing or distributing the material safety data sheet, who can provide additional information on the hazardous chemical and appropriate emergency procedures, if necessary.

(3) If no relevant information is found for any given category on the material safety data sheet, the chemical manufacturer, importer or employer preparing the material safety data sheet shall mark it to indicate that no applicable information was found.

(4) Where complex mixtures have similar hazards and contents (i.e. the chemical ingredients are essentially the same, but the specific composition varies from mixture to mixture), the chemical manufacturer, importer or employer may prepare one material safety data sheet to apply to all of these similar mixtures.

(5) The chemical manufacturer, importer or employer preparing the material safety data sheet shall ensure that the information recorded accurately reflects the scientific evidence used in making the hazard determination. If the chemical manufacturer, importer or employer becomes newly aware of any significant information regarding the hazards of a chemical, or ways to protect against the hazards, this new information shall be added to the material safety data sheet within three months. If the chemical is not currently being produced or imported the chemical manufacturer or importer shall add the information to the material safety data sheet before the chemical is introduced into the workplace again.

(6) Chemical manufacturers or importers shall ensure that distributors and manufacturing purchasers of hazardous chemicals are provided an appropriate material safety data sheet with their initial shipment, and with the first shipment after a material safety data sheet is updated. The chemical manufacturer or importer shall either provide material safety data sheets with the shipped containers or send them to the manufacturing purchaser prior to or at the time of the shipment. If the material safety data sheet is not provided with the shipment, the manufacturing purchaser shall obtain one from the chemical manufacturer, importer, or distributor as soon as possible.

(7) Distributors shall ensure that material safety data sheets, and updated information, are provided to other distributors and manufacturing purchasers of hazardous chemicals.

(8) The employer shall maintain copies of the required material safety data sheets for each hazardous chemical in the workplace, and shall ensure that they are readily accessible during each work shift to employees when they are in their work area (s).

(9) Material safety data sheets may be kept in any form, including operating procedures, and may be designed to cover groups of hazardous chemicals in a work area where it may be

more appropriate to address the hazards of a process rather than individual hazardous chemicals. However, the employer shall ensure that in all cases the required information is provided for each hazardous chemical, and is readily accessible during each work shift to employees when they are in in their work area(s).

(10) Material safety data sheets shall also be made readily available, upon request, to designated representatives and to the Assistant Secretary, in accordance with the requirements of 29 CFR 1910.20 (e). The Director shall also be given access to material safety data sheets in the same manner.

(h) Employee information and training. Employers shall provide employees with information and training on hazardous chemicals in their work area at the time of their initial assignment, and whenever a new hazard is introduced into their work area.

(1) Information. Employees shall be informed of:

(i) The requirements of this section;

(ii) Any operations in their work area where hazardous chemicals are present; and,

(iii) The location and availability of the written hazard communication program, including the required list(s) of hazardous chemicals, and material safety data sheets required by this section.

(2) Training. Employee training shall include at least:

(i) Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area (such as monitoring conducted by the employer, continuous monitoring devices, visual appearance or odor of hazardous chemicals when being released, etc.);

(ii) The physical and health hazards of the chemicals in the work area;

(iii) The measures employees can take to protect themselves from these hazards, including specific procedures the employer has implemented to protect employees from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures, and personal protective equipment to be used; and,

(iv) The details of the hazard communication program developed by the employer, including an explanation of the labeling system and the material safety data sheet, and how employees can obtain and use the appropriate hazard information.

(i) Trade secrets. (1) The chemical manufacturer, importer or employer may withhold the specific chemical identity, including the chemical name and other specific identification of a hazardous chemical, from the material safety data sheet, provided that:

(i) The claim that the information withheld is a trade secret can be supported;

(ii) Information contained in the material safety data sheet concerning the properties and effects of the hazardous chemical is disclosed;

(iii) The material safety data sheet indicates that the specific chemical identity is being withheld as a trade secret; and,

(iv) The specific chemical identity is made available to health professionals, in accordance with the applicable provisions of this paragraph.

(2) Where a treating physician or nurse determines that a medical emergency exists and the specific chemical identity of a hazardous chemical is necessary for emergency or first-aid treatment, the chemical manufacturer, importer, or employer shall immediately disclose the specific chemical identity of a trade secret chemical to that treating physician or nurse, regardless of the existence of a written statement of need or a confidentiality agreement. The chemical manufacturer, importer, or employer may require a written statement of need and confidentiality agreement, in accordance with the provisions of paragraphs (i)(3) and (4) of this section, as soon as circumstances permit.

(3) In non-emergency situations, a chemical manufacturer, importer, or employer shall, upon request, disclose a specific chemical identity, otherwise permitted to be withheld under

paragraph (i)(1) of this section, to a health professional (i.e. physician, industrial hygienist, toxicologist, or epidemiologist) providing medical or other occupational health services to exposed employee(s) if:

(i) The request is in writing;

(ii) The request describes with reasonable detail one or more of the following occcupational health needs for the information:

(A) To assess the hazards of the chemicals to which employees will be exposed;

(B) To conduct or assess sampling of the workplace atmosphere to determine employee exposure levels;

(C) To conduct pre-assignment or periodic medical surveillance of exposed employees;

(D) To provide medical treatment to exposed employees;

(E) To select or assess appropriate personal protective equipment for exposed employees;

(F) To design or assess engineering controls or other protective measures for exposed employees; and,

(G) To conduct studies to determine the health effects of exposure.

(iii) The request explains in detail why the disclosure of the specific chemical identity is essential and that, in lieu thereof, the disclosure of the following information would not

enable the health professional to provide the occupational health services described in paragraph (ii) of this section:

(A) The properties and effects of the chemical;

(B) Measures for controlling workers' exposure to the chemical;

(C) Methods of monitoring and analyzing worker exposure to the chemical; and,

(D) Methods of diagnosing and treating harmful exposures to the chemical;

(iv) The request includes a description of the procedures to be used to maintain the confidentiality of the disclosed information; and,

(v) The health professional, and the employer or contractor of the health professional's services (i.e., downstream employer, labor organization, or individual employer), agree in a written confidentiality agreement that the health professional will not use the trade secret information for any purpose other than the health need(s) asserted and agree not to release the information under any circumstances other than to OSHA, as provided in paragraph (i)(6) of this section, except as authorized by the terms of the agreement or by the chemical manufacturer, importer, or employer.

(4) The confidentiality agreement authorized by paragraph (i)(3)(iv) of this section:

(i) May restrict the use of the information to the health purposes indicated in the written statement of need;

(ii) May provide for appropriate legal remedies in the event of a breach of the agreement, including stipulation of a reasonable pre-estimate of likely damages; and,

(iii) May not include requirements for the posting of a penalty bond.

(5) Nothing in this standard is meant to preclude the parties from pursuing non-contractual remedies to the extent permitted by law.

(6) If the health professional receiving the trade secret information decides that there is a need to disclose it to OSHA, the chemical manufacturer, importer, or employer who provided the information shall be informed by the health professional prior to, or at the same time as, such disclosure.

(7) If the chemical manufacturer, importer, or employer denies a written request for disclosure of a specific chemical identity, the denial must:

(i) Be provided to the health professional within thirty days of the request;

(ii) Be in writing;

(iii) Include evidence to support the claim that the specific chemical identity is a trade secret;

(iv) State the specific reasons why the request is being denied; and,

(v) Explain in detail how alternative information may satisfy the specific medical or occupational health need without revealing the specific chemical identity.

(8) The health professional whose request for information is denied under paragraph (i)(3) of this section may refer the request and the written denial of the request to OSHA for consideration.

(9) When a health professional refers the denial to OSHA under paragraph (i)(8) of this section, OSHA shall consider the evidence to determine if:

(i) The chemical manufacturer, importer, or employer has supported the claim that the specific chemical identity is a trade secret;

(ii) The health professional has supported the claim that there is a medical or occupational health need for the information; and,

(iii) The health professional has demonstrated adequate means to protect the confidentiality.

(10) (i) If OSHA determines that the specific chemical identity requested under paragraph (i)(3) of this section is

not a bona fide trade secret, or that it is a trade secret but the requesting health professional has a legitimate medical or occupational health need for the information, has executed a written confidentiality agreement, and has shown adequate means to protect the confidentiality of the information, the chemical manufacturer, importer, or employer will be subject to citation by OSHA.

(ii) If a chemical manufacturer, importer, or employer demonstrates to OSHA that the execution of a confidentiality agreement would not provide sufficient protection against the potential harm from the unauthorized disclosure of a trade secret specific chemical identity, the Assistant Secretary may issue such orders or impose such additional limitations or conditions upon the disclosure of the requested chemical information as may be appropriate to assure that the occupational health services are provided without an undue risk of harm to the chemical manufacturer, importer, or employer.

(11) If, following the issuance of a citation and any protective orders, the chemical manufacturer, importer, or employer continues to withhold the information, the matter is referrable to the Occupational Safety and Health Review Commission for enforcement of the citation. In accordance with Commission rules, the Administrative Law Judge may review the

citation and supporting documentation in camera or issue appropriate protective orders.

(12) Notwithstanding the existence of a trade secret claim, a chemical manufacturer, importer, or employer shall, upon request, disclose to the Assistant Secretary any information which this section requires the chemical manufacturer, importer, or employer to make available. Where there is a trade secret claim, such claim shall be made no later than at the time the information is provided to the Assistant Secretary so that suitable determinations of trade secret status can be made and the necessary protections can be implemented.

(13) Nothing in this paragraph shall be construed as requiring the disclosure under any circumstances of process or percentage of mixture information which is trade secret.

(j) Effective dates. Employers shall be in compliance with this section within the following time periods:

(1) Chemical manufacturers and importers shall label containers of hazardous chemicals leaving their workplaces, and provide material safety data sheets with initial shipments by November , 1985.

(2) Distributors shall be in compliance with all provisions of this section applicable to them by November , 1985.

(3) Employers shall be in compliance with all provisions of this section by May , 1986, including initial training for all current employees.

APPENDIX A, HEALTH HAZARD DEFINITIONS (Mandatory)

Although safety hazards related to the physical characteristics of a chemical can be objectively defined in terms of testing requirements (e.g. flammability), health hazard definitions are less precise and more subjective. Health hazards may cause measurable changes in the body--such as decreased pulmonary function. These changes are generally indicated by the occurrence of signs and symptoms in the exposed employees -- such as shortness of breath, a non-measurable, subjective feeling. Employees exposed to such hazards must be apprised of both the change in body function and the signs and symptoms that may occur to signal that change.

The determination of occupational health hazards is complicated by the fact that many of the effects or signs and symptoms occur commonly in non-occupationally exposed populations, so that effects of exposure are difficult to separate from normally occurring illnesses. Occasionally, a substance causes an effect that is rarely seen in the population at large, such as angiosarcomas caused by vinyl

chloride exposure, thus making it easier to ascertain that the occupational exposure was the primary causative factor. More often, however, the effects are common, such as lung cancer. The situation is further complicated by the fact that most chemicals have not been adequately tested to determine their health hazard potential, and data do not exist to substantiate these effects.

There have been many attempts to categorize effects and to define them in various ways. Generally, the terms "acute" and "chronic" are used to delineate between effects on the basis of severity or duration. "Acute" effects usually occur rapidly as a result of short-term exposures, and are of short duration. "Chronic" effects generally occur as a result of long-term exposure, and are of long duration.

The acute effects referred to most frequently are those defined by the American National Standards Institute (ANSI) standard for Precautionary Labeling of Hazardous Industrial Chemicals (Z129.1-1982) -- irritation, corrosivity, sensitization and lethal dose. Although these are important health effects, they do not adequately cover the considerable range of acute effects which may occur as a result of occupational exposure, such as, for example, narcosis.

Similarly, the term chronic effect is often used to cover only carcinogenicity, teratogenicity, and mutagenicity. These

effects are obviously a concern in the workplace, but again, do not adequately cover the area of chronic effects, excluding, for example, blood dyscrasias (such as anemia), chronic bronchitis and liver atrophy.

The goal of defining precisely, in measurable terms, every possible health effect that may occur in the workplace as a result of chemical exposures cannot realistically be accomplished. This does not negate the need for employees to be informed of such effects and protected from them.

Appendix B, which is also mandatory, outlines the principles and procedures of hazard assessment.

For purposes of this section, any chemicals which meet any of the following definitions, as determined by the criteria set forth in Appendix B are health hazards:

1. Carcinogen: A chemical is considered to be a carcinogen if:

(a) It has been evaluated by the International Agency for Research on Cancer (IARC), and found to be a carcinogen or potential carcinogen; or

(b) It is listed as a carcinogen or potential carcinogen in the Annual Report on Carcinogens published by the National Toxicology Program (NTP) (latest edition); or,

(c) It is regulated by OSHA as a carcinogen.

2. Corrosive: A chemical that causes visible destruction of, or irreversible alterations in, living tissue by chemical action at the site of contact. For example, a chemical is considered to be corrosive if, when tested on the intact skin of albino rabbits by the method described by the U.S. Department of Transportation in Appendix A to 49 CFR Part 173, it destroys or changes irreversibly the structure of the tissue at the site of contact following an exposure period of four hours. This term shall not refer to action on inanimate surfaces.

3. Highly toxic: A chemical falling within any of the following categories:

(a) A chemical that has a median lethal dose (LD_{50}) of 50 milligrams or less per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.

(b) A chemical that has a median lethal dose (LD_{50}) of 200 milligrams or less per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between two and three kilograms each.

(c) A chemical that has a median lethal concentration (LC_{50}) in air of 200 parts per million by volume or less of gas or vapor, or 2 milligrams per liter or less of mist, fume,

or dust, when administered by continuous inhalation for one hour (or less if death occurs within one hour) to albino rats weighing between 200 and 300 grams each.

4. Irritant: A chemical, which is not corrosive, but which causes a reversible inflammatory effect on living tissue by chemical action at the site of contact. A chemical is a skin irritant if, when tested on the intact skin of albino rabbits by the methods of 16 CFR 1500.41 for four hours exposure or by other appropriate techniques, it results in an empirical score of five or more. A chemical is an eye irritant if so determined under the procedure listed in 16 CFR 1500.42 or other appropriate techniques.

5. Sensitizer: A chemical that causes a substantial proportion of exposed people or animals to develop an allergic reaction in normal tissue after repeated exposure to the chemical.

6. Toxic. A chemical falling within any of the following categories:

(a) A chemical that has a median lethal dose (LD_{50}) of more than 50 milligrams per kilogram but not more than 500 milligrams per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.

(b) A chemical that has a median lethal dose (LD_{50}) of more than 200 milligrams per kilogram but not more than 1,000 milligrams per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weigning between two and three kilograms each.

(c) A chemical that has a median lethal concentration (LC 50) in air of more than 200 parts per million but not more than 2,000 parts per million by volume of gas or vapor, or more than two milligrams per liter but not more than 20 milligrams per liter of mist, fume, or dust, when administered by continuous inhalation for one hour (or less if death occurs within one hour) to albino rats weighing between 200 and 300 grams each.

7. Target organ effects.

The following is a target organ categorization of effects which may occur, including examples of signs and symptoms and chemicals which have been found to cause such effects. These examples are presented to illustrate the range and diversity of effects and hazards found in the workplace, and the broad scope employers must consider in this area, but are not intended to be all-inclusive.

a.	Hepatotoxins:	Chemicals which produce liver damage
	Signs & Symptoms:	Jaundice; liver enlargement
	Chemicals:	Carbon tetrachloride; nitrosamines
b.	Nephrotoxins:	Chemicals which produce kidney damage
	Signs & Symptoms:	Edema; proteinuria
	Chemicals:	Halogenated hydrocarbons; uranium
c.	Neurotoxins:	Chemicals which produce their primary toxic effects on the nervous system
	Signs & Symptoms	Narcosis; behavioral changes; decrease in motor functions
	Chemicals:	Mercury; carbon disulfide
d.	Agents which act on the blood or hemato-poietic system:	Decrease hemoglobin function; deprive the body tissues of oxygen
	Signs & Symptoms:	Cyanosis; loss of consciousness
	Chemicals:	Carbon monoxide; cyanides
e.	Agents which damage the lung:	Chemicals which irritate or damage the pulmonary tissue
	Signs & Symptoms:	Cough; tightness in chest; shortness of breath
	Chemicals:	Silica; asbestos
f.	Reproductive toxins:	Chemicals which affect the reproductive capabilities including chromosomal damage (mutations) and effects on fetuses (teratogenesis)
	Signs & Symptoms:	Birth defects; sterility
	Chemicals:	Lead; DBCP
g.	Cutaneous hazards:	Chemicals which affect the dermal layer of the body

	Signs & Symptoms:	Defatting of the skin; rashes; irritation
	Chemicals:	Ketones; chlorinated compounds
h.	Eye hazards:	Chemicals which affect the eye or visual capacity
	Signs & Symptoms:	Conjunctivitis; corneal damage
	Chemicals:	Organic solvents; acids

APPENDIX B, HAZARD DETERMINATION (Mandatory)

The quality of a hazard communication program is largely dependent upon the adequacy and accuracy of the hazard determination. The hazard determination requirement of this standard is performance-oriented. Chemical manufacturers, importers, and employers evaluating chemicals are not required to follow any specific methods for determining hazards, but they must be able to demonstrate that they have adequately ascertained the hazards of the chemicals produced or imported in accordance with the criteria set forth in this Appendix.

Hazard evaluation is a process which relies heavily on the professional judgment of the evaluator, particularly in the area of chronic hazards. The performance-orientation of the hazard determination does not diminish the duty of the chemical manufacturer, importer or employer to conduct a thorough evaluation, examining all relevant data and producing a scientifically defensible evaluation. For purposes of this standard, the following criteria shall be used in making hazard determinations that meet the requirements of this standard.

1. Carcinogenicity: As described in paragraph (d)(4) and Appendix A of this section, a determination by the National Toxicology Program, the International Agency for Research on Cancer, or OSHA that a chemical is a carcinogen or potential carcinogen will be considered conclusive evidence for purposes of this section.

2. Human data: Where available, epidemiological studies and case reports of adverse health effects shall be considered in the evaluation.

3. Animal data: Human evidence of health effects in exposed populations is generally not available for the majority of chemicals produced or used in the workplace. Therefore, the available results of toxicological testing in animal populations shall be used to predict the health effects that may be experienced by exposed workers. In particular, the definitions of certain acute hazards refer to specific animal testing results (see Appendix A).

4. Adequacy and reporting of data. The results of any studies which are designed and conducted according to established scientific principles, and which report statistically significant conclusions regarding the health effects of a chemical, shall be a sufficient basis for a hazard determination and reported on any material safety data sheet.

The chemical manufacturer, importer, or employer may also report the results of other scientifically valid studies which tend to refute the findings of hazard.

APPENDIX C, INFORMATION SOURCES (Advisory)

The following is a list of available data sources which the chemical manufacturer, importer, or employer may wish to consult to evaluate the hazards of chemicals they produce or import:

-- Any information in their own company files such as toxicity testing results or illness experience of company employees.
-- Any information obtained from the supplier of the chemical, such as material safety data sheets or product safety bulletins.
-- Any pertinent information obtained from the following source list (latest editions should be used):

Condensed Chemical Dictionary
Van Nostrand Reinhold Co.
135 West 50th Street
New York, NY 10020

The Merck Index: An Encyclopedia of Chemicals and Drugs
Merck and Company, Inc.
126 E. Lincoln Avenue
Rahway, NJ 07065

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man
Geneva: World Health Organization
International Agency for Research on Cancer, 1972-1977
(Multivolume work)
49 Sheridan Street
Albany, New York

Industrial Hygiene and Toxicology, by F.A. Patty
John Wiley & Sons, Inc.
New York, NY
(Five volumes)

Clinical Toxicology of Commercial Products
Gleason, Gosselin and Hodge

Casarett and Doull's
Toxicology; The Basic Science of Poisons,
Doull, Klaassen, and Amdur
Macmillan Publishing Co., Inc.
New York, NY

Industrial Toxicology, by Alice Hamilton and Harriet L. Hardy
Publishing Sciences Group, Inc.
Acton, MA

Toxicology of the Eye, by W. Morton Grant
Charles C. Thomas
301-327 East Lawrence Avenue
Springfield, IL

Recognition of Health Hazards in Industry
William A. Burgess
John Wiley and Sons
605 Third Avenue
New York, Ny 10158

Chemical Hazards of the Workplace
Nick H. Proctor and James P. Hughes
J.P. Lipincott Company
6 Winchester Terrace
New York, NY 10022

Handbook of Chemistry and Physics
Chemical Rubber Company
18901 Cranwood Parkway
Cleveland, OH 44128

Threshold Limit Values for Chemical Substances and Physical Agents in the Workroom Environment with Intended Changes
American Conference of Governmental Industrial Hygienists
6500 Glenway Avenue, Bldg. D-5
Cincinnati, OH 45211

NOTE: the following documents are on sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402

Occupational Health Guidelines
NIOSH/OSHA (NIOSH Pub. No. 81-123)

NIOSH/OSHA Pocket Guide to Chemical Hazards
NIOSH Pub. No. 78-210

Registry of Toxic Effects of Chemical Substances
U.S. Department of Health and Human Services
Public Health Service
Center for Disease Control
National Institute for Occupational Safety and Health
(NIOSH Pub. No. 80-102)

The Industrial Environment - Its Evaluation and Control
U.S. Department of Health and Human Services
Public Health Service
Center for Disease Control
National Institute for Occupational Safety and Health
(NIOSH Pub. No. 74-117)

Miscellaneous Documents - National Institute for Occupational Safety and Health

1. Criteria for a recommended standard . . .
   Occupational Exposure to " _____ "
2. Special Hazard Reviews
3. Occupational Hazard Assessment
4. Current Intelligence Bulletins

BIBLIOGRAPHIC DATA BASES

Service Provider	File Name
Bibliographic Retrieval Services (BRS) Corporation Park, Bldg. 702 Scotia, New York 12302	AGRICOLA BIOSIS PREVIEWS CA CONDENSATES CA SEARCH DRUG INFORMATION MEDLARS MEDOC NTIS POLLUTION ABSTRACTS SCIENCE CITATION INDEX SSIE

Lockheed - DIALOG Lockheed Missiles & Space Company, Inc. P.O. Box 44481 San Francisco, CA 94144	AGRICOLA BIOSIS PREV. 1972-PRESENT BIOSIS PREV. 1969-71 CA CONDENSATES 1970-71 CA SEARCH 1972-76 CA SEARCH 1977-PRESENT CHEMNAME CONFERENCE PAPERS INDEX FOOD SCIENCE & TECH. ABSTR. FOODS ADLIBRA INTL. PHARMACEUTICAL ABSTR. NTIS POLLUTION ABSTRACTS SCISEARCH 1978-PRESENT SCISEARCH 1974-77 SSIE CURRENT RESEARCH
SDC - ORBIT SDC Search Service Department No. 2230 Pasadena, CA 91051	AGRICOLA BIOCODES BIOSIS/BIO6973 CAS6771/CAS7276 CAS77 CHEMDEX CONFERENCE ENVIROLINE LABORDOC NTIS POLLUTION SSIE
Chemical Information System (CIS) Chemical Information Systems, Inc. 7215 Yorke Road Baltimore, MD 21212	Structure & Nomenclature Search System Acute Toxicity (RTECS) Clinical Toxicology of Commercial Products Oil and Hazardous Materials Technical Assistance Data System
National Library of Medicine Department of Health and Human Services Public Health Service National Institutes of Health Bethesda, MD 20209	Toxicology Data Bank (TDB) MEDLINE TOXLINE CANCERLIT RTECS

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OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

Contact: Akio Konoshima
Office: (202) 523-8151
After Hours: (301) 657-3509

Contact: Susan H. Fleming
Office: (202) 523-8151
After Hours: (703) 354-1861

OSHA ISSUES FINAL HAZARD COMMUNICATION STANDARD

More than 14 million workers in 300,000 manufacturing establishments will gain greater access to information on the chemical hazards with which they work under a new Occupational Safety and Health Administration standard, the Department of Labor announced today.

"I believe this is the most significant regulatory action ever taken by OSHA," said Assistant Secretary of Labor Thorne G. Auchter, who heads OSHA. "The hazard communication standard will require that people who work with hazardous substances are aware of the dangers and are trained to effectively protect themselves.

"We estimate there may be as many as 575,000 chemical products in American workplaces, with new chemicals being introduced every day. Workers need to know which chemicals are hazardous and how to protect themselves against those hazards. The three components of OSHA's hazard communication program -- labels or other signs, material safety data sheets and worker training -- will meet this need.

"This standard represents an approach to regulation designed to respond to evolving workplace conditions," Auchter added. "It is an approach endorsed by mainstream safety and health professionals in government, labor and management.

"It also underscores our commitment in this administration to provide basic, useful safety and health information directly to the people who need it -- the working men and women of this country. This standard differs from a proposed labeling standard issued in the final week of the previous administration in that it doesn't rely exclusively on technical information about chemical substances printed on labels. This standard mandates communication about workplace hazards between employers and employees. That is a major step toward improved safety and health."

Auchter noted that this action comes less than three weeks after the Labor Department published an emergency temporary standard reducing by 75 percent the permissible exposure limit to cancer-causing asbestos fibers. That standard, said Auchter, was intended to achieve an immediate reduction of risk to exposed workers and, like hazard communication, it required comprehensive hazard awareness and safety training for workers.

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"Awareness is the first and best step toward improved safety and health;" Auchter said. He added that a Bureau of Labor Statistics survey showing significant reductions in workplace injuries and illnesses in 1982 and his own agency's fiscal year 1983 data showing increased OSHA consultation and training efforts and a higher enforcement presence in high hazard industries, indicate that American workers and employers are rapidly reducing workplace hazards. "This new hazard communication standard will greatly accelerate that kind of real progress," Auchter predicted.

Under the standard labels on containers of hazardous chemicals will provide an immediate warning to the worker. More detailed information on the chemical and its hazards, will be available on a material safety data sheet, which the employer will keep readily accessible. The worker will be trained to interpret and understand labels and material safety data sheets, and to safely handle hazardous substances.

The hazard communication program is designed to be a valuable tool for both employers and employees in implementing or strengthening occupational health programs, which help reduce occupational illnesses and injuries resulting from chemical exposures.

The standard will set forth uniform national requirements for hazard communication. Many states and localities already have in place or are considering similar statutes. OSHA's standard will preempt these laws in states which do not have OSHA approved job safety and health plans.

Specifically, by November 25, 1985, OSHA's hazard communication standard requires chemical manufacturers and importers to assess the hazards of chemicals they sell. They are to provide hazard information through warning labels affixed to all containers of their products and through provision of material safety data sheets to all employers in manufacturing establishments in Standard Industrial Classification (SIC) codes 20-39. Labels are to include the identity of the chemical, hazard warnings and the name and address of the manufacturer, importer or responsible party. Chemical distributors also must adhere to the labeling requirements and must ensure that material safety data sheets are provided as required. For stationary containers, signs, placards, process sheets, batch tickets, etc., may be used.

By May 27, 1986, manufacturing employers are required to label certain in-plant containers, to inform workers of hazards within their work areas, to make material safety data sheets or comparable written information available to employees, and to train workers to protect themselves when dealing with specific chemical hazards. Employers must develop written hazard communication programs outlining their plans to accomplish these objectives.

The standard sets a "floor" of about 600 substances regulated by OSHA or listed as hazards by the American Conference of Governmental Industrial Hygienists which will automatically be considered hazardous. It also includes criteria for determining health hazards. The chemical manufacturer will have to evaluate all its chemicals to determine whether they pose such hazards. In determining carcinogenicity, the chemical manufacturer/importer must at least treat OSHA-regulated carcinogens and any substances listed as such by the National Toxicology

Program or the International Agency For Research on Cancer. Mixtures are treated differently depending on whether there is data on the mixture or only on its individual components and on whether there is a physical or a health hazard involved.

Detailed provisions are included in the standard for protecting bona fide trade secrets, and disclosing necessary information to health professionals providing occupational health services to exposed employees. In emergencies, chemical manufacturers and importers must reveal the specific chemical identity of a hazardous chemical to treating physicians and nurses on request. In non-emergency situations, health professionals must justify in writing the need for the specific identity of any chemical a manufacturer or importer claims is a trade secret and provide written assurance that confidentiality will be maintained.

The standard authorizes the use of confidentiality agreements to protect trade secret information. In any case, the chemical manufacturer or importer must disclose the hazards posed by a chemical regardless of its trade secret status. The standard gives OSHA access to trade secrets when necessary. It also specifies the administrative review and enforcement procedures that are in place to handle disputed trade secret claims.

Initial costs of the standard are expected to be $603.926 million or $43 per employee with annual costs of $158.87 million or $11 per employee--slightly higher than costs anticipated in the proposal. These costs represent less than one-quarter of the initial cost of the labelling proposal issued by the previous Administration and less than 15 percent of the annual costs expected under that proposal.

Benefits of the hazard communication standard include increased employee awareness of hazards and increased compliance with protective measures. These in turn will result in lower incidences of chemically-related injury and illness on the job. Further, the OSHA standard will reduce the costs involved with complying with diverse state and local standards.

OSHA originally proposed a chemical labelling standard Jan. 16, 1981. That proposal was withdrawn Feb. 12, 1981 and a new hazard communication proposal was subsequently published in the March 19, 1982 Federal Register. Hearings were held in June and July 1982 in Washington, Houston, Los Angeles and Detroit.

OSHA plans to develop various means of describing and explaining the provisions of the final standard to affected parties. The agency is considering a number of options to accomplish this, including sponsoring seminars as well as providing written materials. OSHA invites suggestions from interested parties regarding the most effectve means to ensure the provisions are understood so that employers may comply with the requirements. Suggestions should be directed to Jennifer Silk, OSHA Health Standards, Room N-3700, Frances Perkins Bldg., Third St. and Constitution Ave,, N.W., Washington, D.C. 20210, telephone (202) 523-7166.

Jurisdictions with their own safety and health plans must adopt a comparable standard by May 25, 1984. These jurisdictions include: Alaska, Ariz., Calif., Conn. (covers state and local government employees only), Hawaii, Ind., Iowa, Ky., Md., Mich., Minn., Nev., N.M., N.C., Ore., Puerto Rico, S.C., Tenn., Utah, Vt., Va., Virgin Islands, Wash., Wyo.

A brochure "Chemical Hazard Identification" which covers major provisions of the standard is available from OSHA. Interested persons should send a self-addressed mailing label to Hazard Communication, OSHA Publications, Room N-4101, Frances Perkins Bldg., Third St. and Constitution Ave., Washington, D.C. 20210.

OSHA's hazard communication standard is scheduled for publication in the November 25 Federal Register.

A fact sheet with highlights of the hazard communication standard is attached.

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HIGHLIGHTS OF OSHA'S HAZARD COMMUNICATION STANDARD

Purpose

-- To ensure the evaluation of chemicals to determine their hazards.

-- To apprise workers in manufacturing industries of the hazards with which they work.

-- To preempt state laws covering hazard communication in states without state OSHA plans; to require OSHA approval for state hazard communication laws in states operating their own OSHA programs.

Scope

-- Covers 14 million employees in 300,000 manufacturing establishments in SIC codes 20-39. These industries include: 20) Food and Kindred Products; 21) Tobacco Manufacturers; 22) Textile Mill Products; 23) Apparel and Other Textile Products; 24) Lumber and Wood Products; 25) Furniture and Fixtures; 26) Paper and Allied Products; 27) Printing and Publishing; 28) Chemicals and Allied Products; 29) Petroleum and Coal Products; 30) Rubber and Plastic Products; 31) Leather and Leather Products; 32) Stone, Clay and Glass Products; 33) Primary Metal Industries; 34) Fabricated Metal Products; 35) Machinery, Except Electrical; 36) Electrical Equipment and Supplies; 37) Transportation Equipment; 38) Instruments and Related Products; and 39) Miscellaneous Manufacturing Products.

-- Requires chemical manufacturers and importers to assess hazards, develop labels and material safety data sheets and forward this information to manufacturers.

-- Makes manufacturing employers responsible for informing and training workers about the hazards in their workplaces, retaining warning labels and making available material safety data sheets supplied with hazardous products.

-- Exempts chemical laboratories in manufacturing from labeling provisions of standard, but otherwise provides for limited coverage of laboratory employees.

-- Exempts hazardous wastes, wood, tobacco, "articles" and potentially hazardous substances such as drugs, food, and cosmetics brought into the workplace for the personal consumption of employees.

-- Permits the use of labels required by other federal agencies in lieu of those otherwise required under this standard.

Hazard Determination

-- Written hazard evaluation procedures are required.

-- Physical hazards include chemicals which are combustible liquids, compressed gases, explosive, flammable, organic peroxides, oxidizers, pyrophorics, unstable (reactive), or water-reactive.

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-- Health hazards include chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic system and agents which damage the lungs, skin, eyes or mucous membranes. (See Appendix A of the standard.)

-- Determining health hazards (Appendix B)

1) If one or more positive studies--human and/or animal data--which are conducted according to accepted scientific principles and have statistically significant results which show adverse health effects that may occur as a result of employee exposure, these must be reported. Negative data believed to be relevant also may be reported.

2) The standard establishes a "floor" of about 600 substances automatically considered health hazards--substances regulated by OSHA and/or listed by the American Conference of Governmental Industrial Hygienists in Threshold Limit Values for Chemical Substances and Physical Agents in the Work Environment.

3) In determining carcinogenicity, chemical manufacturers/importers are to rely on the National Toxicology Program, the International Agency for Research on Cancer and OSHA standards.

4) Mixtures are to be evaluated for health hazards on the basis of data covering them or on the basis of data on any constituent chemical which comprises 1 percent or more of the mixture. If a constituent chemical comprises 0.1 percent or more and is a carcinogen, the mixture must be considered carcinogenic. If a mixture component represents less than 1 percent but might result in workplace exposures exceeding OSHA permissible exposure limits or in harm to workers, this must be reported.

Written Hazard Communication Program

-- To be in writing and to be available to employees, designated representatives, OSHA and NIOSH.

-- To cover container labeling, material safety data sheets and employee training.

-- To include a list of hazardous chemicals in each work area, describe how the employer will meet criteria of the standard, explain methods for communicating hazards to employees involved in nonroutine tasks and to those who work in areas where there are unlabeled pipes, explain the methods used to inform contractors of hazards to which their employees may be exposed.

Labels

-- Affixed by manufacturer, importer or distributor to shipped containers.

-- Include identity (chemical and common names), hazard warnings and name and address of the manufacturer or responsible party. Must be legible, and in English. Must not be removed or defaced. May follow format required by other federal agency or foreign entity such as the European Economic Community. New labels not necessary if current ones provide required information.

-- Not conflict with labels required by the Department of Transportation under the Hazardous Materials Transportation Act.

-- Affixed by employer to other containers used in-plant by employees except: signs or placards or standard operating procedures, process sheets, batch tickets, blend tickets, etc. may be used for stationary containers.

-- Exempt: pipes and piping systems as well as in-plant containers for immediate use only of employee who transfers chemicals from labeled containers.

Material Safety Data Sheets

-- Manufacturers, importers and distributors to forward at the time of initial shipment to an employer.

-- Employers required to obtain and maintain MSDS for each hazardous chemical in their workplace.

-- Information must be in English, include identity and chemical and common names for the hazardous chemical. Mixtures to receive special treatment (see Hazard Determination above).

-- One MSDS may be used for similar mixtures with essentially the same hazards and contents.

-- MSDS must also include information specified on physical and chemical characteristics of the hazardous chemical; known acute and chronic health effects and related information; information on exposure limits and whether OSHA, the International Agency for Research on Cancer or the National Toxicology Program consider the chemical a carcinogen; precautionary measures; emergency and first aid procedures; date of preparation; and identification of the party responsible for the MSDS.

-- No blank spaces permitted; spaces should be marked when information is not found or not applicable.

-- New information to be incorporated on MSDS within three months following the manufacturer's receipt of the information. New MSDS to be transmitted with the next shipment of the chemical to the employer.

-- Copies of MSDS or comparable written document to be available in the workplace to employees, designated employee representatives, OSHA and NIOSH.

-more-

Employee Information and Training

-- To take place upon initial assignment and when new hazards are introduced.

-- To include: requirements of the standard; operations in the workplace where hazardous chemicals are used; location of written hazard communication program, material safety data sheets, written hazard evaluation procedures and lists of hazardous chemicals; procedures for determining the presence of a hazardous chemical; specific hazards of specific chemicals in employees' work area; protective measures employer has instituted and employees are to follow to protect themselves; how to read and interpret information on labels and material safety data sheets and how to get and use the available hazard information.

Trade Secrets

-- Manufacturer, importer or employer may withhold the specific chemical identity (chemical name, Chemical Abstracts Services registry number) from an MSDS if this information constitutes a trade secret; provided information on the hazardous nature of the chemical is disclosed on the MSDS and if the MSDS indicates that the specific chemical identity is being withheld because it is a trade secret.

-- Trade secret information must be disclosed to OSHA upon request.

-- Trade secret processes and percentage of mixture information are excluded from disclosure requirements.

-- In emergencies the specific identity must be provided immediately upon request to a treating physician or nurse.

-- Non-emergency situations

1) The specific chemical identity must be made available to health professionals such as physicians, industrial hygienists, toxicologists and others providing medical or occupational health services to exposed employees upon written request.

2) Written requests must describe the medical or occupational health need such as: to assess the hazards of chemicals to which employees will be exposed; to conduct or assess sampling of workplace atmosphere to determine employee exposure levels; to conduct pre-assignment or periodic medical surveillance of exposed employees; to provide medical treatment to exposed employees; to select or assess appropriate personal protective equipment for exposed employees; to design or assess engineering controls or other protective measures for exposed employees; to conduct studies to determine the health effects of exposure.

3) The request must explain why the following types of information would be insufficient: properties and effects of the chemical; measures for controlling workers' exposure to the chemical; methods of monitoring and analyzing worker exposure to the chemical; methods of diagnosing and treating harmful exposures to the chemical.

-more-

-- Confidentiality

1) The request must describe procedures to be used to protect the confidentiality of the information and include a written agreement not to use the information for any purpose other than the health need or to release it except to OSHA and be signed by both the health professional and the employer or contractor of the health professional's services.

2) No penalty bond may be required; however, a liquidated damages agreement may be required and the parties may pursue non-contractual remedies to the extent permitted by law.

3) If the health professional decides to disclose the information to OSHA, he/she must inform the chemical manufacturer, importer or employer who provided the information.

-- Denials

1) Denials of health professionals' written requests for the specific identity of a chemical must be in writing within thirty days of the request and must include evidence to support the claim that the chemical identity is a trade secret, state the specific reasons for denial and explain in detail how alternative information may suffice.

2) If OSHA determines that the specific chemical identity does not represent a trade secret, the withholding manufacturer, importer or employer will be subject to citation. Likewise a citation may result if the specific chemical identity is a bona fide trade secret but the health professional has demonstrated a need to know the identity, executed a confidentiality agreement and shown adequate means for protecting the trade secret. Abatement of the citation will most likely involve divulging the information subject to confidentiality protections.

3) If the trade secret must be revealed, OSHA may impose additional limitations or conditions to assure that it is protected.

-- If the employer appeals the citation to the Occupational Safety and Health Review Commission, the administrative law judge may decide to review the matter in camera.

Effective Dates

-- November 25, 1985--Chemical manufacturers must complete labeling of containers shipped downstream and provide material safety data sheets to manufacturers.

-- May 27, 1986--All employers must be in compliance with all provisions of the standard.

# # #

PLEASE NOTE: THE PRECEDING PAGES WERE TREATED AS A UNIT IN THE ORIGINAL DOCUMENT.

Question

Substances exempt from list (18.60.105(a)(9)) (concentration, amount, personal use, transit) must remain on list if are on one of the 3 specified lists. However, not managed as toxic under SB 79.

? How designate those substances on the list that are exempt?

rec 8-9-84

MEMORANDUM State of Alaska

TO: Commissioner Jim Robison
Department of Labor

DATE: July 18, 1984

FILE NO: 166-010-85

TELEPHONE NO: 276-3550

FROM: Norman C. Gorsuch
Attorney General

By: Paul S. Stahl
Paul S. Stahl
Assistant Attorney General

SUBJECT: List of toxic and hazardous substances under "Right to Know" law (AS 18.60.010-.105)

You have asked three questions concerning Alaska's "Right to Know" law (AS 18.60.010-.105).

1) Can the Department publish its list of designated toxic and hazardous substances pursuant to AS 18.60.030(12) and AS 18.60.105(a) without going through the promulgation proceeding in the Administrative Procedure Act? yes only req'd when adding a substance that's not on one of the 3 lists

2) Is the list of toxic and hazardous substances required to be published under AS 18.60.030(12) intended to be coextensive with the chemicals and substances identified in AS 18.60.105(a)? yes so Dept. list must include the other 3 lists

3) Does the Department have the authority, under AS 18.60-.105(9)(A), to promulgate regulations excluding from its list of toxic and hazardous substances certain chemicals listed under AS ~~18~~ 18.60.105(A) and (B)? so substances stay on list, but aren't managed as "toxic" no

In answer to the first question we conclude that the Department can publish the list of toxic and hazardous substances without going through the promulgation procedures set out in the Administrative Procedure Act, AS 44.62.010-44.62.650. Regarding the second question, as the list to be published by the Department includes those chemicals and substances described in AS 18.60.105(a)(8)(A), (B), (C) and (D), they are coextensive. In answer to the third question, the Department does not have the authority to exclude those substances described under either AS 18.60.105(a)(8)(A) or (B) from the list of toxic and hazardous substances.

Your request concerns the effect of the recently enacted "Right to Know" law, AS 18.60.010-.105. AS 18.60.030(12) provides, "The Department of Labor shall annually publish a list of toxic and hazardous substances."

"Toxic and hazardous substances" is defined in AS 18.60.105(a), which provides:

(8) "toxic or hazardous substance" includes

(A) a chemical listed in 29 CFR Part 1910, Subpart Z, Toxic and Hazardous Substances, "General Industry Standards", Occupational Safety and Health Administration;

(B) a chemical listed in "Threshold Limit Values for Chemical Substances and Physical Agents in the Work Environment", American Conference of Governmental Industrial Hygienists (Latest Edition);

(C) a substance for which an OSHA form 20 or equivalent information is required under OSHA regulations; and

(D) a substance determined by the department, in accordance with the Administrative Procedure Act (AS 44.62), to be a health hazard to an employee who is exposed to the substance, including a carcinogen, reproductive toxin, irritant, corrosive, sensitizer, hepatotoxin, nephrotoxin, neurotoxin, agent that acts on the hematopoietic system, agent that damages the lungs, a cutaneous hazard and an eye hazard;

(9) "toxic or hazardous substance" does not include

(A) substances that because of their physical state, volume, or concentration do not pose a health hazard upon exposure;

(B) substances that are goods, food, drugs, cosmetics, or tobacco products intended for personal consumption;

(C) substances in transit;

Your question is whether, in publishing this list, the Department must follow the requirements for promulgating regulations in the Administrative Procedures Act, AS 44.52.010-44.62.650. The term "regulation" as defined in AS 44.62.640(a)(2), includes the following:

> "manuals," "policies," "instructions," "guides to enforcement," "interpretive bulletins," "interpretations," and the like, which have the effect of rules, orders, regulations or standards of general application.

The label which is attached to a statement by the Department does not determine the applicability of the APA. The "list" of toxic

and hazardous substances could be a regulation if it had the effect of rules, orders, regulations or standards of general application. Kenai Peninsula Fisherman's Cooperative Association v. State, 628 P.2d 897, 905 (Alaska 1981).

The list of toxic and hazardous substances should not be considered a regulation. The Department is not exercising any discretion. The list is merely a compilation of chemicals and substances from sources already identified by the legislature. AS 18.60.105(a)(8)(A), (B) and (C).

The legislature has also empowered the Department to determine other substances which are hazardous upon exposure. AS 18.60.105(a)(8)(D). This latter provision explicity requires that the Department follow the Administrative Procedure Act ("APA") when making that determination under AS 18.60-.105(a)(8)(D). While the compilation of the list from the sources identified in AS 18.60.105(a)(8)(A), (B) and (C) does not have to follow the requirements for promulgating regulations of the APA, the APA must be followed when the Department is exercising its discretion pursuant to AS 18.60.105(a)(8)(D).

The list mandated by AS 18.60.030(12) will be coextensive with the provisions of AS 18.60.105(a). Thus, at a minimum, the list published by the Department must include substances or chemicals from the sources identified in AS 18.60.105(a)(8)(A), (B) and (C). Any additional substances which the Department determines to be hazardous upon exposure pursuant to AS 18.60.105(a)(8)(D) must also be included on the list.

In publishing this list, however, you cannot exclude substances the legislature has specifically declared to be hazardous or toxic. Substances which appear on the list are not considered to be toxic or hazardous when the substance's state, volume or concentration cause that substance not to be a hazard upon exposure. AS 18.60.105(a)(9)(A). However, under that circumstance, the substance itself would remain on the list.

An example illustrates this point. AS 18.60-.105(a)(9)(C) provides that "substances in transit" are not toxic or hazardous for purposes of the statute. Therefore, when PCBs are "in transit" they are not considered toxic or hazardous for purposes of the statute. However, PCBs would certainly remain on the list of toxic and hazardous substances.

In summary, we conclude that the Department need not follow APA procedures when publishing the list of toxic and hazardous substances. However, those procedures must be

followed each time the Department makes a determination under AS 18.60.105(a)(8)(D) to add a new substance to those which the legislature has specifically included in the list. The list required by AS 18.60.030(2) will be coextensive with the chemicals and substances listed under AS 18.60.105(8). The Department does not have the authority to exclude chemicals identified by AS 18.60.105(a)(8)(A) and (B) from the list. A substance's physical state, volume or concentration can result in its not being considered toxic or hazardous, however, the substance itself would remain on the list.

PSS:jg

cc: Richard Arab

Special Report

Right-to-Know Laws in the States . . . An Emerging Issue for the Eighties?

So-called "right-to-know" legislation is proliferating in state legislatures—and even in some city and county councils. These laws attempt, in a variety of ways, to inform workers, emergency service personnel, and the public of hazards that may exist because of the presence of chemical substances. Right-to-know legislation is not only a major state legislative area; it is a major *new* legislative area.

by Barney Wander

Up to now, most efforts to manage individual chemical substances have been concentrated at the federal level. The U.S. Toxic Substances Control Act (TSCA), for example, requires that health, safety, and other information be collected and maintained for all chemicals, and that these substances be managed to prevent harm to people or the environment. TSCA preempts state activity in this area.

The reason for TSCA's preemptive status is obvious: if a substance is hazardous in Alabama, it will be equally hazardous in Alaska. Chemicals do not change physical properties when they cross geographic boundaries. Another federal preemptive law is the Food, Drug, and Cosmetics Act; if food additive or drug requirements were individually—and differently—prescribed by each state, the result would be chaotic. There is even international cooperation in these areas to achieve uniformity.

The entry of states into the regulation of individual chemical substances raises dramatic new questions for state legislatures and regulatory agencies in an area where there traditionally has been little activity or experience.

The States Take a Hand

The obvious question of whether states should become involved in the right-to-know area at all will be addressed later, but it should first be understood why the issue is now coming before state legislatures.

The first workplace right-to-know law in the United States was enacted by the Oregon legislature in 1979; the first public right-to-know law was promulgated in Philadelphia in 1981. In the final hours of the Carter administration in January 1981, the U.S. Occupational Safety and Health Administration (OSHA) proposed a nationwide workplace right-to-know regulation. This rule was withdrawn by the incoming Reagan administration, and it was not until March 1982 that OSHA proposed an alternative, which was revised and reissued as a final rule in November 1983.

This apparent foot-dragging by the federal government prompted many proponents of right-to-know legislation to shift their focus from the federal to the state level. These proponents—principally labor unions and environmental activist organizations—believed industry was not doing enough to inform workers about workplace hazards, or to inform public agencies and the public about potential environmental problems. Growing media attention to a wide variety of incidents involving chemicals—whether related to right-to-know issues or not—helped support this view.

Some state and local emergency response agencies believed they did not have enough information to deal with accidents involving chemicals. The general public's fear of "chemicals" in the 1970s began to be replaced in the 1980s with concern over specific chemical substances, and mistrust of industry spread to doubts about the ability of government and the scientific community to control them. Various industrialized areas of the country each believed that the incidence of chronic diseases such as cancer in their locality was higher than anyone else's, despite scientific evidence to the contrary.

Misconceptions

All these factors fed the fight for right-to-know legislation at the state level, but they also led to public misconceptions about what right-to-know laws are designed to do.

Right-to-know laws do not regulate chemicals, nor, in and of themselves, do they protect workers or the public. They do not limit production of chemicals. They do not limit exposure to chemicals. They do not regulate the transportation of chemicals. These kinds of activities are already regulated—at the federal level and in most states—by existing laws enforced by the U.S. Environmental Protection Agency (EPA) or equivalent state agencies, or by OSHA and similar state regulators.

The only purpose of right-to-know laws, however, is to make information available to specified groups or individuals. In addition, major agreement has been reached

Barney Wander is a free-lance writer who specializes in environmental subjects.

on the kind of information which should be provided to employees. Major differences have arisen relative to specifying how that information should be transmitted or what mechanisms are needed to disseminate it.

Workers believe they have a "right" to enough information to protect their on-the-job safety and health. Labor unions believe they have a "right" to all the information known by industry. Industry believes it has the "right" to protect confidential business information. Environmental activists claim the public has the "right" to comprehensive information about chemicals that may be present in a state or community. Emergency response organizations say they have a "right" to the chemical information needed to respond to industrial accidents.

Who actually has a "right" to know information about chemicals, and what kind of information do they have a "right" to know? Which governmental agencies have the "right" to set the rules for "right-to-know" activities? These are the difficult questions currently being asked in state legislatures across the country; this article is an attempt to answer these and related questions, to help legislators reach informed positions on right-to-know issues.

Executive Summary

- The so-called "right-to-know" issue is a new one for state legislators, state regulators, and for the public. It involves issues and areas of expertise not usually found at the state level, and therefore exceptionally careful consideration is required before final legislative action should be taken.
- Right-to-know laws do not control chemicals or their use. They provide a mechanism for informing workers or the public about the existence of potential chemical hazards. Legislation should be performance-oriented and not overburdened with details that should be left to subsequent regulation.
- A host of federal and state laws and regulations already provide information about chemicals to workers and to the public. Principal among these is the new OSHA standard providing for a workplace hazard communication system. State legislatures should be cautious about reinventing existing wheels or establishing laws that conflict with federal or other state requirements. The need for a state right-to-know law should be very carefully considered, given the existence of so many other regulations and the possibility of violating Interstate Commerce Clause provisions.
- The cost of state right-to-know laws and regulations can be substantial, and it is the state's taxpayers who will ultimately bear these costs, directly or indirectly. These costs must be an integral part of any discussion of a proposed state right-to-know law.
- Before a state adopts its own right-to-know legislation, some principal considerations are: limiting the number of materials that will be included to those that truly are hazardous under actual conditions of use; determining ways to protect confidential business information and specifying mechanisms for dissemination of data; and building in flexibility to reduce costs and increase effectiveness.
- Other issues to be considered are: the right of workers to refuse to work if information is not provided, and the corresponding right of employers to protect themselves against harassment; the need to restrict right-to-know laws to realistic conditions; the need to limit and control the bureaucracies that will be created and the paperwork that will be generated; the need to restrict right-to-know laws to right-to-know issues.

Regulations in Force

Any discussion of the right-to-know issue should first consider how much information workers and the public already have about chemical substances.

Current federal environmental regulations (40 CFR Part 2, Subparts A and B) require that all EPA information be available to the public except where an individual's right to privacy would be violated, or when confidential business information is involved. A person requesting information from EPA need not state the reason why the information is sought.

Another broad requirement is found in the National Environmental Policy Act (42 USC 4341), which requires public environmental impact statements for all projects that might affect the environment; this even affects space shuttle and satellite launchings!

Under the Toxic Substances Control Act (15 USC 2601), EPA maintains information about more than 55,000 chemical substances; as new chemicals are introduced, they must be added to the list. The TSCA files include data about production, processing, distribution, use, exposure, and known adverse health and environmental effects. TSCA requires that allegations of previously unknown significant adverse effects to health or the environment be added as soon as they become known. Very little TSCA information has been claimed as confidential by industry, and such claims can be challenged.

Public exposure to chemicals occurs because of emissions from workplaces or from consumer products, and the identity of chemicals emitted from plants is controlled and made public by a number of laws. The Clean Air Act (42 USC 7401) requires that all emission data gathered by federal or state agencies be public. This information is exhaustive and voluminous for all industrial categories in the nation. The Clean Water Act (33 USC 1251) and the Safe Drinking Water Act (42 USC 300f) not only require that all information be public, but that the public participate in all stages of proposed projects—planning, implementation, and enforcement. The federal government must make air and water emission data public, regardless of whether these data are requested.

The Comprehensive Environmental Response, Compensation, and Liability Act, sometimes called the "Superfund" law (42 USC 9601), requires public notification and involvement. Whatever the failings of Superfund in achieving clean-up of abandoned hazardous waste sites, public involvement has not been one of them, as newspaper headlines for the past two years clearly indicate. The Resource Conservation and Recovery Act (42 USC 3251) requires public disclosure of information about chemical wastes and mandates public participation in the establishment of new hazardous waste management facilities.

A glance at the labels on products in supermarkets, pharmacies, or garden supply stores indicates just part of the information that must be made public under the Federal Food, Drug, and Cosmetics Act (21 USC 310) and the Federal Insecticide, Fungicide, and Rodenticide Act (7 USC 136). Considerably more information is available, if requested, from the Food and Drug Administration (FDA) and EPA, the agencies that administer these acts.

The Consumer Product Safety Act (15 USC 2051) established an information clearinghouse that collects and disseminates information about manufactured products with which the public comes in direct contact. The Hazardous Materials Transportation Act (49 USC 1801) requires that information be publicly available regarding specifications, packaging, handling, manifesting, placarding, and routing—and mandates immediate notification when hazardous substances are involved in transportation accidents or pipeline leaks.

Finally, the Freedom of Information Act (5 USC 552) gives the public access to information not specifically made available by any of the laws mentioned above, within 10 days of a request for information.

Workers or their representatives have access to any of the information sources outlined above. In addition, the Occupational Safety and Health Act (29 USC 651) requires companies to keep logs of occupational injuries and illnesses, as well as maintain medical records. This information is available to employees or appropriate employee representatives. As will be explained below, OSHA regulations now include comprehensive worker right-to-know standards that affect all manufacturing workplaces in the United States that handle chemical substances.

Easy Access. Gaining access to so much information about chemicals is not as difficult as it might appear, given the voluminous amount of data available. Most of the information is contained in computer data banks. Many large public libraries, universities and medical schools, and most major corporations subscribe to these computer services. The number of scientific and technical articles that have been written about specific chemical substances and their effects is incalculable. Computer programs are being constructed to keep track of this information, too, and the information in most recently published scientific and technical publications is now available by computer within minutes. Other computer files contain data gathered by government and private agencies about hundreds of thousands of animal and laboratory tests of chemicals, and about human health studies.

With all of this available information, and with recent activity by OSHA (described in the next section) to ensure the availability of information to workers, there arises a very logical question: Why are state right-to-know laws needed at all?

Are State Laws Needed?

By late 1983, 16 states had adopted worker or public right-to-know laws. Such laws have been considered in at least 19 others. Thirty-four local ordinances currently address some right-to-know issues.

On Nov. 25, 1983, a major new development occurred at the federal level. After years of debate, discussion, disagreement, and delay, OSHA issued a standard concerning workers' right-to-know—or, to use federal terminology, "hazard communication."

Hazard Communication

The standard came in response to the federal Occupational Safety and Health Act, which authorizes OSHA to promulgate rules requiring the "use of labels or other appropriate forms of warning as are necessary to insure that employees are apprised of all hazards to which they are exposed...." The final OSHA standard, therefore, requires employers to identify hazards and then communicate them to employees by means of hazard communication programs including labels, material safety data sheets, information and training, and access to written records. While not directly affecting workplace safety or health, OSHA has expressed the hope that the hazard communication program will provide an impetus for employees and employers to devise better means of protection from chemical hazards.

The new federal standard has one basic objective: to ensure the transmittal of complete hazard information from manufacturers to employees and to user companies. Each employer's program is subject to approval by OSHA compliance officers. The bulk of the hazard information will be produced by manufacturers and importers, and then sent to user companies by means of container labels and material safety data sheets.

The OSHA standard generally requires the disclosure of specific chemical identity information, which sometimes may be considered a trade secret. The final standard provides for limited disclosure of such trade secrets, which may require signing a confidentiality agreement that includes liquidated damages provisions. Thus trade secrets can be protected while still providing information when necessary to protect employee health. The Occupational Safety and Health Act provides protection for trade secret information whenever such information must be made available directly to OSHA.

In an effort to reduce costs, employers are not required routinely to submit information to OSHA; data must be submitted only when requested. Nevertheless, annual costs to industry of the new rule will be approximately $117.8 million, and about 328,000 workplaces will be affected. Since the program dovetails conveniently into OSHA's existing regulatory and enforcement programs, costs to the federal government will not be substantial. Industry will conduct (and therefore pay for) the program, rather than requiring the government to perform the program for industry.

The standard requires hazard information labels on all hazardous materials containers, the provision of Material Safety Data Sheets with initial shipments of a hazardous material, training programs for all employees, and employee access to written hazard information documents generated by their employer. All information must be updated and kept current.

Company Responsibility

The economic burden on any particular company will be in direct proportion to the size of the company. Chemical producers with extensive product lines will spend considerable time performing right-to-know activities, while smaller downstream manufacturers using a limited number of chemicals, and obtaining information from suppliers, will spend much less time on this function.

Each employer is responsible for maintaining a list of hazardous materials used in specific workplaces. Materials are determined to be hazardous if they meet certain criteria established in the standard. In addition, certain substances appearing on any one of specified existing lists, such as the OSHA Subpart Z list, are presumed to be hazardous. Employers can rely on existing hazard communication programs if they meet the performance requirements of the new standard, and there must be compatibility with other existing laws, such as the Hazardous Materials Transportation Act, to avoid conflicting information requirements.

Any chemical mixture is considered hazardous if it contains 1 percent or more of a known hazardous substance, or if it contains one-tenth of 1 percent or more of a known carcinogen. Manufacturers are allowed to keep secret the chemical identity of certain substances if they justify their claim of confidentiality, note that the identity is being withheld on the Material Safety Data Sheet, and agree to disclose the information in emergency situations.

This new OSHA regulation will probably influence the decision in many states about whether to adopt separate right-to-know law for workplaces. If, however, a state chooses to operate its own worker health and safety information program—in lieu of the federal OSHA program—it must adopt laws and regulations, including interstate provisions, that generally conform to these new federal requirements; otherwise, the state program will not be authorized by OSHA. While Congress did not make the Occupational Safety and Health Act preemptive of all state programs, it did provide that there should be considerable uniformity among state requirements by establishing federal rules as minimum, model standards.

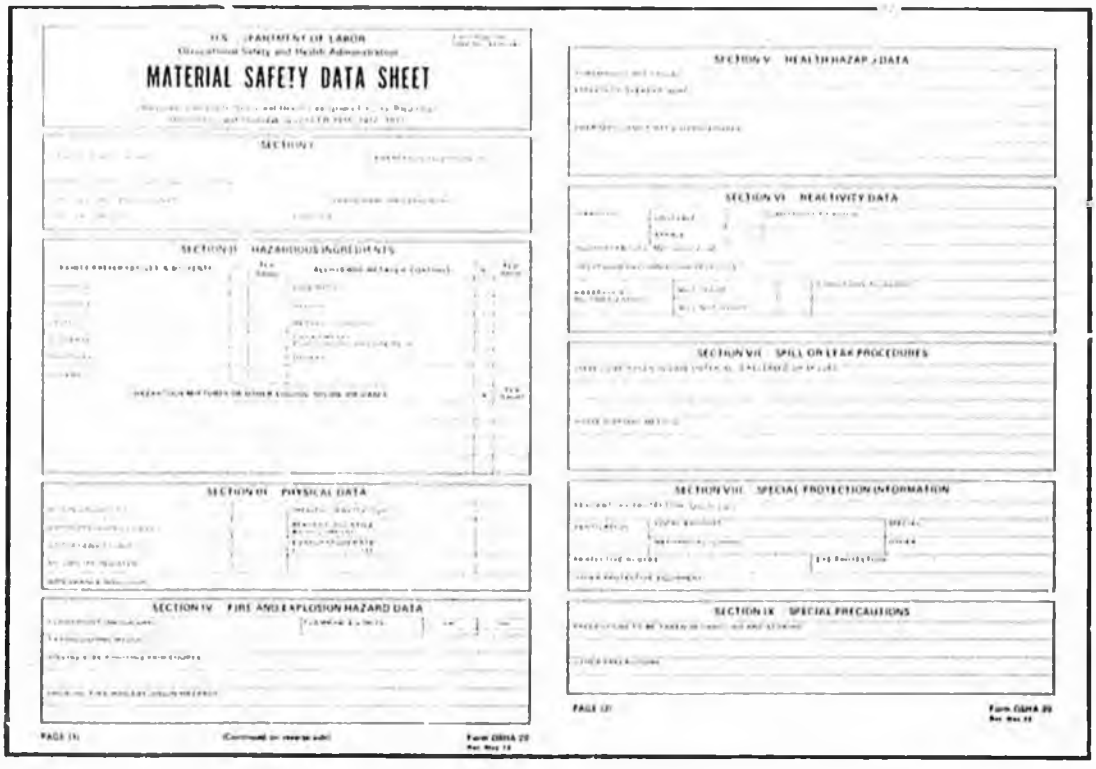
Regulatory Inconsistency

Twenty-four states have established their own worker safety and health agencies. These states must adopt worker right-to-know rules within six months in order to maintain OSHA approval of their state program. The new federal right-to-know standard adopted by OSHA will therefore apply automatically in all states that do not operate their own programs. The rule applies to all manufacturers in the United States. Retail and service industries are excluded.

In fact, problems created by individual state right-to-know laws may far outweigh any benefits these laws are designed to produce.

Workers and the materials they work with are both highly mobile. Increasingly, workers move from a plant in one state to a similar plant in another state. Few materials—particularly chemical substances—are distributed and used only intrastate. If differing state laws are created for situations that are constant, serious problems can result.

If one state tells a worker that a particular substance is hazardous, and another state does not, the worker may


MATERIAL SAFETY DATA SHEET

SECTION I

SECTION II HAZARDOUS INGREDIENTS

SECTION III PHYSICAL DATA

SECTION IV FIRE AND EXPLOSION HAZARD DATA

SECTION V HEALTH HAZARD DATA

SECTION VI REACTIVITY DATA

SECTION VII SPILL OR LEAK PROCEDURES

SECTION VIII SPECIAL PROTECTION INFORMATION

SECTION IX SPECIAL PRECAUTIONS

The Occupational Safety and Health Administration's Material Safety Data Sheet (MSDS) is at present the one uniform method used throughout the United States to document chemical information.

ignore all hazard warnings. Some chemicals have many synonyms, and if nomenclature differs among the states, the worker may not realize what chemicals are being regulated.

Companies shipping chemicals in interstate commerce could face a bewildering array of information requirements, and the right-to-know paperwork that must accompany shipments may be so large and so complex that it will be virtually useless to the worker. A drum or package could contain 50 hazard warning labels, all in a different format and all with different and possibly conflicting information.

States with information requirements that differ greatly from federal requirements may put themselves in jeopardy of violating the Interstate Commerce Clause of the U.S. Constitution, which prohibits undue restraint of trade. Court challenges could come from manufacturers or states who believe right-to-know restrictions are severe enough to prevent shipment of some products into a state.

Enforcement Costs

Nor can any responsible state legislature consider right-to-know legislation without recognizing the costs of implementing and enforcing such legislation. Some sort of bureaucracy will have to be established to write the required regulations and to enforce them once they are in place. Unless such rules are carefully tailored, the amount of right-to-know paperwork could be staggering. Actions taken under a right-to-know law—such as responding to worker or public questions or complaints—must be taken quickly. Lack of sufficient state resources is not an excuse that will satisfy either workers or the public.

Finding the necessary resources will not be easy for most states, however, since most states do not have existing bureaucracies to administer or enforce right-to-know laws. The management of any law that attempts to deal with many technologies, thousands of chemical substances, thousands of workplaces, and millions of people imposes a significant administrative burden. Since many materials originate outside the state, where a different set of regulations will be in effect, the problem is compounded for state regulators. If the state finances the program from its general funds, there may not be enough available, given today's climate of opposition to deficit spending and increasingly tight state budgets. The cost of adding a new state agency or expanding an existing one will not be welcomed by many taxpayers, and tax increases to support a right-to-know program will be difficult to approve.

Equitable Taxation

Finding a way to tax industry equitably for right-to-know program expenses—without a tax that is discriminatory against smaller companies—may be impossible. Such a program will affect different industries—and different companies—unevenly. Yet no logical criteria for establishing an uneven tax on industry seem to exist, even if such a system could be legally defended. A tax on industry in a state with right-to-know legislation would put industry in that state at a competitive disadvantage vis-a-vis similar industries in states without such requirements. In that situation, the incentive for industrial relocation out of a right-to-know state would be doubled: because of the law itself, and because of the burden of financing the law.

Questions of how to support the costs of a right-to-know program are largely moot, in the last analysis. Ultimately, it is the public that pays for such programs, directly through taxation or indirectly through higher costs of goods and services. Now that a federal standard is finally in place, it is difficult to see how any state can defend to its taxpayers an additional or duplicative state program.

The Public Interest

Although most states may decide that a worker right-to-know law is unnecessary, the question of the need for a *public* right-to-know law remains. Few states that have passed public right-to-know laws have actually implemented them. Where they have been implemented, public requests for information have been sparse, and when such requests have been made, they often have come from business competitors. It is difficult to justify the high costs—on both government and industry—of public right-to-know laws on the basis of public or competitor curiosity, particularly when the public has shown so little interest.

Public Agencies. A case can be made for providing information to public agencies that have to respond to industrial accidents. Fire departments, hospitals, police, and other services may be called on to handle emergency situations involving chemicals at sites where they are manufactured, used, or stored. Prior knowledge of the proper ways to treat these chemicals clearly could be a great advantage to these agencies.

There is no need, however, to provide agencies with more information than they need to respond to emergencies. Given all information about all chemicals, most agencies would find the resulting paperwork to be beyond their limited resources. Emergency agencies need *usable* information.

At many plant sites, information already is shared between industry and local emergency services. Periodic exercises are held at plants simulating emergency conditions, to ensure that personnel are adequately trained as well as informed. These programs have been quite successful, even though they usually are not required by law.

In discussing public right-to-know laws, it is necessary to define exactly what is meant by "public." As has been noted, the public has access to a lot of information about chemical substances made and used in the United States. Most citizens are not exposed to the chemicals present within a manufacturing facility unless these chemicals are emitted beyond its boundaries. If this happens, then a wide variety of federal and state air, water, and hazardous waste laws require public information or notification.

Simply knowing what chemicals may be present within a workplace does not add to public safety or environmental well-being. Knowing how to prepare for and deal with hazardous situations does, however, and any public right-to-know law should have this as its basic objective if it is truly to contribute to the public good.

What Materials Should Be Covered?

If the intent of a right-to-know law is to inform individuals about the potential hazards of chemical substances, then it seems logical that only substances that are truly hazardous under the conditions in which they are used should be covered by the law. Some proponents of right-to-know legislation believe all chemical substances ought to be included, regardless of hazard. They suggest, for example, that the more than 50,000 substances on the National Institute of Occupational Safety and Health "Registry of Toxic Effects of Chemical Substances" (RTECS) list should be used. Opponents of this idea point out that chemicals on the list are included only because they have been subjected to some form of laboratory or animal testing, and inclusion does not necessarily mean that the listed material is toxic or harmful. Other lists, particularly the OSHA "Subpart Z" list, address themselves specifically to chemicals that have proven to be hazardous in certain conditions; such targeted lists are far more precise than the "laundry list" approach that includes materials regardless of the degree or potential for hazard or exposure. For carcinogens, two generally accepted guidelines are the latest listings from the International Agency for Research on Cancer (IARC) or the National Toxicology Program (NTP).

Chemical State. Another important criterion—often overlooked—is the material's state. Some chemicals are hazardous when in the gaseous state because they should not be inhaled. However, they present no risk as solids and therefore do not belong in a plant's right-to-know program. Any proposed law on this subject, then, should recognize the potential for exposure; if such a potential does not exist because of the physical properties of the material, or for other reasons, then it should not needlessly be subjected to right-to-know provisions.

Duplicative Regulation. Other exemptions should be made for materials that already are subject to adequate disclosure regulations. These include registered pesticides, drugs, consumer products, and materials in transit which are governed by U.S. Department of Transportation regulations.

In addition, right-to-know laws should be flexible enough to allow the addition of new materials as new hazards become known, or the removal of substances where suspected hazards are not proven. In any event, broad, indiscriminate lists should be avoided because they are unnecessarily expensive and virtually impossible to enforce.

What Should Be Disclosed?

The kind and amount of information disclosed about any potentially hazardous substance should depend on the material itself and the person to whom it is being released. For example, a health professional in a hospital emergency room treating an injured worker has far different information needs from those of a layman with only a passing curiosity about chemicals. Is there a system for providing sufficient information to everyone who wants a role in the right-to-know process?

The current, uniform method used throughout the United States to document chemical information is the Material Safety Data Sheet (MSDS). It is at the heart of the new federal standard adopted recently by OSHA. This document requires the listing of hazardous ingredients, physical data, fire and explosion hazards, health hazards, reactivity, spill or leak procedures, protective information, special precautions, waste disposal methods, and corrective first aid procedures. Acute and chronic health hazards are both described.

Under current OSHA standards, provisions are made for keeping some information confidential at a company's request, as well as for disclosing this confidential information, under appropriate safeguards, to those with a legitimate need to know. The information on the MSDS is comprehensive, and any state system would be well-advised to adopt it entirely, or closely copy it. This at least will keep a degree of consistency among federal and state requirements.

Chemical Identity

A major question that occurs over and over in any discussion of the right-to-know issue is this: Must the manufacturer or user always disclose the exact chemical identity of a substance? Many proponents of right-to-know laws think so; otherwise, they claim, there will not be sufficient disclosure. Sheldon Samuels of the AFL-CIO put it this way: "Nothing is more important than the name of the chemical. . . . We don't want the industry's interpretation of what the chemical does or what the chemical might be. . . . We don't care as much about being warned of its effects because we have access to [that information]. . . . We want the name of the chemical; we have that right. . . ."

Opponents of this position point out that it is the *hazard* of the material—not its detailed chemical identity or composition—that should be of most concern in any right-to-know system; as long as a trademark or other name is used accurately to identify the substance, that should be sufficient. Industry's position is that the proper handling of hazardous chemicals, to achieve environmental and health protection, does not necessarily depend on a detailed knowledge of chemical identity. As long as the hazards are linked to a material by a common identity, they can be avoided or corrected.

In most cases, the chemical identity will be known anyway. Only when confidential information—called "intellectual property"—is at stake does the question of disclosing chemical identity come into play, and these instances are relatively rare. The confidentiality of business information protects the jobs of millions of workers, and is particularly important in international trade where foreign laws may not provide adequate patent protection. That confidentiality should not be violated without good reason.

In emergency situations, industry does not object to the disclosure of confidential information to physicians or others involved with the protection of life, health, property, or environmental well-being. But to endanger the livelihood of individual companies—and perhaps even entire U.S. industries and the jobs they provide—without providing a benefit that would offset this kind of result is clearly an inappropriate use of legislative authority.

Spreading The Word

Once it is determined what materials should be involved, and what should be disclosed about them, what mechanism then should be used to get this information to the worker or the public? Among the choices: the Material Safety Data Sheet, already described; labels or placards on various kinds of workplace containers or in specific workplace areas; lists of materials posted in the workplace; brochures that describe hazards and ways to avoid them (particularly useful for workers who move frequently between work areas); and training programs tailored specifically to chemicals to which individual workers may be exposed. All these are currently used—in various combinations—by industry. All of them also are called for—again in various combinations—by the new OSHA standard and by many existing state right-to-know laws.

Principals in the Right-to-Know Debate

Each of the parties to the right-to-know debate has a specific viewpoint—often tenaciously held. The only consensus is that workers have the right to know how to protect themselves against hazards in the workplace. And there are differences on how to achieve even this goal.

Nevertheless, general conclusions about right-to-know policy can be reached by analyzing the positions of the principal involved parties:

Labor. Organizations representing workers—and many individual employees as well—believe that knowledge of the materials workers come into contact with is important to worker safety and health. They want enough information to prevent both accidents and illness, as well as to deal with emergency situations when they occur. They believe full disclosure of chemical identity is necessary to achieve this, and feel people should be allowed to stop working with a substance if they are given insufficient information about it. How and where information will be provided, and who should have access to information, are additional worker concerns.

Public. While the general public does not seem enthusiastic about the subject, environmental activist organizations—who see themselves as representatives of the public—have shown great interest. Some people believe they should know everything possible about any substances that might prove a hazard under some known or unknown condition. Others, who live in close proximity to manufacturing facilities, may see the need for more specific information. Whatever the reason, some segments of the public perceive a threat to health or environmental well-being from chemicals and believe that information about these materials will protect people.

Government. Legislators feel a responsibility to respond to the needs of their constituents and to make certain that government is acting in the best interests of the people. Legislators find it difficult to explain that the absence rather than the creation of a new law may be the best option. Fire departments, police, and emergency health services perceive the need for enough information to be able to handle emergency situations. Regulatory agencies need enough data to be able to carry out their mandates of health and environmental protection, regulation, and enforcement. On the other hand, many of these agencies also have a legal obligation to protect the secrecy of legitimately confidential business information.

Industry. Chief among industry concerns is the need to protect the confidentiality of sensitive manufacturing processes and business information. Many chemical processes cannot be patented, and the success of a company that makes or uses chemicals may depend on its ability to keep process details secret. Industry has not objected to making these details known—under appropriate safeguards—to those with a legitimate need to know, such as health professionals or government agencies, but it looks askance at broad right-to-know provisions that permit widespread or indiscriminate disclosure of confidential information.

Other industry concerns include the costs of right-to-know programs, and the disruption of existing programs that have proved effective. To meet these two concerns, industry has sought flexibility in new, mandated programs to allow cost-effective approaches that do not require abandonment of present programs.

Industry generally has not opposed the basic right of workers to know potential workplace hazards. However, the chemical industry—the principal affected industry—points to the fact that for the past two years the National Safety Council has named the chemical industry the safest of all industries based on death rates and work days missed. This, according to the industry, indicates that present programs are effective. Industry also notes that increased worker health and safety is a major factor in increased productivity and profitability, and that failure to protect worker health results in higher medical program costs, higher insurance premiums, higher workmen's compensation costs, and higher manufacturing costs generally. Thus, the incentives for a safe and healthy workplace—regardless of the existence of right-to-know laws—are high.

Obviously, no worker or public right-to-know law can satisfy everyone who has opinions on this subject. This is most evident in the basic question of whether a right-to-know law is needed at all, or the related question of whether separate state rules are required now that OSHA has issued a rule that covers the entire country. There are other specific questions that occur whenever a right-to-know law is discussed, and these are outlined in the accompanying article.

Innovative Systems

It is difficult to say any one system is best, because there is so much variety among workplaces. As long as the basic objective is demonstrably achieved, the exact method used should not be particularly important. The legislative and regulatory objective should be performance-oriented—that is, it should define the goal to be achieved and require employers to demonstrate that they are achieving it. But laws or regulations that define not only the goal but the method do not allow companies to use new, imaginative, or more cost-effective systems. One way to avoid this is to use legislative language that clearly states the performance that must be achieved by a regulated company, and then states the acceptable methods which may be used, individually or in combination, to meet this standard.

It is also constructive to provide for the use of new systems that may not be known or available today but may become feasible tomorrow (automatically triggered electronic data or television displays in individual workplaces, for example). Whatever system is used, it should be continually updated to take account of changes as they occur.

Producer Responsibility

Responsibility for preparing information, whether in the form of MSDSs, labels, or other communication devices, should rest with the manufacturer of the material. The manufacturer should be required to provide this information to all companies to which they provide a material, or to all companies who request it (in addition to providing it to the manufacturer's own employees, of course). Other companies subsequently using the material should be sent the manufacturer's MSDS, and these companies would have the responsibility of requesting the information if it is not automatically sent. This system provides for the orderly communication of hazard information within industry and heightens the awareness of using companies, since they have the responsibility of asking for the required information and then disseminating it to their workers.

Having only the original manufacturer prepare the basic required information ensures uniformity as this information is passed through the manufacturing chain from company to company. Each employer in the chain could use whatever communication system works best for its workplaces, provided the overall performance standards and limitations set by the legislation or subsequent regulations are achieved.

Legislators can find themselves unnecessarily bogged down in the "how to" details of right-to-know laws, when they really should be concerned with defining and meeting overall objectives. A legislature should provide direction to regulatory agencies, but not so specifically that regulatory flexibility is discouraged.

Added Costs

Any right-to-know law, of course, will add considerably to the cost of existing state regulatory programs. Inspection of workplaces is a day-to-day routine for designated regulatory agencies in virtually all states, and right-to-know requirements would be but another element of such inspections. The size of the new bureaucracy created to deal with right-to-know matters would depend on the scope and complexity of the right-to-know law adopted by the state. Certainly, additional personnel would be required, record-keeping would increase, and administrative costs would grow.

One way to help control bureaucratic paperwork for a state right-to-know law is for companies to submit to regulatory agencies only the information that is requested by the agencies. Simply submitting all information to agencies serves no other purpose other than to fill filing cabinets. Information about all known chemical substances is available from a variety of sources, as noted; before any new chemical substance can be manufactured, enough information must be submitted to the federal government to gain approval under the provisions of one or more existing laws.

Control of Substances. There are a host of other federal and state laws and regulations that allow the control of hazardous substances—in the workplace or in the general environment. It is important to realize that right-to-know laws do not control these substances; rather, they provide information so that those receiving the information—workers, government, emergency services, employers, and others—can better protect themselves or others in situations where unwarranted or unusual exposure occurs.

Other Issues

In addition to general right-to-know issues, specific concerns have arisen in some states and at the federal level when this kind of legislation is discussed. Here are some of them:

Refusal to Work

Some right-to-know proposals have included provisions requiring employers to respond to worker requests for information within a specified time. During that time (usually two to five days) an employee was given the right to refuse to work with the involved chemical substance—while still being paid—until his or her demands were satisfied. There are some obvious problems with this approach, however.

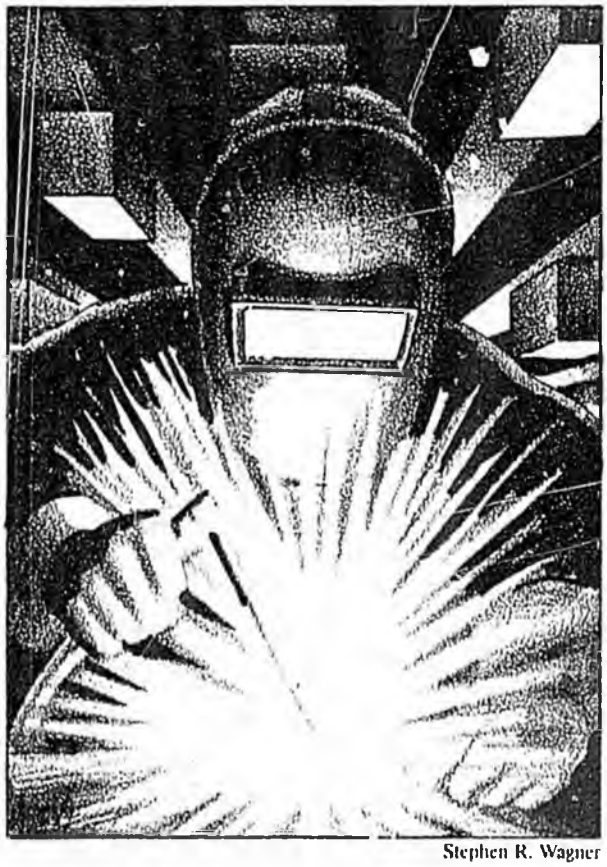
Provisions allowing unilateral refusal to work could shut down companies for indefinite periods of time. On the other hand, the absence of any system for employees to ensure that their right-to-know program is working effectively can lead to abuses of the system and unjustified harassment of employees.

It is a problem that invites compromise. For example, a refusal-to-work request could be granted, for a specified period of time and without pay, until the right-to-know question is resolved. If after that time the complaint proved to be justified, the worker would be paid for the days he did not work. Or, an employee could be assigned to an alternate work area, with any reduction in pay being restored if the question were resolved in his favor. If the complaint proves unjustified, the worker would not be paid or reimbursed. In either case, an employer should be prohibited from taking any action against a complaining employee for the first complaint; if unjustified complaints were repeated, then action could be taken by an employer within the constraints of existing collective bargaining agreements.

Although refusal to work is sometimes treated as a unique and new problem, such actions are not uncommon in plants handling hazardous materials and have become part of the union-management negotiation process. What some right-to-know proponents want is to abandon the traditional systems for resolving disputes, and the substitution of a system that places the entire burden of proof on the employer. Such a system ignores the democratic, legal tradition of challenge, proof, and compromise.

Exposure

It should be noted that "exposure"—discussed earlier—is not synonymous with "handling and use." Proper handling and use of chemicals does not result in unsafe exposure to chemicals. Some right-to-know proposals, however, define exposure in terms of employees who handle or use substances, and this overly broad definition could encompass employees in negligible risk situations.



Stephen R. Wagner

Although it seems obvious, right-to-know laws should specify that there be some causal relationship between a request for information and the chemical substance involved. Arbitrary, peremptory demands for information about substances which are not present and cannot reasonably be anticipated will only use up time that should be used to ensure that the right-to-know program is working effectively.

Training

Training programs are an integral part of any workplace right-to-know program. Although details will vary significantly according to workplace, typical elements of training programs will include safe use guidelines, proper handling procedures, emergency plans and procedures, the availability of information, and details about materials present in a specific area.

The object of any right-to-know *law* should be to see that an adequate training program is called for; the law itself should not become bogged down in extensive training requirements that may not be appropriate for all workplaces. As with other elements of right-to-know legislation, training objectives should be performance-oriented, providing a standard to be met. Good training programs are the single most effective way to inform workers about potential hazards from chemicals used in the workplace.

Transportation

Attempts have been made to introduce transportation issues into right-to-know laws, but this seems inappropriate. Right-to-know laws should inform, not control. There are existing laws, which have been in effect for a long while, to control the transportation of hazardous materials. Transportation accidents are highly publicized and occasionally spectacular, but they seldom happen. The incident rate for shipments of hazardous materials is considerably below that of nonhazardous shipments.

That is because the transportation of hazardous materials is one of the most highly regulated industrial activities. Both the U.S. Department of Transportation and state transportation and environmental agencies regulate such shipments. To add this complex issue to a right-to-know law will only cloud the basic purpose of such a law.

Summing Up

Legislators owe it to themselves and their constituents to find out as much as they can about right-to-know issues before considering legislation to control the complex right-to-know issue, which is one the states have just begun to ponder. All constituencies should be consulted, from the public to industry. All viewpoints have some legitimacy, and many varying opinions must be weighed, balanced, and accommodated or rejected.

It is important to keep in mind the basic purpose of a right-to-know law, which is information, not control. Attempts to broaden right-to-know laws into all-purpose environmental legislation should be rejected.

Finally, a thorough understanding of existing federal laws and regulations—those delineated in this article—is necessary to weigh the need for state legislation in this area. Right-to-know laws, while they may be beneficial, are also burdensome to all constituencies—to government, to industry, and to the public. As in any legislative area, the benefits must be carefully weighed against these burdens.

Regardless of what an individual legislator decides, his decision is a difficult one because of the divergence among important groups on the right-to-know issue. Some guidance from Mark Twain may be useful in this regard: "Always do right. This will gratify some people, and astonish the rest." ■

SB 79

Final Regs.

15.0101 Hazard Communication.

(a) Purpose. The purpose of this section is to ensure that the hazards of all toxic or hazardous substances produced or imported by chemical manufacturers or importers are evaluated, and that information concerning their hazards is transmitted to affected employers and employees in Alaska. This transmittal of information is to be accomplished by means of comprehensive hazard communication programs, which are to include container labeling and other forms of warning, material safety data sheets and employee training.

This occupational safety and health standard is intended to address comprehensively the issue of evaluating and communicating chemical hazards to employees in Alaska.

(b) Scope and application.

(1) This section requires chemical manufacturers or importers to assess the hazards of chemicals which they produce or import, and all employers in Alaska to provide information to their employees about the toxic or hazardous substances to which they are exposed, by means of a hazard communication program, labels and other forms of warning, material safety data sheets, and information and training. In addition, this section requires distributors to transmit the required information to Alaskan employers.

(2) This section applies to any chemical which is known to be present in the workplace in such a manner that employees may be exposed under normal conditions of use or in a foreseeable emergency.

(3) This section applies to laboratories only as follows:

(A) Labels on incoming containers of hazardous chemicals are not to be removed or defaced;

(B) Any material safety data sheets that are received with incoming shipments of hazardous chemicals shall be maintained and they shall be readily accessible to laboratory employees; and

(C) Laboratory employees shall be apprised of and trained to recognize, the hazards of the chemicals in their workplaces in accordance with (i) of this section

(D) Laboratories shall follow the posting requirements outlined in (h) of this section.

(4) This section does not require labeling of the following chemicals:

(A) Any pesticide as such term is defined in the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. §136 et seq.), when subject to the labeling requirements of that Act and labeling regulations issued under that Act by the Environmental Protection Agency;

(B) Any food, food additive, color additive, drug, or cosmetic, including materials intended for use as ingredients in such products (e.g., flavors and fragrances), as such terms are defined in the Federal Food,

Drug, and Cosmetic Act (21 U.S.C. §301 et seq.) and regulations issued under that Act, when they are subject to the labeling requirements of that Act and labeling regulations issued under that Act by the Food and Drug Administration;

(C) Any distilled spirits (beverage alcohols), wine, or malt beverage intended for nonindustrial use, as such terms are defined in the Federal Alcohol Administration Act (27 U.S.C. §201 et seq.) and regulations issued under that Act, when subject to the labeling requirements of that Act and labeling regulations issued under that Act by the Bureau of Alcohol, Tobacco, and Firearms; and

(D) Any consumer product or hazardous substance as those terms are defined in the Consumer Product Safety Act (15 U.S.C. §2051 et seq.) and Federal Hazardous Substances Act (15 U.S.C. §1261 et seq.) respectively, when subject to a consumer product safety standard or labeling requirement of those Acts, or regulations issued under those Acts by the Consumer Product Safety Commission.

(5) This section does not apply to:

(A) Any hazardous waste as such term is defined by the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended (42 U.S.C. §6901 et seq.), when subject to regulations issued under that Act by the Environmental Protection Agency;

(B) Tobacco or tobacco products;

(C) Articles; and

(D) Foods, drugs, or cosmetics intended for personal consumption by employees while in the workplace.

(c) Definitions.

(1) "Article" means a manufactured item

(A) which is formed to a specific shape or design during manufacture,

(B) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and

(C) which does not release, or otherwise result in exposure to, a hazardous chemical under normal conditions of use.

(2) "Chemical" means any element, chemical compound or mixture of elements and/or compounds.

(3) "Chemical manufacturer" means an employer in Standard Industrial Classification codes 20 through 39 with a workplace where chemical(s) are produced for use or distribution.

(4) "Chemical name" means the scientific designation of a chemical in accordance with the nomenclature system developed by the International Union of Pure and Applied Chemistry (IUPAC) or the Chemical Abstracts Service (CAS) rules of nomenclature, or a name which will clearly identify the chemical for the purpose of conducting a hazard evaluation.

(5) "Combustible liquid" means any liquid having a flashpoint at or above 100°F (37.8°C), but below 200°F (93.3°C), except any mixture having components with flashpoints of 200°F (93.3°C), or higher, the total volume of which make up 99 percent or more of the total volume of the mixture.

(6) "Commissioner" means the Commissioner of Labor, or designee.

(7) "Common name" means any designation or identification such as code name, code number, trade name, brand name or generic name used to identify a chemical other than by its chemical name.

(8) "Compressed gas" means:

(A) A gas or mixture of gases having, in a container, an absolute pressure exceeding 40 psi at 70°F (21.1°C); or

(B) A gas or mixture of gases having, in a container, an absolute pressure exceeding 104 psi at 130°F (54.4°C) regardless of the pressure at 70°F (21.1°C); or

(C) A liquid having a vapor pressure exceeding 40 psi at 100°F (37.8°C) as determined by ASTM D-323-72.

(9) "Container" means any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank, or the like that contains a hazardous chemical. For purposes of this section, pipes or piping systems are not considered to be containers.

(10) "Department" means the Alaska Department of Labor.

(11) "Designated representative" means any individual or organization to whom an employee gives written authorization to exercise such employee's rights under this section. A recognized or certified collective bargaining agent shall be treated automatically as a designated representative without regard to written employee authorization.

(12) "Director" means the Director, National Institute for Occupational Safety and Health, U.S. Department of Health and Human Services, or designee.

(13) "Distributor" means a business, other than a chemical manufacturer or importer, which supplies hazardous chemicals to other distributors or to employers.

(14) "Employee" means a worker employed by an employer in a workplace but not in a place used primarly as a personal residence.

> Note: For the purposes of this section "employee" also means a worker who may be exposed to hazardous chemicals under normal operating conditions or foreseeable emergencies, including, but not limited to production workers, line supervisors, and repair or maintenance personnel.

(15) "Employer" means a person engaged in a business where chemicals are either used, or are produced for use or distribution. Excluded are

persons who have one or more employees working in a place used primarily as a personal residence.

(16) "Explosive" means a chemical that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature.

(17) "Exposure" or "exposed" means that an employee is subjected to a hazardous chemical in the course of employment through any route of entry (inhalation, ingestion, skin or eye contact or absorption, etc.), and includes potential (e.g. accidental or possible) exposure.

(18) "Flammable" means a chemical that falls into one of the following categories:

(A) "Aerosol, flammable" means an aerosol that, when tested by the method described in 16 CFR 1500.45, yields a flame projection exceeding 18 inches at full valve opening, or a flashback (a flame extending back to the valve) at any degree of valve opening;

(B) "Gas, flammable" means:

(i) A gas that, at ambient temperature and pressure, forms a flammable mixture with air at a concentration of 13 percent by volume or less; or

(ii) A gas that, at ambient temperature and pressure, forms a range of flammable mixtures with air wider than 12 percent by volume, regardless of the lower limit;

(C) "Liquid, flammable" means any liquid having a flashpoint below 100°F (37.8°C), except any mixture having components with flashpoints of 100°F (37.8°C) or higher, the total of which make up 99 percent or more of the total volume of the mixture.

(D) "Solid, flammable" means a solid, other than a blasting agent or explosive as defined in 09.120(a)(6) that is liable to cause fire through friction, absorption of moisture, spontaneous chemical change, or retained heat from manufacturing or processing, or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious hazard. A chemical shall be considered to be a flammable solid if, when tested by the method described in 16 CFR 1500.44, it ignites and burns with a self-sustained flame at a rate greater than one-tenth of an inch per second along its major axis.

(19) "Flashpoint" means the minimum temperature at which a liquid gives off a vapor in sufficient concentration to ignite when tested as follows:

(A) Tagliabue Closed Tester (see American National Standard Method of Test for Flash Point by Tag Closed Tester, Z11.24-1979 [ASTM D 56-79]) for liquids with a viscosity of less than 45 Saybolt Universal Seconds (SUS) at 100°F (37.8°C), that do not contain suspended solids and do not have a tendency to form a surface film under test; or

(B) Pensky-Martens Closed Tester (see American National Standard Method of Test for Flash Point by Pensky-Martens Closed Tester, Z11.7-1979 [ASTM D 93-79]) for liquids with a viscosity equal to or greater than 45 SUS at 100°F (37.8°C),

or that contain suspended solids, or that have a tendency to form a surface film under test; or

(C) Setaflash Closed Tester (see American National Standard Method of Test for Flash Point by Setaflash Closed Tester [ASTM D 3278-78]). Organic peroxides, which undergo autoaccelerating thermal decomposition, are excluded from any of the flashpoint determination methods specified above.

(20) "Foreseeable emergency" means any potential occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment which could result in an uncontrolled release of a hazardous chemical into the workplace.

(21) "Hazard warning" means any words, pictures, symbols, or combination thereof appearing on a label or other appropriate form of warning which convey the hazards of the chemical(s) in the container(s).

(22) "Hazardous chemical" means any chemical which is a physical hazard or a health hazard.

(23) "Health hazard" means a chemical for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees. The term "health hazard" includes chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hematopoietic, hephrotoxins, neurotoxins, agents which act on the hematopietic system, and agents which damage the lungs, skin, eyes, or mucous membranes.

Appendix A provides further definitions and explanations of the scope of health hazards covered by this section, and Appendix B describes the criteria to be used to determine whether or not a chemical is to be considered hazardous for purposes of this standard.

(24) "Identity" means any chemical and common name which is indicated on the material safety data sheet (MSDS) for the chemical. The identity used shall permit cross-references to be made among the required list of hazardous chemicals, the label and the MSDS.

(25) "Immediate use" means that the hazardous chemical will be under the control of and used only by the person who transfers it from a labeled container and only within the work shift in which it is transferred.

(26) "Importer" means the first business with employees within the Customs Territory of the United States which receives hazardous chemicals produced in other countries for the purpose of supplying them to distributors or manufacturing purchasers within the United States.

(27) "Label" means any written, printed, or graphic material displayed on or affixed to containers of hazardous chemicals.

(28) "Laboratory" means a workplace primarily used for scientific experimentation or research or for preparing chemicals, drugs, etc.

(29) "Material safety data sheet (MSDS)" means written or printed material concerning a hazardous chemical which is prepared in accordance with (g) of this section.

(30) "Mixture" means any combination of two or more chemicals if the combination is not, in whole or in part, the result of a chemical reaction.

(31) "Organic peroxide" means an organic compound that contains the bivalent -O-O structure and which may be considered to be a structural or derivative of hydrogen peroxide where one or both of the hydrogen atoms have been replaced by an organic radical.

(32) "Oxidizer" means a chemical other than a blasting agent or explosive as defined in 09.120(a)(6), that initiates or promotes combustion in other materials, thereby causing fire either of itself or through the release of oxygen or other gases.

(33) "Physical hazard" means a chemical for which there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive) or water-reactive.

(34) "Produce" means to manufacture, process, formulate, or repackage.

(35) "Purchaser" means an employer who purchases a toxic or hazardous substance for use within the workplace.

(36) "Pyrophoric" means a chemical that will ignite spontaneously in air at a temperature of 130°F (54.4°C) or below.

(37) "Responsible party" means someone who can provide additional information on the toxic or

hazardous substance and appropriate emergency procedures, if necessary.

(38) "Specific chemical identity" means the chemical name, Chemical Abstracts Service (CAS) Registry Number, or any other information that reveals the precise chemical designation of the substance.

(39) "Toxic or hazardous substance" means

(A) a chemical listed in section 4, Article 1-4, Alaska Occupational Safety and Health standards.

(B) a chemical listed in "Threshold Limit Values for Chemical Substances and Physical Agents in the Work Environment", American Conference of Governmental Industrial Hygienists (Latest Edition);

(C) a substance for which a Material Safety Data Sheet is required under OSH regulations; and

(D) a substance determined by the department, in accordance with the Administrative Procedure Act (AS 44.62), to be a health hazard to an employee who is exposed to the substance, including a carcinogen, reproductive toxin, irritant, corrosive, sensitizer, hepatotoxin, nephtrotoxin, neurotoxin, agent that acts on the hematopoietic system, agent that damages the lungs, a cutaneous hazard and an eye hazard.

(40) "Trade secret" means any confidential formula, pattern, process, device, information or compilation of information (including chemical name or other unique chemical identifier) that

is used in an employer's business, and that gives the employer an opportunity to obtain an advantage over competitors who do not know or use it.

(41) "Unstable (reactive)" means a chemical which in the pure state, or as produced or transported, will vigorously polymerize, decompose, condense, or will become self-reactive under conditions of shock, pressure or temperature.

(42) "Use" means to package, handle, react, or transfer.

(43) "Water-reactive" means a chemical that reacts with water to release a gas that is either flammable or presents a health hazard.

(44) "Work area" means a room or defined space in a workplace in or outside of a building where toxic or hazardous substances are produced or used, and where employees are present.

(45) "Workplace" means an establishment at one geographical location containing one or more work areas.

(d) Hazard determination.

(1) Chemical manufacturers and importers shall evaluate chemicals produced in their workplaces or imported by them to determine if they are hazardous. Employers are not required to evaluate chemicals unless they choose not to rely on the evaluation performed by the chemical manufacturer or importer for the chemical to satisfy this requirement.

(2) Chemical manufacturers, importers, or employers evaluating chemicals shall identify and consider the available scientific evidence concerning such hazards. For health hazards, evidence which is statistically significant and which is based on at least one positive study conducted in accordance with established scientific principles is considered to be sufficient to establish a hazardous effect if the results of the study meet the definitions of health hazards in this section. Appendix A shall be consulted for the scope of health hazards covered, and Appendix B shall be consulted for the criteria to be followed with respect to the completeness of the evaluation, and the data to be reported.

(3) The chemical manufacturer, importer or employer evaluating chemicals shall treat the following sources as establishing that the chemicals listed in them are hazardous:

(A) Subchapter 4, Occupational Health and Environmental Control Code, Alaska Occupational Safety and Health Standards (This is the State's equivalent of 29 CFR Part 1910, subpart Z), or

(B) Threshold Limit Values for Chemical Substances and Physical Agents in the Work Environment. American Conference of Governmental Industrial Hygienists (ACGIH) (latest edition).

The chemical manufacturer, importer, or employer is still responsible for evaluating the hazards associated with the chemicals in these source lists in accordance with the requirements of this standard.

(4) Chemical manufacturers, importer and employers evaluating chemicals shall treat the following sources as establishing that a chemical is a carcinogen or potential carcinogen for hazard communication purposes:

(A) National Toxicology Program (NTP), Annual Report on Carcinogens (latest edition);

(B) International Agency for Research on Cancer (IARC) Monographs (latest edition); or

(C) Section 4, Occupational Health and Environmental Control Code, Alaska Occupational Safety and Health Standards.

Note: The Registry of Toxic Effects of Chemical Substances published by the National Institute for Occupational Safety and Health indicates whether a chemical has been found by NTP or IARC to be a potential carcinogen.

(5) The chemical manufacturer, importer or employer shall determine the hazards of mixtures of chemicals as follows:

(A) If a mixture has been tested as a whole to determine its hazards, the results of such testing shall be used to determine whether the mixture is hazardous;

(B) If a mixture has not been tested as a whole to determine whether the mixture is a health hazard, the mixture shall be assumed to present the same health hazards as do the components which comprise one percent

(by weight or volume) or greater of the mixture, except that the mixture shall be assumed to present a carcinogenic hazard if it contains a component in concentrations of 0.1 percent or greater which is considered to be a carcinogen under paragraph (d)(4) of this section;

(C) If a mixture has not been tested as a whole to determine whether the mixture is a physical hazard, the chemical manufacturer, importer, or employer may use whatever scientifically valid data is available to evaluate the physical hazard potential of the mixture; and,

(D) If the employer has evidence to indicate that a component present in the mixture in concentrations of less than one percent (or in the case of carcinogens, less than 0.1 percent) could be released in concentrations which would exceed an established Alaska Occupational Safety and Health permissible exposure limit or ACGIH Threshold Limit Value, or could present a health hazard to employees in those concentrations, the mixture shall be assumed to present the same hazard.

(6) Chemical manufacturers, importers, or employers evaluating chemicals shall describe in writing the procedures they use to determine the hazards of the chemical they evaluate. The written procedures are to be made available, upon request, to employees, their designated representatives, the Commissioner and the Director. The written description may be incorporated into the written hazard communication program required under (e) of this section.

(e) Hazard communication program

(1) The following information shall be provided upon an employee's request:

(A) A copy, upon request of the employee, of the most recent Material Safety Data Sheet, or equivalent written information for a toxic or hazardous substance to which the employee may be exposed. If the employer does not have the copy or information requested, the employer shall request a copy from the department or the manufacturer of the substance within three state government working days after receiving the request.

(B) If the copy or information requested under (A) of this section is not made available to the employee within 15 calendar days after the request is received, the employer shall take measures to assure that employees are not exposed to the substance to which the copy or information pertains until the copy or information is made available to the employee who made the request. This subsection applies only to substances for which a Material Safety Data Sheet, or equivalent information is required under OSH regulations. This subsection does not alter, deny, or abrogate any right an employee may have under law to refuse to work under hazardous circumstances.

(2) Effective November 25, 1986, a written hazard communication program shall be developed and implemented for workplaces which at least describes how the criteria specified in

(f), (g), and (h) of this section for labels and other forms of warning, material safety data sheets, and employee information and training will be met, and which also includes the following:

(A) A list of the hazardous chemicals known to be present using an identity that referenced on the appropriate material safety data sheet (the list may be compiled for the workplace as a whole or for individual work areas);

(B) The methods the employer will use to inform employees of the hazards of non-routine tasks (for example: the cleaning of reactor vessels), and the hazards associated with chemicals contained in unlabeled pipes in their work areas; and,

(C) The methods the employer will use to inform any contractor employers with employees working in the employer's workplace of the hazardous chemicals their employees may be exposed to while performing their work, and any suggestions for appropriate protective measures.

(3) The employer may rely on an existing hazard communication program to comply with these requirements, provided that it meets the criteria established in section (e).

(4) The written hazard communciation program shall be made available, upon request, to employees, their designated representatives, the Commissioner and the Director, in accordance with the requirements of 8 AAC 61.270(e).

Note: If an employer refuses to provide information required by (e)(1)(B), an employee may file a complaint with the department per Alaska Statutes (AS) 18.60.088. An employee who files a complaint is protected against retribution per AS 18.60.089.

(f) Labels and other forms of warning: The following labeling requirements shall become effective, November 25, 1986.

(1) The chemical manufacturer, importer, or distributor shall ensure that each container of hazardous chemicals leaving the workplace is labeled, tagged or marked with the following information:

(A) Identity of the hazardous chemical(s);

(B) Appropriate hazard warnings; and

(C) Name and address of the chemical manufacturer, importer, or other responsible party.

(2) Chemical manufacturers, importers, or distributors shall ensure that each container of hazardous chemicals leaving the workplace is labeled, tagged, or marked in accordance with this section in a manner which does not conflict with the requirements of the Hazardous Materials Transportation Act (18 U.S.C. §1801 et seq.) and regulations issued under that Act by the U.S. Department of Transportation.

(3) If the hazardous chemical is regulated by the Alaska Occupational Safety and Health Section in a substance-specific health standa , the

chemical manufacturer, importer, distributor or employer shall ensure that the labels or other forms of warning used are in accordance with the requirements of that standard.

(4) Except as provided in paragraphs (5) and (6) of subsection (f), each container of hazardous chemicals in the workplace shall be labeled, tagged, or marked with the following information:

(A) Identity of the hazardous chemical(s) contained therein; and

(B) Appropriate hazard warnings.

(5) Signs, placards, process sheets, batch tickets, operating procedures, or other such written materials may be used in lieu of affixing labels to individual stationary process containers, as long as the alternate method identifies the containers to which it is applicable and conveys the information required by paragraph (4) of this subsection to be on a label. The written materials shall be readily accessible to the employees in their work area throughout each work shift.

(6) Portable containers into which hazardous chemicals are transferred from labeled containers and which are intended only for the immediate use of the employee who performs the transfer need not be labeled.

(7) Existing labels on incoming containers of hazardous chemicals shall not be removed or defaced unless the container is immediately marked with the required information.

(8) Labels or other forms of warning shall be legible, in English, and prominently displayed on the container, or readily available in the work area throughout each work shift. Employers having employees who speak other languages may add the information in their language to the material presented, as long as the information is presented in English as well.

(9) The chemical manufacturer, importer, distributor or employer need not affix new labels to comply with this section if existing labels already convey the required information.

(g) Material safety data sheets.

(1) Chemical manufacturers and importers shall obtain or develop a material safety data sheet for each hazardous chemical they produce or import. Employers shall have a material safety data sheet for each toxic or hazardous substance which they use.

(2) Each material safety data sheet shall be in English and shall contain at least the following information:

(A) The identity used on the label, and, except as provided for in subsection (j) of this section, on trade secrets:

(i) If the hazardous chemical is a single substance, its chemical and common name(s);

(ii) If the hazardous chemical is a mixture which has been tested as a whole to determine its hazards, the chemical and common name(s) of the

ingredients which contribute to these known hazards, and the common name(s) of the mixture itself; or,

(iii) If the hazardous chemical is a mixture which has not been tested as a whole:

a. The chemical and common name(s) of all ingredients which have been determined to be health hazards, and which comprise one percent or greater of the composition, except that chemicals identified as carcinogens under paragraph (d)(4) of this section shall be listed if the concentrations are 0.1 percent or greater; and,

b. The chemical and common name(s) of all ingredients which have been determined to present a physical hazard when present in the mixture;

1. Physical and chemical characteristics of the hazardous chemical (such as vapor pressure, flash point);

2. The physical hazards of the hazardous chemical, including the potential for fire, explosion, and reactivity;

3. The health hazards of the hazardous chemical, including signs and symptoms

of exposure, and any medical conditions which are generally recognized as being aggravated by exposure to the chemical;

4. The primary route(s) of entry;

5. The Alaska Occupational Safety and Health permissible exposure limit, ACGIH Threshold Limit Value, and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the material safety data sheet, where available;

6. Whether the hazardous chemical is listed in the National Toxicology Program (NTP) Annual Report on Carcinogens (latest edition) or has been found to be a potential carcinogen in the International Agency for Research on Cancer (I A R C) Monographs (latest edition), or by an Alaska Occupational Safety and Health standard;

7. Any generally applicable precautions for safe handling and use which are known to the chemical manufacturer, importer or employer preparing the material

safety data sheet, including appropriate hygienic practices, protective measures during repair and maintenance of contaminated equipment, and procedures for clean-up of spills and leaks;

8. Any generally applicable control measures which are known to the chemical manufacturer, importer or employer preparing the material safety data sheet, such as appropriate engineering controls, work practices , or personal protective equipment;

9. Emergency and first aid procedures;

10. The date of preparation of the safety data sheet or the last change to it; and,

11. The name, address and telephone number of the chemical manufacturer, importer, employer or other responsible party preparing or distributing the material safety data sheet, who can provide additional information on the hazardous chemical and appropriate emergency procedures, if necessary.

(3) If no relevant information is found for any given category on the material safety data sheet, the chemical manufacturer, importer or employer preparing the material safety data sheet shall mark it to indicate that no applicable information was found.

(4) Where complex mixtures have similar hazards and contents (i.e. the chemical ingredients are essentially the same, but the specific composition varies from mixture to mixture), the chemical manufacturer, importer or employer may prepare one material safety data sheet to apply to all of these similar mixtures.

(5) The chemical manufacturer, importer or employer preparing the material safety data sheet shall ensure that the information recorded accurately reflects the scientific evidence used in making the hazard determination. If the chemical manufacturer, importer or employer becomes newly aware of any significant information regarding the hazards of a chemical, or ways to protect against the hazards, this new information shall be added to the material safety data sheet within three months. If the chemical is not currently being produced or imported the chemical manufacturer or importer shall add the information to the material safety data sheet before the chemical is introduced into the workplace again.

(6) Chemical manufacturers or importers shall ensure that distributors and purchasers of hazardous chemicals are provided an appropriate material safety data sheet with their initial shipment, and with the first shipment after a material safety data sheet is updated. The chemical manufacturer or importer shall either provide material safety data sheets with the ship-

ped containers or send them to the purchaser prior to or at the time of the shipment. If the material safety data sheet is not provided with the shipment, the purchaser shall obtain one from the chemical manufacturer, importer, distributor or the Department of Labor's Occupational Safety and Health Section as soon as possible.

(7) Distributors shall ensure that material safety data sheets, and updated information, are provided to other distributors and purchasers of hazardous chemicals.

(8) Copies of the required material safety data sheets shall be maintained for each hazardous chemical in the workplace, and they shall be readily accessible during each work shift to employees when they are in their work area(s).

(9) Material safety data sheets may be kept in any form, including operating procedures, and may be designed to cover groups of hazardous chemicals in a work area where it may be more appropriate to address the hazards of a process rather than individual hazardous chemicals. However, the employer shall ensure that in all cases the required information is provided for each hazardous chemical, and is readily accessible during each work shift to employees when they are in their work area(s).

(10) Material safety data sheets shall also be made readily available, upon request, to designated representatives and to the Commissioner, in accordance with the requirements of 8 AAC 61.270.

The Director shall also be given access to material safety data sheets in the same manner.

(h) Posting requirements.

(1) A poster that contains the provisions of AS 18.60.065, .066, and .068 shall be displayed at the worksite. A poster meeting this requirement is available from the Department but an employer may use any poster that meets this requirement.

(2) Material safety data sheets or equivalent information for each toxic or hazardous substance to which an employee may be exposed in the workplace will be posted.

(3) Instead of posting the information required under (h)(2) of this section, an employer may post a list of the chemical name and product name of each toxic or hazardous substance to which an employee may be exposed in the workplace, together with an identification of a location, in or near the workplace and accessible to employees, where an employee may inspect the material safety data sheets.

(i) Employee information and training.

(1) Employees shall be provided the following training before employees perform a new job assignment that may result in the employee being exposed to a toxic or hazardous substance:

(A) The location, properties, and known or suspected acute and chronic health effects of the hazardous or toxic substance to which the employee is exposed in the workplace;

(B) the nature of the operations that could result in exposure to hazardous or

toxic substances, as well as any necessary handling or hygienic practices or precautions; and

(C) The location, purpose, proper use, and limitaitons of personal protective equipment used in the workplace.

Note: The department will help employers, upon request, to develop employee safety education programs to meet the requirements of (i) of this section.

(2) Effective November 25, 1986, employees in industries SIC 20-39, shall be provided with the additional following information and training on hazardous or toxic substances in their work area at the time of their initial assignment, and whenever a new hazard is introduced into their work area.

(A) Information. Employees shall be informed of:

(i) the requirements of this section;

(ii) any operations in their work area where hazardous chemicals are present; and,

(iii) the location and availability of the written hazard communication program, including the required list(s) of hazardous chemicals, and material safety data sheets required by this section.

(B) Training. Employee training shall include at least:

(i) Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area (such as monitoring conducted by the employer, continuous monitoring devices, visual appearance or odor of hazardous chemicals when being released, etc.);

(ii) The physical and health hazards of the chemicals in the work area;

(iii) The measures employees can take to protect themselves from these hazards, including specfic procedures the employer has implemented to protect employees from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures, and personal protective equipment to be used;

(iv) The details of the hazard communication program developed by the employer, including an explanation of the labeling system and the material safety data sheet, and how employees can obtain and use the appropriate hazard information.

(j) Trade Secrets.

(1) The chemical manufacturer, importer or employer may withhold the specific chemical identity, including the chemical name and other speci-

fic identification of a hazardous chemical, from the material safety data sheet, provided that:

(A) The claim that the information withheld is a trade secret can be supported;

(B) Information contained in the material safety data sheet concerning the properties and effects of the hazardous chemical is disclosed;

(C) The material safety data sheet indicates that the specific chemical identity is being withheld as a trade secret; and,

(D) The specific chemical identity is made available to health professionals, in accordance with the applicable provisions of this section.

(2) Where a treating physician or nurse determines that a medical emergency exists and the specific chemical identity of a hazardous chemical is necessary for emergency or first-aid treatment the chemical manufacturer, importer, or employer shall immediately disclose the specific chemical identity of a trade secret chemical to that treating physician or nurse, regardless of the existence of a written statement of need or a confidentiality agreement. The chemical manufacturer, importer or employer may require a written statement of need and confidentiality agreement, in accordance with the provisions of paragraphs (j)(3) and (4) of this section, as soon as circumstances permit.

(3) In non-emergency situations, a chemical manufacturer, importer, or employer shall, upon request, disclose a specific chemical identity,

otherwise permitted to be withheld under paragraph (j)(1) of this section, to a health professional (i.e. physician, industrial hygienist, toxicologist, or epidemiologist) providing medical or other occupational health services to exposed employee(s) if:

(A) The request is in writing;

(B) The request describes with reasonable detail one or more of the following occupational health needs for the information:

(i) To assess the hazards of the chemicals to which employees will be exposed;

(ii) To conduct or assess sampling of the workplace atmosphere to determine employee exposure levels;

(iii) To conduct pre-assignment or periodic medical surveillance of exposed employees;

(iv) To provide medical treatment to exposed employees;

(v) To select or assess appropriate personal protective equipment for exposed employees;

(vi) To design or assess engineering controls or other protective measures for exposed employees; and,

(vii) To conduct studies to determine the health effects of exposure.

(C) The request explains in detail why the disclosure of the specific chemical identity is essential and that, in lieu thereof, the disclosure of the following information would not enable the health professional to provide the occupational health services described in paragraph (2) of this subsection:

(i) The properties and effects of the chemical;

(ii) Measures for controlling workers' exposure to the chemical;

(iii) Methods of monitoring and analyzing worker exposure to the chemical; and,

(iv) Methods of diagnosing and treating harmful exposures to the chemical;

(D) The request includes a description of the procedures to be used to maintain the confidentiality of the disclosed information; and,

(E) The health professional, and the employer or contractor of the health professional's services (i.e. downstream employer, labor organization, or individual employer), agree in a written confidentiality agreement that the health professional will not use the trade secret information for any purpose other than the health need(s) asserted and agree not to release the information under any circumstances other than to Alaska Occupational Safety and Health Section as provided in paragraph (6) of this subsection,

except as authorized by the terms of the agreement or by the chemical manufacturer, importer, or employer.

(4) The confidentiality agreement authorized by subparagraph (j)(3)(E) of this section:

(A) May restrict the use of the information to the health purposes indicated in the written statement of need;

(B) May provide for appropriate legal remedies in the event of a breach of the agreement, including stipulation of a reasonable pre-estimate of likely damages; and,

(C) May not include requirements for the posting of a penalty bond.

(5) Nothing in this standard is meant to preclude the parties from pursuing non-contractual remedies to the extent permitted by law.

(6) If the health professional receiving the trade secret information decides that there is a need to disclose it to Alaska Occupational Safety and Health Section, the chemical manufacturer, importer, or employer who provided the information shall be informed by the health professional prior to, or at the same time as, such disclosure.

(7) If the chemical manufacturer, importer, or employer denies a written request for disclosure of a specific chemical identity, the denial must:

(A) Be provided to the health professional within thirty days of the request;

(B) Be in writing;

(C) Include evidence to support the claim that the specific chemical identity is a trade secret;

(D) State the specific reasons why the request is being denied; and,

(E) Explain in detail how alternative information may satisfy the specific medical or occupational health need without revealing the specific chemical identity.

(8) The health professional whose request for information is denied under paragraph (j)(7) of this section may refer the request and the written denial of the request to the Alaska Occupational Safety and Health Section for consideration.

(9) When a health professional refers the denial to the Alaska Occupational Safety and Health Section under paragraph (j)(8) of this section, the Alaska Occupational Safety and Health Section shall consider the evidence to determine if:

(A) The chemical manufacturer, importer, or employer has supported the claim that the specific chemical identity is a trade secret;

(B) The health professional has supported the claim that there is a medical or occupational health need for the information; and,

(C) The health professional has demonstrated adequate means to protect the confidentiality.

(10) If the Alaska Occupational Safety and Health Section determines that the specific chemical identity requested under paragraph (j)(3) of this section is not a bona fide trade secret, or that it is a trade secret but the requesting health professional has a legitimate medical or occupational health need for the information, has executed a written confidentiality agreement, and has shown adequate means to protect the confidentiality of the information, then the chemical manufacturer, importer, or employer will be subject to citation by the Alaska Occupational Safety and Health Section.

(11) If a chemical manufacturer, importer, or employer demonstrates to the Alaska Occuational Safety and Health Section that the execution of a confidentiality agreement would not provide sufficient protection against the potential harm from the unauthorized disclosure of a trade secret specific chemical indentity, the Commissioner may issue such orders or impose such additional limitations or conditions upon the disclosure of the requested chemical information as may be appropriate to assure that the occupational health services are provided without an undue risk of harm to the chemical manufacturer, importer, or employer.

(12) If, following the issuance of a citation and any protective orders, the chemical manufacturer, importer, or employer continues to withhold the information, the matter is referrable to the Occupational Safety and Health Review Board for enforcement of the citation. In accordance with the Alaska Rules of Civil Procedures,

the Board may review the citation and supporting documentation in camera or issue appropriate protective orders.

(13) Notwithstanding the existence of a trade secret claim, a chemical manufacturer, importer, or employer shall, upon request, disclose to the Commissioner any information which this section requires the chemical manufacturer, importer, or employer to make available. Where there is a trade secret claim, such claim shall be made no later than at the time the information is provided to the Commissioner so that suitable determinations of trade secret status can be made and the necessary protections can be implemented.

(14) Nothing in this subsection shall be construed as requiring the disclosure under any circumstances of process or percentage of mixture information which is trade secret.

APPENDIX A

HEALTH HAZARD DEFINITIONS (Mandatory)

Although safety hazards related to the physical characteristics of a chemical can be objectively defined in terms of testing requirements (e.g. flammability), health hazard definitions are less precise and more subjective. Health hazards may cause measurable changes in the body -- such as decreased pulmonary function. These changes are generally indicated by the occurrence of signs and symptoms in the exposed employees -- such as shortness of breath, a non-measurable, subjective feeling. Employees exposed to such hazards must be apprised of both the change in body function and the signs and symptoms that may occur to signal that change.

The determination of occupational health hazards is complicated by the fact that many of the effects or signs and symptoms occur commonly in non-occupationally exposed populations, so that effects of exposure are difficult to separate from normally occuring illnesses. Occasionally, a substance causes an effect that is rarely seen in the population at large, such as angiosarcomas caused by vinyl chloride exposure, thus making it easier to ascertain that the occupational exposure was the primary causative factor. More often, however, the effects are common, such as lung cancer. The situation is further complicated by the fact that most chemicals have not been adequately tested to determine their health hazard potential, and data do not exist to substantiate these effects.

There have been many attempts to categorize effects and to define them in various ways. Generally, the terms "acute" and "chronic" are used to delineate between effects on the basis of severity or duration. "Acute" effects usually occur rapidly as a result of short-term exposures, and are of short duration. "Chronic" effects generally occur as a result of long-term exposure, and are of long duration.

The acute effects referred to most frequently are those defined by the American National Standards Institute (ANSI) standard for Precautionary Labeling of Hazardous Industrial Chemicals (Z129.1-1982) -- irritation, corrosivity, sensitization and lethal dose. Although these are important health effects, they do not adequately cover the considerable range of acute effects which may occur as a result of occupational exposure, such as, for example, narcosis.

Similarly, the term chronic effect is often used to cover only carcinogenicity, teratogenicity, and mutagenicity. These effects are obviously a concern in the workplace, but again, do not adequately cover the area of chronic effects, excluding, for example, blood dyscrasias (such as anemia), chronic bronchitis and liver atrophy.

The goal of defining precisely, in measurable terms, every possible health effect that may occur in the workplace as a result of chemical exposures cannot realistically be accomplished. This does not negate the need for employees to be informed of such effects and protected from them.

Appendix B, which is also mandatory, outlines the principles and procedures of hazard assessment.

For purposes of this section, any chemicals which meet any of the following definitions, as determined by the criteria set forth in Appendix B are health hazards:

(1) Carcinogen: A chemical is considered to be a carcinogen if:

(A) It has been evaluated by the International Agency for Research on Cancer (IARC), and found to be a carcinogen or potential carcinogen; or,

(B) It is listed as a carcinogen or potential carcinogen in the Annual Report on Carcinogens published by the National Toxicology Program (NTP) (latest edition); or,

(C) It is regulated by the Alaska Occupational Safety and Health Section as a carcinogen.

(2) Corrosive: A chemical that causes visible destruction of, or irreversible alterations in, living tissue by chemical action at the site of contact. For example, a chemical is considered to be corrosive, if, when tested on the intact skin of albino rabbits by the method described by the U.S. Department of Transportation in Appendix A to 49 CFR Part 173, it destroys or changes irreversibly the structure of the tissue at the site of contact following an exposure period of four hours. This term shall not refer to action on inanimate surfaces.

(3) Highly toxic: A chemical falling within any of the following categories:

(A) A chemical that has a median lethal dose (LD_{50}) of 50 milligrams or less per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.

(B) A chemical that has a median lethal dose (LD_{50}) of 200 milligrams or less per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between two and three kilograms each.

(C) A chemical that has a median lethal concentration (LC_{50}) in air of 200 parts per million by volume or less of gas or vapor, or 2 milligrams per liter or less of mist, fume, or dust, when administered by continuous inhalation for one hour (or less if death occurs within one hour) to albino rats weighing between 200 and 300 grams each.

(4) Irritant: A chemical, which is not corrosive, but which causes a reversible inflammatory effect on living tissue by chemical action at the site of contact. A chemical is a skin irritant if, when tested on the intact skin of albino rabbits by the methods of 16 CFR 1500.41 for four hours exposure or by other appropriate techniques, it results in an empirical score of five or more. A chemical is an eye irritant if so determined under the procedure listed in 16 CFR 1500.42 or other appropriate techniques.

(5) Sensitizer: A chemical that causes a substantial proportion of exposed people or animals to develop an allergic reaction in normal tissue after repeated exposure to the chemical.

(6) Toxic: A chemical falling within any of the following categories:

(A) A chemical that has a median lethal dose (LD_{50}) of more than 50 milligrams per kilogram but not more than 500 milligrams per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.

(B) A chemical that has a median lethal dose (LD_{50}) of more than 200 milligrams per kilogram but not more than 1,000 milligrams per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between two and three kilograms each.

(C) A chemical that has a median lethal concentration (LC_{50}) in air of more than 200 parts per million but not more than 2,000 parts per million by volume of gas or vapor, or more than two milligrams per liter but not more than 20 milligrams per liter of mist, fume, or dust, when administered by continuous inhalation for one hour (or less if death occurs within one hour) to albino rats weighing between 200 and 300 grams each.

(7) Target organ effects: The following is a target organ categorization of effects which may occur, including examples of signs and symptoms and chemicals which have been found to cause such effects. These examples are presented to illustrate the range and diversity of effects and hazards found in the workplace, and the broad scope employers must consider in this area, but are not intended to be all-inclusive.

(A)

Hepatotoxins:	Chemicals which produce liver damage
Signs & Symptoms:	Jaundice; liver enlargement
Chemicals:	Carbon tetrachloride; nitrosamines

(B)

Nephrotoxins:	Chemicals which produce kidney damage
Signs & Symptoms:	Edema; proteinuria
Chemicals:	Halogenated hydrocarbons; uranium

(C)

Neurotoxins:	Chemicals which produce their primary toxic effects on the nervous system
Signs & Symptoms:	Narcosis; behavioral changes; decrease in motor functions
Chemicals:	Mercury; carbon disulfide

(D)

Agents which act on the blood or hematopoietic system:	Decrease hemoglobin function; deprive the body tissues of oxygen
Signs & Symptoms:	Cyanosis; loss of consciousness
Chemicals:	Carbon Monoxide; cyanides

(E)

Agents which damage the lung:	Chemicals which irritate or damage the pulmonary tissue
Signs & Symptoms:	Cough; tightness in chest; shortness of breath
Chemicals:	Silica; asbestos

(F)

Reproductive toxins:	Chemicals which affect the reproductive capabilities including chromosomal damage (mutations) and effects on fetuses (teratogenesis)
Signs & Symptoms:	Birth defects; sterility
Chemicals:	Lead; DBCP

(G)

Cutaneous hazards:	Chemicals which affect the dermal layer of the body
Signs & Symptoms:	Defatting of the skin; rashes; irritation
Chemicals:	Ketones; chlorinated compounds

(H)

Eye hazards:	Chemicals which affect the eye or visual capacity
Signs & Symptoms:	Conjunctivities; corneal damage
Chemicals:	Organic solvents; acids

APPENDIX B

HAZARD DETERMINATION (Mandatory)

The quality of a hazard communication program is largely dependent upon the adequacy and accuracy of the hazard determination. The hazard determination requirement of this standard is performance-oriented. Chemical manufacturers, importers, and employers evaluating chemicals are not required to follow any specific methods for determining hazards, but they must be able to demonstrate that they have adequately ascertained the hazards of the chemicals produced or imported in accordance with the criteria set forth in this Appendix.

Hazard evaluation is a process which relies heavily on the professional judgement of the evaluator, particularly in the area of chronic hazards. The performance-orientation of the hazard determination does not diminish the duty of the chemical manufacturer, importer or employer to conduct a thorough evaluation, examining all relevant data and producing a scientifically defensible evaluation. For purposes of this standard, the following criteria shall be used in making hazard determinations that meet the requirements of this standard.

(1) Carcinogenicity: As described in paragraph (d)(4) and Appendix A of this section, a determination by the National Toxicology Program, the International Agency for Research on Cancer, or the Alaska Occupational Safety and Health Section that a chemical is a carcinogen or potential carcinogen will be considered conclusive evidence for purposes of this section.

(2) Human data: Where available, epidemiological studies and case reports of adverse health effects shall be considered in the evaluation.

(3) Animal data: Human evidence of health effects in exposed populations is generally not available for the majority of chemicals produced or used in the workplace. Therefore, the available results of toxicological testing in animal populations shall be used to predict the health effects that may be experienced by exposed workers. In particular, the definitions of certain acute hazards refer to specific animal testing results (see Appendix A).

(4) Adequacy and reporting of data: The results of any studies which are designed and conducted according to established scientific principles, and which report statistically significant conclusions regarding the health effects of a chemical, shall be a sufficient basis for a hazard determination and reported on any material safety data sheet.

The chemical manufacturer, importer, or employer may also report the results of other scientifically valid studies which tend to refute the findings of hazard.

INFORMATION (Advisory)

The following is a list of available data sources which the chemical manufacturer, importer, or employer may wish to consult to evaluate the hazards of chemicals they produce or import:

-- Any information in their own company files such as toxicity testing results or illness experience of company employees.

-- Any information obtained from the supplier of the chemical, such as material safety data sheets or product safety bulletins.

-- Any information available from the Occupational Safety and Health Section of the Department of Labor, Pouch 7-022, Anchorage, Alaska 99510, Phone (907)264-2599.

-- Any pertinent information obtained from the following source list (latest editions should be used):

Condensed Chemical Dictionary
Van Nostrand Reinhold Company
135 West 50th Street
New York, NY 10020

The Merck Index: An Encyclopedia of Chemicals and Drugs
Merck and Company, Inc.
126 E. Lincoln Avenue
Rahway, NJ 07065

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man
Geneva: World Health Organization
International Agency for Research on Cancer, 1972-1977
(Multivolume work)
49 Sheridan Street
Albany, New York

Industrial Hygiene and Toxicology, by F. A. Patty
John Wiley & Sons, Inc.
New York, NY
(Five volumes)

Clinical Toxicology of Commercial Products
Gleason, Gosselin and Hodge

Casarett and Doull's Toxicology; The Basic Science of Poisons
Doull, Klaassen, and Amdur
Macmillan Publishing Co., Inc.
New York, NY

Industrial Toxicology, by Alice Hamilton and Harriet L. Hardy
Publishing Sciences Group, Inc.
Acton, MA

Toxicology of the Eye, by W. Morton Grant
Charles C. Thomas
301 - 327 East Lawrence Avenue
Springfield, IL

Recognition of Health Hazards in Industry
William A. Burgess
John Wiley and Sons
605 Third Avenue
New York, NY 10158

Chemical Hazards of the Workplace
Nick H. Proctor and James P. Hughes
J.P. Lipincott Company
6 Winchester Terrace
New York, NY 10022

Handbook of Chemistry and Physics
Chemical Rubber Company
18901 Cranwood Parkway
Cleveland, OH 44128

Threshold Limit Values for Chemical Substances and Physical Agents in the Workroom Environment with Intended Changes
American Conference of Governmental Industrial Hygienists
6500 Glenway Avenue, Bldg. D-5
Cincinnati, OH 45211

Note: The following documents are on sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

Occupational Health Guidelines
NIOSH/OSHA (NIOSH Pub. No. 81-123)

NIOSH/OSHA Pocket Guide to Chemical Hazards
NIOSH Pub. No. 78-210

Registry of Toxic Effects of Chemical Substances
U.S. Department of Health & Human Svcs.
Public Health Service
Center for Disease Control
National Institute for Occupational Safety & Health
(NIOSH Pub. No. 80-102)

The Industrial Environment - Its Evaluation and Control

U.S. Department of Health & Human Svcs.
Public Health Service
Center for Disease Control
National Institute for Occupational Safety & Health
(NIOSH Pub. No. 74-117)

Miscellaneous Documents

National Institute for Occupational Safety & Health

1. Criteria for a recommended standard.... Occupational exposure to "_____"
2. Special Hazard Reviews
3. Occupational Hazard Assessment
4. Current Intelligence Bulletins

BIBLIOGRAPHIC DATA BASES

Service Provider	File Name
Bibliographic Retrieval Services (BRS) Corporation Park Building 702 Scotia, New York 12302	AGRICOLA BIOSIS PREVIEWS CA CONDENSATES CA SEARCH DRUG INFORMATION NEDLARS MEDOC NTIS POLLUTION ABSTRACTS SCIENCE CITATION INDEX SSIE
Lockheed - DIALOG	ARGICOLA

Lockheed Missiles & Space Co., Inc. P.O. Box 44481 San Francisco, CA 94144	BIOSIS PREV.1972-PRESENT BIOSIS PREV.1969-1971 CA CONDENSATES 1970-71 CA SEARCH 1972-1976 CA SEARCH 1977-PRESENT CHEMNAME CONFERENCE PAPERS INDEX FOOD SCIENCE & TECH. ABSTR. FOODS ADLIBRA INTL. PHARMACEUTICAL ABSTR. NTIS POLLUTION ABSTRACTS SCISEARCH 1978-PRESENT SCISEARCH 1974-1977 SSIE CURRENT RESEARCH
SDS - ORBIT SDC Search Service Department No. 2230 Pasadena, CA 91051	AGRICOLA BIOCODES BIOSIS/BIO6973 CAS6771/CAS7276 CAS77 CHEMDEX CONFERENCE ENVIROLINE LABORDOC NTIS POLLUTION SSIE
Chemical Information System (CIS) Chemical Information Systems, Inc. 7215 Yorke Road Baltimore, MD 21212	Structure & Nomenclature Search System Acute Toxicity (RTECS) Clinical Toxicology of Commercial Products Oil and Hazardous Materials Technical Assistance Data System

Service Provider	File Name
National Library of Medicine Department of Health & Human Services Public Health Service National Institutes of Health Bethesda, MD 20209	Toxicology Data Bank (TDB) MEDLINE TOXLINE CANCERLIT RTECS

Alaska State Legislature

Senate

Official Business

Pouch V
State Capitol
Juneau, Alaska 99811

March 11, 1983

Memo

To: Bettye
From: Pat
Subject: SB 79, "Right-to-Know", Hazardous and Toxic Substances in Workplace legislation

Attached is the bill comparison done for our first hearing in Juneau on February 28. At that time you announced your intention to have an ad hoc group of interested parties get together to try to work out problems and come up with a new acceptable version of the bill. This work has been initiated, but it still several weeks away from completion probably.

However, you might want to comment, if asked, on the following possible changes which you are considering to make the bill more reasonable:

1) Rather than using 40,000 substance lists, the Department of Labor would be instructed to develop a list that relates to Alaska and known hazardous substances and would not include:
   a. Substances because of volume or manner of use are not considered hazardous; and
   b. Substances used for personal use. This would exclude grocery items, car gas, etc.

2) Information sheets on substances to be given to employees could be the same as required by OSHA and would be obtained from manufacturers and wholesalers. Would not have to be developed by individual employers.

3) Copies of information would go to Dept. of Labor who would issue regs determining who would have access to info but would be subject to trade secret provisions of existing law.

4) Labeling provisions would be stripped down considerably to only include barrels or large containers or deleted all together.

5) Posting of information would be in "appropriate place" in workpla rather than any specific place.

Senate Resources Committee
May 11, 1983

LETTER OF INTENT, SB 79

The purpose of this legislation is to inform employees of the identity of and the health hazards and proper handling procedures for hazardous and toxic substances in their workplace through a communication and safety education program adopted by employers. While this legislation is designed to cover most employers in the state utilizing substances defined in the bill, it is not the intent to require employers to be responsible for the generation or creation of the information required to be posted or communicated to employees. Rather, the bill is designed under the assumption that federal regulations will be promulgated in the near future by the Occupational Safety and Health Administration (OSHA) which will require manufacturers to develop and distribute information for all the substances covered by the bill. The provision requiring that such information accompany substances imported into the state and the provision requiring the State Department of Labor to keep information on file for all substances covered by the bill are designed to aid employers in readily obtaining the required information.

It is the intent of the Committee that the Department of Labor play an active role in informing employers of the requirements of this bill and aiding them in meeting the requirements. Among the tasks required of and intended that the Department undertake are: the development of a poster outlining the provisions and employee rights under the bill and the printing of sufficient copies for all applicable employers; the compilation of all relevant information on the various substances covered by the bill and formulation of an information retrieval system capable of answering telephone inquiries by employers and employees on various substances and products; the compilation and printing of a list of the various substances identified in the bill as hazardous and toxic for use by employers; the provision of assistance to employers upon request in developing safety education programs; and the surveying of various employers or industries to identify the types of substances used and problems being encountered. In this last task it is intended that such surveys be made in cooperation with business and industry groups or associations.

It is the intent of the Committee that the Department complete the specific tasks identified in section 1 of the bill at least several months in advance of the July 1, 1984 effective date for section 2 of the bill requiring posting and training by employers.

The bill authorizes the Department to identify substances to be covered by the bill. It is the intent of the Committee that this authority be used only on a case-by-case basis pursuant to the Administrative Procedure Act to cover a very few substances which might be of specific concern in the

state but for some reason, such as bureaucratic delay, have not yet been identified on the federal level pursuant to OSHA regulation. It is not the intent of the Committee to direct the Department to engage in a major identification, testing or research program which would result in large numbers of additional substances or additional lists of substances beyond those identified in the bill.

PLEASE NOTE: THE FOLLOWING PAGES WERE TREATED AS A UNIT IN THE ORIGINAL DOCUMENT

Senate Resources Committee
April 20, 1983

COMMENTS ON DRAFT SUBSTITUTE
FOR SB-79

Page 1, Section 1--Substances Covered

-- Several people commented that there remained ambiguity as to how the Department of Labor was to arrive at a list of hazardous and toxic substances and how their definitions were to relate to the lists of substances contained on page 5 in the definitions section.

-- A specific comment was made that the regulations from DOL should be set within a timeframe.

-- Need more specific criteria for which substances are to be included or excluded; particularly relating to "amounts which to not pose a health risk" (lines 14-15).

Staff Comment

Although our intent was to have the DOL use the lists in the definitions from which to arrive at a list best representing the Alaskan situation and avoiding "frivolous" substances or limit substances such as sand to those unusual circumstances where they do constitute a health hazard, this section is obviously unclear as to how to use the lists. It probably could use additional direction and clarification. The draft OSHA regulations contain several lists including the Subpart Z list which must be included and also spell out more specific instances and substances that are not to be included.

Pages 1 & 2, Section 2--Manufacturer's and Wholesaler's Info Requirements

-- Business interest emphasized that the requirements relating to manufacturers were covered by the pending OSHA regulations. The "final" draft regulations would also cover distributors and importers of substances.

-- Line 7-8. One comment was made that the symptoms should be described in laymen's terms, as in (5) on line 14.

Page 3, Section 3--Employer Info and Training Requirements

-- Labor and Health commentors emphasized that the pending OSHA regs ("final" draft and draft) do not cover non-manufacturing employers as contained in this section.

-- Lines 3-7. In the case of employer with many substances, recommended that rather than posting of multiple MSDS's, that only notice of where detailed info on substances was available for inspection need be posted. New MSDS could be posted for 30 days.

-- Lines 11-12. Several comments that all employees should receive MSDS info annually, that agents should be permitted to ask for information. One comment that info should be provided in native language.

-- Line 15. Training:
  -- Employers wanted to be able to utilize existing training programs to maximum extent possible.

  -- Several comments that training for all employees should be required annually.

  -- In line 18, delete the word "routinely" to ensure coverage of all circumstances.

-- After line 23, it was recommended to add an additional requirement to inform employees on where they can get additional information on substances.

-- Lines 24-27. Many comments received opposed 30-day grace period on supplying MSDS info to employees. Said too long to adequately protect worker. Some suggestions for shorter time (like 7 days), other for different approach like calling DOL for info and supplying verbal info. Business argued more for good faith effort including notification of DOL after 30 days if info not forthcoming from manufacturers.

Staff Comment

MSDS on most common hazardous and toxic substances are now readily available commercially in response to other state laws such as New York's, or on file now with the DOL. Use of DOL as clearinghouse for MSDS information would be very possible.

-- Lines 27-28. A recommendation was made to require employers give information on safety to employees when checking out equipment.

-- Page 3, lines 28-29, and Page 4, lines 1-2. A suggestion was made to insert the words "on request" for TA from DOL to employers.

-- Page 4, lines 1-2. A suggestion was made to require the DOL to monitor the training programs of employers.

Page 4, Line 3--Reports to be filed with DOL

-- Several comments were made on the overall needs for and objectives of this section's requirements. One set of comments felt that such reports to the DOL were needless paperwork. Others felt that information on only a few especially hazardous and toxic substances was needed to track use in the state. Others felt that only certain information, not all MSDS info, was necessary.

-- Some felt that there needed to be better clarification of which substances were to be required to be reported and how such a list compared with the list of substances provided for on page 1, first section. Also, timeframe needed for DOL to specify list.

-- Also, clarification is needed as to whether MSDS information is to be required or whether different or additional information is to be required.

-- Many commented that reports should be annual and that new info needs timeframe.

-- One comment was that only manufacturers and wholesalers should make reports.

Staff Comments

This section needs work and clarification based on what objectives are to be achieved. The list of substances required in Section 1 and the list required in this section and the informational requirements need to be reconciled.

Page 4, line 19--Access to Records

-- Several comments were made expressing concern on how trade secrets were to be protected and whether additional guidance was needed in the provision. Recommended new OSHA reg language be used.

-- Concern was expressed that information on exposure monitoring already required under existing OSHA regs was not covered in this bill. It was recommended that the additional access language contained in HB 197 be included.

Page 4-5, Sec. 4--Definitions

-- Page 5, line 15. It was recommended that terms such as "combustible" be defined per existing OSHA and ANSI standards.

-- Page 5, line 27-29. Several commentors felt NIOSH list should be eliminated and avoid any confusion that the entire list should or might be used.

-- Page 6, line 1. A comment was made to place more criteria on DOL's ability to add substances to the list by regulation. (The regulation authority which is referenced is section 1 of this bill, which does contain limitations.)

-- Page 6, lines 11 and 19. A recommendation was made to delete the exclusion for employers using primary residences.

-- Page 6, line 14. The references are in error.

-- Page 6, lines 19-21. Problems with multiple-employer job sites were pointed out, and it was recommended that employers be required to meet the provisions of the act for their employees regardless of their location.

Additions to Bill

-- There were several suggestions to add labeling requirements into the bill as contained in the original SB 79.

-- There was a suggestion to retain the anti-waiver provision in the original SB 79 regarding employees rights to information.

-- There was a request for a specific exemption from the bill for hospitals.

-- Intrastate transportation carriers expressed concern with the bill's requirements due to their unique circumstances of handling a variety of pre-packaged, pre-labeled substances which are not used, but only transferred from one carrier or mode of transportation to another.

[illegible] OF OSHA STANDARDS ACTIONS

Date: 3/1/83

Health

Project Name (Major Rule = *)	Initiation Date	Advance Notice Date (ANPRM)	Public Comments Due	Proposal Date (NPRM)**	Public Comments Due	Hearing Date	Close of Hearing Record	Final Rule Date**	Comments
Access to Employee Exposure and Medical Records - Revision	08/07/81	08/07/81	09/21/81	07/13/82	09/14/82	10/05/82	12/13/82	06/00/83	
Arsenic, Inorganic - Significant Risk Issues	04/00/81	N/A	N/A	04/09/82	06/08/82	07/13/82	09/03/82	01/14/83	
Asbestos - Revision	10/09/75	N/A	N/A						
Carcinogen Policy - Revision	01/20/80	01/05/82	04/05/82	03/00/83					
Coal Tar Pitch Volatiles Modification of Interpretive Rule	10/15/73	N/A	N/A	05/28/82	08/26/82	N/A	N/A	01/21/83	
*Cotton Dust - Revision	04/00/81	02/09/82	03/26/82	03/00/83					
- Stay for Knitting Industry	N/A	N/A	N/A	08/13/82	09/13/82	N/A	N/A	02/04/83	
*Engineering Controls vs Personal Protective Equipment	04/00/81	02/22/83	06/22/83						
*Ethylene Dibromide (EDB	09/21/81	12/18/81	05/31/82	06/00/83					
*Ethylene Oxide (EtO)	08/13/81	01/26/82	03/31/82	07/00/83					
Field Sanitation	07/16/82	03/01/83							
*Hazard Communication - Review	04/00/81	N/A	N/A	03/19/82	05/18/82	06/15/82	09/01/82	05/00/83	

(** Dates for publication in the Federal Register.)

[illegible] esa King
Associated General Contractors
134 N Franklin
Suite A
Juneau, AK 99801

U.S. Department of Labor

Occupational Safety and Health Administration
909 First Avenue
Seattle, Washington 98174

Reply to the Attention of:

March 1, 1983

Ms. Resa King
Association of General Contractors
134 N. Franklin
Juneau, Alaska 99801

Dear Ms. King:

In response to your current inquiries to my staff about the proposed Federal Hazard Communication Standard; Final Rule, 29 CFR 1910.1200, we have contacted the National Office, OSHA, for guidance. The Final Rule is expected to be published about July 1, 1983, provided there are no unexpected delays or court challenges. None are expected at this time.

The Hazard Communication Standard will require chemical manufacturers and importers to assess the hazards of the chemicals which they produce or import and make this information known. All employers in manufacturing (SIC 20-29) will be required to provide information to their employees about the hazardous chemicals. Distributors will be required to properly label containers of the hazardous chemicals.

The standard is under final review in the National Office. Major changes in text are not expected.

We are pleased to be of assistance.

Sincerely,

John A. Granchi
Assistant Regional Administrator
Office of Technical Support

cc: C. A. Mangold

U.S. Department of Labor

Assistant Secretary for
Occupational Safety and Health
Washington, D.C. 20210

APR 22 1982

MEMORANDUM FOR: STATE DESIGNEES
REGIONAL ADMINISTRATORS

FROM: THORNE G. AUCHTER
Assistant Secretary

SUBJECT: OSHA Policy on State Adoption of Standards Different from Federal Standards

As I have discussed with you on several occasions, strong concern has been raised about the cost and the impact of State adoption of standards that are different from comparable Federal standards. This concern is based primarily on four considerations:

1. When State standards differ from comparable Federal standards, employers who do business in more than one State are forced to keep track of and to comply with a variety of requirements. They indicate that this creates unnecessary burdens on their business.

2. The process of researching and developing standards is highly technical and the cost is enormous. The Federal standards development process provides full opportunity for parties in all States to participate, and OSHA is developing means for earlier and fuller State participation in the process. In this context, critics of different State standards argue that there is no clear need for States to duplicate this effort and expense, and that such duplication is particularly difficult to justify in a time of tight budgetary constraints.

3. States which develop their own standards typically take longer than the 6 months from promulgation of a Federal standard which is permitted by OSHA regulations. During this extended period, OSHA must enforce the Federal standard in the State. This responsibility requires OSHA to shift resources from other States and to modify its inspection targeting system to include plan States. Consequently OSHA must dilute enforcement in Federally-covered States. As a result, workers in all

the affected States receive less coverage. The harm from State delay in adopting standards becomes even greater after final approval of the State's program, because thereafter OSHA will not be able to enforce standards in the State pending the State's adoption.

4. Federal OSHA review of different State standards is time-consuming and costly. Combined with the extended promulgation period, the review time may result in a situation in which an approvable standard is not present in a State for a considerable period. Further, under existing OSHA regulations a State may enforce a different standard which it has promulgated, pending completion of OSHA's review. This can result in the State's replacing Federal enforcement with enforcement of a standard less effective than the Federal standard.

The Occupational Safety and Health Act and its legislative history indicate that States have authority under some circumstances to promulgate standards which differ from the Federal. However, such standards must meet certain tests. They must be at least as effective as any corresponding Federal standard and, where applicable to products used in interstate commerce, they must be based upon compelling local conditions and not be an undue burden on interstate commerce.

The requirements of the product standard limitation clause have never been completely defined by OSHA regulations or definitively construed in administrative or judicial proceedings. Recently, however, employer groups in two States have challenged State standards as invalid under this statutory provision. Increased industry awareness of this issue may lead to more challenges in the future. The product clause is potentially a very significant limitation on State standards which are more stringent than corresponding OSHA standards.

In the light of these considerations, several actions related to the issue of different State standards are under consideration.

Proposal 1: Review different State standards more closely in relation to section 18(c)(2), in conjunction with increased opportunity for comment on the impact of the limitation on

the standards by affected parties. This review would give more careful attention to the Congressional concern in section 18(c)(2) that different State standards not unduly burden interstate commerce.

Proposal 2: Revise OSHA regulations to require State adoption of standards identical to the Federal within one month of Federal promulgation, allowing development of a different standard only thereafter. At the same time, preclude enforcement of different State standards until they have been approved Federally while providing that identical State standards are deemed approved upon promulgation. This would eliminate the excessive time after promulgation of a Federal standard that an approvable State standard is not in effect.

Proposal 3: Exclude from State grants funding for development of different State standards. Such exclusion would require development of a formula for determining a reasonable cost for promulgation of standards identical to the Federal. It would eliminate Federal support for duplicate standard-setting processes. In addition, it would eliminate the inequity of funding the cost of promulgating different standards for a few States and thereby denying the use of those funds for other purposes by the States that adopt identical standards.

I want to encourage your careful attention to this issue. I hope that you will discuss it among yourselves and prepare to share your thoughts on these alternatives as well as any others which you may propose. In order to facilitate discussion, I will include the issue on the agenda for the State designees meeting in Williamsburg, Virginia, on May 17-18. Regional Administrators will discuss the issue at our meeting in Salt Lake City, Utah on June 9-11.

ment by the Field brothers has altered nor diminished our long-term plans for continued improvements in the newspaper and we remain as steadfast as ever in providing our readers with the best newspaper that talent and en-

ests."

Marshall Field noted that the family has owned newspapers in Chicago since 1941. The statement said the company "anticipates that The Chicago Sun-Times will be one of the assets offered for

pendent Press Service.

The syndicate, headquartered in Irvine, Calif., distributes columns, cartoons and features worldwide to more than 2,000 dailies and weeklies.

The news service was

Times.

• Field Electronic Publishing, established in 1981 to develop and test the first commercial teletext experiment approved by the Federal Communications Commission.

Bill asks employer's danger advice

By ROBERTA GRAHAM
Daily News business reporter

Gov. Bill Sheffield has said he strongly favors a bill that would require employers to advise workers of the presence of cancer-causing chemicals in the workplace and to label hazardous substance containers, according to Department of Labor Commissioner Jim Robinson.

Robinson, attending a forum Friday on safety and health in the workplace, announced Sheffield's endorsement of the Senate amended version the bill nicknamed the right-to-know legislation.

Robinson said the governor asked the labor department to take the lead in ensuring the bill is passed.

"He's asked us to lobby Anchorage and Kenai and Fairbanks legislators. He's asked us to push for the bill," Robinson said.

The legislation is currently being opposed by business, which prefers more lenient, proposed federal standards, and supported by labor and consumer groups.

It calls for a manufacturer or a wholesaler, when selling a hazardous or toxic substance, to provide the purchaser a list of those chemicals.

Under the bill, that information must then be posted in the workplace, such as the lunchroom or on an employee billboard. Additionally, it would require the employer, within 30 days, to provide the information to any worker.

Federal agenices have identified some 65,000 cancer-causing agents. But the bill would require the state labor department to draw up a list of only those chemicals used in Alaska. It specifically exempts foods, cosmetics, drugs, tobacco or substances used for personal consumption because most of these items already are regulated by federal statutes.

The employer would be required to train all employees as to the hazards of the chemicals, the potential long-term affects and how to properly handle them.

And, it would give an employee, who believes he has been exposed to toxic chemicals, access to corporate records.

The Senate Resources Committee has held several hearings on S.79 and recently has drafted a substitute bill — the version which the governor likes.

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THE FOLLOWING DOCUMENT(S) MAY NOT FILM LEGIBLY BECAUSE OF POOR QUALITY OF THE ORIGINAL.

FOR FIRE, EXPLOSION, AND REACTIVITY;

(IV) KNOWN ACUTE AND CHRONIC HEALTH EFFECTS OF EXPOSURE TO THE HAZARDOUS CHEMICAL, INCLUDING SIGNS AND SYMPTOMS OF EXPOSURE, AND ANY MEDICAL CONDITIONS WHICH ARE GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE TO THE CHEMICAL;

(V) THE PRIMARY ROUTE(S) OF ENTRY AND PERMISSIBLE EXPOSURE LIMIT (FOR THOSE HAZARDOUS CHEMICALS FOR WHICH OSHA HAS PROMULGATED A PERMISSIBLE EXPOSURE LIMIT), AS WELL AS THE ACGIH THRESHOLD LIMIT VALUE AND ANY OTHER AVAILABLE EXPOSURE LIMIT RECOMMENDATIONS;

(VI) ANY PRECAUTIONS FOR SAFE HANDLING AND USE WHICH ARE GENERALLY KNOWN TO THE CHEMICAL MANUFACTURER, IMPORTER OR EMPLOYER, INCLUDING APPROPRIATE HYGIENIC PRACTICES, PROTECTIVE MEASURES DURING REPAIR AND MAINTENANCE OF CONTAMINATED EQUIPMENT, AND PROCEDURES FOR CLEAN-UP OF SPILLS AND LEAKS;

(VII) ANY CONTROL MEASURES WHICH ARE GENERALLY KNOWN TO THE CHEMICAL MANUFACTURER, IMPORTER OR EMPLOYER, SUCH AS APPROPRIATE ENGINEERING CONTROLS, WORK PRACTICES, OR PERSONAL PROTECTIVE EQUIPMENT;

(VIII) EMERGENCY AND FIRST AID PROCEDURES;

(IX) THE DATE OF PREPARATION OF THE MATERIAL SAFETY DATA SHEET OR THE LAST CHANGE TO IT; AND

(X) THE NAME, ADDRESS AND TELEPHONE NUMBER OF THE MANUFACTURER OR OTHER RESPONSIBLE PARTY PREPARING OR DISTRIBUTING THE SHEET.

(3) WHERE COMPLEX MIXTURES IN A WORKPLACE HAVE SIMILAR CONTENTS AND HAZARDS, BUT VARY IN SPECIFIC COMPOSITIONS, THE IMPORTER OR EMPLOYER MAY PREPARE ONE MATERIAL SAFETY DATA SHEET TO APPLY TO ALL OF THESE SIMILAR MIXTURES.

(4) IF NO INFORMATION IS FOUND FOR ANY GIVEN CATEGORY ON THE MATERIAL SAFETY DATA SHEET, THE IMPORTER OR EMPLOYER SHALL MARK IT TO INDICATE NO INFORMATION WAS FOUND.

(5) THE CHEMICAL MANUFACTURER, IMPORTER OR EMPLOYER SHALL ENSURE THAT THE INFORMATION ON THE MATERIAL SAFETY DATA SHEET ACCURATELY REFLECTS THE AVAILABLE SCIENTIFICALLY WELL-ESTABLISHED DATA REGARDING THE HAZARDOUS CHEMICAL. IF THE CHEMICAL MANUFACTURER, IMPORTER OR EMPLOYER BECOMES AWARE OF ANY INFORMATION WHICH IS BOTH NEW AND SIGNIFICANT REGARDING THE HEALTH HAZARD OF A CHEMICAL, THIS SHALL BE ADDED TO THE MATERIAL SAFETY DATA SHEET WITHIN THREE MONTHS. IF THE CHEMICAL IS NOT CURRENTLY BEING PRODUCED OR IMPORTED THE CHEMICAL MANUFACTURER OR IMPORTER SHALL ADD THE INFORMATION TO THE MATERIAL SAFETY DATA SHEET BEFORE THE CHEMICAL IS INTRODUCED INTO THE WORKPLACE AGAIN.

(6) CHEMICAL MANUFACTURERS OR IMPORTERS SHALL ENSURE THAT MANUFACTURING PURCHASERS OF HAZARDOUS CHEMICALS ARE PROVIDED AN APPROPRIATE MATERIAL SAFETY DATA SHEET WITH THEIR INITIAL SHIPMENT, AND WITH THE FIRST SHIPMENT AFTER A MATERIAL SAFETY DATA SHEET IS UPDATED. IN LIEU OF PHYSICALLY ATTACHING MATERIAL SAFETY DATA SHEETS TO CONTAINERS SHIPPED, THE CHEMICAL MANUFACTURER OR IMPORTER MAY MAIL THEM TO THE MANUFACTURING PURCHASER AT THE TIME OF THE SHIPMENT. IF THE MATERIAL SAFETY DATA SHEET IS NOT PROVIDED WITH THE SHIPMENT, THE MANUFACTURING PURCHASER SHALL OBTAIN ONE FROM THE CHEMICAL MANUFACTURER OR IMPORTER AS SOON AS POSSIBLE.

(7) DISTRIBUTORS SHALL ENSURE THAT MATERIAL SAFETY DATA SHEETS ARE PROVIDED TO MANUFACTURING PURCHASERS OF HAZARDOUS CHEMICALS.

(8) THE EMPLOYER SHALL MAINTAIN COPIES OF THE REQUIRED MATERIAL SAFETY DATA SHEETS FOR EACH HAZARDOUS CHEMICAL IN THE WORKPLACE, AND SHALL ENSURE THAT THEY ARE READILY ACCESSIBLE TO EMPLOYEES IN EACH WORK AREA.

(9) EMPLOYERS MAY USE PROCESS SHEETS, OPERATING PROCEDURES OR OTHER SUCH WRITTEN MATERIALS AS ALTERNATIVES TO MATERIAL SAFETY DATA SHEETS WITHIN THEIR PLANTS, AS LONG AS THE ALTERNATIVE INCLUDES ALL OF THE INFORMATION REQUIRED ON THE MATERIAL SAFETY DATA SHEET, AND IS READILY ACCESSIBLE TO EMPLOYEES IN EACH WORK AREA. THESE ALTERNATIVES MAY ALSO BE USED TO COVER GROUPS OF HAZARDOUS CHEMICALS IN A WORK AREA WHERE IT MAY BE MORE APPROPRIATE TO ADDRESS THE HAZARDS OF A PROCESS RATHER THAN INDIVIDUAL HAZARDOUS CHEMICALS. HOWEVER, THE EMPLOYER SHALL ENSURE THAT IN ALL CASES THE REQUIRED INFORMATION IS PROVIDED FOR EACH HAZARDOUS CHEMICAL INVOLVED, AND IS READILY ACCESSIBLE TO EMPLOYEES IN THE WORK AREA.

(10) MATERIAL SAFETY DATA SHEETS SHALL BE MADE AVAILABLE TO EMPLOYEES AND THEIR DESIGNATED REPRESENTATIVES, AND UPON REQUEST, TO THE ASSISTANT SECRETARY

SECTIONS 6(B) AND 8(G) OF THE ACT, 29 CFR IS HEREBY AMENDED BY ADDING A NEW SECTION 1910.1200 AS SET FORTH BELOW.

LIST OF SUBJECTS IN 29 CFR PART 1910

OCCUPATIONAL SAFETY AND HEALTH, HAZARD COMMUNICATION.

(SEC. 6(B), 8(C), AND 8(G). PUB. L. 91-596, 84 STAT. 1593, 1599, 1600; 19 U.S.C., 655, 657; 29 CFR PART 1911; SECRETARY OF LABOR'S ORDER NO. 8-76 (41 FR 25059))

PART 1910 OF TITLE 29 OF THE CODE OF FEDERAL REGULATIONS (CFR) IS HEREBY AMENDED BY ADDING A NEW SECTION WHICH READS AS FOLLOWS:

1910.1200 HAZARD COMMUNICATION.

(A) PURPOSE. THE PURPOSE OF THIS SECTION IS TO ENSURE THAT THE HAZARDS OF ALL CHEMICALS PRODUCED, IMPORTED, OR USED WITHIN THE MANUFACTURING SECTOR ARE EVALUATED, AND THAT INFORMATION CONCERNING THESE HAZARDS IS TRANSMITTED TO AFFECTED EMPLOYERS AND EMPLOYEES. THIS TRANSMITTAL OF INFORMATION IS TO BE ACCOMPLISHED BY MEANS OF COMPREHENSIVE HAZARD COMMUNICATION PROGRAMS, WHICH ARE TO INCLUDE CONTAINER LABELING, MATERIAL SAFETY DATA SHEETS AND EMPLOYEE TRAINING.

THIS OCCUPATIONAL SAFETY AND HEALTH STANDARD IS INTENDED TO OCCUPY THE FIELD IN TERMS OF COMMUNICATING HAZARDS TO EMPLOYEES IN THE MANUFACTURING SECTOR. ANY STATE WHICH DESIRES TO ASSUME RESPONSIBILITY IN THIS AREA MAY ONLY DO SO UNDER THE PROVISIONS OF 18(B) OF THE OCCUPATIONAL SAFETY AND HEALTH ACT (P.L. 91-596, 84 STAT. 1608) WHICH DEALS WITH STATE PLANS.

(B) SCOPE AND APPLICATION. (1) THIS SECTION REQUIRES CHEMICAL MANUFACTURERS OR IMPORTERS TO ASSESS THE HAZARDS OF CHEMICALS WHICH THEY PRODUCE OR IMPORT, AND ALL EMPLOYERS IN SIC CODES 20 THROUGH 39 (DIVISION D, STANDARD INDUSTRIAL CLASSIFICATION MANUAL) TO PROVIDE INFORMATION TO THEIR EMPLOYEES ABOUT THE HAZARDOUS CHEMICALS WHICH THEY USE, BY MEANS OF A HAZARD COMMUNICATION PROGRAM LABELS, PLACARDS, MATERIAL SAFETY DATA SHEETS, AND INFORMATION AND TRAINING. IN ADDITION, THIS SECTION REQUIRES DISTRIBUTORS TO TRANSMIT THE REQUIRED INFORMATION TO MANUFACTURING PURCHASERS.

(2) THIS SECTION APPLIES TO ANY CHEMICAL WHICH IS KNOWN TO BE PRESENT IN THE WORKPLACE IN SUCH A MANNER THAT EMPLOYEES MAY BE EXPOSED UNDER NORMAL CONDITIONS OF USE OR IN A FORESEEABLE EMERGENCY.

(3) THIS SECTION APPLIES TO LABORATORIES AS FOLLOWS:

(I) EMPLOYERS SHALL ENSURE THAT EXISTING LABELS ON INCOMING CONTAINERS OF HAZARDOUS CHEMICALS ARE NOT REMOVED OR DEFACED;

(II) EMPLOYERS SHALL MAINTAIN ANY MATERIAL SAFETY DATA SHEETS THAT ARE RECEIVED WITH INCOMING SHIPMENTS OF HAZARDOUS CHEMICALS, AND ENSURE THEY ARE ACCESSIBLE TO LABORATORY EMPLOYEES;

(III) EMPLOYERS SHALL ENSURE THAT LABORATORY EMPLOYEES ARE APPRISED OF THE HAZARDS OF THE CHEMICALS IN THEIR WORKPLACES IN ACCORDANCE WITH PARAGRAPH (H) OF THIS SECTION; AND

(IV) EMPLOYERS NEED NOT IMPLEMENT ANY OTHER PROVISIONS OF THIS SECTION IN THEIR LABORATORIES.

(4) THIS SECTION DOES NOT APPLY TO CHEMICALS WHICH ARE FOODS, DRUGS, COSMETICS, OR TOBACCO PRODUCTS INTENDED FOR PERSONAL CONSUMPTION BY EMPLOYEES WHILE IN THE WORKPLACE.

(5) THIS SECTION DOES NOT APPLY TO:

(I) ANY HAZARDOUS WASTE AS SUCH TERM IS DEFINED BY THE SOLID WASTE DISPOSAL ACT, AS AMENDED BY THE RESOURCE CONSERVATION AND RECOVERY ACT OF 1976, AS AMENDED (42 U.S.C. 6901 ET SEQ.), WHEN SUBJECT TO THE LABELING REQUIREMENTS OF THAT ACT AND REGULATIONS ISSUED UNDER THAT ACT BY THE ENVIRONMENTAL PROTECTION AGENCY;

(II) ANY PESTICIDE AS SUCH TERM IS DEFINED IN THE FEDERAL INSECTICIDE, FUNGICIDE, AND RODENTICIDE ACT (7 U.S.C. 136 ET SEQ.), WHEN SUBJECT TO THE LABELING REQUIREMENTS OF THAT ACT AND REGULATIONS ISSUED UNDER THAT ACT BY THE ENVIRONMENTAL PROTECTION AGENCY;

(III) ANY FOOD, FOOD ADDITIVE, DRUG, OR COSMETIC, (E.G., FLAVORS AND FRAGRANCES), AS SUCH TERMS ARE DEFINED IN THE FEDERAL FOOD, DRUG, AND COSMETIC ACT (21 U.S.C. 301 ET SEQ.) AND REGULATIONS ISSUED UNDER THAT ACT,

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FORESEEABLE EMERGENCIES;

(IV) ANY DISTILLED SPIRITS, WINE, OR MALT BEVERAGE AS SUCH TERMS ARE DEFINED IN THE FEDERAL ALCOHOL ADMINISTRATION ACT (27 U.S.C. 201 ET SEQ.) AND REGULATIONS ISSUED UNDER THAT ACT;

(V) ANY CONSUMER PRODUCT OR HAZARDOUS SUBSTANCE AS THOSE TERMS ARE DEFINED IN THE CONSUMER PRODUCT SAFETY ACT (15 U.S.C. 2051 ET SEQ.) AND FEDERAL HAZARDOUS SUBSTANCES ACT (15 U.S.C. 1261 ET SEQ.) RESPECTIVELY, WHEN SUBJECT TO A CONSUMER PRODUCT SAFETY STANDARD OR LABELING REQUIREMENT OF THOSE ACTS, OR REGULATIONS ISSUED UNDER THOSE ACTS BY THE CONSUMER PRODUCT SAFETY COMMISSION, AND WHEN PRESENT IN QUANTITIES OR CONCENTRATIONS WHICH ARE NOT HAZARDOUS TO EMPLOYEES UNDER CONDITIONS OF NORMAL EXPOSURE OR USE, INCLUDING FORESEEABLE EMERGENCIES;

(VI) TOBACCO OR TOBACCO PRODUCTS;

(VII) WOOD OR WOOD PRODUCTS (INCLUDING PRESERVED WOOD); AND

(VIII) ANY ARTICLE.

(C) DEFINITIONS.

/ARTICLE/ MEANS A MANUFACTURED ITEM (I) WHICH IS FORMED TO A SPECIFIC SHAPE OR DESIGN DURING MANUFACTURE, (II) WHICH HAS END USE FUNCTION(S) DEPENDENT IN WHOLE OR IN PART UPON ITS SHAPE OR DESIGN DURING END USE, AND (III) WHICH DOES NOT RELEASE, OR OTHERWISE RESULT IN EXPOSURE TO, A HAZARDOUS CHEMICAL UNDER NORMAL CONDITIONS OF USE.

/ASSISTANT SECRETARY/ MEANS THE ASSISTANT SECRETARY OF LABOR FOR OCCUPATIONAL SAFETY AND HEALTH, U.S. DEPARTMENT OF LABOR, OR DESIGNEE.

/CHEMICAL/ MEANS ANY ELEMENT, CHEMICAL COMPOUND OR MIXTURE OF ELEMENTS AND/OR COMPOUNDS.

/CHEMICAL MANUFACTURER/ IS AN EMPLOYER IN SIC CODES 20 THROUGH 39 WITH A FACILITY WHERE CHEMICAL(S) ARE PRODUCED OR PROCESSED FOR USE OR DISTRIBUTION.

/CHEMICAL NAME/ IS THE SCIENTIFIC DESIGNATION OF A CHEMICAL IN ACCORDANCE WITH THE NOMENCLATURE SYSTEM DEVELOPED BY THE INTERNATIONAL UNION OF PURE AND APPLIED CHEMISTRY (IUPAC) OR THE CHEMICAL ABSTRACTS SERVICE (CAS) RULES OF NOMENCLATURE, OR A NAME WHICH WILL CLEARLY IDENTIFY THE CHEMICAL FOR HAZARD EVALUATION PURPOSES.

/COMBUSTIBLE LIQUID/ MEANS ANY LIQUID HAVING A FLASHPOINT AT OR ABOVE 100 DEGREES FAHRENHEIT (37.8 DEGREES CENTIGRADE), BUT BELOW 200 DEGREES FAHRENHEIT (93.3 DEGREES CENTIGRADE), EXCEPT ANY MIXTURE HAVING COMPONENTS WITH FLASHPOINTS OF 200 DEGREES FAHRENHEIT (93.3 DEGREES CENTIGRADE), OR HIGHER, THE TOTAL VOLUME OF WHICH MAKE UP 99 PERCENT OR MORE OF THE TOTAL VOLUME OF THE MIXTURE.

/COMMON NAME/ MEANS ANY DESIGNATION OR IDENTIFICATION SUCH AS CODE NAME, CODE NUMBER, TRADE NAME, BRAND NAME OR GENERIC NAME USED TO IDENTIFY A CHEMICAL OTHER THAN BY ITS CHEMICAL NAME.

/COMPRESSED GAS/ MEANS:

(I) A GAS OR MIXTURE OF GASES HAVING, IN A CONTAINER, AN ABSOLUTE PRESSURE EXCEEDING 40 PSI AT 70 DEGREES FAHRENHEIT (21.1 DEGREES CENTIGRADE); OR

(II) A GAS OR MIXTURE OF GASES HAVING, IN A CONTAINER, AN ABSOLUTE PRESSURE EXCEEDING 104 PSI AT 130 DEGREES FAHRENHEIT (54.4 DEGREES CENTIGRADE) REGARDLESS OF THE PRESSURE AT 70 DEGREES FAHRENHEIT (21.1 DEGREES CENTIGRADE); OR

(III) A LIQUID HAVING A VAPOR PRESSURE EXCEEDING 40 PSI AT 100 DEGREES FAHRENHEIT (37.8 DEGREES CENTIGRADE) AS DETERMINED BY ASTM D-323-72.

/CONTAINER/ MEANS ANY BAG, BARREL, BOTTLE, BOX, CAN, CYLINDER, DRUM, REACTION VESSEL, STORAGE TANK, OR THE LIKE THAT CONTAINS A HAZARDOUS CHEMICAL. FOR PURPOSES OF THIS SECTION, PIPES OR PIPING SYSTEMS ARE NOT CONSIDERED TO BE CONTAINERS.

/DESIGNATED REPRESENTATIVE/ MEANS ANY INDIVIDUAL OR ORGANIZATION TO WHOM AN EMPLOYEE OR FORMER EMPLOYEE GIVES WRITTEN AUTHORIZATION TO EXERCISE SUCH EMPLOYEE'S RIGHTS UNDER THIS SECTION. A RECOGNIZED OR CERTIFIED COLLECTIVE BARGAINING AGENT SHALL BE TREATED AUTOMATICALLY AS A DESIGNATED REPRESENTATIVE WITHOUT REGARD TO WRITTEN EMPLOYEE AUTHORIZATION.

/DIRECTOR/ MEANS THE DIRECTOR, NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH, U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, OR DESIGNEE.

/DISTRIBUTOR/ MEANS A BUSINESS WHICH SUPPLIES OR SELLS CONTAINERS OF HAZARDOUS

OR FORESEEABLE EMERGENCIES TO HAZARDOUS CHEMICALS IN A WORKPLACE IN SIC CODES 20 THROUGH 39, INCLUDING, BUT NOT LIMITED TO PRODUCTION WORKERS, LINE SUPERVISORS, AND REPAIR OR MAINTENANCE PERSONNEL. OFFICE WORKERS, GROUNDS MAINTENANCE PERSONNEL, SECURITY PERSONNEL OR NON-RESIDENT MANAGEMENT ARE GENERALLY NOT INCLUDED, UNLESS THEIR JOB PERFORMANCE ROUTINELY INVOLVES POTENTIAL EXPOSURE TO HAZARDOUS CHEMICALS.

/EMPLOYER/ MEANS A PERSON ENGAGED IN A BUSINESS WITHIN SIC CODES 20 THROUGH 39 WHERE CHEMICALS ARE EITHER USED, OR ARE PRODUCED OR PROCESSED FOR USE OR DISTRIBUTION.

/EXPLOSIVE/ MEANS A CHEMICAL THAT CAUSES A SUDDEN, ALMOST INSTANTANEOUS RELEASE OF PRESSURE, GAS, AND HEAT WHEN SUBJECTED TO SUDDEN SHOCK, PRESSURE, OR HIGH TEMPERATURE.

/EXPOSURE/ OR /EXPOSED/ MEANS THAT AN EMPLOYEE IS SUBJECTED TO A HAZARDOUS CHEMICAL IN THE COURSE OF EMPLOYMENT THROUGH ANY ROUTE OF ENTRY (INHALATION, INGESTION, SKIN CONTACT OR ABSORPTION, ETC.), AND INCLUDES PAST EXPOSURE AND POTENTIAL (E.G., ACCIDENTAL OR POSSIBLE) EXPOSURE.

/FLAMMABLE/ MEANS A CHEMICAL THAT FALLS INTO ONE OF THE FOLLOWING CATEGORIES:

(I) /AEROSOL, FLAMMABLE/ MEANS AN AEROSOL THAT, WHEN TESTED BY THE METHOD DESCRIBED IN 16 CFR 1500.45, YIELDS A FLAME PROJECTION EXCEEDING 18 INCHES AT FULL VALVE OPENING, OR A FLASHBACK (A FLAME EXTENDING BACK TO THE VALVE) AT ANY DEGREE OF VALVE OPENING;

(II) /GAS, FLAMMABLE/ MEANS:

(A) A GAS THAT, AT AMBIENT TEMPERATURE AND PRESSURE, FORMS A FLAMMABLE MIXTURE WITH AIR AT A CONCENTRATION OF THIRTEEN (13) PERCENT BY VOLUME OR LESS; OR

(B) A GAS THAT, AT AMBIENT TEMPERATURE AND PRESSURE, FORMS A RANGE OF FLAMMABLE MIXTURES WITH AIR WIDER THAN TWELVE (12) PERCENT BY VOLUME, REGARDLESS OF THE LOWER LIMIT;

(III) /LIQUID, FLAMMABLE/ MEANS ANY LIQUID HAVING A FLASHPOINT BELOW 100 DEGREES FAHRENHEIT (37.8 DEGREES CENTIGRADE), EXCEPT ANY MIXTURE HAVING COMPONENTS WITH FLASHPOINTS OF 100 DEGREES FAHRENHEIT (37.8 DEGREES CENTIGRADE) OR HIGHER, THE TOTAL OF WHICH MAKE UP 99 PERCENT OR MORE OF THE TOTAL VOLUME OF THE MIXTURE.

(IV) /SOLID, FLAMMABLE/ MEANS A SOLID, OTHER THAN A BLASTING AGENT OR EXPLOSIVE AS DEFINED IN 1910.109(A), THAT IS LIABLE TO CAUSE FIRE THROUGH FRICTION, ABSORPTION OF MOISTURE, SPONTANEOUS CHEMICAL CHANGE, OR RETAINED HEAT FROM MANUFACTURING OR PROCESSING, OR WHICH CAN BE IGNITED READILY AND WHEN IGNITED BURNS SO VIGOROUSLY AND PERSISTENTLY AS TO CREATE A SERIOUS HAZARD. A CHEMICAL SHALL BE CONSIDERED TO BE A FLAMMABLE SOLID IF, WHEN TESTED BY THE METHOD DESCRIBED IN 16 CFR 1500.44, IT IGNITES AND BURNS WITH A SELF-SUSTAINED FLAME AT A RATE GREATER THAN ONE-TENTH OF AN INCH PER SECOND ALONG ITS MAJOR AXIS.

/FLASHPOINT/ MEANS THE MINIMUM TEMPERATURE AT WHICH A LIQUID GIVES OFF A VAPOR IN SUFFICIENT CONCENTRATION TO IGNITE WHEN TESTED AS FOLLOWS:

(I) TAGLIABUE CLOSED TESTER (SEE AMERICAN NATIONAL STANDARD METHOD OF TEST FOR FLASH POINT BY TAG CLOSED TESTER, Z11.24-1979 (ASTM D 56-79))-FOR LIQUIDS WITH A VISCOSITY OF LESS THAN 45 SAYBOLT UNIVERSAL SECONDS (SUS) AT 100 DEGREES FAHRENHEIT (37.8 DEGREES CENTIGRADE), THAT DO NOT CONTAIN SUSPENDED SOLIDS AND DO NOT HAVE A TENDENCY TO FORM A SURFACE FILM UNDER TEST; OR

(II) PENSKY-MARTENS CLOSED TESTER (SEE AMERICAN NATIONAL STANDARD METHOD OF TEST FOR FLASH POINT BY PENSKY-MARTENS CLOSED TEST, Z11.7-1979 (ASTM D 93-79))-FOR LIQUIDS WITH A VISCOSITY EQUAL TO OR GREATER THAN 45 SUS AT 100 DEGREES FAHRENHEIT (37.8 DEGREES CENTIGRADE), OR THAT CONTAIN SUSPENDED SOLIDS, OR THAT HAVE A TENDENCY TO FORM A SURFACE-FILM UNDER TEST; OR

(III) SETAFLASH CLOSED TESTER (SEE AMERICAN NATIONAL STANDARD METHOD OF TEST FOR FLASH POINT BY SETAFLASH CLOSED TESTER (ASTM D 3278-78)).

ORGANIC PEROXIDES, WHICH UNDERGO AUTOACCELERATING THERMAL DECOMPOSITION, ARE EXCLUDED FROM ANY OF THE FLASHPOINT DETERMINATION METHODS SPECIFIED ABOVE.

/FORESEEABLE EMERGENCY/ MEANS ANY POTENTIAL OCCURRENCE SUCH AS, BUT NOT LIMITED TO, EQUIPMENT FAILURE, RUPTURE OF CONTAINERS, OR FAILURE OF CONTROL EQUIPMENT WHICH MAY OR DOES RESULT IN AN UNCONTROLLED RELEASE OF A HAZARDOUS CHEMICAL INTO THE WORKPLACE.

/HAZARDOUS CHEMICAL/ MEANS ANY CHEMICAL WHICH IS A CORROSIVE LIQUID, A

/EXPLOSIVE/ MEANS UNSTABLE REACTIVE OR WATER-REACTIVE.
/HAZARD WARNING/ MEANS ANY WORDS, PICTURES, SYMBOLS, OR COMBINATION THEREOF APPEARING ON A LABEL WHICH INSTRUCT EMPLOYEES AS TO IMMEDIATE ACTION THEY SHOULD TAKE FOR THEIR OWN PROTECTION.
/HEALTH HAZARD/ MEANS A CHEMICAL WHICH, UPON EXPOSURE, MAY RESULT IN THE OCCURRENCE OF ACUTE OR CHRONIC HEALTH EFFECTS IN EMPLOYEES. THE TERM /HEALTH HAZARD/ INCLUDES CHEMICALS WHICH ARE CARCINOGENS, REPRODUCTIVE TOXINS, IRRITANTS, CORROSIVES, SENSITIZERS, HEPATOTOXINS, NEPHROTOXINS, NEUROTOXINS, AGENTS WHICH ACT ON THE HEMATOPOIETIC SYSTEM, AGENTS WHICH DAMAGE THE LUNG, CUTANEOUS HAZARDS OR EYE HAZARDS. APPENDIX A PROVIDES FURTHER DEFINITIONS AND EXPLANATIONS OF THE SCOPE OF HEALTH HAZARDS COVERED BY THIS SECTION.
/IDENTITY/ MEANS ANY CHEMICAL OR COMMON NAME WHICH IS INDICATED ON THE MATERIAL SAFETY DATA SHEET (MSDS) FOR THE CHEMICAL. THE IDENTITY USED SHALL PERMIT CROSS-REFERENCES TO BE MADE AMONG THE REQUIRED LIST OF HAZARDOUS CHEMICALS, THE LABEL AND THE MSDS.
/IMMEDIATE USE/ MEANS THAT THE HAZARDOUS CHEMICAL WILL BE UNDER THE CONTROL OF AND USED ONLY BY THE PERSON WHO OBTAINED IT AND ONLY WITHIN THE WORK SHIFT IN WHICH IT IS OBTAINED.
/IMPORTER/ MEANS THE FIRST BUSINESS WITH EMPLOYEES WITHIN THE CUSTOMS TERRITORY OF THE UNITED STATES, WHICH HANDLES CONTAINERS OF HAZARDOUS CHEMICALS PRODUCED IN OTHER COUNTRIES AND INTENDED FOR SALE AND DISTRIBUTION TO MANUFACTURING PURCHASERS WITHIN THE UNITED STATES.
/LABEL/ MEANS WRITTEN, PRINTED, OR GRAPHIC MATERIAL DISPLAYED ON OR AFFIXED TO CONTAINERS OF HAZARDOUS CHEMICALS.
/MANUFACTURING PURCHASER/ MEANS AN EMPLOYER WITH A FACILITY CLASSIFIED IN SIC CODES 20 THROUGH 39 WHO PURCHASES A HAZARDOUS CHEMICAL FOR USE WITHIN THAT FACILITY.
/MATERIAL SAFETY DATA SHEET (MSDS)/ MEANS PRINTED MATERIAL CONCERNING A HAZARDOUS CHEMICAL WHICH IS PREPARED IN ACCORDANCE WITH PARAGRAPH (G) OF THIS SECTION.
/MIXTURE/ MEANS ANY COMBINATION OF TWO OR MORE CHEMICALS IF THE COMBINATION IS NOT, IN WHOLE OR IN PART, THE RESULT OF A CHEMICAL REACTION.
/ORGANIC PEROXIDE/ MEANS AN ORGANIC COMPOUND THAT CONTAINS THE BIVALENT -O-O- STRUCTURE AND WHICH MAY BE CONSIDERED TO BE A STRUCTURAL DERIVATIVE OF HYDROGEN PEROXIDE WHERE ONE OR BOTH OF THE HYDROGEN ATOMS HAS BEEN REPLACED BY AN ORGANIC RADICAL.
/OXIDIZER/ MEANS A CHEMICAL OTHER THAN A BLASTING AGENT OR EXPLOSIVE AS DEFINED IN 1910.109(A), THAT INITIATES OR PROMOTES COMBUSTION IN OTHER MATERIALS, THEREBY CAUSING FIRE EITHER OF ITSELF OR THROUGH THE RELEASE OF OXYGEN OR OTHER GASES.
/PYROPHORIC/ MEANS A CHEMICAL THAT WILL IGNITE SPONTANEOUSLY IN AIR AT A TEMPERATURE OF 130 DEGREES FAHRENHEIT (54.4 DEGREES CENTIGRADE) OR BELOW.
/TRADE SECRET/ MEANS ANY FORMULA, PATTERN, PROCESS, DEVICE, INFORMATION OR COMPILATION OF INFORMATION (INCLUDING CHEMICAL NAME OR OTHER UNIQUE CHEMICAL IDENTIFIER) THAT IS USED IN AN EMPLOYER'S BUSINESS, AND THAT GIVES THE EMPLOYER AN OPPORTUNITY TO OBTAIN AN ADVANTAGE OVER COMPETITORS WHO DO NOT KNOW OR USE IT.
/UNSTABLE (REACTIVE)/ MEANS A CHEMICAL WHICH IN THE PURE STATE, OR AS PRODUCED OR TRANSPORTED, WILL VIGOROUSLY POLYMERIZE, DECOMPOSE, CONDENSE, OR WILL BECOME SELF-REACTIVE UNDER CONDITIONS OF SHOCKS, PRESSURE OR TEMPERATURE.
/USE/ MEANS HANDLE, REACT, PROCESS, PACKAGE OR REPACKAGE, OR TRANSPORT (OTHER THAN THAT TRANSPORTATION UNDER THE JURISDICTION OF THE U.S. DEPARTMENT OF TRANSPORTATION, E.G., WITHIN A PLANT).
/WATER-REACTIVE/ MEANS A CHEMICAL THAT REACTS WITH WATER TO RELEASE A GAS THAT IS EITHER FLAMMABLE OR PRESENTS A HEALTH HAZARD.
/WORK AREA/ MEANS A ROOM OR DEFINED SPACE IN AN ESTABLISHMENT WHERE HAZARDOUS CHEMICALS ARE PRODUCED OR USED, AND WHERE EMPLOYEES ARE PRESENT.
/WORKPLACE/ MEANS AN ESTABLISHMENT AT ONE GEOGRAPHICAL LOCATION CONTAINING ONE OR MORE WORK AREAS.
(D) HAZARD DETERMINATION. (1) CHEMICAL MANUFACTURERS AND IMPORTERS SHALL EVALUATE CHEMICALS PRODUCED IN OR IMPORTED INTO THEIR WORKPLACES TO DETERMINE IF THEY ARE HAZARDOUS. EMPLOYERS MAY RELY ON THE EVALUATION PERFORMED BY THE

(2) CHEMICAL MANUFACTURERS, IMPORTERS OR EMPLOYERS EVALUATING CHEMICALS SHALL ENSURE THAT THEY HAVE THOROUGHLY CONSIDERED THE AVAILABLE SCIENTIFICALLY WELL-ESTABLISHED EVIDENCE IN MAKING THEIR HAZARD DETERMINATIONS. THE CHEMICAL MANUFACTURER OR EMPLOYER SHALL ENSURE THAT THE CHEMICAL IS EVALUATED FOR ITS POTENTIAL TO PRESENT ANY OF THE PHYSICAL OR HEALTH HAZARDS COVERED BY THIS SECTION, AND ENUMERATED IN THE DEFINITION FOR A HAZARDOUS CHEMICAL. APPENDIXES A AND B ARE MANDATORY, AND ARE TO BE CONSULTED TO IDENTIFY THE SCOPE OF HEALTH HAZARDS COVERED AND THE COMPLETENESS OF EVALUATION EXPECTED.

(3) THE CHEMICAL MANUFACTURER, IMPORTER OR EMPLOYER SHALL TREAT CHEMICALS LISTED IN THE FOLLOWING SOURCES AS BEING HAZARDOUS WHENEVER THEY ARE PRESENT IN THE WORKPLACE:

(I) 29 CFR PART 1910, SUBPART Z, TOXIC AND HAZARDOUS SUBSTANCES, /GENERAL INDUSTRY STANDARDS/, OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION; AND

(II) /THRESHOLD LIMIT VALUES FOR CHEMICAL SUBSTANCES AND PHYSICAL AGENTS IN THE WORK ENVIRONMENT/, AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS (LATEST EDITION).

THE CHEMICAL MANUFACTURER, IMPORTER, OR EMPLOYER IS STILL RESPONSIBLE FOR EVALUATING THE SPECIFIC HAZARDS ASSOCIATED WITH THE CHEMICALS IN THESE SOURCE LISTS.

(4) CHEMICAL MANUFACTURERS AND IMPORTERS SHALL INFORM DOWNSTREAM EMPLOYERS WHEN A CHEMICAL HAS BEEN IDENTIFIED AS A CARCINOGEN IN ONE OF THE FOLLOWING SOURCES:

(I) NATIONAL TOXICOLOGY PROGRAM (NTP), /ANNUAL REPORT ON CARCINOGENS/ (LATEST EDITION); OR

(II) INTERNATIONAL AGENCY FOR RESEARCH ON CANCER (IARC) /MONOGRAPHS/ (LATEST EDITIONS).

CHEMICAL MANUFACTURERS, IMPORTERS AND EMPLOYERS SHALL NOTE THIS INFORMATION ON THE MATERIAL SAFETY DATA SHEET FOR THE CHEMICAL PREPARED IN ACCORDANCE WITH PARAGRAPH (G) OF THIS SECTION.

(5) THE HAZARDS OF MIXTURES OF CHEMICALS SHALL BE DETERMINED AS FOLLOWS:

(I) IF A MIXTURE HAS BEEN TESTED AS A WHOLE TO DETERMINE ITS HAZARDS, THE RESULTS OF SUCH TESTING SHALL BE USED TO DETERMINE WHETHER THE MIXTURE IS HAZARDOUS;

(II) IF A MIXTURE HAS NOT BEEN TESTED AS A WHOLE TO DETERMINE WHETHER THE MIXTURE IS A HEALTH HAZARD, THE MIXTURE WILL BE ASSUMED TO HAVE THE SAME HEALTH HAZARDS AS DO THE COMPONENTS WHICH COMPRISE ONE PERCENT (BY WEIGHT OR VOLUME) OR GREATER OF THE COMPOSITION, EXCEPT THAT CHEMICALS IDENTIFIED AS CARCINOGENS UNDER PARAGRAPH (D)(4) ABOVE WILL BE IDENTIFIED WHEN PRESENT IN CONCENTRATIONS OF 0.1 PERCENT OR GREATER;

(III) IF MIXTURE HAS NOT BEEN TESTED AS A WHOLE TO DETERMINE WHETHER THE MIXTURE IS A PHYSICAL HAZARD (E.G., FLAMMABLE), THE CHEMICAL MANUFACTURER, IMPORTER, OR EMPLOYER MAY USE WHATEVER SCIENTIFICALLY VALID DATA IS AVAILABLE TO EVALUATE THE PHYSICAL HAZARD POTENTIAL OF THE MIXTURE; AND

(IV) IF THE EMPLOYER HAS EVIDENCE TO INDICATE THAT A COMPONENT PRESENT IN THE MIXTURE IN CONCENTRATIONS OF LESS THAN ONE PERCENT COULD BE RELEASED IN CONCENTRATIONS WHICH WOULD EXCEED AN ESTABLISHED PERMISSIBLE EXPOSURE LIMIT OR THRESHOLD LIMIT VALUE, OR COULD BE HAZARDOUS TO EMPLOYEES IN THOSE CONCENTRATIONS, THAT COMPONENT SHALL BE IDENTIFIED.

(E) WRITTEN HAZARD COMMUNICATION PROGRAM.

(1) EMPLOYERS SHALL DEVELOP AND IMPLEMENT A WRITTEN HAZARD COMMUNICATION PROGRAM FOR THEIR WORKPLACES WHICH AT LEAST MEETS THE CRITERIA SPECIFIED IN PARAGRAPHS (F), (G), AND (H) OF THIS SECTION FOR LABELS AND PLACARDS, MATERIAL SAFETY DATA SHEETS, AND EMPLOYEE INFORMATION AND TRAINING, AND WHICH INCLUDES THE FOLLOWING:

(I) THE PROCEDURES CHEMICAL MANUFACTURERS, IMPORTERS OR EMPLOYERS USED TO DETERMINE THE HAZARDS OF THE CHEMICALS WHICH THEY PRODUCE, IMPORT OR USE;

(II) A LIST OF THE HAZARDOUS CHEMICALS KNOWN TO BE PRESENT IN EACH WORK AREA (USING AN IDENTITY THAT IS REFERENCED ON THE APPROPRIATE MATERIAL SAFETY DATA SHEET); AND

(III) THE METHODS THE EMPLOYER WILL USE TO INFORM EMPLOYEES OF THE HAZARDS OF NON-ROUTINE TASKS (FOR EXAMPLE, THE CLEANING OF REACTOR VESSELS), AND THE HAZARDS ASSOCIATED WITH CHEMICALS CONTAINED IN UNLABELED PIPES IN THEIR WORK

WITH THIS SECTION PROVIDED THAT IT MEETS THE CRITERIA ESTABLISHED IN THIS PARAGRAPH.

(3) THE WRITTEN HAZARD COMMUNICATION PROGRAM, INCLUDING THE REQUIRED LISTS OF HAZARDOUS CHEMICALS, SHALL BE MADE AVAILABLE TO EMPLOYEES OR THEIR DESIGNATED REPRESENTATIVE, THE ASSISTANT SECRETARY AND THE DIRECTOR.

(F) LABELS AND PLACARDS. (1) THE EMPLOYER SHALL ENSURE THAT EACH CONTAINER OF HAZARDOUS CHEMICALS IN THE WORKPLACE IS LABELED, TAGGED OR MARKED WITH THE FOLLOWING INFORMATION:

(I) IDENTITY OF THE HAZARDOUS CHEMICAL(S) CONTAINED THEREIN; AND

(II) APPROPRIATE HAZARD WARNINGS.

(2) WHEN STATIONARY CONTAINERS IN A WORK AREA HAVE SIMILAR CONTENTS AND HAZARDS, THE EMPLOYER MAY POST SIGNS OR PLACARDS TO CONVEY THE REQUIRED INFORMATION RATHER THAN AFFIXING LABELS TO EACH INDIVIDUAL CONTAINER.

(3) THE EMPLOYER MAY USE BATCH PROCESS SHEETS, BATCH TICKETS, OPERATING PROCEDURES, OR OTHER SUCH WRITTEN MATERIALS AS ALTERNATIVES TO INDIVIDUAL LABELS ON STATIONARY PROCESS EQUIPMENT, AS LONG AS THE ALTERNATIVE USED INDICATES THE APPROPRIATE IDENTITY AND HAZARD WARNING(S), AND IS READILY ACCESSIBLE TO EMPLOYEES IN THEIR WORK AREA.

(4) THE EMPLOYER OR IMPORTER SHALL ENSURE THAT EACH CONTAINER OF HAZARDOUS CHEMICALS LEAVING THE WORKPLACE IS LABELED, TAGGED OR MARKED WITH THE FOLLOWING INFORMATION:

(I) IDENTITY OF THE HAZARDOUS CHEMICAL(S);

(II) APPROPRIATE HAZARD WARNINGS; AND

(III) NAME AND ADDRESS OF THE MANUFACTURER OR OTHER RESPONSIBLE PARTY.

(5) CHEMICAL MANUFACTURERS SHALL ENSURE THAT EACH CONTAINER OF HAZARDOUS CHEMICALS LEAVING THE WORKPLACE IS LABELED IN ACCORDANCE WITH THIS SECTION IN A MANNER WHICH DOES NOT CONFLICT WITH THE REQUIREMENTS OF THE HAZARDOUS MATERIALS TRANSPORTATION ACT (18 U.S.C. 180) ET SEQ.) AND REGULATIONS ISSUED UNDER THAT ACT BY THE DEPARTMENT OF TRANSPORTATION.

(6) THE EMPLOYER NEED NOT AFFIX NEW LABELS TO COMPLY WITH THIS STANDARD IF EXISTING LABELS ALREADY CONVEY THE NECESSARY INFORMATION.

(7) THE EMPLOYER IS NOT REQUIRED TO LABEL PORTABLE CONTAINERS INTO WHICH HAZARDOUS CHEMICALS ARE TRANSFERRED FROM LABELED CONTAINERS, AND WHICH ARE INTENDED ONLY FOR THE IMMEDIATE USE OF THE EMPLOYEE WHO PERFORMS THE TRANSFER.

(8) THE EMPLOYER SHALL NOT REMOVE OR DEFACE EXISTING LABELS ON INCOMING CONTAINERS OF HAZARDOUS CHEMICALS, UNLESS THE CONTAINER IS IMMEDIATELY RELABELED WITH THE REQUIRED INFORMATION.

(9) THE EMPLOYER SHALL ENSURE THAT LABELS ARE LEGIBLE AND PROMINENTLY DISPLAYED ON THE CONTAINER.

(10) DISTRIBUTORS SHALL ENSURE THAT CONTAINERS OF HAZARDOUS CHEMICALS DELIVERED TO MANUFACTURING PURCHASERS ARE LABELED IN ACCORDANCE WITH PARAGRAPH (F)(4) OF THIS SECTION.

(G) MATERIAL SAFETY DATA SHEETS. (1) CHEMICAL MANUFACTURERS AND IMPORTERS SHALL DEVELOP A MATERIAL SAFETY DATA SHEET FOR EACH HAZARDOUS CHEMICAL THEY PRODUCE OR IMPORT. EMPLOYERS SHALL OBTAIN OR DEVELOP A MATERIAL SAFETY DATA SHEET FOR EACH HAZARDOUS CHEMICAL WHICH THEY USE.

(2) EACH MATERIAL SAFETY DATA SHEET SHALL CONTAIN AT LEAST THE FOLLOWING INFORMATION:

(I) THE IDENTITY USED ON THE LABEL, AND, EXCEPT AS PROVIDED FOR IN PARAGRAPH (I) OF THIS SECTION ON TRADE SECRETS:

(A) IF THE HAZARDOUS CHEMICAL IS A SINGLE SUBSTANCE, OR A MIXTURE WHICH HAS BEEN TESTED AS A WHOLE TO DETERMINE ITS HAZARDS, ITS CHEMICAL AND COMMON NAME(S); OR

(B) IF THE HAZARDOUS CHEMICAL IS A MIXTURE, THE CHEMICAL AND COMMON NAME(S) OF ALL INGREDIENTS WHICH HAVE BEEN DETERMINED TO BE HEALTH HAZARDS, AND WHICH COMPRISE GREATER THAN 1 PERCENT OF THE COMPOSITION, EXCEPT THAT CHEMICALS IDENTIFIED AS CARCINOGENS UNDER PARAGRAPH (D)(4) OF THIS SECTION SHALL BE LISTED IN CONCENTRATIONS GREATER THAN 0.1 PERCENT; AND

(C) THE CHEMICAL AND COMMON NAME(S) OF ALL INGREDIENTS WHICH HAVE BEEN DETERMINED TO BE A PHYSICAL HAZARD;

(II) PHYSICAL AND CHEMICAL CHARACTERISTICS OF THE HAZARDOUS CHEMICAL (SUCH AS [illegible])

EXPOSURE AND MEDICAL RECORDS, WILL BE MAINTAINED IN ACCORDANCE WITH THE PROVISIONS OF THAT REGULATION.

(H) EMPLOYEE INFORMATION AND TRAINING. EMPLOYERS SHALL PROVIDE EMPLOYEES WITH INFORMATION AND TRAINING ON HAZARDOUS CHEMICALS IN THEIR WORK AREA AT THE TIME OF THEIR INITIAL ASSIGNMENT, AND WHENEVER A NEW HAZARD IS INTRODUCED INTO THEIR WORK AREA.

(1) INFORMATION. EMPLOYEES SHALL BE INFORMED OF:

(I) THE REQUIREMENTS OF THIS REGULATION;

(II) ANY OPERATIONS IN THE WORK AREA WHERE HAZARDOUS CHEMICALS ARE PRESENT; AND

(III) THE LOCATION AND AVAILABILITY OF THE WRITTEN HAZARD COMMUNICATION PROGRAM, INCLUDING THE REQUIRED LISTS OF HAZARDOUS CHEMICALS, AND MATERIAL SAFETY DATA SHEETS REQUIRED BY THIS SECTION.

(2) TRAINING. EMPLOYEE TRAINING SHALL INCLUDE AT LEAST:

(I) METHODS AND OBSERVATIONS THE EMPLOYEE MAY USE TO DETECT THE PRESENCE OR RELEASE OF A HAZARDOUS CHEMICAL IN THE WORK AREA;

(II) THE HAZARDS OF THE CHEMICALS IN THE WORK AREA;

(III) THE MEASURES EMPLOYEES CAN TAKE TO PROTECT THEMSELVES FROM THE HAZARDS, INCLUDING SPECIFIC PROCEDURES THE EMPLOYER HAS IMPLEMENTED TO PROTECT EMPLOYEES FROM EXPOSURE TO HAZARDOUS CHEMICALS, SUCH AS APPROPRIATE WORK PRACTICES, EMERGENCY PROCEDURES, PERSONAL PROTECTIVE EQUIPMENT TO BE USED, ETC.; AND

(IV) THE DETAILS OF THE HAZARD COMMUNICATION PROGRAM DEVELOPED BY THE EMPLOYER, INCLUDING AN EXPLANATION OF THE LABELING SYS..I AND THE MATERIAL SAFETY DATA SHEET, AND HOW EMPLOYEES CAN OBTAIN AND USE THE APPROPRIATE HAZARD INFORMATION.

(I) TRADE SECRETS. (1) THE EMPLOYER MAY WITHHOLD THE CHEMICAL NAME AND OTHER SPECIFIC IDENTIFICATION OF A HAZARDOUS CHEMICAL PROVIDED THAT:

(I) THE EMPLOYER CAN SUBSTANTIATE THAT IT IS A TRADE SECRET;

(II) THE OTHER INFORMATION CONTAINED IN THE MATERIAL SAFETY DATA SHEET ON THE PROPERTIES AND EFFECTS OF THE HAZARDOUS CHEMICAL IS DISCLOSED;

(III) THE EMPLOYER INDICATES ON THE MATERIAL SAFETY DATA SHEET THAT THE SPECIFIC CHEMICAL IDENTITY IS BEING WITHHELD AS A TRADE SECRET; AND

(IV) THE CHEMICAL NAME IS MADE AVAILABLE TO HEALTH PROFESSIONALS IN ACCORDANCE WITH (I)(2) BELOW.

(2) AN EMPLOYER SHALL, UPON REQUEST, DISCLOSE THE WITHHELD CHEMICAL NAME TO A HEALTH PROFESSIONAL (I.E., PHYSICIAN, INDUSTRIAL HYGIENIST, TOXICOLOGIST, OR EPIDEMIOLOGIST) PROVIDING MEDICAL OR OTHER OCCUPATIONAL HEALTH SERVICES TO EXPOSED EMPLOYEES.

(3) WHENEVER TRADE SECRET INFORMATION IS DISCLOSED TO AN EMPLOYEE OR DESIGNATED REPRESENTATIVE (INCLUDING HEALTH PROFESSIONALS), THE EMPLOYER MAY REQUIRE, AS A CONDITION OF DISCLOSURE, THAT THE RECIPIENT:

(I) INDICATE IN WRITING THE OCCUPATIONAL HEALTH PURPOSE FOR WHICH THE THE INFORMATION IS NEEDED; AND

(II) AGREE IN WRITING NOT TO USE THE TRADE SECRET INFORMATION FOR THE PURPOSE OF COMMERCIAL GAIN, AND NOT TO PERMIT MISUSE OF THE TRADE SECRET INFORMATION BY A COMPETITOR OR POTENTIAL COMPETITOR OF THE EMPLOYER.

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(4) IN THE CASE OF A MEDICAL EMERGENCY WHERE THE NAME OF A HAZARDOUS CHEMICAL IS REQUIRED FOR PROPER EMERGENCY OR FIRST-AID TREATMENT, THE EMPLOYER SHALL IMMEDIATELY DISCLOSE THE NAME OF A TRADE SECRET CHEMICAL TO THE TREATING HEALTH PROFESSIONAL, REGARDLESS OF THE EXISTENCE OF A WRITTEN STATEMENT OF NEED OR A CONFIDENTIALITY AGREEMENT. THE EMPLOYER MAY REQUIRE A WRITTEN STATEMENT OF NEED AND A CONFIDENTIALITY AGREEMENT AS SOON AS CIRCUMSTANCES PERMIT.

(5) THE CONFIDENTIALITY AGREEMENT AUTHORIZED BY PARAGRAPH (I)(3)(II) ABOVE MAY RESTRICT THE USE OF THE INFORMATION TO THE HEALTH PURPOSES INDICATED IN THE WRITTEN STATEMENT OF NEED, PROHIBIT DISCLOSURE OF THE INFORMATION TO ANYONE WHO HAS NOT ENTERED INTO A SIMILAR AGREEMENT WITH THE CONSENT OF THE EMPLOYER, AND PROVIDE FOR APPROPRIATE LEGAL REMEDIES IN THE EVENT OF A BREACH OF THE AGREEMENT, BUT MAY NOT INCLUDE REQUIREMENTS FOR THE POSTING OF A PENALTY BOND OR THE PAYMENT OF LIQUIDATED DAMAGES IF THE PARTY REQUESTING THE TRADE SECRET INFORMATION OBJECTS TO SUCH PROVISIONS.

(6) NOTWITHSTANDING THE EXISTENCE OF A TRADE SECRET CLAIM, AN EMPLOYER SHALL, UPON REQUEST, DISCLOSE TO THE ASSISTANT SECRETARY ANY INFORMATION WHICH THIS SECTION REQUIRES THE EMPLOYER TO MAKE AVAILABLE. WHERE THERE IS A TRADE SECRET

CLAIM, SUCH CLAIM SHALL BE MADE NO LATER THAN AT THE TIME THE INFORMATION IS PROVIDED TO THE ASSISTANT SECRETARY SO THAT SUITABLE DETERMINATIONS OF TRADE SECRET STATUS CAN BE MADE AND THE NECESSARY PROTECTIONS IMPLEMENTED.

(J) EFFECTIVE DATES. EMPLOYERS SHALL BE IN COMPLIANCE WITH THIS SECTION WITHIN THE FOLLOWING TIME PERIODS:

(1) CHEMICAL MANUFACTURERS AND IMPORTERS WILL LABEL CONTAINERS OF HAZARDOUS CHEMICALS LEAVING THEIR WORKPLACES, AND PROVIDE MATERIAL SAFETY DATA SHEETS WITH INITIAL SHIPMENTS, AND DISTRIBUTORS WILL ENSURE SUCH INFORMATION IS PROVIDED TO MANUFACTURING PURCHASERS, BY ——(2 YEARS).

(2) ALL EMPLOYERS WILL BE IN COMPLIANCE WITH ALL PROVISIONS OF THIS SECTION BY ——(2 1/2 YEARS).

APPENDIX A, HEALTH HAZARD DEFINITIONS

ALTHOUGH SAFETY HAZARDS RELATED TO THE PHYSICAL CHARACTERISTICS OF A CHEMICAL CAN BE OBJECTIVELY DEFINED IN TERMS OF TESTING REQUIREMENTS (E.G., FLAMMABILITY), HEALTH HAZARD DEFINITIONS ARE LESS PRECISE AND MORE SUBJECTIVE. HEALTH HAZARDS MAY CAUSE MEASURABLE CHANGES IN THE BODY—SUCH AS DECREASED PULMONARY FUNCTION. THESE CHANGES ARE GENERALLY INDICATED BY THE OCCURRENCE OF SIGNS AND SYMPTOMS IN THE EXPOSED EMPLOYEES — SUCH AS SHORTNESS OF BREATH, A NON-MEASURABLE, SUBJECTIVE FEELING. EMPLOYEES EXPOSED TO SUCH HAZARDS SHOULD BE APPRISED OF BOTH THE CHANGE IN BODY FUNCTION AND THE SIGNS AND SYMPTOMS THAT MAY OCCUR TO SIGNAL THAT CHANGE.

THE DETERMINATION OF OCCUPATIONAL HEALTH HAZARDS IS COMPLICATED BY THE FACT THAT MANY OF THE EFFECTS OR SIGNS AND SYMPTOMS OCCUR COMMONLY IN NON-OCCUPATIONALLY EXPOSED POPULATIONS, SO THAT EFFECTS OF EXPOSURE ARE DIFFICULT TO SEPARATE FROM NORMALLY OCCURRING ILLNESSES. OCCASIONALLY, A SUBSTANCE CAUSES AN EFFECT THAT IS RARELY SEEN IN THE POPULATION AT LARGE, SUCH AS ANGIOSARCOMAS CAUSED BY VINYL CHLORIDE EXPOSURE, THUS MAKING IT EASIER TO ASCERTAIN THAT THE OCCUPATIONAL EXPOSURE HAS THE PRIMARY CAUSATIVE FACTOR. MORE OFTEN, HOWEVER, THE EFFECTS ARE COMMON, SUCH AS LUNG CANCER. THE SITUATION IS FURTHER COMPLICATED BY THE FACT THAT MOST CHEMICALS HAVE NOT BEEN ADEQUATELY TESTED TO DETERMINE THEIR HEALTH HAZARD POTENTIAL, AND DATA DOES NOT EXIST TO SUBSTANTIATE THESE EFFECTS.

THERE HAVE BEEN MANY ATTEMPTS TO CATEGORIZE EFFECTS AND TO DEFINE THEM IN VARIOUS WAYS. GENERALLY, THE TERMS /ACUTE/ AND /CHRONIC/ ARE USED TO DELINEATE BETWEEN EFFECTS ON THE BASIS OF SEVERITY OR DURATION. /ACUTE/ EFFECTS USUALLY OCCUR RAPIDLY AS A RESULT OF SHORT-TERM EXPOSURES, AND ARE OF SHORT DURATION. /CHRONIC/ EFFECTS OCCUR AS A RESULT OF LONG-TERM EXPOSURE, AND ARE OF LONG DURATION. NEITHER OF THESE TERMS GIVES SUFFICIENT GUIDANCE TO THOSE ATTEMPTING TO DEFINE A HEALTH HAZARD.

THE ACUTE EFFECTS REFERRED TO MOST FREQUENTLY ARE THOS DEFINED BY THE AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) STANDARD FOR PRECAUTIONARY LABELING OF HAZARDOUS INDUSTRIAL CHEMICAL (Z129.1-1976) — IRRITATION, CORROSIVITY, SENSITIZATION AND LETHAL DOSE. ALTHOUGH THESE ARE IMPORTANT HEALTH EFFECTS, THEY DO NOT ADEQUATELY COVER THE CONSIDERABLE RANGE OF ACUTE EFFECTS WHICH MAY OCCUR AS A RESULT OF OCCUPATIONAL EXPOSURE, SUCH AS, FOR EXAMPLE, NARCOSIS.

SIMILARLY, THE TERM CHRONIC EFFECT IS OFTEN USED TO COVER ONLY CARCINOGENICITY, TERATOGENICITY, AND MUTAGENICITY. THESE EFFECTS ARE OBVIOUSLY A CONCERN IN THE WORKPLACE, BUT AGAIN, DO NOT ADEQUATELY COVER THE AREA OF CHRONIC EFFECTS, EXCLUDING, FOR EXAMPLE BLOOD DYSCRASIAS (SUCH AS ANEMIA), CHRONIC BRONCHITIS AND LIVER ATROPHY.

THE GOAL OF DEFINING PRECISELY, IN MEASURABLE TERMS, EVERY POSSIBLE HEALTH EFFECT THAT MAY OCCUR IN THE WORKPLACE AS A RESULT OF CHEMICAL EXPOSURES CANNOT REALISTICALLY BE ACCOMPLISHED. THIS DOES NOT NEGATE THE NEED FOR EMPLOYEES TO BE INFORMED OF SUCH EFFECTS AND PROTECTED FROM THEM.

APPENDIX B, WHICH IS MANDATORY, OUTLINES THE PRINCIPLES AND PROCEDURES OF HAZARD ASSESSMENT.

FOR PURPOSES OF THIS SECTION ANY CHEMICALS WHICH MEET THE FOLLOWING DEFINITIONS ARE HEALTH HAZARDS:

1. CARCINOGEN: A CHEMICAL IS CONSIDERED TO BE A CARCINOGEN IF:

(A) IT HAS BEEN EVALUATED BY THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER (IARC), AND FOUND TO BE A CARCINOGEN OR POTENTIAL CARCINOGEN; OR

ON CARCINOGENS/ PUBLISHED BY THE NATIONAL TOXICOLOGY PROGRAM (NTP) (LATEST EDITION).

2. CORROSIVE: A CHEMICAL THAT CAUSES VISIBLE DESTRUCTION OF, OR IRREVERSIBLE ALTERATIONS IN, LIVING TISSUE BY CHEMICAL ACTION AT THE SITE OF CONTACT. FOR EXAMPLE, A CHEMICAL IS CONSIDERED TO BE CORROSIVE IF, WHEN TESTED ON THE INTACT SKIN OF ALBINO RABBITS BY THE METHOD DESCRIBED BY THE U.S. DEPARTMENT OF TRANSPORTATION IN APPENDIX A TO 49 CFR PART 173, IT DESTROYS OR CHANGES IRREVERSIBLY THE STRUCTURE OF THE TISSUE AT THE SITE OF CONTACT FOLLOWING AN EXPOSURE PERIOD OF FOUR HOURS. THIS TERM SHALL NOT REFER TO ACTION ON INANIMATE SURFACES.

3. HIGHLY TOXIC: A CHEMICAL FALLING WITHIN ANY OF THE FOLLOWING CATEGORIES:

(A) A CHEMICAL THAT HAS A MEDIAN LETHAL DOSE (LD50) OF 50 MILLIGRAMS OR LESS PER KILOGRAM OF BODY WEIGHT WHEN ADMINISTERED ORALLY TO ALBINO RATS WEIGHING BETWEEN 200 AND 300 GRAMS EACH.

(B) A CHEMICAL THAT HAS A MEDIAN LETHAL DOSE (LD50) OF 200 MILLIGRAMS OR LESS PER KILOGRAM OF BODY WEIGHT WHEN ADMINISTERED BY CONTINUOUS CONTACT FOR 24 HOURS WITH THE BARE SKIN OF ALBINO RABITS WEIGHING BETWEEN TWO AND THREE KILOGRAMS EACH.

(L) A CHEMICAL THAT HAS A MEDIAN LETHAL CONCENTRATION (LC50) IN AIR OF 200 PARTS PER MILLION BY VOLUME OR LESS OF GAS OR VAPOR, OR 2 MILLIGRAMS PER LITER OR LESS OF MIST, FUME, OR DUST, WHEN ADMINISTERED BY CONTINUOUS INHALATION FOR ONE HOUR (OR LESS IF DEATH OCCURS WITHIN ONE HOUR) TO ALBINO RATS WEIGHING BETWEEN 200 AND 300 GRAMS EACH.

(4) IRRITANT: A CHEMICAL, WHICH IS NOT CORROSIVE, BUT WHICH CAUSES A REVERSIBLE INFLAMMATORY EFFECT ON LIVING TISSUE BY CHEMICAL ACTION AT THE SITE OF CONTACT. A CHEMICAL IS A SKIN IRRITANT IF, WHEN TESTED ON THE INTACT SKIN OF ALBINO RABBITS BY THE METHODS OF 16 CFR 1500.41 FOR FOUR HOURS EXPOSURE OR BY OTHER APPROPRIATE TECHNIQUES, IT RESULTS IN AN EMPIRICAL SCORE OF FIVE OR MORE. A CHEMICAL IS AN EYE IRRITANT IF SO DETERMINED UNDER THE PROCEDURE LISTED IN 16 CFR 1500.42 OR OTHER APPROPRIATE TECHNIQUES.

(5) SENSITIZER: A CHEMICAL THAT CAUSES A SUBSTANTIAL PROPORTION OF EXPOSED PEOPLE OR ANIMALS TO DEVELOP AN ALLERGIC REACTION IN NORMAL TISSUE AFTER REPEATED EXPOSURE TO THE CHEMICAL.

(6) TOXIC: A CHEMICAL FALLING WITHIN ANY OF THE FOLLOWING CATEGORIES:

(A) A CHEMICAL THAT HAS MEDIAN LETHAL DOSE (LD50) OF MORE THAN 50 MILLIGRAMS PER KILOGRAM BUT NOT MORE THAN 500 MILLIGRAMS PER KILOGRAM OF BODY WEIGHT WHEN ADMINISTERED ORALLY TO ALBINO RATS WEIGHING BETWEEN 200 AND 300 GRAMS EACH.

(B) A CHEMICAL THAT HAS A MEDIAN LETHAL DOSE (LD50) OF MORE THAN 200 MILLIGRAMS PER KILOGRAM BUT NOT MORE THAN 1,000 MILLIGRAMS PER KILOGRAM OF BODY WEIGHT WHEN ADMINISTERED BY CONTINUOUS CONTACT FOR 24 HOURS (OR LESS IF DEATH OCCURS WITHIN 24 HOURS) WITH THE BARE SKIN OF ALBINO RABBITS WEIGHING BETWEEN TWO AND THREE KILOGRAMS EACH.

(C) A CHEMICAL THAT HAS A MEDIAN LETHAL CONCENTRATION (LC50) IN AIR OR MORE THAN 200 PARTS PER MILLION BUT NOT MORE THAN 2,000 PARTS PER MILLION BY VOLUME OF GAS OR VAPOR, OR MORE THAN TWO MILLIGRAMS PER LITER BUT NOT MORE THAN 20 MILLIGRAMS PER LITER OF MIST, FUME, OR DUST, WHEN ADMINISTERED BY CONTINUOUS INHALATION FOR ONE HOUR (OR LESS IF DEATH OCCURS WITHIN ONE HOUR) TO ALBINO RATS WEIGHING BETWEEN 200 AND 300 GRAMS EACH.

IN ADDITION, THE FOLLOWING IS A TARGET ORGAN CATEGORIZATION OF EFFECTS WHICH MAY OCCUR, INCLUDING EXAMPLES OF SIGNS AND SYMPTOMS AND CHEMICALS WHICH HAVE BEEN FOUND TO CAUSE SUCH EFFECTS. THESE EXAMPLES ARE PRESENTED TO ILLUSTRATE THE RANGE AND DIVERSITY OF EFFECTS AND HAZARDS FOUND IN THE WORKPLACE, AND THE BROAD SCOPE EMPLOYERS MUST CONSIDER IN THIS AREA, BUT ARE NOT INTENDED TO BE ALL-INCLUSIVE.

1.	HEPATOTOXINS:	CHEMICALS WHICH PRODUCE LIVER DAMAGE
	SIGNS AND SYMPTOMS:	JAUNDICE; HEPATITIS
	CHEMICALS:	CARBON TETRACHLORIDE; NITROSAMINES
2.	NEPHROTOXINS:	CHEMICALS WHICH PRODUCE KIDNEY DAMAGE
	SIGNS AND SYMPTOMS:	DECREASED ELIMINATION OF WASTES
	CHEMICALS:	HALOGENATED HYDROCARBONS; URANIUM
3.	NEUROTOXINS:	CHEMICALS WHICH PRODUCE THEIR PRIMARY

IN JOINT FUNCTIONS

	CHEMICALS:	MERCURY; CARBON DISULFIDE
4.	AGENTS WHICH ACT ON THE BLOOD OR HEMATOPOIETIC SYSTEM:	LOWER BLOOD PRESSURE; DEPRIVE THE BODY TISSUES OF OXYGEN
	SIGNS AND SYMPTOMS:	LEUKEMIA; ANEMIA
	CHEMICALS:	CARBON MONOXIDE; CYANIDES
5.	AGENTS WHICH DAMAGE THE LUNGS:	CHEMICALS WHICH IRRITATE OR DAMAGE THE PULMONARY TISSUE
	SIGNS AND SYMPTOMS:	COUGH; TIGHTNESS IN CHEST; FIBROSIS
	CHEMICALS:	SILICA; ASBESTOS
6.	REPRODUCTIVE TOXINS:	CHEMICALS WHICH AFFECT THE REPRODUCTIVE CAPABILITIES INCLUDING CHROMOSOMAL DAMAGE (MUTATIONS) AND EFFECTS ON FETUSES (TERATOGENESIS)
	SIGNS AND SYMPTOMS:	BIRTH DEFECTS; STERILITY
	CHEMICALS:	LEAD; DBCP
7.	CUTANEOUS HAZARDS:	CHEMICALS WHICH AFFECT THE DERMAL LAYER O BODY
	SIGNS AND SYMPTOMS:	DEF[illegible]NG OF THE SKIN; RASHES; IRRITATION
	CHEMICALS:	KETONES; CHLORINATED COMPOUNDS
8.	EYE HAZARDS:	CHEMICALS WHICH AFFECT THE EYE OR VISUAL CAPACITY
	SIGNS AND SYMPTOMS:	CONJUCTIVITIS; CORNEAL DAMAGE
	CHEMICALS:	ORGANIC SOLVENTS; ACIDS

APPENDIX B, HAZARD DETERMINATION

THE QUALITY OF A HAZARD COMMUNICATION PROGRAM IS LARGELY DEPENDENT UPON THE ADEQUACY AND ACCURACY OF THE HAZARD DETERMINATION. THE HAZARD DETERMINATION REQUIREMENT OF THIS STANDARD IS PERFORMANCE-ORIENTED. CHEMICAL MANUFACTURERS OR IMPORTERS ARE NOT REQUIRED TO FOLLOW ANY SPECIFIC METHODS FOR DETERMINING HAZARDS, BUT IT IS INCUMBENT UPON THEM TO DEMONSTRATE THAT THEY HAVE ADEQUATELY ASCERTAINED THE SCIENTIFICALLY WELL-ESTABLISHED HAZARDS OF THE CHEMICALS PRODUCED.

HAZARD EVALUATION IS A PROCESS WHICH RELIES HEAVILY ON THE PROFESSIONAL JUDGMENT OF THE EVALUATOR, PARTICULARLY IN THE AREA OF CHRONIC HAZARDS. THE PERFORMANCE-ORIENTATION OF THE HAZARD DETERMINATION DOES NOT DIMINISH THE DUTY OF THE CHEMICAL MANUFACTURER OR IMPORTER TO CONDUCT A THOROUGH EVALUATION, EXAMINING ALL RELEVANT DATA, AND PRODUCING A SCIENTIFICALLY DEFENSIBLE EVALUATION. FOR PURPOSES OF THIS STANDARD, THE FOLLOWING PARAMETERS WILL BE USED TO HELP DEFINE /SCIENTIFICALLY WELL-ESTABLISHED/.

1. CARCINOGENICITY: AS DESCRIBED IN PARAGRAPH (D)(4) AND APPENDIX A OF THIS SECTION, A DETERMINATION BY THE NATIONAL TOXICOLOGY PROGRAM OR THE INTERNATIONAL AGENCY ON RESEARCH AND CANCER THAT A CHEMICAL IS A POTENTIAL CARCINOGEN WILL BE SCIENTIFICALLY WELL-ESTABLISHED EVIDENCE FOR PURPOSES OF THIS STANDARD.

2. HUMAN DATA: EPIDEMIOLOGICAL STUDIES AND CASE REPORTS OF ADVERSE HEALTH EFFECTS WILL BE CONSIDERED IN THE EVALUATION.

3. ANIMAL DATA: HUMAN EVIDENCE OF HEALTH EFFECTS IN EXPOSED POPULATIONS IS GENERALLY NOT AVAILABLE FOR THE MAJORITY OF CHEMICALS PRODUCED OR USED IN THE WORKPLACE. THEREFORE, THE AVAILABLE RESULTS OF TOXICOLOGICAL TESTING IN ANIMAL POPULATIONS WILL BE USED TO PREDICT THE HEALTH EFFECTS THAT MAY BE EXPERIENCED BY EXPOSED WORKERS. IN PARTICULAR, THE DEFINITIONS OF CERTAIN ACUTE HAZARDS REFER TO SPECIFIC ANIMAL TESTING RESULTS (SEE APPENDIX A).

4. ADEQUACY OF DATA. THE RESULTS OF ANY STUDIES WHICH ARE DESIGNED AND CONDUCTED ACCORDING TO ACCEPTABLE SCIENTIFIC PRINCIPLES, AND WHICH REPORT STATISTICALLY SIGNIFICANT CONCLUSIONS REGARDING THE HEALTH EFFECTS OF A CHEMICAL, WILL BE REPORTED.

5. REPORTING OF DATA. THE CHEMICAL MANUFACTURER OR IMPORTER NEED NOT REPORT IN A CONCLUSIONARY FASHION DATA THEY DON'T AGREE WITH, I.E., IF THEY DO NOT AGREE THAT THE CHEMICAL IS A CARCINOGEN, THEY DO NOT HAVE TO STATE THAT IT IS. HOWEVER, THE EMPLOYER MUST STATE THAT THE NTP OR IARC HAVE REPORTED THAT IT MAY BE A POTENTIAL CARCINOGEN. IF ANY STUDY MEETS THE SCIENTIFIC CRITERIA

MANUFACTURER OR IMPORTER AGREE WITH THE FINDINGS OR NOT.

SOURCES

— ANY INFORMATION EMPLOYERS HAVE IN THEIR OWN COMPANY FILES SUCH AS TOXICITY TESTING RESULTS OR ILLNESS EXPERIENCE OF COMPANY EMPLOYEES.

— ANY INFORMATION OBTAINED FROM THE SUPPLIER OF THE CHEMICAL, SUCH AS MATERIAL SAFETY DATA SHEETS OR PRODUCT SAFETY BULLETINS.

— ANY PERTINENT INFORMATION OBTAINED FROM THE FOLLOWING SOURCE LIST (LATEST EDITIONS SHOULD BE USED):

/CONDENSED CHEMICAL DICTIONARY/ BY A. AND E. ROSE
REINHOLD PUBLISHING CORPORATION
450 WEST 33RD STREET
NEW YORK, NY 10001

/THE MERCK INDEX: AN ENCYCLOPEDIA OF CHEMICALS AND DRUGS/
MERCK AND COMPANY, INC.
126 E. LINCOLN AVENUE
RAHWAY, NJ 07065

/IARC MONOGRAPHS ON THE EVALUATION OF THE CARCINOGENIC RISK OF CHEMICALS TO MAN/
GENEVA: WORLD HEALTH ORGANIZATION
INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, 1972-1977
(MULTIVOLUME WORK)

/INDUSTRIAL HYGIENE AND TOXICOLOGY, BY F.A. PATTY/
JOHN WILEY AND SONS, INC.
NEW YORK, NY
(FIVE VOLUMES)

/CLINICAL TOXICOLOGY OF COMMERCIAL PRODUCTS/
GLEASON, GOSSELIN AND HODGE

/CASARETT AND DOULL'S
TOXICOLOGY: THE BASIC SCIENCE OF POISONS/
DOULL, KLAASSEN, AND AMDUR
MACMILLAN PUBLISHING CO., INC.
NEW YORK, NY

/INDUSTRIAL TOXICOLOGY, BY ALICE HAMILTON AND HARRIET L. HARDY/
PUBLISHING SCIENCES GROUP, INC.
ACTON, MA

/TOXICOLOGY OF THE EYE, BY W. MORTON GRANT/
CHARLES C. THOMAS
SPRINGFIELD, MD

/RECOGNITION OF HEALTH HAZARDS IN INDUSTRY/
WILLIAM A. BURGESS
JOHN WILEY AND SONS
U.S.A.

/CHEMICAL HAZARDS OF THE WORKPLACE/
NICK H. PROCTOR AND JAMES P. HUGHES
J.P. LIPINCOTT COMPANY
PHILADELPHIA, PA

/HANDBOOK OF CHEMISTRY AND PHYSICS/
CHEMICAL RUBBER COMPANY
18901 CRANWOOD PARKWAY
CLEVELAND, OH 44128

/THRESHOLD LIMIT VALUES FOR CHEMICAL SUBSTANCES AND PHYSICAL AGENTS IN THE WORKROOM ENVIRONMENT WITH INTENDED CHANGES/
AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS
1014 BROADWAY
CINCINNATI, OH 45202

/DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS, BY N. IRVING SAX/
REINHOLD PUBLISHING CORPORATION
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Standard Industrial Classification Manual 1972

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Norstar, with assets of about $3.5 billion and deposits of about $2.9 billion is the eleventh-largest banking organization in New York. Northeast, which is the third-largest banking organization in Maine, has assets of about $551 million and deposits of $465 million. The transaction is valued at about $51 million.

The Fed's March 21 order points out that both Maine and New York recently have passed laws which allow out-of-state bank holding companies to enter the state. Maine's law allows acqusition of a banking institution in Maine by a bank holding company that controls a bank located in another state as long as that other state authorizes the acqusition of a financial institution in that state by a Maine bank holding company under terms no more restrictive than those imposed under Maine law. New York has a similar provision.

The Fed ruled that conditions for approval of such acquistions under New York law are not more restrictive than those provided under the Maine statute and consequently approved the application.

The acquistion will not eliminate any existing competition in the Maine market, the Fed said, and is unlikely to have any significant adverse effects on probably future competition in Maine. The Fed pointed out that there are a number of probably future entrants into the Maine market from out-of-state institutions. There are about 20 New York institutions that might enter the market, and about five Massachusetts banking organizations that could be considered as future entrants.

Massachusetts recently passed a law that allows out-of-state banks to enter the state, but only if the out-of-state organizations are located in New England.

The Fed also ruled that Norstar could acquire Northeast Consumer Services Corp., which is Northeast's credit-card issuing, financing and servicing subsidiary, and Northeast Data Processing Corp., the holding company's data processing subsidiary.

- 0 -

JOB SAFETY: OSHA'S DRAFT LABELING RULE TIGHTENS TRADE SECRET PROVISIONS

A draft Occupational Safety and Health Administration final rule on hazard communication would depart from the agency's March 1982 proposal by tightening trade secret provisions, widening industry coverage to include chemical distributors and importers, and strengthening the agency's position that state rules will be pre-empted by the federal action.

Procedures for hazard determination, preparation of material safety data sheets, and container labeling, as well as the rule's effective dates, also would be changed from those enumerated in the proposal. The draft final rule, shown to BNA, was prepared by agency staff and was submitted to OSHA Administrator Thorne Auchter. If approved by Auchter, it will be sent on to the Labor Department and the Office of Management and Budget for review, according to an agency spokesman.

Many provisions, such as those governing employee training, the obligation of chemical companies to label their products and provide users with material safety data sheets, and the right of employees to gain access to the data sheets, remained essentially unchanged from the March proposal for a flexible, performance-oriented rule.

Trade secret provisions in the draft final rule, however, would eliminate a proposed exception for certain narrowly defined "high-hazard" chemicals, such as carcinogens, mutagens, and teratogens, the identities of which the proposal said must be disclosed under any circumstances. Recognizing that "chemical identity information can constitute a bona fide trade secret," the draft rule extends protection to any chemical identity that the manufacturer can substantiate as a trade secret, regardless of the hazard posed.

Unlike the proposal, however, which granted trade secret access only to treating physicians with a need to know, the draft rule would allow trade secret disclosure to "any

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health professional" involved in providing occupational health services. Confidentiality agreements may be required. The agreements may require the health professional to state t occupational health purpose for the information, but they may not require posting of penalty bonds or payment of liquidated damages, unless the party requesting the data agrees to their imposition.

In conducting hazard evaluations for chemicals, employers must find hazardous in any occupational setting those chemicals already regulated by OSHA standards or listed in the American Conference of Governmental Industrial Hygienists table of threshold limit values. Suspected or confirmed carcinogens identified by the International Agency for Research on Cancer and the National Toxicology Program similarly must be listed as carcinogens.

In an attempt to answer testimony at hearings last summer that the rule provided no guidance to employers on what constitutes a "scientifically well-established hazard" that must be listed in warning information, the draft rule included two mandatory appendices. On discussed the difficulty in definitely identifying all possible health effects and indicated the broad hazard determination approach intended by the rule, and gave definitions for certain acute hazards.

The other appendix listed reference sources for hazard data and would specify that both human and animal data should be used in determining a chemical's hazard. The appendix stated, "If an available study indicates that an adverse health effect is likely to occur, and th study is conducted according to scientific principles and results in statistically significant findings, the employer is required to report it whether he agrees with the finding or not." Tl listing need not imply the employer's approval or disapproval of the study, however.

Procedures for evaluating a mixture in cases where it has not been evaluated as a whole were changed to require disclosure of all ingredients posing physical hazards. Health hazard of a mixture component need be disclosed only if the component constitutes 1 percent or mor of the total—0.1 percent or more of the total if a carcinogen—or may be released under norm conditions of use in such a way that even a small quantity exceeds an OSHA permissible exposure limit or otherwise poses a hazard.

In another departure from the proposal, the draft final rule would extend coverage to importers and distributors of chemicals. "All aspects of the supply chain" must be covered make the rule effective, the agency said in defense of the new scope, which would apply the same duties to importers as it would to chemical manufacturers, and would require distributors to ship labeled containers and "provide downstream purchasers with access to a appropriate material safety data sheet."

Laboratories, which were excluded in the proposal, were included in the draft final rul only to the extent that they must maintain labels on incoming containers, keep data sheets the have received, and train employees in hazard recognition and avoidance.

A brief section on pre-emption expressly would limit state responsibility in hazard communication to enforcement of rules promulgated under state plans as detailed in Section 18(b) of the Occupational Safety and Health Act. This presumably would rule out state jurisdiction in the six states under federal OSHA that have enacted right-to-know laws. Approximately nine others without state plans are considering or have considered passing their own legislation.

Effective dates in the draft final rule were pulled back by a year, with manufacturers expected to comply within two years of final publication and users within 30 months.

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BANKING: LaFALCE PUSHES FOR HIGHER PERCENTAGE OF EXPORTS FOR TRADING COMPANIES

Bank-affiliated export trading companies should not conduct 49 percent of their business in imports but should only import incidentally to their main business, House Banking

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Alaska Health Project

P. O. Box 1037, Anchorage, Alaska 99510 (907) 272-8734

Contacts: Steve Kadish or
Brenda Duffey, 272-8734 &
274-5054

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-- Alaskans Have a Right to Know --

This summer Alaska's Governor Bill Sheffield signed into law right-to-know legislation (S.B. 79) to provide information to workers about hazardous and toxic substances in the workplace.

The bill passed Alaska's Senate 17 to 1 and breezed through the House 39 to 0. It was supported by health, labor, and environmental groups.

"I'm delighted that the legislature has enacted this bill so quickly. It enjoys wide public support," said Sen. Joe Josephson (D) of Anchorage, one of the bill's sponsors.

Initially the right-to-know legislation was opposed by industry representatives for being too inclusive, broad, and overreaching. They also said the bill was unnecessary because a proposed U.S. Occupational Safety and Health Administration (OSHA) right-to-know regulation would be adequate.

"The Alaskan bill includes all affected Alaskan employers and employees in contrast to the pending federal regulation which only deals with manufacturers. According to Alaska Department of Labor estimates, less than 5 percent of Alaskan employers would have been covered by the proposed federal regulation," said Alaska Health Project Executive Director Steven Kadish.

Kadish's group, Alaska Health Project, supported the Alaskan legislation and worked with different groups involved to reach a bill that was agreeable to the diverse interests.

(more)

"Never let it be said that business interests are only out for a buck or that environmentalists never compromise," Alaska Sen. Bettye Fahrenkamp (D) said about passage of the right-to-know legislation which she co-sponsored with Josephson, Sen. Vic Fischer (D), and Sen. Arliss Sturgulewski (R).

"Passage of this legislation marks the first time that a coalition of health, labor, and environmental groups has formed to protect workers' health in Alaska," Kadish said.

The bill requires that information on health hazards accompanies products containing any one of about 800 known hazardous substances when they are imported into the state. It also calls for employers to post notices and provide training in workplaces where the hazardous materials are used.

The new law gives employees the right to request information on possibly hazardous substances they are working with. If an employer does not have that information, the measure allows the employer three working days to request the information from the state Department of Labor or the manufacturer. If the employee requesting information does not receive a response from the employer within 15 calendar days, the employee has the right to refuse working with the hazardous substance until the information is made available.

"Without enough information about the potential hazard of a material, a worker cannot take precautions to prevent an accident or illness," said Mick Hotrum, a business and safety representative for the Alaska District Council of Laborers.

(more)

In addition to support from health, labor, environmental groups -- and the eventual support of industry representatives -- the right-to-know bill has enthusiastic backing from Alaska's Department of Labor.

"We are pleased that Governor Sheffield has signed S.B. 79 into law. With so many hazardous and toxic substances used in and around the workplace it is very important that the working men and women in Alaska be informed as to what they are handling.

"This department stands ready to assist employers in their safety education programs and to provide information as to the requirements of this law," said Commissioner of Labor Jim Robison.

In discussing the legislation, Kadish pointed out two areas he feels are shortcomings of the bill.

"The bill does not provide for specific labeling of individual products, nor does it require any reporting to the state about specific hazardous materials," he said.

"Some of us will want to monitor the contributions it makes and be ready to offer amendments (to the bill) if experience shows them to be necessary," Josephson commented.

A representative from one of the grass roots environmental groups that supported the legislation cited possible implications the bill has for the community.

"Although the right-to-know bill is a landmark bill for workers, it also marks a potential turning point for community health and environmental protection. The bill could provide the impetus for communities to demand their right to know about toxic substances they are exposed to on a daily basis.

"Furthermore, information gathered on the types, quantities, and hazards of substances used by industry will assist state and local environmental protection groups in managing wastes that result from industry's activities," said David Wigglesworth of the Alaska Center for the Environment.

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The right to know

Industry presses for a national standard

When Congress set up the Occupational Safety and Health Administration early in the 1970s, labor groups expected the federal agency to do a job that they felt states could not—and industry would not—do: police the workplace to ensure worker safety. Now, OSHA is tackling the controversial right-to-know issue, the outcome of which will determine how much information companies must give their employees about the substances used in the workplace. And it looks as though the usual OSHA-labor alliance has been turned on its ear.



Hearings in Cincinnati led to a local right-to-know law, which was passed this month.

In fact, the unions are downright hostile toward OSHA's attempts to set up a national right-to-know standard. Whereas labor had for more than a decade pushed for a strong, federal right-to-know rule instead of separate state standards, labor leaders are now dismayed by the most recent OSHA proposal. "It's a right-to-conceal standard," claims Sylvia Krekel, occupational health specialist for the Oil, Chemical and Atomic Workers (OCAW). In contrast, chemical industry groups, which generally oppose across-the-board regulations, are virtually unanimous in backing federal preemption of state and local right-to-know statutes.

Both camps are now getting a chance to voice their views publicly. On June 15, OSHA began hearings in Washington to discuss its proposed rules (*CW, June 21, 1982, p. 52*). Under the agency's suggested standard for "hazard communication"—the nomenclature that OSHA chose for right-to-know and other labeling rules—chemical manufacturers would have to provide information about hazardous substances to their own employees and to industrial customers that use those materials. The standard specifies that manufacturers make available to employees an up-to-date list of hazardous substances, label all containers of these substances, and train employees in handling them.

Manufacturers, though arguing that no new regulation is needed, find it more palatable to deal with a single "unnecessary" rule than to deal with 50—thus their stated reasons for backing OSHA. For example, the Chemical Specialties Manufacturers Assn. (CSMA) is actively supporting the proposed federal regulation, even though the association's view, according to its counsel, Lawrence A. Levin, is "that workers are adequately protected now by common practice in the industry." Adds Horace A. Thompson, management chairman of the American Bar Assn.'s section on occupational safety and health laws: "It's not a burning issue in terms of the need for information; it's a burning issue in terms of the inconsistent state regulations."

Grudging support. But there is another, more important, item involved in industry's rather grudging support of the OSHA standard. Within its framework, chemical manufacturers would wield considerable power. The proposed standard covers only "hazardous" substances—and the manufacturer determines what is hazardous. This is in marked contrast to most state right-to-know laws, which spell out which chemicals must be tagged and described.

That difference appeals to many executives in the chemical industry. "The responsibility falls on the manufacturer, and we believe that's where it belongs," says Patrick C. Joyce, until recently an attorney for the Chemical Manufacturers Assn. (CMA).

Unions and their allies, however, cite figures on occupational disease—25 million workers are exposed to circumstances identified as hazards by the National Institute of Occupational Safety and Health (NIOSH)—as evidence that employers may be unreliable sources of information on dangerous substances. And the unions cite recent "horror" stories to bolster their position.

Manufacturer's burden. In fact, the well-publicized occupational health disaster at Occidental Chemical's pesticide formulation operation in Lathrop, Calif., where workers became sterile after years of exposure to dibromochloropropane (DBCP), is often credited with launching labor's campaign for the right to know. According to Roberta Lynch, research director of the Chicago Area Committee on Occupational Safety and Health, workers learned that the company had not disclosed the full results of animal studies that showed that DBCP caused health problems. "That's what really started this whole movement," Lynch recalls.

Labor's collective memory also still



"It's a right-to-conceal standard."

Sylvia Krekel, Oil, Chemical and Atomic Workers

rankles over asbestos, the grisliest of stories in the safety-and-health chronicle. Asbestos, once a common substance in U.S. Navy shipyards and other workplaces, causes mesothelioma, a rare and terminal cancer, and asbestosis, which thousands of workers have contracted. Lawsuits are still being filed, charging both the federal government and industry with failure to warn about hazards that, the suits contend, were first noted more than 40 years ago.

The crux of the matter. Thus, the manufacturer's responsibility clause of the federal proposal remains the crux of labor's break with OSHA on the right-to-know issue. "We've consistently wanted a federal approach, but industry is going after federal standards that are unacceptable," says Sheldon Samuels, safety-and-health director for the AFL-CIO's Industrial Union Dept. "If the chemical industry doesn't want a fair, thorough remedy, it's going to have to pay through the nose." Says Rafael Moure, an OCAW industrial hygienist: "I would welcome a good federal standard, but in its absence I have to go with the logistical nightmare of different requirements."

Labor groups have all but given up hope on a compromise standard. They are still disgruntled over the fate of the health agency's first proposal, which unions found acceptable. Eula Bingham, OSHA's administrator in the Carter Administration, issued that proposal in January 1981, seven years after an OSHA advisory committee had recommended a standard. But the Reagan Administration has held back from implementing that proposal, calling it part of a deliberate "midnight" rule-making blitz by outgoing administrators.

OSHA's new head, Thorne G. Auchter, ran into trouble with the Office of Management and Budget when he tried to issue a modified proposal. But industry's heavy lobbying led Vice-President George Bush, chairman of Reagan's Regulatory Relief Task Force, to rally round the new proposal in March 1982. The current thinking in Washington is that the issue would never have made its way to public debate had industry not feared a proliferation of state laws.

Labor and its supporters, viewing reliance on the federal government as futile, have been rigorously lobbying in state capitals and in cities across the country for state and local right-to-know legislation. Already, 10 states have passed right-to-know statutes, and bills are likely to be introduced in about 13 more states during the coming legislative session.

OSHA's authority. OSHA's legal authority to preempt state laws has not been established. The Occupational Safety and Health Act guarantees states the right to set up their own, separate OSHA programs. Although about half the states currently have their own OSHA programs, few have issued standards that differ from the federal agency's. Therefore, there have been no precedent-setting court cases.

"I'm concerned that there's no explicit federal preemption in the proposal," says ABA's Thompson. Without preemption, he fears, "federal regulations may only add to the confusion rather than resolve it."

A look at some of the state bills goes a long way to explain industry's adamant support of preemption. California recently concluded hearings on a list of more than 700 substances that employers are required to list and label. West Virginia, Wisconsin and Connecticut use the OSHA subpart Z list, which itemizes about 400 toxic substances or physical agents and their permissible exposure limits. Michigan, Oregon and Washington leave the job of defining hazardous substances to the employer.

New York outdoes all of those states, and requires manufacturers to identify for workers the entire NIOSH list of 40,000 substances commonly used in industry. New York's statute is particularly infuriating to industry. "Common table salt is treated the same way as benzene," says Brian T. McMahon, government affairs manager for the New York Business Council.

While McMahon and other industry spokesmen complain bitterly about the intrinsic burden of classifying a myriad of substances, others suggest that perhaps industry should not have full responsibility for identifying hazardous chemicals. "This is normally the function of OSHA, to determine what is hazardous and what is not," notes John W. Whittlesey, chief labor counsel for Union Carbide. "A real question is whether OSHA can delegate its standard-setting to a manufacturer."

Other chemical executives are leery



"The need for information is not the burning issue."

Horace A. Thompson, American Bar Assn

of OSHA's vague definition of a health hazard, which includes any chemical that "may result in the occurrence of acute or chronic health effects in employees." Even CMA's Joyce concedes that the proposed standard is not foolproof—it allows industry to keep a substance unlabeled until scientific conflicts over its potential danger are resolved. "There is no simple answer as to what industry will do if there is contradictory evidence," Joyce says. "It's going to be the proverbial case-by-case decision."

Nagging questions. Legal and philosophical questions of just where responsibility belongs are at the heart of the controversy over right-to-know rules. But there are also nagging procedural questions about how any standard should be implemented. OSHA's proposal calls for labeling of all containers found in the workplace, but its requirements are "performance-oriented." This means that the employer can decide how to label the container—by chemical name, generic name or trade name; what kind of hazard warning is included; and whether the label will be on the container or posted alongside.

Union industrial hygienists fear that the use of generic names will foil their efforts to assess the risks at hand and will fail to alert workers to substances better known by other names. If generic classifications are used, they explain, DBCP or vinyl chloride—which many workers recognize as toxic—could be listed as "halogenated hydrocarbons," a meaningless designation to all but the most sophisticated workers.

The standard is more explicit when it comes to supporting documentation. It would require manufacturers to make a material-safety data sheet (MSDS) available to all employees, explaining in detail various potential hazards of the chemicals. The MSDS, which is already used by many firms, would include data on the effects of long-term exposure and describe health conditions that exposure may aggravate.

User community. Manufacturers are also expected to distribute data sheets to their customers, who must then make them available to their own employees. Although several industry groups question OSHA's legal power to force manufacturers to give an MSDS to any downstream, user of chemicals, most acknowledge the rule's wisdom: Manufacturers are more experienced in dealing with the questions of what is or is not hazardous and in training employees to deal with dangerous substances. "You're talking about the transfer of knowledge to the user community," explains McMahon of the New York Business Council. After New York passed its right-to-know law, he recalls, "the first question I was getting was, 'What's a NIOSH directory?'."

From the viewpoint of both workers and health officials, it is essential that hazard warnings accompany every step of a chemical's journey to end-product.

The chemical industry backs federal preemption of states' and cities' right to know

Dr. Stephen M. Hessl, chairman of Chicago's Cook County Hospital's division of occupational medicine, recounts the case of an 18-year-old worker at a metal-coating operation who was suffering a severe respiratory infection that eventually landed him in intensive care. Hessl asked his patient to describe substances he worked with at the pl Ignorant of the chemical composition the specific powder he used on the and afraid to ask his employer about the worker instead brought a samp Hessl analyzed the powder and fou traces of arsenic.

The original supplier, Amoco, v well aware of the powder's proble but informed Hessl that trimellitic hydride, which was also present in t substance, was actually to blame f the worker's ailment. "They were ve cooperative," Hessl recalls. "They co firmed that the patient had had a re tion to the material." As for the wor er's boss, Hessl says, "I don't think [t employer] knew himself" that the pow der contained either substance.

Such stories lend weight to labor insistence on the need for precise labe

Communities want to know, too

Labor groups are not alone in clamoring for strong right-to-know laws. Now, local communities are also demanding more comprehensive information about substances used within their geographic limits. Some require industry to tell officials not only what chemical substances are used, but how much of the material is present and what the firm does with it. And a few even tell local businesses to disclose the exact location of hazardous substances within a plant.

Many of the existing and proposed rulings are designed to enable localities to plan better the most effective response to an emergency—say, a fire or an explosion. The need for this information has been well documented. A recent study by Ohio State University's Disaster Research Center finds that most U.S. communities are ill prepared for chemical emergencies. While many private firms are equipped to cope with in-plant accidents, the study suggests that towns and cities are particularly deficient in contingency plans for crises related to the transportation of toxics.

Several localities are not willing to settle for rules that just help them handle emergencies. They want regulations to provide health officials and citizens with general information on public exposure to toxic or potentially toxic substances. For example, California's public right-to-know drive is "largely a public-health program," says Kenneth Finney, Governor Edmund G. Brown, Jr.'s assistant for the control of toxic substances. "The need for information hasn't been met at the local level," Finney says. "It is local officials and residents who face the reality of toxic hazards in their communities."

Understandably, the idea of yet another set of regulations mandating the disclosure of data perturbs industry groups. "We're just now realizing that public right to know may override worker right to know in terms of the problems it may present," says Robert E. Belliveau, associate manager of technical government relations for Procter & Gamble. Belliveau, who has worked extensively with the Chemical Specialties Manufacturers Assn. on the right-to-know issue, explains that companies are alarmed at the demand for quantitative information that industry views as confidential.

The California ordinance. California's model ordinance, which requires detailed information from companies about chemicals and their uses, epitomizes the type of law that industry fears. The state took the lead in passing a statewide statute for workplace-labeling in 1980 and is now encouraging cities and counties to adopt its proposed community rules. Moreover, Governor Brown is requesting an allocation of $428,000 in the state's 1982-

ing of chemicals. Indeed, the OSHA proposal describes the exact chemical identity as "the passkey to the scientific literature" concerning a substance's toxic effects. But industry is equally adamant in saying that an employer should not be forced to reveal the chemical name for a substance as long as the company provides detailed information on the hazards of exposure.

Herein, for labor and industry alike, lies the thorny question of trade secrets. And the OSHA standard as it now reads satisfies neither camp. Labor is angered that the agency would allow employers to withhold the chemical identity of a substance—except from a treating physician—if employers can prove that disclosure would jeopardize the product's competitiveness and if a full description of the hazards of exposure is made in the material-safety data sheet. That rule "is full of loopholes an unscrupulous company can drive trucks through," charges Michael Wright, United Steelworkers of America's industrial hygienist. Franklin Mirer, occupational health and safety director for the United Auto Workers, says "OSHA's standard gives employers a free opportunity to call anything a trade secret."

The traditional alliance between labor and OSHA is being turned on its ear

Industry, meanwhile, is irate that OSHA has exempted from trade-secret protection any suspected carcinogens, teratogens, mutagens, or any other substances known to cause severe, irreversible damage to humans. "There is no protection for the chemical which may be carcinogenic, even though there is differing opinion on what is carcinogenic," says Robert P. Vogel, regulatory counsel at Rohm and Haas, who feels industry would like to see more protection for trade secrets involving suspected carcinogens.

Both industry and labor spokesmen have offered to compromise on the trade-secret issue. An OCAW official suggests that NIOSH should determine which formulations are eligible for trade-secret protection. And some unions and companies have suggested that manufacturers provide unions with complete information about proprietary products—as long as the unions sign nondisclosure agreements. But that method could also make unions vulnerable to law suits from ailing workers.

The Steelworkers and the International Chemical Workers Union say they would sign nondisclosure agreements to gain access to substance lists, while UAW's Mirer says his union would not. "If the information is a secret, then I don't want it," he says. Meanwhile, industry and labor are miles apart in their definition of "secret." Says the Steelworkers' Wright: "We are willing to recognize trade secrets, [but] anything a competitor can analyze in a lab shouldn't be included."

Duplication. Thayer Talcott, Dow Chemical's manager of product-safety compliance, concedes that process is the key to duplicating his company's products, which he says could not be easily duplicated working from a substance list. "I have heard manufacturers of disinfectants and the like say that the whole secret of their business is in the particular combination," Talcott notes. But while many such customers claim their products are more easily duplicated—and therefore in greater need of protection—these are the very products that can be most easily analyzed.

Talcott maintains that competitors would learn the workings of process-oriented products like Dow's if they got their hands on a complete list of chemical components. "If you're talking with analytical chemists, they'll say, 'We can find anything if you give us enough time and equipment'," Talcott explains. "But that might mean six to nine months and hundreds of thousands of dollars worth of equipment." With an ingredient list in hand, says Talcott, breaking down a competitor's process would be far less costly.

What purpose the listing of exact chemical compositions would serve for workers—confusion or help—also stirs disagreement. Talcott, for one, insists

1983 budget for educational programs and local hearings on the matter.

Brown's program has broad backing—from environmentalists to labor groups to firefighters. "We feel it is a good idea that firemen have a clear understanding of hazardous substances they face in the event of a fire emergency," says Robert Griffith, director of safety and health for the Federated Firefighters of California.

San Diego County and three California cities—Vallejo, Santa Monica and Union City—have passed their own measures. Vallejo's version is limited to keeping the local fire department informed about local industry's use of toxics. Santa Monica, on the other hand, requires local companies to report by Sept. 1 on three types of material: hazardous wastes, as defined by the state's administrative codes; priority pollutants, as listed by the Environmental Protection Agency; and radioactive materials, as defined by the Nuclear Regulatory Commission.

To many minds, it may seem that the right-to-know concept was born in Jerry Brown's state, but in actuality the first such ordinance was passed by Philadelphia. Since then, at least one other East Coast city has followed suit: Danbury, Conn., passed a public right-to-know ordinance in 1981. "The objective was to provide emergency-response officials with information," says Jack S. Kozuchowski, coordinator of the city's Environmental and Occupational Health Services Dept. Kozuchowski, describing Danbury's ordinance as "really keyed to emergency response," explains that the rules were established after an employee of a local firm died fighting a chemical fire in a storage shed.

The ordinance "has not been vigorously enforced," says a spokesman for Danbury-headquartered Union Carbide. Nonetheless, local industry has lobbied hard against it. And it looks as though the provision will soon be substantially revised. The original ordinance required companies to report to local officials on any of more than 1,000 substances, but the city council will consider altering this to allow companies to submit emergency-response plans instead of a list of substances. The revision would also pare the hazard list to only those substances targeted as hazardous by the U. S. Transportation Dept.

Philadelphia, having passed the first municipal right-to-know law in 1980, now has the longest-running experience in implementing such requirements. The city's law spans the dual health and safety concerns of local requirements: The fire department monitors the storage, handling and transportation of dangerous materials; and the Air Management Services Dept. monitors toxic emissions. So far, the Air Management Service Dept. has found toxic emissions at 135 of the 650 enterprises that returned the department's questionnaire. Air Management Services Commissioner William Reilly is now looking into the emissions at those plants. So far, he says, "we have not uncovered anything alarming."

that chemical names do not convey much information to people who are not schooled in chemistry. But health professionals dispute this view. "Workers can't pronounce them and can't spell them," counters Susan M. Daum, a physician specializing in occupational disease, "but they can copy them down and bring them to me."

Daum is one of a growing cadre of physicians who want right-to-know laws that will both mandate generic chemical names and force companies to keep records in perpetuity of what chemicals were used at what time. They note that many forms of cancer and other diseases have incubation periods measurable in decades, and that it can be essential to know what a patient was exposed to in the past to make an accurate diagnosis today. "If you don't know what you're exposed to, now and 20 years ago, you don't have a chance in the world of figuring out whether [a workplace substance] played a role" in the onset of disease, Daum insists.

'State legislatures have been more eager to put new laws on the books than enforce them'

Some state laws mandate long-term record-keeping, but OSHA's proposals ask only for current lists. To labor, this is unacceptable. "Our union is the last one to want to rely on epidemiological studies," says an OCAW official, "but if some things occur only in human populations and we don't keep the records, we're never going to see the connection" between disease and exposure.

Some right-to-know advocates suggest that manufacturers are wary of keeping records for the long term, fearing better-documented linkage between disease and occupational exposure. But industry disputes this view. "If you have claims being filed, you want to have those records to support your side," says Union Carbide's Whittlesey. "The real problem with keeping records is the expense and the nuisance of keeping a lot of paper. You can proliferate records until they're coming out of your ears, but eventually the space they take up will cost you money."

By requiring only current listings of chemical hazards, OSHA claims it has kept the cost of setting up record-keeping systems down to an estimated $14.7 million for all companies combined. The agency estimates the total cost for implementing its proposals at $581.9 million initially—and $227.9 million each year thereafter. OSHA predicts that initial hazard evaluation would be the most expensive component, accounting for $230 million of industry's costs. Labeling would cost industry an additional $177.8 million to start, OSHA reckons, followed by annual expenditures of $69.8 million. Startup educational programs would require about $125 million.

"We think the proposal overstates the benefits and underestimates the cost," says CSMA attorney Levin. He notes that OSHA puts the cost of educational programs at an estimated $41 per employee during the first year of compliance and $16/year thereafter. But he says that OSHA did not include in its figures either the cost of employee time spent in training or the cost of bringing in an industrial hygienist to conduct the training sessions. Thus, CSMA estimates that the same programs will cost $160 per employee during the first year.



Dr. Stephen M. Hessl (left) wants hazard data to follow substances downstream

The cost of it. Levin and others also argue with OSHA's overall estimates for record-keeping costs. According to Levin, costs will be particularly high for smaller companies producing a variety of formulations. He points to one CSMA member company that must fill in MSDS forms on 2,000 different substances. But even giant Du Pont considers the costs unwieldy. Ned K. Walters, Du Pont's chief of safety and fire protection, estimates that the cost of compliance for one of his company's departments will be twice OSHA figures.

Cost figures from both sides are ballpark estimates at best, for the full scope of the final standard has yet to be decided. So far, the preliminary standard exempts new chemicals in development and all imported substances from hazard communication procedures. Neither of the two exemptions is exhilarating to industry or overly bothersome to labor. Of far more concern to industry is that OSHA has to date refused to exempt laboratories from the rules. And labor is unhappy that the agency has excluded service workers and other non-manufacturing employees.

There is also considerable dissidence—and no little confusion—about requirements for the pipes and reactor vessels used in chemical processes. As OSHA now stands, pipes are exempt from regulations but reactor vessels must be labeled. "Two-thirds of our membership is working with piping systems," says OCAW's Krekel. "We've had a lot of fatalities due to lack of labels in piping."

Krekel cites an accident last year at a Port Arthur, Tex., refinery, where a brick mason died from lack of oxygen when an air hose was mistakenly connected to an unmarked nitrogen flue-gas line. "I'm not saying label the entire piping system," Krekel says. "Label the line ends and label the valves—it would be cost effective."

No simple matter. Industry is no less troubled by OSHA's insistence that it should label reactor vessels. Du Pont's Walters notes that in one of its departments the company uses the same ves-

s to create 50 different products ed on 25 ingredients. Because the mical composition of the contents of essel is constantly being changed, he ys, "it is not always a simple matter label a container."

As a result of all this dissatisfaction, SHA's standard will undoubtedly be amstrung by court battles for years fore it can be implemented. And that another reason why labor is lobbying strongly for state rules. Says AFL-IO industrial hygienist Margaret Seminario: "There will be a real need, practically speaking, to protect people during the next five years."

Even so, unions doubt that the states will vigorously enforce their own statutes. "The state legislatures have been more eager to put laws on the books than to enforce them," notes the Steelworkers' Wright. "You have to push very aggressively to get much action."

Lesser evil. But unions and their allies will press for state rules as the lesser of two evils, simply because they perceive OSHA under Administrator Auchter as an empty shell. "There's really a deep concern on the part of working people about the decimation of OSHA," says Harriet S. Applegate, associate director of the Ohio Public Interest Group. "There's a sense that there's nothing to protect people unless they protect themselves."

Applegate was part of a Cincinnati group that drafted a citywide ordinance for workers' right to know after a joint study by Johns Hopkins and Howard universities, released in 1980, showed that the city led the nation in the incidence of several types of cancer. Despite fierce opposition from the business community, the city council passed a compromise version of the ordinance on June 3.

The bill mandates that employers use National Fire Protection Assn. labels on containers for substances defined as hazardous on OSHA's subpart Z list—a list far shorter than the NIOSH list first proposed. The chemical's name is to be available on the MSDS, except in the case of trade secrets, with the city managers to act as referees if trade secrecy conflicts arise.

Unless OSHA moves far more quickly than most observers expect, what happened in Cincinnati seems likely to be repeated. "We've targeted the right to know as one of the most critical issues for the 1980s," says Warren Stickle, CSMA's director of legislative affairs. "It's going to be an issue that will arise in state after state, community after community." □

Now the generic drugs can be look-alikes, too

When the U.S. patent held by Hoffmann-La Roche for its tranquilizer Valium expires in 1985, more than a dozen makers of generic drugs are expected to seek the Food and Drug Administration's approval to market diazepam, the generic name for the chemical on which Valium is based. And once such approval is granted, each of these companies will likely bring out a pill resembling the size, shape, and color of the little yellow tablets that bring La Roche more than $200 million/year. Companies in the generic market predict that their less-expensive copies could cut Valium sales in the U.S. by 20-30%.

Like any big producer confronted by the expiration of its patent on a big seller, La Roche would be happy to throw a legal monkey wrench into the plans of the generic marketers. "These companies should not be permitted to use the reputation of a brand product," says a La Roche spokesman. "We strongly feel that copying a branded product in any way is a false and deceptive marketing practice."

Court rulings allow makers of generics to carbon-copy name brands as patents expire

Unfortunately for La Roche, that point of view has few friends in court. In the case of *Inwood Laboratories et al vs. Ives Laboratories*, the Supreme Court early this month set a precedent likely to render futile any legal maneuvering that La Roche, or any other name-brand company, has in mind to disrupt competitors' plans to market less expensive, generic look-alikes. And the name-brand manufacturers are uneasily awaiting a ruling by the U.S. Court of Appeals for the Second Circuit (New York City) on another aspect of the same case. Here the industry fears the court will uphold a lower-court decision squarely in favor of the rights that generic manufacturers have to emulate formerly patented products.

The Supreme Court handed down its *Inwood vs. Ives* decision on June 1. The court said that neither Inwood, a small generic drug producer based in New York City, nor a number of other small companies that had joined in the case, should be prevented from marketing drugs identical in composition and appearance to Cyclospasmol. The patent on Cyclospasmol, a circulatory drug developed by the Ives Laboratories division of American Home Products, expired in 1972.

At issue was the validity of an FDA regulation allowing a generic marketer such as Inwood to duplicate the blue-and-red Cyclospasmol capsules. Marketers of generics insist they copy the appearance of a name-brand drug such as Cyclospasmol in order to avoid confusion at wholesale and consumer levels.

Ives argued unsuccessfully in a federal district court that the practice opens the door to mislabeling by pharmacists, whether intentionally or accidentally, and consequently in lost sales for Ives. However, the Second Circuit Appeals Court, on its first hearing of the case, decided that branded drugs deserve protection, reversed the lower court ruling, and enjoined the generic makers from selling copies. The Supreme Court then overturned the appeals court ruling, agreeing with the district court that generic drug companies cannot be held responsible for the possible action of a pharmacist.

A broader claim. However, the Supreme Court did not rule on Ives' broader claim—that the marketing of a look-alike generic constitutes an infringement against the trademark of a name-brand drug. And sources in the pharmaceuticals industry predict that, from their point of view, this claim will fare no better since it, too, was denied by the federal district court and was not ruled on by the appeals court.

The Supreme Court has remanded Ives' broad infringement claim to the appeals court for final disposition, with instructions that the appeals court not overturn the district court ruling unless Ives can unequivocally invalidate the generic drug manufacturers' argument that look-alike drugs are necessary to prevent harmful mixups of dissimilar drugs by consumers. This appeals court ruling is expected later this year.

Buoyed by victory in the Cyclospasmol case, the generic drug industry is now looking ahead with gleeful anticipation. Over the next three years, more than 40 major name-brand drugs will lose their patent protection. Among them is Inderal, a cardiovascular drug

Hazardous Materials: How Much Should Workers Know?

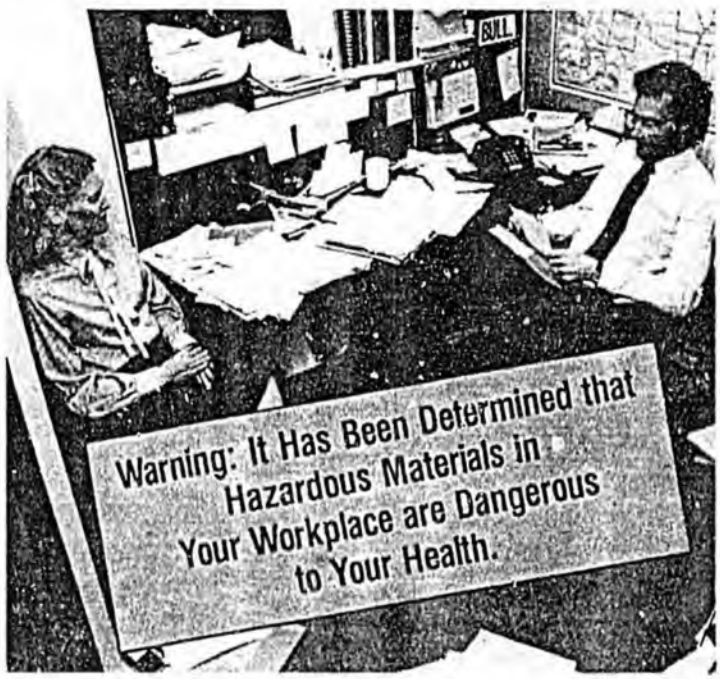
Brian Weberg

"I started in textiles in 1936 at Dan River. I worked there until 1968. Then I moved into Fieldcrest in 1968 and worked there until 1976. While I was there, they found this breathing trouble. They sent me to Chapel Hill and [the doctor] gave me an 8-hour examination. He ordered me out of the cardroom, to be transferred out of the cardroom.

I went back, but the job they were going to move me on had already been taken. So I continued working in the cardroom. They were always giving me the blowing test, kept that going all the time. I would get choked up at times, and I'd have to move to a window so I could breathe. On my way to the car, it was low, the lot. I would have to stop as much as two times to rest to get into my car. It was getting shorter all the time.

So in 1976, March 1, they retired me."

Roy Dowdy, a "brown lung" victim.



Brown lung, black lung, asbestosis and mesothelioma ...these are diseases of industrialization. The rush of labor to the factories and mines exacted, it is now clear, a heavy health toll on many workers.

Until recently, occupational exposure to hazardous substances had been considered simply part of the job. There is little reason to assign fault for this perception: Workers needed jobs and factories needed labor. However, we are beginning to realize that for some workers the health costs were not clear. Under an "iron law of latency" that works silently, we now know that many diseases resulting from occupational exposure to toxic substances may not manifest themselves for periods of from five to possibly 40 years.

The National Institutes of Health estimates that 11 million workers have been exposed to asbestos since the early 1940's. And in 1978, the U.S. Department of Health, Education, and Welfare concluded that as many as 5.6 million Americans may die of diseases rsulting from workplace exposure to asbestos.

While many of those who suffer from the consequences of past exposure have been forced to seek restitution through litigation, recent governmental actions have focused on awareness and prevention to lessen the risks to current and future workers.

Prevention clearly was the intent of the first substantive governmental action on hazardous materials in the workplace—the federal Occupational Safety and Health Act of 1970. But labor unions especially have not been satisfied with efforts to date. And firefighters often argue that they need more information about dangerous chemicals that they may be forced to deal with in an emergency.

The problem has been exacerbated by the rapid increase in the use of chemicals in today's workplace.

Seven states have responded by enacting worker "right-to-know" legislation. Similar bills were introduced in at least 16 other legislatures this year.

Right-to-know legislation establishes employee rights to specific information about hazardous substances that may be found

in the workplace. These laws usually require employers to:

- Notify employes of potential harzards;
- Provide information on safe handling and emergency response for specific chemicals; and
- Create employee education and training programs on the risks of working with hazardous substances and on reducing these risks.

Some statutes also require companies to notify the public, law enforcement officials or fire departments, of hazardous substances being used at local work sites.

The debate, essentially, is over costs—both to the industries involved and to the state for enforcement. Industry has not automatically opposed legislation, but it is concerned that state regulations provide flexibility in compliance and that some degree of consistency among states be maintained. Business groups such as the Chemical Manufacturers Association (CMA) fear that strict and inconsistent state laws will lead only to confusion, hardship and unnecessary costs—without equivalent gains in worker safety.

These worries have led CMA and other industry associations to support federal legislation in this area. Indeed, regulations have been proposed by OSHA to provide significant employer discretion in the administration of a federal "hazard communication" program.

Organized labor also has fought for a federal initiative on this issue. But the program that the federal Occupational Safety and Health Agency (OSHA) proposed in early 1981—a program "tough" enough to gain labor's support—was withdrawn by the Reagan Administration and replaced by the industry-backed "hazard communication" plan.

What States Are Doing

Apparently having lost its bid at the federal level, labor has joined environmentalists, community groups and police and fire protection officials in an effort to promote state and local right-to-know regulations. Labor's shift in emphasis to the state and local level has been paralleled by a signficant increase in activity on this issue in state legislatures.

The seven states that have adopted right-to-know laws are: California, Connecticut, Maine, Michigan, New York, West Virginia, and Wisconsin. Legislative battles over similar proposals are being waged in more than a dozen states. The debate in New Jersey, for example, has been particularly intense; a recent *Wall Street Journal* article notes that chemical makers "see the New Jersey contest as a turning point that provides an opportunity to weaken the right-to-know movement."

Most proposals center on providing workers a Material Safety Data Sheet (MSDS), which is considered the primary means of chemical safety information. There is little disagreement among industry and labor on what should be included in a MSDS.

It is generally accepted that chemical manufacturers are the best source of MSDS information, and legislation usually requires manufacturers to provide the data when requested by an employer regulated under a right-to-know statute. California specifies that out-of-state chemical manufacturers also provide MSDS information on hazardous substances they ship into the state.

More controversial than the contents of a MSDS is the issue of which chemicals should require a MSDS and how the MSDS should be made available to workers. Legislatures have thus far handled these questions in various ways.

New York's law is considered the strictest, and one reason is because its regulations require employers to provide MSDA-type information on any substance listed in the National Institute for Occupational Safety and Health (NIOSH) Registry of the Effects of Toxic Substances (RTECS), or a chemical that has shown "positive evidence of acute or chronic health hazards in human, animal or other biological testing." The registry lists more than 50,000 substances. Industry claims that such a broad definition will require them to provide detailed information on such common substances as "table salt and beach sand."

Another reference, the OSHA "z" list, was adopted by Wisconsin. This list contains about 400 substances and is preferred by industry because it makes compliance easier.

Labor, however, does not hide its desire for extensive definitions of hazardous substances. In providing "tips to remember" for legislators when drafting bills, the AFL-CIO suggests they "seek the broadest scope of chemicals possible. The NIOSH RTECS list is a good place to start."

Some states, though, have avoided the problems of lists and instead left the matter of defining hazardous substances to administrative rule. Another option is to let employers decide what substances in their workplaces are hazardous,

When Questions Are Easier Than Answers

In the debate over workers' right-to-know legislation, there is no shortage of issues:

- What workplaces should be subject to regulation?
- What is a hazardous substance, and who decides?
- Who should be notified about potential workplace hazards and how should notification be accomplished?
- How can important trade secrets be protected if companies are forced to disclose the chemical composition of hazardous substances in the workplace?
- Should workers have the right to refuse to work if adequate information about workplace hazards is not provided by the employer?
- Should records be kept of worker exposure to specific chemicals? How long should the records be kept and by whom?
- What constitutes a good education and training program? Should it be made available before or after the employee enters a new work environment?
- Who should be responsible for supplying detailed safety data on substances designated as hazardous?

and this approach reportedly is being taken in OSHA's proposed federal regulations.

The next step, after deciding which substances are hazardous and what information employers have to provide, is how to notify workers of potential hazards. This is the soul of the regulation—where the workers' right to know is satisfied.

Industry argues that different types of workplaces and situations require different approaches to successful communications about hazards. However, lobbyists working for comprehensive legislation claim that labeling of chemicals in the workplace is a must.

"Without labeling, workers have no way of knowing what precautions to take," says a spokesman for the New Jersey Environmental Lobby. Maine's law, for example, requires that "Each container present in the work area shall be labeled, tagged or marked with the common or chemical names of the chemicals contained." But strict labeling language often does not survive the legislative process and appear in the law.

The main thrust of most right-to-know legislation is a requirement that employers notify workers that potential chemical hazards exist in the workplace, and they have the right under law to know those hazards. Employers are often required to post notice of these rights and inform workers that they may obtain a MSDS for any hazardous substance to which they may be exposed. Some legislation requires that lists of hazardous substances present in a particular workplace be posted.

Education and training programs are often included as a required means of employee notification. Wisconsin, for example, requires education and training to take place before "an employee's initial assignment to a workplace where the employee may be routinely exposed to any toxic substance or infectious agent." Similar provisions in Maine also call for retraining on an annual basis.

There is little disagreement that education and training is the most effective approach to minimize worker injuries from hazardous substances. Industry does argue, however, that such requirements should be flexible so that training can be "consistent with the hazardous nature of the substances and mixtures and with the operations and processes of the workplace."

Under some right-to-know laws, workers also may have the right to refuse to work should they believe that their employer has not followed the regulations. Wisconsin stipulates that if an employee has not received requested information on a toxic substance within 15 days, the employee may refuse to work with or be exposed to the toxic substance. Legislation often includes an associated right—the right against employer retaliation—for those employees who exercise any of their rights established under the law.

Trade Secrets and Records

A major concern of employers, particularly chemical manufacturers, is that right-to-know laws will jeopardize company trade secrets, and they oppose strict language on what chemical specifications must be included in a MSDS. Most legislation, however, includes trade secret protection.

New York, for example, allows manufacturers to withhold the identity of trade secrets from a MSDS and instead register the information with the state health commissioner. If requested, manufacturers must provide employers with information on the toxic effects of a trade secret substance, but can withhold information on its chemical identity. Trade secret provisions may also include employee rights to trade secret information in a medical emergency.

Because of the potentially high cost of compliance, record-keeping has become a major point of contention in the debate. The issue is not only over whether or not records should be kept, but over who should keep them and for how long.

Records of worker exposure are useful since so many diseases related to hazardous substances demonstrate a period of lateney, up to 40 years for some substances. Know-

The debate is over costs—both to industry and to the state for enforcement.

A Genetic Factor

Genetic makeup is one factor that may indicate an employee's health risk when exposed to certain chemicals. According to *U.S. News & World Report*, at least 23 companies already use genetic testing to screen high-risk cases or monitor the health of exposed workers, with many more firms planning to adopt the procedures in the next few years.

Genetic testing raises two major issues:

- How will information gained through genetic testing be used? Will people with certain genetic traits be denied jobs, thus raising the question of discrimination? Or will the information simply be provided to employees as an additional factor in their decision to accept a particular work situation?
- Is the technology sufficiently developed and understood to be used in employment decisions? Some scientists argue that employee monitoring—not screening—is the only appropriate application of current techniques.

The lack of federal laws on genetic testing by employers and the prospect of its expanded use suggest that states will be pressed to deal with these issues. Four states already have related regulations. New Jersey's rule, which outlaws discrimination based on "atypical" genetic characteristics, is the most comprehensive.

ing what hazardous chemicals a worker has been exposed to and when can be invaluable in preventative care, diagnosis, and treatment.

Federal regulations already require that employers maintain exposure and health records on employees. State right-to-know legislation with record-keeping provisions modifies those requirements by assuring that worker exposure to specific substances is included in those records. States may also extend the period that the records be kept. A broader goal of record-keeping might be to establish a data base on worker exposure for epidemiological studies.

Maintenance of these records can be very expensive. Industry claims that because they are already required by federal law to keep records, the imposition of additional, possibly conflicting regulations would only increase costs and provide few additional benefits.

Proponents of a stronger state emphasis on records argue that, although they recently won the right of access to these federally mandated records, the information is insufficient when considering the potential health consequences of exposure.

Several alternatives have been tried or are being considered. Employers in Maine must keep "chemical identification lists" for 20 years and make them available to any "affected employee, former employee, designated physician or representative or the director."

Oregon legislators, who have had a long right-to-know debate, drafted a compromise in their bill: Exposure records would only have to be maintained by the employer for as long as an employee worked for the employer. Upon ending employment, the employee would be given the records and take responsibility for them. This provision, simple as it sounds, has raised concern among Oregon employers with inherently high worker turnover rates.

Another alternative would make the state the keeper of the records for a certain period beyond termination of employment, but this could create a huge administrative burden for the state.

How Effective are Right-to-Know Laws?

It is difficult, at this point, to evaluate the effectiveness of enacted right-to-know laws. Many are in the early stages of implementation; West Virginia's attempt is tied up in the courts.

Most notably, however, few states have allocated sufficient money for the enforcement of the regulations. A spokesman at the Chemical Manufacturers Association, when asked if any of its New York members had experienced an unnecessary burden under that state's strict right-to-know regulations, commented that the New York law has "never been enforced to any degree," but that manufacturers were making a good faith effort to comply. He added that most states are finding that "it's a very significant cost to administer and enforce a (right-to-know) law."

The AFL-CIO, in its suggestions to bill drafters, recommends that agencies with "expertise and a track record for action" be selected to enforce and administer the regulations. "It will do little good," it adds, "to work for the passage of legislation that will not be enforced."

The final test of state commitment to improving the right of workers to know what hazardous materials they are exposed to in the workplace will rest in a legislature's willingness to include realistic enforcement provisions in the bills.

Because effective enforcement requires money—a scarce resource for most legislatures—it is likely that this will be the toughest test for many states to pass.

Brian Weberg is a staff associate for NCSL's Legislative Information Systems and Services.

The Shadow of OSHA

Casting a shadow over the ability of states to enforce their right-to-know laws is the prospect of federal OSHA regulations slated to be issued in final form this summer. It is not clear exactly how the OSHA rules will read.

Known as the Hazard Communication Program, the OSHA rules probably will apply only to manufacturers, giving them fairly broad discretion to decide what chemicals in their workplaces constitute a hazard and thus must be made known to employees. Trade secret protection reportedly will be broad.

It also seems likely that OSHA will include in the regulation a provision for state preemption, but it is difficult to say how extensive the preemption might be.

Clearly, states that currently operate OSHA programs under "state plans" will have to submit right-to-know laws to OSHA for approval. States lacking their own plan will be preempted. But under the expected rule, the preemption would probably extend only to regulation of the manufacturing sector.

An AFL-CIO legal analysis concludes that preemptions will only occur where:

1) the OSHA standard is stronger than the state and local protections; or
2) state laws are in direct conflict with provisions of the federal standard. Since the OSHA standard will not cover many industrial sectors and will not cover the public, it is unlikely it can preempt all state activity.

Existing and proposed OSHA rules—plus other regulations such as the Federal Insecticide, Fungicide, and Rodenticide Act which sets standards for the labeling of pesticides—present a confusing framework to state lawmakers. Some argue that this confusion will be exaggerated only if states continue to enact right-to-know laws.

But even if a federal right-to-know standard is deemed the more effective policy route, it seems clear that the current OSHA proposal falls short of the protections many states have or wish to establish.

Right to know' laws on hazardous substances necessary

STEVEN KADISH

The recent PCB spill in the ort area of Anchorage was a ainatic reminder of the mmunity's exposure to hazrdous and toxic materials. CB or polychlorinated bihenyls is a known cancerusing substance. Since the te 1970s, the use of PCBs as been banned for most rposes in the United States. Hundreds of hazardous and xic substances are used in nchorage every day. Although most are not as danerous as PCBs, these subances can seriously affect e health of those exposed to em.

Workers are in the front ne of potential exposure to ese hazardous substances. or example, carpenters, roofrs, cement finishers, carpet yers and others use various inds of possibly toxic adhelves and glues. Many busiesses including printing, etal manufacturing, launries and others use potentially hazardous solvents for cleaning purposes. Mechanics can be exposed to hydraulic and other lubricating fluids that are harmful. The grisly story of those exposed to asbestos is well-known.

The disturbing fact is that many workers in many occupations are unknowingly exposed to substances that are hazardous to their health. Few companies presently inform workers or community residents about the identity of the chemicals they are exposed to, or about the possible hazards from those chemicals.

Some statistics help describe the magnitude of the problem. Nationally, there are 300,000 to 400,000 new cases of occupationally-related diseases each year. The U.S. Department of Labor has estimated that "nearly 60 percent of the total number of recorded occupational illnesses are related to chemical exposures." Annually 100,000



die of job-related disease. To put these figures in perspective the National Safety Council estimates approximately 52,000 motor vehicles deaths. In 1979, a typical year. 59,000 Americans died in the Vietnam War.

In addition to the human suffering, unnecessary and dangerous exposures to hazardous substances mean production losses, lost wages, health care payments, and higher workers compensation costs.

The "right to know" about hazardous substances that workers and communities are exposed to is developing into one of the biggest public health issues of the 1980s. Nine states and several major cities have already passed "right to know" laws. At least 12 more states will have legislation introduced this year.

"Right to know" legislation is designed to help reduce the incidence of job-related disease and to guard communities against health hazards from nearby companies that use dangerous substances. Last year a "right to know" bill was introduced in the Alaska State House.

"Occupational cancer can be prevented," said Philip Landrigan, MD of the National Institute of Occupational Safety and Health in a "Cincinnati Enquirer" article. "Unlike multiple sclerosis or many cases of diabetes, the causes of a number of occupational cancers are known. Prevention can therefore be achieved by reducing the exposure of workers to the substances which are known to cause those cancers," he added.

With "right to know" employees and employers could begin to take the necessary preventive measures to eliminate or reduce exposures to toxic and hazardous materials. In communities, residents and health officials could have access to information that would help them deal more effectively with illnesses and accidents resulting from hazardous substances.

The U.S. Occupational Safety and Health Administration (OSHA) has just recently concluded public hearings on its version of "right to know," known as the Hazard Communication Standard. While a step in the right direction, there are some major problems with the proposed regulations. The 60 million workers in transportation, agriculture, construction and other sectors are not covered.

Also, the proposed regulation may not be any help for many years to come. Labor, management, government officials and the health & science communities have been able to agree on a federal standard. "As a result, all this dissatisfaction OSHA's standard will undoubtedly be hamstrung in court battles for years before it can be implemented," notes "Chemical Week."

State and local "right to know" legislation provides an option for action now. "There will be a real need, practically speaking, to protect people during the next five years," says Peg Seminario an industrial hygienist with the AFL-CIO.

Our newly elected governor and legislature should take note. They have an opportunity to prevent unnecessary illness, production losses, health and insurance payments and human suffering.

Steven Kadish is executive director of the Alaska Health Project.

Bill No. Senate Bill 79

Date February 3, 1983

Title "An Act relating to toxic and hazardous substances in the workplace"

Contact: Judy Knight
465-2700

Richard Arab
465-4856

As part of its occupational safety and health program, the Department of Labor enforces regulations to protect employees from certain hazardous and toxic substances, and provides consultation and training services to employers and employees on the safe handling and use of these substances. Because it has historically been difficult to identify specific workplaces in the state where toxic and hazardous substances are present, the reporting provisions of this bill may enhance the department's efforts to direct its limited occupational safety and health resources to those workplaces where hazardous exposures actually exist.

Often employers and employees are not aware of the toxic or other harmful qualities of a particular substance being used or handled in the workplace. The labeling and training requirements provided in this bill would go a long way toward filling this void. This would, in turn, effect implementation of protective measures or controls by the employer to safeguard employees.

It should be noted however that in the absence of a federal law that requires manufacturers to provide the information required in this bill, Alaska employers may not be able to obtain and provide it to the Department or to employees (most toxic and hazardous substances are not manufactured in Alaska). Accordingly, the Department's recommendation would be that the bill be amended to hold wholesalers, rather than employers, responsible for obtaining the information from the manufacturers and providing it to buyers. Since there are more wholesalers in the state than there are manufacturers, this amendment would effect a larger universe for compliance with the provisions of the bill. We would also point out that the existing language in the bill, as well as the amendment we are proposing in this regard, may pose legal questions with respect to interstate commerce.

The department also recommends that Sec. 18.60.066(a)(5) and 18.60.067 (b)(9) be amended to clarify that these provisions specifically relate to personal protective equipment.

If this bill is passed many employers will, no doubt, look to the Department of Labor for assistance in providing the required training and in implementing effective protective measures. Accordingly, we would anticipate an increase in the demand for consultative and training services. A fiscal note is attached which reflects the costs associated with providing the increased services.

APPROVED BY Jan Robinson

DATE 2/22/83

POSITION PAPER/Department of Labor

STATE OF ALASKA
FINAL STATEMENT OF FISCAL IMPACT

Bill No: Senate Bill 79 Date on Bill: February 3, 1983
Title: "An Act relating to toxic and hazardous substances in the workplace"
Sponsor: Josephson, Sturgulewski, Fischer
Requestor: Senate Resources

1. Estimated fiscal impacts on:

a. Expenditures:

(Thousands of Dollars)

			FY 83	FY 84	FY 85	FY 86		
Capital								
Operating				128.4	114.0	120.9		
Total								

b. Revenues:

Revenue								

2. Source of funds to offset fiscal impact of bill:

N/A

3. Assumptions:

The Department will collect and disseminate information regarding hazardous chemicals and/or substances to the general public, and as a result will also be making increased work site inspections.

4. This statement has been reviewed by the OMB in the Office of the Governor. It may be considered to represent the policy of the Sheffield Administration and the final estimate of fiscal impact.

Prepared By: NB Robert J. Bacolas Phone: 465-4856
Division: Labor Standards and Safety Date: February 22, 1983

Approved by Commissioner: NB Jim Robison Date: February 22, 1983
Department: Labor

Reviewed by OMB: Date:
Phone:

5. Distribution:
Original to Legislative Finance
Copy to Department
Copy to Sponsor
Copy to Requestor

2/8/83

Detail Analysis for House Bill 79

Under this bill the Department of Labor will be responsible for collecting and disseminating information regarding hazardous chemicals and/or substances at work or storage sites in Alaska.

An Industrial Hygenist position in Anchorage will be required to review and respond to requests about the effects of hazardous chemicals or substances, recommend remedial action if required, and communicate this information to the requestor. In addition one clerical position will be required to provide support for the hygenist.

In addition to the Personal Services costs associated with the Industrial Hygenist and the clerical position there will be a need to increase the department's current contract for laboratory services ($5,000), as well as it's management services and rent allocation ($7,479 and $6,800 respectively). All other costs in Contractual Services are normal operating costs. Additionally, the Industrial Hygenist position will require various scientific measuring and sampling equipment ($7,700), as well as basic office equipment. The travel budget for FY '84 includes $7,500 for recruiting and relocation expenses for the hygenist position and $5,000 needed for extensive in-state travel to visit Alaskan work sites.

Line item costs are as follows:

	FY '84
Personal Services	$ 71,550
Travel	12,500
Contractual	29,525
Commodities	1,500
Equipment	13,300
TOTAL:	$128,375

One time items are $13,300 for equipment and $7,500 for travel.

Alaska State Legislature

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STATE CAPITOL
JUNEAU, ALASKA 99811
(907) 465-3834
(907) 465-3835

Senate

Committee on Resources

February 28, 1983

COMPARISON OF MAJOR PROVISIONS OF "RIGHT TO KNOW"
LEGISLATION, SB 79 and HB 197

Who must comply with the terms of the bill

SB 79---All employers who manufacture, store, use or transport hazardous or toxic substances must comply with information, labeling, reporting and education program provisions of the bill. Only employers using substances in a workplace which is used as a personal residence are excluded.

HB 197--The manufacturer of a hazardous or toxic substance is responsible for developing information and providing it to purchasers. In turn, wholesalers are required to supply same information to purchasers. Wholesalers are not required to provide information to purchasers when such information is already required by federal law.

What substances are covered by the bill

SB 79---All substances listed by the U.S. Department of Transportation, those listed in regulations pursuant to the Occupational Safety and Health Act and those listed in the registry of the National Institute for Occupational Safety and Health would be defined as "hazardous" or "toxic".

HB 197--The Department of Labor would adopt regulations which would define "hazardous" and "toxic" substances using the above lists. The regulations would exclude those substances not posing a health risk because of their physical state, volume, or concentration and those goods, drugs, cosmetics or tobacco products intended for personal use.

What are the reporting requirements

SB 79---Employers are required to provide a "material safety data sheet" (MSDS on substances used, their effects, conditions for safe use and exposure associated to the Department of Labor.

Presumably all information received by the Department, except for trade secrets, would be available to the public.

Reporting requirements continued

HB 197--The Department of Labor would issue regulations on what substances would be required to be reported by manufacturers, wholesalers, or employers to the Department. Information required would include substance descriptions, health effects, exposure conditions, safety procedures, quantities of substances used and other information.

The Department's records, except for trade secrets, would be open for inspection by employees, physicians, and certain other concerned persons. The Department "may" disclose information to the public.

How is information made available to employees

SB 79---An employer is required to make available information on substances to employees or their agents within five working days of a request. All employees and applicants for employment would be provided information on the substances which they would specifically be exposed to. Signs notifying employees of these rights would be required.

A waiver by employees or applicants of this information would be declared void.

Employers would be required to provide employees at least annual safety education programs on substances used or exposed to.

HB 197--Employers must give information to each new employee and to other employees on request (not their agents). Must give new employees and other employees on request safety training on substances.

Employers must post in the workplace information on substances used.

No anti-waiver provision contained.

What are the labeling requirements

SB 79---Containers of more than one gallon of the substances must be labeled by the name, hazards, exposure treatment and safe handling procedures. Pipes and fixtures containing substances in workplace must be labeled.

HB 197--No labeling requirements.

What is the role of the Department of Labor

SB 79---The Department is authorized to assist employers in the supplying of information to the Department. Presumbly the Department would be responsible for the enforcing of reporting requirements. Also, they would monitor and possibly issue additional requirements for the employee safety education programs.

HB 197--The Department would adopt regulations defining substances to be covered; would receive and presumably enforce, information on substances used by manufacturers, wholesalers and employers; and adopt regulations relating to the access to records and information.

No provisions relating to technical assistance are contained.

Alaska State Legislature

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ROBERT H. ZIEGLER, SR., Vice Chairman
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POUCH V
STATE CAPITAL
JUNEAU, ALASKA 99811
(907) 465-3834
(907) 465-3835

Senate

Committee on Resources

MINUTES

May 11, 1983
3:10 p.m.

Beltz Room
Room 211, Capitol

MEMBERS PRESENT

Senator Fahrenkamp, Chair
Senator Ziegler, Vice Chair
Senator Eliason
Senator P. Fischer
Senator V. Fischer
Senator Mulcahy
Senator Sturgulewski

CALENDAR

SB 79 An Act relating to toxic and hazardous substances in the workplace; and providing for an effective date.

Pat Pourchot, committee aide, explained that the proposed committee substitute and letter of intent were the product of meetings between business, labor, health, and environmental groups, who worked together to arrive at a bill agreeable to all. He said the bill had been pared down to dovetail with federal OSHA regulations, and he went over specific provisions of the bill.

T.J. Thrasher, co-chair of the Alaska Employers' Committee, said she had participated in the meetings to work on the bill, and that the language of the committee substitute was acceptable.

Jim Robison, Commissioner of the Department of Labor, said that the Administration supports the committee substitute, and commended those who worked on the bill. There was discussion of how the OSHA regulations would relate to the committee substitute.

Senator Josephson's staff presented written testimony to the committee.

Mike Andrews of the Fairbanks Painters Union and Anchorage Painters Local, supported the committee substitute.

Senator Vic Fischer moved to adopt the committee substitute. The motion passed without objection.

Senator Vic Fischer moved to adopt the letter of intent. The motion passed without objection.

Senator Vic Fischer moved that the committee substitute, with the letter of intent, be reported out of committee with individual recommendations. The motion passed without objection.

The meeting adjourned at 3:34 p.m.

Alaska State Legislature

Senate

Resources Committee

cial Business

Bettye Fahrenkamp
Chairman

Pouch V
State Capitol
Juneau, Alaska 99811

February 28, 1983
3:05 p.m.

Beltz Room
Room 211 Capitol

MEMBERS PRESENT

Senator Fahrenkamp
Senator Ziegler
Senator Eliason
Senator Paul Fischer
Senator Vic Fischer
Senator Mulcahy
Senator Sturgulewski

SB 79 Relating to toxic and hazardous substances in the workplace.

Senator Josephson presented written testimony supporting SB 79. He stated that OSHA has held hearings on "right to know" standards, however they are concerned only with manufacturing which effects very few Alaskans. Even if National rules were adopted it would not preclude states from adopting rules that are less stringent than the federal ones. He added that the savings to the State through fewer health emergencies, fewer law suits, fewer road closures, lost work-days, Medicaid, and general medical assistance claims would be great.

Judy Knight, Department of Labor testified that labeling and training requirements would fill a void presently experienced in the implementation of protective measures by the employer to safeguard employees. Often employers and employees are not aware of the toxic or other harmful qualities of a particular substance being handled in the workplace. Department's recommendation would be that the bill be amended to hold wholesalers, rather than employers responsible for obtaining the information from manufacturers and providing it to the buyer. The Department of Labor feels that implementing effective protective measures would increase the demand for consultative and training services which would increase the cost.

Richard Arub, Department of Labor stated that regarding Federal standards versus State standards, we have an obligation under the State plan to have as effective regulations as the federal regulations.

Steven Kadish, Director, Alaska Health Project supports SB 79. There are more than 150 industrial facilities in Alaska that generate more than 2,200 pounds of hazardous waste per month. He recommended that language be included in the Senate Bill from sections (a) and (b) of the House Bill.

Bill Schneider, representing the Alaska Employers' Committee testified that SB 79 shows no evidence that the bill will accomplish its purpose of promoting safety and health in the Alaska workplace. Instead, the bill provides ...sive regulatory burden, additional bureaucracy and unreasonable expense to ...ska's taxpayers.

Jay Nelson, Alaskan Environmental Lobby testified in support of SB 79.

J. P. Tangent testified in opposition to SB 79 not because of lack of concern for employees health and safety but because most employers are over-burdened now with existing state and federal regulations.

Beverly Ward representing Atlantic Richfield Company testified that SB 79 is lacking (1) a uniform program (2) any program should be based on risk assessment and the communication of identified hazards; and (3) standards should be performanced-based to maximize flexibility, effectiveness, and to reduce unnecessary costs. ARCO is concerned about the conflicting federal, state, and local laws and regulations covering the identification and labeling of chemicals.

Wally Kubley, Louisiana Pacific, testified that the act is redundant and that existing state and federal agencies are already covering the intent of the provisions of the Act.

A film entitled "Song of the Canary" was shown.

Meeting adjourned at 4:00 p.m.

RIGHT TO KNOW

An Act Relating to Hazardous or Toxic Substances.

Questions and Answers on House Bill 197 and Senate Bill 79.

1. What is it?

"Right to Know" refers to legislation which requires that the use of certain hazardous and toxic materials found in the workplace are made known to the workers exposed to them, so that appropriate preventive health measures can be taken. On January 27, 1983 Senate Bill was introduced by Senators Josephson, Fahrenkamp, V. Fischer, and Sturgulewski. The House Labor and Commerce Committee introduced House Bill 197 on February 14.

2. Why do we need it?

Hundreds of toxic and hazardous substances are used throughout Alaska every day. Many of these materials are first used in the workplace and then often take the form of hazardous wastes. Few companies presently inform workers about the identity of those chemicals they are exposed to, or about the possible hazards from those chemicals. The result is that workers are unknowingly exposed to substances that are hazardous to their health.

For Workers. Some statistics help describe the magnitude of the problem. Nationally, there are over 300,000 new cases of occupationally-related diseases each year. The US Department of Labor has estimated that "nearly 60% of the total number of recorded occupational illnesses are related to chemical exposures." Annually 100,000 die of job-related disease. That death toll equals a 747 Jumbo Jet aircraft crashing every day of the year. To compare, there are 52,000 motor vehicle deaths each year. With 3,000 new chemicals introduced in our workplaces each year, the situation is likely to become worse.

For Businesses. In the January 31, 1983 issue of Time, the American Cancer Society said, "When workers aren't there, business doesn't work. Each year cancer strikes 120,000 in the workforce and causes our economy to lose more than $10 billion in earnings." Production losses, retraining costs, workers compensation charges, and health payments are real costs to employers. Right to Know legislation would help limit these business costs.

For Health Professionals. The symptoms of occupational illnesses are sometimes confused with other illnesses. Nausea, dizziness, respiratory problems, and a variety of cancers are among the ills that may result from workplace exposures in many Alaskan occupations. In order for the health professional to properly diagnose and then treat these disorders, the chemical substances a worker is exposed to is essential information. The current labeling information is inadequate for these purposes. Right to Know enables workers to inform their physicians and other medical professional basic information that may affect their health.

For Communities. The exposure to hazardous and toxic substances is not limited to their use in the workplace. The transportation, storage, and disposal of these materials can threaten the public's health. Recently, there have been numerous Alaskan and national examples of hazardous materials emergencies. Those transporting toxic and hazardous substances need to know what they are carrying and what to do in emergencies to limit the impact on the community. Public safety officials need to be able to accurately identify a substance and how it should be handled in emergencies. Right to Know provides essential information in these circumstances.

With Right to Know employees and employers could begin to take the necessary preventive measures to eliminate or reduce exposures to toxic or hazardous materials. In communities, residents, public safety officials, and health professionals could have access to information that would help deal more effectively with illness and accidents resulting from hazardous substances.

3. How do the proposed bills work?

In both the House and Senate legislation, the employer is required to supply employees with a Material Safety Data Sheet (MSDS) on specified toxic and hazardous substances to include: the chemical and trade name of the substance, permissable exposure levels, chronic and short term health effects, safe use conditions, proper clean-up procedures, and emergency medical treatment. An employee education program covers much of the same information so that the employee better understands this information. This education program is provided by the employer. The MSDS is also filed with the state.

MSDS already have been prepared by the manufacturer of the toxic and hazardous substances to be regulated. An employer, then, simply has to take an inventory of the substances covered by the proposed legislation and request a MSDS from the manufacturer. In fact, the US Longshoremen and Harborworkers Compensation Act requires that a MSDS be attached to all ocean transported hazardous goods. This means that MSDS information should be readily available on many of Alaska's products as they are shipped by sea. Finally, enforcement of these provisions would be part of the Department of Labor's Occupational Safety and Health Section regular inspection for workplace safety and health.

4. Other States and Right to Know?

To date, nine states and several major cities have passed Right to Know laws. Bills in another 13 states are likely to be introduced in the next legislative session. The states and cities that already have Right to Know laws include:

California	Connecticut
Maine	Michigan
New York	Virginia
West Virginia	Philadelphia, PA
Cincinnati, OH	San Diego, CA

5. A Proposed Federal Standard?

The US Occupational Safety and Health Administration (OSHA) has just recently concluded public hearings on its version of Right to Know, known as the Hazard Communication Standard. While a step in the right direction, there are some major problems with the proposed regulations. First, the proposal only applies to employees in manufacturing. The 60 million workers in transportation, agriculture, construction and other sectors are not covered. Only a small portion of Alaskans are employed in manufacturing.

Also, the proposed regulations may not be any help for many years to come. Labor, management, health professionals and others have not been able to agree on this federal standard. "As a result of all this dissatisfaction, OSHA's standard will undoubtedly be hamstrung by court battles for years before it can be implemented," notes Chemical Week, a trade magazine for the chemical industry.

State Right to Know legislation provides an option for action now. "There will be a real need, practically speaking, to protect people during the next five years, says, Peg Seminario an industrial hygienist with the AFL-CIO.

6. How much will it cost?

This year's HB 197 is virtually identical to last year's HB 806. The fiscal note on HB 806 in 1982 was $58,600. This is comparable to costs for New York State when adjusted. Because the proposed Senate legislation asks the State to assist employers in preparing MSDS and other information. The cost may be slightly higher for this bill than for the House version.

Many large employers are already operating at close to compliance. These large employers should attain compliance at little additional cost. Small and medium sized firms will probably face some minimal start-up costs. In the Senate bill, the Department of Labor's assistance to employers helps minimize these costs and makes compliance easier. Labeling requirements in the Senate bill may increase costs to employers when compared to the House bill.

This information sheet was prepared by the Alaska Health Project, PO Box 1037, Anchorage, AK 99510, 272-8734.

* There are over 150 industrial facilities that generate over 2200 pounds of hazardous waste each per month in Alaska. Are you working in one of these buildings? Do you live near one of them?

* In the fall of 1982, transformers containing PCBs, a cancer-causing substance, being hauled along the Parks highway from Fairbanks to Anchorage began to leak resulting in a massive clean-up effort. The boxes containing the transformers were not properly labeled to indicate the contents or the health hazards of exposure from PCBs. Also, these containers were not adequate for the transportation of hazardous materials. How often are PCBs and other hazardous substances transported in this manner?

* In Ketchikan in the summer of 1982, some residents spent a weekend vomiting, coughing and complaining of stomach cramps when they were exposed to a wood preservative, pentachlorophenol. A company was spraying the preservative on a rooftop when strong winds carried the vapor to a nearby residential area. The residents exposed to this chemical were unaware of this activity and the health hazards associated with it.

* This summer a toxic fire occurred 8 miles north of Livengood when a tractor trailer truck carrying a class B poison, MMT caught fire. The fire started when a rock punctured one of the 35-gallon drums containing the poison. No one at the scene, including the driver knew how this chemical should be handled. The haul road was closed for 7 hours. The three people exposed to the fire's fumes were rushed to the hospital and suffer serious pulmonary disorders. What would happen if this same incident occured in Anchorage or Fairbanks?

Right to Know: What is it?

"Right to Know" refers to legislation which requires that the use and composition of certain hazardous and toxic materials found in the workplace are made known to the workers and communities exposed to them, so that appropriate preventive health measures can be taken. It is legislation that would help deal specifically with the examples above and others like them.

Right to Know: Why do we need it?

Hundreds of hazardous and toxic substances are used throughout Alaska every day. Many of these materials are first used it the workplace and then often take the form of hazardous wastes. Few companies presently inform workers or community residents about the identity of the chemicals they are exposed to, or about the possible hazards from those chemicals. The result is that both workers and residents are unknowingly exposed to substances that are hazardous to their health.

Some statistics help describe the magnitude of the problem. Nationally, there are 300,000 to 400,000 new cases of occupationally-related diseases each year. The US Department of Labor has estimated that "nearly 60% of the total number of recorded occupational illnesses are related to chemical exposures." Annually 100,000 die of job-related disease. In comparison, there are 52,000 motor vehicle deaths each year, and about 59,000 Americans died in the Vietnam War!

With "Right to Know" employees and employers could begin to take the necessary preventive measures to eliminate or reduce exposures to toxic and hazardous materials. In communities, residents and health officials could have access to information that would help them deal more effectively with illnesses and accidents resulting from hazardous substances.

Other States and Right to Know

To date, nine states and several major cities have passed "Right to Know" laws. Bills in another 13 states are likely to be introduced in the next legislative session. The states and cities that already have "Right to Know" include:

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Also, the proposed regulations may not be any help for many years to come. Labor, management, government officials, and the health and science communities have not been able to agree on this federal standard. "As a result of all this dissatisfaction, OSHA's standard will undoubtedly be hamstrung by court battles for years before it can be implemented," notes Chemical Week, a trade magazine for the chemical industry.

State "Right to Know" legislation provides an option for action now. "There will be a real need, practically speaking, to protect people during the next five years, says, Peg Seminario an industrial hygienist with the AFL-CIO.

Key Elements of A Strong Right to Know Law

An effective "Right to Know" law must include the following:

*employees are informed about and trained to work with hazardous and toxic materials they may be exposed to;

*hazardous and toxic substances containers and piping are accurately and adequately labeled;

*trade secret provisions are developed to protect both the employees' health and the employers' production processes;

*an outreach and information program that effectively teaches all Alaskan employers and employees about their rights and responsibilities under "Right to Know"; and

*information involving this act is centrally and systematically filed, and available to the public, health providers and fire departments.

What Your Can Do

Contact Your Legislator. A version of "Right to Know" was introduced in the Alaska State House last session, but received little attention. Your legislator needs to know that "Right to Know: is a priority of yours that should be enacted.

Write a Letter to the Editor. This part of the newspaper is widely read. It is your opportunity to let the community know about the problem of hazardous and toxic substances and what can be done about it by passing a "Right to Know" law.

Organize a Public Forum to Discuss Right to Know. Many people have questions, fears, and examples of their exposures to hazardous and toxic substances and how a "Right to Know" law would have helped them. A forum open to the community with knowledgeable speakers would help develop strong support for "Right to Know" legislation and act as an educational opportunity.

Document Experiences with Hazardous Substances. People's real experiences with exposure to hazardous materials provide a powerful message and help us to better understand how widespread the problem is. If you or others you know have had dangerous or potentially dangerous contact with toxic or hazardous substances, please let us know. Contact the organizations listed below.

Contact Your Friends and Other Organizations. Although there are many reasons to support "Right to Know" legislation, some people are opposed to it, including the Chemical Manufacturers of America and some businesses who see this type of action as unnecessarily costly. "Right to Know" will only pass in Alaska with widespread support. Encourage your friends and organizations to contact their legislator.

For more information contact:

Paul Dunham, AFL-CIO, 2501 Commercial Drive, Anchorage 99501, 279-3825
Steven Kadish, Alaska Health Project, PO Box 1037, Anchorage 99510, 272-8734
David Wigglesworth, Alaska Center for the Environment, 1069 W. 6th, Anchorage 99501, 274-3621

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STATE CAPITAL
JUNEAU, ALASKA 99811
(907) 465-3834
(907) 465-3835

Senate

Committee on Resources

March 24, 1983

Memo

To: Ad hoc Review Committee for SB 79: "Right to Know" legislation

From: Senate Resources Committee Staff

Subject: Rough draft Committee Substitute for SB 79

Attached for your review and comment is a beginning draft substitute for SB 79 dealing with hazardous and toxic substances in the workplace.

At our hearings in Juneau on February 28 and in Fairbanks on March 11, 1983 most persons testified in support of the basic intent and purposes of the bill--the informing of employees of potential exposures to hazardous and toxic substances in their workplaces. However, many persons expressed concern that the particular provisions of SB 79 created unreasonable economic and bureaucratic burdens on employers and the state. It was also stated the either existing or proposed federal laws/regulations would accomplish the same intent of SB 79 and as such made this legislation unnecessary and duplicative.

Senator Fahrenkamp has acknowledged the problems in the current bill and directed staff to pursue a committee substitute with concerned interest groups under the assumption that most persons were in basic accord with the general intent and purposes of the legislation and that state law would not necessarily duplicate federal efforts. Staff was instructed to look into this latter assumption also. It is our conclusion that existing federal OSHA law and regulation is quite limited to only setting workplace exposure levels to a very few toxic substances such as asbestos and does not deal with "right to know" provisions per se. It was also concluded that proposed OSHA regulations may or may not be adopted this summer or by any other time certain. Furthermore, these regulations cover only manufacturers of substances which would cover only a relatively small portion of the employers in Alaska. It was found, however, that federal and state law and regulations do require substantial labeling requirements for hazardous and radioactive substances which are shipped or transported. In conclusion, however, it was found that Alaska state law on this subject could be structured in a manner which would address the basic intent of the legislation without being duplicative of federal law or regulation.

The attached draft borrows heavily from the similar bill which has been introduced in the House, HB 197. It was felt that this legislation met many of the objections to SB 79 and would form a better starting point for discussions.

The draft contains provisions which address the following:

1) Directs the Dept. of Labor (DOL) to develop a list of "hazardous and toxic substances" using the DOT, OSHA, and NIOSH lists. However, the intent would be for the DOL to use discretion in the formulation of the list and specifically to exclude: a) substances because of their amounts do not pose a health hazard and b) subtances used for personal consumption (grocery store items, etc.)

2) Manufacturers would be required to supply material safety data sheets (MSDSs) or OSHA Form 20s or equivalent information on substances for wholesalers. Wholesalers, in turn, would be required to supply this same info to employers. Employers then would be required to supply the information to new employees (not applicants) and to other employees on request (not agents).

3) Employers would also be required to post info in workplace or other appropriate place.

4) Employers would be required to provide training for employees on the effects, safety precautions and exposure conditions of substances in workplace.

5) An employer would be allowed 30 days to provide info to employee upon request. After 30 days employee can not be made to work with substance.

6) DOL authorized to provide assistance to employers in obtaining info and developing training programs.

7) A report (not annual) is required to DOL by employers on the info on substances they use and the safety procedures and equipment they have.

8) The DOL is to issue regulations governing access to the info reports filed by employers to ensure access by employees subject to trade secrets protection.

9) The definitions include "employee" as one who works in other than a personal residence; and "employer" as one who conducts work in other than a personal residence and also includes the state and local governments.

Please review this draft and get your comments back to Pat Pourchot or Sandra Schubert by Monday, April 4. Based on the comments we will probably want to get together with as many concerned groups and persons as possible shortly thereafter to work out further problems and develop additional language.

Messrs. Pehler, Taylor, Frederick, Diessner and Chmielewski introduced--

S. F. No. 576 Referred to the Committee on Employment

A bill for an act

relating to labor; providing for occupational health and safety; providing for an employee right to know; protecting trade secrets; providing penalties; amending Minnesota Statutes 1982, section 182.651, by adding subdivisions; 182.653, by adding subdivisions; 182.658; 182.66, subdivision 1; 182.661; 182.663, subdivisions 2 and 5; 182.664, subdivisions 3 and 5; 182.666; 182.667, subdivision 2; and 182.668.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF MINNESOTA:

Section 1. Minnesota Statutes 1982, section 182.651, is amended by adding a subdivision to read:

Subd. 14. "Hazardous substance" means a substance or mixture meeting the criteria of ANSI Z129.1-1982 (American National Standards Institute Standard for the Precautionary Labeling of Hazardous Chemicals) for any combustible liquid, compressed gas, corrosive material, dangerously reactive material, extremely flammable material, flammable material, high toxic material, irritant, pressure-generating material, pyroforic material, strong oxidizer, strong sensitizer, or toxic material, if such substance or mixture may cause a significant risk to safety or health during or as a proximate result of any customary or reasonably foreseeable handling or use.

The following substances or mixtures are not hazardous substances if they are:

(a) products intended for personal comsumption by employees

exemptions

in the workplace;

(b) consumer products packaged for distribution to, and used by, the general public, including any product used by an employer or the employer's employees in the same form, concentration, and manner as it is sold to consumers, and to the employer's knowledge, employee exposure is not significantly greater than the consumer exposure occurring during principal consumer use of the product;

(c) products labeled pursuant to the Federal Insecticide, Fungicide and Rodenticide Act, as amended, and the Federal Food, Drug, and Cosmetic Act, as amended;

(d) waste products labeled pursuant to the Resource Conservation and Recovery Act;

(e) any substance received by an employee in a sealed package and subsequently sold or transferred in that package, if the seal remains intact while the substance is in the employer's workplace;

(f) any article, including but not limited to, an item of equipment or hardware, which contains a hazardous substance, if the substance is present in a solid form which does not create a health hazard as a result of being handled by an employee;

(g) any hazardous substance that is bound and not released under normal conditions of work or in a reasonably foreseeable occurrence resulting from workplace operations;

(h) products sold or used in retail food sale establishments and all other retail trade establishments, exclusive of processing and repair work areas;

(i) any substance, mixture, or product if present in a physical state, volume, or concentration for which there is no valid and substantial evidence that a significant risk to human health may occur from exposure;

(j) products labeled pursuant to 6MCAR sections 4.9214 and 4.9216.

Sec. 2. Minnesota Statutes 1982, section 182.651, is amended by adding a subdivision to read:

Subd. 15. Chapter 182 shall not apply to materials being

developed and used only in a research laboratory.

Sec. 3. Minnesota Statutes 1982, section 182.651, is amended by adding a subdivision to read:

Subd. 16. "Trade secret" means information, including a formula, pattern, compilation, program, device, method, technique, or process, that derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by, other persons who can obtain economic value from its disclosure or use, and is the subject of efforts that are reasonable under the circumstances to maintain its secrecy.

Sec. 4. Minnesota Statutes 1982, section 182.651, is amended by adding a subdivision to read:

Subd. 17. "Data sheet" means a material safety data sheet or other literature prepared pursuant to section 182.653, subdivision 8.

Sec. 5. Minnesota Statutes 1982, section 182.651, is amended by adding a subdivision to read:

Subd. 18. "Chemical name" means the designation of a chemical in accordance with the nomenclature system developed by the International Union of Pure and Applied Chemistry or the Chemical Abstracts Service.

Sec. 6. Minnesota Statutes 1982, section 182.651, is amended by adding a subdivision to read:

Subd. 19. "Designated representative" means any individual or organization to whom an employee or former employee gives written authorization to exercise the employee's rights under chapter 182.

Sec. 7. Minnesota Statutes 1982, section 182.651, is amended by adding a subdivision to read:

Subd. 20. "Manufacturer" means anyone who produces, synthesizes, extracts, or otherwise makes, processes, blends, packages, or repackages a hazardous substance or mixture.

Sec. 8. Minnesota Statutes 1982, section 182.653, is amended by adding a subdivision to read:

Subd. 8. The manufacturer of any hazardous substance shall

safety and health standard promulgated under Laws 1973, Chapter 732, any existing rule or regulation promulgated by the department, may be punished by a fine of not more than $10,000 or by imprisonment for not more than six months or by both; except, that if the conviction is for a violation committed after a first conviction of such person, punishment shall be a fine of not more than $20,000 or by imprisonment for not more than one year, or by both.

Sec. 24. Minnesota Statutes 1982, section 182.668, is amended to read:

182.668 [TRADE SECRETS.]

Subdivision 1. [EMPLOYER CLAIM AS TRADE SECRET.] (a) If an employer or manufacturer receives a request for information that is a trade secret, the employer or manufacturer shall inform the requester that all or part of the requested information is a trade secret but shall provide any part of the requested information that is not a trade secret.

The claim of an employer or manufacturer that information is a trade secret is presumed to be valid. If the claim is challenged by the commissioner on his or her own initiative, or upon receipt of a request by an employer who is a purchaser of the hazardous substance which is the subject of the trade secret designation, the commissioner shall notify the manufacturer or employer of the challenge by certified mail.

(b) The employer or manufacturer of the hazardous substance shall have 15 days, exclusive of weekends and legal holidays, which time period can be extended by the commissioner for just cause, after receipt of notification to provide the commissioner with a complete justification and statement of the grounds on which the trade secret is being claimed. A claim by the employer or manufacturer that the justification and statement containing the trade secret information is a trade secret shall likewise be presumed to be valid. This justification and statement shall be submitted by certified mail.

(c) The commissioner shall determine whether the requested information is protected as a trade secret within 15 days,

exclusive of weekends and legal holidays, after receipt of the justification and statement, or if no justification and statement is filed, within 30 days, exclusive of weekends and legal holidays, of the original notice, and shall notify the employer or manufacturer and any party who has requested the data of that determination by certified mail. If the commissioner determines that the requested information is not protected as a trade secret, the final notice shall also specify a date, not sooner than 15 days, exclusive of weekends and legal holidays, after the date of mailing of the final notice, when the information shall be available upon request.

(d) Prior to the date specified on the final notice, an employer or manufacturer of the hazardous substance may institute an action in an appropriate court for a declaratory judgment as to whether the requested information is subject to protection under this act.

Subd. 2. [TRADE SECRET DISCLOSURE.] All information reported to or otherwise obtained by the commissioner or his representative in connection with any inspection or proceeding under Laws 1973, Chapter 732 which contains or which might reveal a trade secret shall be considered confidential except that such information may be disclosed to other officers or employees concerned with carrying out Laws 1973, Chapter 732 or when relevant in any proceeding under Laws 1973, Chapter 732.

Subd. 3. [PROTECTIVE ORDERS.] The commissioner shall issue such orders as may be appropriate to protect the confidentiality of trade secrets by allowing, upon the request of an employer or manufacturer, any authorized representative of employees in inspections of trade secrets areas or discussions involving trade secrets to be replaced by an employee authorized by the employer; by permitting the employer to screen out trade secret details where photographs are deemed essential to the investigation; and by allowing the employer to restrict samples to be taken where trade secrets might be exposed.

Subd. 4. [PENALTY.] Information provided to an employer, employee, or designated representative pursuant to section

Alaska State Legislature

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POUCH V
STATE CAPITAL
JUNEAU, ALASKA 99811
(907) 465-3834
(907) 465-3835

Senate

Committee on Resources

May 20, 1983

Memo

To: Senator Bettye Fahrenkamp

From: Senate Resources Committee Staff

Subject: Support for SB 79, "Right to Know" bill

On May 2 and 3, 1983 staff met with representatives from the following interests and organizations with expressed purpose of redrafting SB 79 dealing with hazardous and toxic substances in the workplace:

Alaska Employer's Committee	(William Schneider, T.J. Thrasher)
Associated General Contractors	(Resa King, William Schneider)
Alaska Trucking Association	(T.J. Thrasher)
Sohio	(Bob Straub)
Arco	(Beverly Ward)
Alaska District Council of Laborers	(Mick Hotrum)
Alaska Health Project	(Steve Kadish)
Alaska Environmental Lobby	(Jay Nelson, David Wigglesworth)
Alaska State Dept. of Labor	(Judy Knight, Richard Arab)
Senator Josephson's Office	(Henry Lancaster)

At the end of the two days of meeting, all participants concurred in the general provisions of the draft subject to reviewing the language and consulting with their organizations.

Following the meeting staff worked with Legal Division in formally drafting a committee substitute. All participants were sent a copy of the draft for review and staff contacted each for comments. After a redrafting all participants verbally approved the committee substitute.

At a Resources Committee hearing on the bill on May 11 testimony was received from T.J. Thrasher representing the Alaska Employers Committee, from Commissioner Robison of the State Department of Labor and Mike Andrews representing the International Brotherhood of Painters and Allied Trades. All testified in support of the committee substitute for SB 79. Prior to the hearing and following the hearing specific support for the committee substitute was formally received from the Alaska Environmental Lobby, the Alaska Health Project, the Alaska District Council of Laborers and individual members of the Alaska Employers Committee including The Alaska Cleaners. Additional support has been received from the Golden Valley Electric Association. At this date the committee substitute is still being reviewed by Arco and no approval or disapproval as been received.

STATE OF ALASKA
FISCAL NOTE

Revision Date June 20, 1983

I. REQUEST

Bill/Resolution No.: CS for SB 79
Title: "...hazardous & toxic substances"
Sponsor: Senate Labor & Commerce
Requestor: Senate Labor & Commerce

II. FISCAL DETAIL

Agency Affected: Labor
Program Category Affected: Worker Protection
BRU, Program of Subprogram(s) Affected: Labor Standards & Safety, Occupational Safety & Health

EXPENDITURES/REVENUES: (Thousands of Dollars)

	FY 83	FY 84	FY 85	FY 86	FY 87	FY 88
OPERATING						
100 PERSONAL SERVICES		68.8	79.5	84.3	89.4	94.8
200 TRAVEL		15.0	10.6	11.2	11.9	12.6
300 CONTRACTUAL		26.4	22.7	24.1	25.5	27.0
400 COMMODITIES		2.0	2.1	2.2	2.4	2.5
500 EQUIPMENT		1.5	0	0	0	0
600 LAND & STRUCTURES						
700 GRANTS, CLAIMS, ETC						
TOTAL OPERATING		113.7	114.9	121.8	129.2	136.9
CAPITAL						
REVENUE						

FUNDING: (Thousands of Dollars)

GENERAL FUND		113.7	114.9	121.8	129.2	136.9
FEDERAL FUNDS						
OTHER (Specify Source)						

POSITIONS:

FULL-TIME		2	2	2	2	2
PART-TIME						
TEMPORARY						

III. SOURCE OF FUNDS TO OFFSET FISCAL IMPACT OF BILL:

N/A

IV. ANALYSIS: Attach a separate page for any analysis

Prepared By: RB Robert J. Bacolas, Sr. Phone: 465-4870
Division: Labor Standards and Safety Date: June 20, 1983

Approved by Commissioner: RB Jim Robison Date: June 20, 1983
Department: Labor

LEG:B:9

Distribution:
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3/8/83

FISCAL NOTE

THE LEGISLATURE OF THE STATE OF ALASKA
THIRTEENTH LEGISLATURE
TITLE: "An Act relating to hazardous and toxic substances."
AGENCY AFFECTED: Department of Labor
Page 2

Under this bill the Department of Labor will be responsible for collecting and disseminating information regarding hazardous chemical and/or substances at work or storage sites in Alaska. The first year will include an intensive employer training program at locations throughout the State.

An Industrial Hygienist position in Anchorage will be required to review and respond to requests about the effects of hazardous chemicals or substances, recommend remedial action if required, and communicate this information to the requestor. In addition, one clerical position will be required to provide support for the hygienist and organize, cross reference, and provide information to the public; particularly employers.

In addition to the personal services cost associated with the Industrial Hygienist and clerical position, the Department will need to contract for laboratory services ($5,000) for testing hazardous substances, the indirect support services, and increase its printing and postage allocations for distribution of posters, and safety data sheets. The travel budget for FY 1984 includes $15,000 for extensive in-state travel to conduct training sessions and hazardous substance seminars throughout the State for the first year.

Assumptions:

The Department will collect and disseminate information regarding hazardous chemicals and/or substances to the general public, and as a result will also be making increased work-site inspections.

Personal services are for 11 months in FY 1984.

Inflation rate of 6 percent per annum.

The equipment costs of $1,500 are one-time items.

$5,000 of the in-state travel is a one-time item (informational visits).

Effective date of July 1, 1983.

1.	POSITION TITLE: Industrial Hygienist I			RANGE/STEP: 19A	BARG. UNIT: GGU	FORM 12 PAGE/LINE	GOV. / APPROV. / DISAP.
2.	TYPE OF POSITION: PFT	STAFF MONTHS: 11	RP NUMBER: CS for SB 79	PCN NUMBER:	BRU PRIORITY:	LOCATION: Anchorage	ELECTION DISTRICT / LEG.

3.	CONTINUATION LEVEL		ADDITION
4.	TYPE OF EXPENDITURE		AMOUNT
	1	2	3
	PERSONAL SERVICES		
5.	Salary	34,957	
6.	Benefits	5,608	
7.	Supplemental Benefits	2,143	
8.	Fixed Benefits	2,640	
9.	TOTAL PERSONAL SERVICES	01	45,348
10.	Travel	02	15,000
11.	Contractual	03	18,933
12.	Commodities	04	1,000
13.	Equipment	05	1,500
14.	Other		
15.	TOTAL COST		81,781

	RECEIPT CODE	FUNDING SOURCE	
16.		Federal Receipts 1002	
17.		G.F. Match 1003	
18.		General Funds 1004	81,781
19.		I-A Receipts 1005	
20.		Program Receipts 1028	
21.		Other	

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4A KEY NUMBER __ __ - __ __ - __ __ - __ __ - __ __

JUSTIFICATION

The hygienist will ascertain the effects a chemical/substance will produce, recommend remedial action if required and communicate this information to requestor in understandable terminology. As the populace becomes better informed, there will undoubtably be more requests for this agency to visit work/storage sites to monitor them for potentially hazardous conditions.

Personal services calculations are based on the salary schedule that is currently awaiting approval for FY '84.

Travel funds include $15,000 for in-state travel because this position will be conducting training sessions and other workshops throughout the State.

Contractual services consist of $4,793 for indirect support services, $5,000 for increased laboratory costs, $7,200 for printing and postage for hazardous information and $2,000 equipment rent and communications.

The equipment cost is for personal protective equipment ($1,500).

13 REQUEST FOR NEW POSITION

AGENCY: Labor
PROGRAM: Workers' Protection
BRU: Labor Standards and Safety
COMPONENT: Occupational Safety and Health

Revised Date

FY 84

01-1156(7/82)-13

1.	POSITION TITLE: Clerk Typist III			RANGE/STEP: 8A	BARG. UNIT: GGU	FORM 12 PAGE/LINE	GOV.	APPROV. / DISAPP.
2.	TYPE OF POSITION: PFT	STAFF MONTHS: 11	RP NUMBER: CS for SB 79	PCN NUMBER	BRU PRIORITY	LOCATION: Anchorage	ELECTION DISTRICT	LEG.
3.	CONTINUATION LEVEL		ADDITION					

4.	TYPE OF EXPENDITURE		AMOUNT
	1	2	3
	PERSONAL SERVICES		
5.	Salary	17,094	
6.	Benefits	2,713	
7.	Supplemental Benefits	1,047	
8.	Fixed Benefits	2,640	
9.	TOTAL PERSONAL SERVICES	01	23,494
10.	Travel	02	
11.	Contractual	03	7,450
12.	Commodities	04	1,000
13.	Equipment	05	-0-
14.	Other		
15.	TOTAL COST		31,944

	RECEIPT CODE	FUNDING SOURCE	
16.		Federal Receipts 1002	
17.		G.F. Match 1003	
18.		General Funds 1004	31,944
19.		I-A Receipts 1005	
20.		Program Receipts 1028	
21.		Other	

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4A KEY NUMBER __ __ - __ __ - __ __ - __ __ - __ __

JUSTIFICATION

This position is necessary to provide support to the Industrial Hygienist to handle the increased activity that will occur as a result of implementing the provisions of Committee Substitute for Senate Bill 79.

This position will type and file information under direction of the Industrial Hygienist and respond to inquiries from the public.

Personal services calculations are based on the salary schedule that is currently awaiting approval for FY 1984.

Contractual services costs consist of indirect support of $2,000. Additionally, $1,000 for a word processing data management package will be required to collate and facilitate the disseminating of hazardous substance information. Other costs include equipment rent, telephone, postage, and office consumables.

13 REQUEST FOR NEW POSITION

01-1136 (7/82) - 13

AGENCY Labor

PROGRAM Workers' Protection

BRU Labor Standards and Safety

COMPONENT Occupational Safety and Health

Revised Date

FY 84

Alaska State Legislature

Official Business

Pouch V
State Capitol
Juneau, Alaska 99811

M E M O R A N D U M

May 12, 1983

TO: Senator Bettye Fahrenkamp
Chair, Senate Resources Committee

FROM: Senator Joe P. Josephson JPJ

SUBJECT: Senate Bill 79, "An Act relating to toxic and hazardous substances in the workplace; and providing for an effective date."

Chair Fahrenkamp and members of the Senate Resources Committee:

I would like to express my sincere appreciation for this opportunity to once again address the issue of improved worker safety in Alaska. Since the introduction of SB 79 on January 27, I have been deluged with information, POMs and news articles applauding and criticizing the need for such legislation. I would like to commend you and your staff for enduring the long hours of testimony, negotiations and renegotiations needed to produce the committee substitute under consideration today.

CSSB 79 is a compromise bill without undue restrictions on red tape that affords Alaska workers the opportunity to make reasonable choices. The class of workers affected by this bill will be educated in the use and disposal of toxic and hazardous substances in their work environment. They will be able to ascertain accurate and up-to-date information about substances in their work environment without undue burdens or obstacles. And, probably the most significant aspect of the bill rests in the fact that the Alaska worker will know that the state is enhancing its commitment to worker safety. The role of the Department of Labor will be responsible for accumulating valuable information for worker inquiry. The Department will develop monitoring procedures to insure that the education programs provided by employers are adequate. The Department will be available to answer questions about particular occupations with respect to toxic or hazardous substances.

Madame Chair, the bill has come a long way this session and has seen quite a facelift, but I think that the major premise of "worker right to know" has been preserved and has been presented in a reasonable manner. I support the bill and encourage the committee to vote in favor of it.

JPJ/tl

STATE OF ALASKA
FISCAL NOTE

Revision Date May 10 1983

I. REQUEST

Bill/Resolution No.: CS for SB 79
Title: "...hazardous & toxic substances"
Sponsor: Senate Labor & Commerce
Requestor: Senate Labor & Commerce

II. FISCAL DETAIL

Agency Affected: Labor
Program Category Affected: Worker Protecti
BRU, Program of Subprogram(s) Affected: Labor Standards & Safety, Occupational Safety & Health

EXPENDITURES/REVENUES: (Thousands of Dollars)

	FY 83	FY 84	FY 85	FY 86	FY 87	FY 88
OPERATING						
100 PERSONAL SERVICES		75.0	79.5	84.3	89.4	94.8
200 TRAVEL		17.5	10.6	11.2	11.9	12.6
300 CONTRACTUAL		37.5	39.8	42.2	44.7	47.4
400 COMMODITIES		2.5	1.6	1.7	1.8	1.9
500 EQUIPMENT		12.7	0	0	0	0
600 LAND & STRUCTURES						
700 GRANTS, CLAIMS, ETC						
TOTAL OPERATING		145.2	131.5	139.4	147.8	156.7
CAPITAL						
REVENUE						

FUNDING: (Thousands of Dollars)

GENERAL FUND		145.2	131.5	139.4	147.8	156.7
FEDERAL FUNDS						
OTHER (Specify Source)						

POSITIONS:

FULL-TIME		2	2	2	2	2
PART-TIME						
TEMPORARY						

III. SOURCE OF FUNDS TO OFFSET FISCAL IMPACT OF BILL:

N/A

IV. ANALYSIS: Attach a separate page for any Analysis

Prepared By: Robert J. Bacolas, Sr. Phone: 465-4870
Division: Labor Standards and Safety Date: May 10, 1983

Approved by Commissioner: Jim Robison Date: May 10, 1983
Department: Labor

LEG:B:9

Distribution:
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3/8/83

FISCAL NOTE

THE LEGISLATURE OF THE STATE OF ALASKA
THIRTEENTH LEGISLATURE
TITLE: "An Act relating to hazardous and toxic substances."
AGENCY AFFECTED: Department of Labor
Page 2

Under this bill the Department of Labor will be responsible for collecting and disseminating information regarding hazardous chemicals and/or substances at work or storage sites in Alaska.

An Industrial Hygienist position in Anchorage will be required to review and respond to requests about the effects of hazardous chemicals or substances, recommend remedial action if required, and communicate this information to the requestor. In addition, one clerical position will be required to provide support for the hygienist.

In addition to the personal services cost associated with the Industrial Hygienist and clerical position, the Department will need to increase the current contract for laboratory services ($5,000), the indirect support services and rent allocations ($7,479 and $6,800 respectively), and its printing and postage allocations, distribution of posters, and safety data sheets. All other costs in Contractual Services are normal operating costs ($7,200). Additionally, the Industrial Hygienist position will require various scientific measuring and sampling equipment ($7,600), as well as basic office equipment. The Travel budget for FY 1984 includes $2,500 for recruiting and relocation expenses for the hygienist position and $15,000 for extensive in-state travel to conduct training sessions and hazardous substance seminars throughout the State for the first year.

Assumptions:

The Department will collect and disseminate information regarding hazardous chemicals and/or substances to the general public, and as a result will also be making increased work-site inspections.

Inflation rate of 6 percent per annum.

The equipment costs of $12,700 are one-time items.

$5,000 of the in state travel is a one time item (informational visits) and $2,500 of the travel for relocation/recruiting expenses is a one-time item.

Effective date of July 1, 1983.
$1,000 of the first year's supply costs is a one-time item.

LEG:B:5

1.	POSITION TITLE Industrial Hygienist I			RANGE/STEP 19A	BARG. UNIT GGU	FORM 12 PAGE/LINE	GOV.	APPROV.	DISAPP.
2.	TYPE OF POSITION PFT	STAFF MONTHS 12	RP NUMBER CS for SB 79	PCN NUMBER	BRU PRIORITY	LOCATION Anchorage	ELECTION DISTRICT	LEG.		
3.	CONTINUATION LEVEL		ADDITION	X					

4.	TYPE OF EXPENDITURE		AMOUNT
	1	2	3
	PERSONAL SERVICES		
5.	Salary	38,135	
6.	Benefits	6,053	
7.	Supplemental Benefits	2,338	
8.	Fixed Benefits	2,880	
9.	TOTAL PERSONAL SERVICES 01		49,406
10.	Travel 02		17,500
11.	Contractual 03		25,622
12.	Commodities 04		1,500
13.	Equipment 05		10,200
14.	Other		
15.	TOTAL COST		104,228

	RECEIPT CODE	FUNDING SOURCE	
16.		Federal Receipts 1002	
17.		G.F. Match 1003	
18.	100	General Funds 1004	104,228
19.		I-A Receipts 1005	
20.		Program Receipts 1028	
21.		Other	

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JUSTIFICATION

The hygienist will ascertain the effects a chemical/substance will produce, recommend remedical action if required and communicate this information to requestor in understandable terminology. As the populace becomes better informed, there will undoubtably be more requests for this agency to visit work/storage sites to monitor them for potentially hazardous conditions.

Personal services calculations are based on the salary schedule that is currently awaiting approval for FY '84.

Travel funds include $2,500 in relocation and recruiting expense and $15,000 for in-state travel because this position will be conducting training sessions and other workshops throughout the State.

Contractual services consist of $3,400 for rent, $5,022 for indirect support services, 5,000 for increased laboratory costs, $7,200 for printing and postage for hazardous information, and $5,000 for basic operating expenses.

The equipment costs are comprised of various scientific equipment ($7,700), office equipment ($1,500), and protective equipment ($1,000).

13 REQUEST FOR NEW POSITION

AGENCY Labor

PROGRAM Workers' Protection

BRU Labor Standards and Safety

Occupational Safety and Health

FY 84

1.	POSITION TITLE: Clerk Typist III			RANGE/STEP: 8A	BARG. UNIT: GGU	FORM 12 PAGE/LINE	GOV.	APPRDV.	DISAPP.
2.	TYPE OF POSITION: PFT	STAFF MONTHS: 12	RP NUMBER: CS FOR SB 79	PCN NUMBER:	BRU PRIORITY:	LOCATION: Anchorage	ELECTION DISTRICT	LEG.		
3.	CONTINUATION LEVEL		ADDITION	XX					

4.	TYPE OF EXPENDITURE		AMOUNT
	1	2	3
	PERSONAL SERVICES		
5.	Salary	18,647	
6.	Benefits	2,960	
7.	Supplemental Benefits	1,143	
8.	Fixed Benefits	2,880	
9.	TOTAL PERSONAL SERVICES 01		25,630
10.	Travel 02		0
11.	Contractual 03		11,856
12.	Commodities 04		1,000
13.	Equipment 05		2,500
14.	Other		
15.	TOTAL COST		40,986

	RECEIPT CODE	FUNDING SOURCE		
16.		Federal Receipts	1002	
17.		G.F. Match	1003	
18.	100	General Funds	1004	40,986
19.		I-A Receipts	1005	
20.		Program Receipts	1028	
21.		Other		

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4A KEY NUMBER __ __ - __ __ - __ __ - __ __ - __ __

JUSTIFICATION

This position is necessary to provide support to the Industrial Hygienist to handle the increased activity that will occur as a result of implementing the provisions of House Bill 197.

This position will type and file information under direction of the Industrial Hygienist.

Personal services calculations are based on the salary schedule that is currently awaiting approval for FY 1984.

Contractual services costs consist of equipment rent, management services support of $2,456, and space rent of $3,400. Additionally, $1,000 for a word processing data management package will be required to collate, and facilitate the diseminating of hazardous substance information. All other costs are normal operating costs.

13 REQUEST FOR NEW POSITION

01-1136 (7/82) - 13

AGENCY Labor

PROGRAM Worker Protection

BRU Labor Standards and Safety

COMPONENT Occupational Safety and Health Administration

Revised Date

FY 84

LEG:B:7

STATE OF ALASKA

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POUCH V
JUNEAU, ALASKA 99811
(907) 465-3892

HOUSE LABOR AND COMMERCE COMMITTEE

House Labor and Commerce
Letter of Intent
Committee Substitute for House Bill 197(L&C)

The purpose of this legislation is to inform employees of the identity of and the health hazards and proper handling procedures for hazardous and toxic substances in their workplace through a communication and safety education program adopted by employers. While this legislation is designed to cover most employers in the state utilizing substances defined in the bill, it is not the intent to require employers to be responsible for the generation or creation of the information required to be posted or communicated to employees. Rather, the bill is designed under the assumption that federal regulations will be promulgated in the near future by the Occupational Safety and Health Administration (OSHA) which will require manufacturers to develop and distribute information for all the substances covered by the bill. The provision requiring that such information accompany substances imported into the state and the provision requiring the State Department of Labor to keep information on file for all substances covered by the bill are designed to aid employers in readily obtaining the required information.

It is the intent of the Committee that the Department of Labor play an active role in informing employers of the requirements of this bill and aiding them in meeting the requirements. Among the tasks required of and intended that the Department undertake are: the development of a poster outlining the provisions and employee rights under the bill and the printing of sufficient copies for all applicable employers; the compilation of all relevant information on the various substances covered by the bill and formulation of an information retrieval system capable of answering telephone inquiries by employers and employees on various substances and products; the compilation and printing of a list of the various substances identified in the bill as hazardous and toxic for use by employers; the provision of assistance to employers upon request in developing safety education programs; and the surveying of various employers or industries to identify the types of substances used and problems being encountered. In this last task it is intended that such surveys be made in cooperation with business and industry groups or associations.

It is the intent of the Committee that the Department complete the specific tasks identified in section 1 of the bill at least several months in advance of the July 1, 1984 effective date for section 2 of the bill requiring posting and training by employers.

The bill authorizes the Department to identify substances to be covered by the bill. It is the intent of the Committee that this authority be used only on a case-by-case basis pursuant to the Administrative Procedure Act to cover a very few substances which might be of specific concern in the state but for some reason, such as bureaucratic delay, have not yet been identified on the federal level pursuant to OSHA regulation. It is not the intent of the Committee to direct the Department to engage in a major identification, testing or research program which would result in large numbers of additional substances or additional lists of substances beyond those identified in the bill.

It is specifically recognized that the sole reason for exempting goods in transit is that these goods are under strict regulation by the Interstate Commerce Commission and the Alaska Transportation Commission. It is the intent of the Committee that each individual transporting goods fully comply with the Federal and State laws and regulations relating to that transportation.

Alaska State Legislature

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POUCH V
STATE CAPITOL
JUNEAU, ALASKA 99811
(907) 465-3834
(907) 465-3835

Senate

Committee on Resources

MEMO

To: Representative Al Adams, Chairman
House Finance Committee

From: Senator Bettye Fahrenkamp

Date: June 20, 1983

Subject: June 21 Hearing on SB 79, "Right to Know" bill

Thank you for scheduling a hearing on this important legislation. I am a co-sponsor of the bill and would strongly commend to you the committee substitute which unanimously passed the Senate Resources Committee.

Following Resources Committee hearings on the bill this session in Juneau and Fairbanks, I asked staff to meet with concerned interest groups to try to work out problems which were widely acknowledged in the bill as originally drafted. Among these problems were:

---Coverage of as many as 40,000 substances to be dealt with by employers.

---Inclusion of "household" substances like salt, sand, bug spray and others.

---Coverage of transportation industry where many break-in-transit handlings but no substance use were involved.

---Requirement of labeling of substance containers, piping systems.

---Reporting requirements to the State Department of Labor potentially involving extensive paperwork for employers and the state.

---Possible duplication and conflicts iwth federal OSHA regulations to be promulgated in the near future.

However, most agreed that the basic intent of the legislation to communicate the identity, health hazards and proper handling methods for hazardous and toxic substances to employees by employers was desireable.

A meeting was held in Juneau May 2 and 3 with representatives of the following groups to try to arrive at consensus legislation: Committee staff, Sen. Josephson's office, Alaska Environmental Lobby, Alaska Employer's Committee, Alaska General Contractors, Sohio, Arco, Alaska Health Project, Alaska District Council of Laborers, Alaska Department of Labor and Alaska Trucking Association.

The group proceeded under the following assumptions and objectives:

---that it was desireable to pursue legislation this session.

---that federal OSHA regulations would probably be published around July 1 of this year.

---that while federal OSHA regulations would cover several aspects of this legislation most employers in Alaska would not be covered.

---that it was desireable and possible to cover most Alaskan employers in a manner which would not duplicate or conflict with federal OSHA regulations.

---that any legislation pursued this session should represent a basic, simplified employer-to-employee communication system involving a minimum of paperwork or expense.

Provisions of the CS

The group agreed to a draft CS containing the following general provisions:

---The CS tracks the proposed OSHA regulations for the substances covered. Two basic lists of chemicals for which study and exposure limits have been set would be covered plus additional substances which would be covered by OSHA regulation following performance-based testing. The combined lists (large overlap) would cover approximately 600-700 chemical substances to be considered "hazardous" or "toxic" under the bill.

---Employers would be required to post a notice of hazardous and toxic substances in their workplaces with information on health hazards, handling procedures, and other information. Employers would also be required to provide safety training on these substances to new employees and reassignment of employees for substances they would be exposed to.

---The information required to be supplied by employers would be in the same form as required under OSHA regulation. This information would not have to be produced by employers but would come from manufacturers as required by the OSHA regs, would be required on all substances imported into Alaska (to cover middleman wholesalers not covered by federal regs), and would be on file with the state Department of Labor. In fact, information on most, if not all, the substances covered by the bill is currently available.

---No labeling or reporting requirements are included in the CS. Labeling will be required of all manufacturers under OSHA regulations and the reporting requirements were determined not to be critical to the basic communication to employees of substance information.

---Substances while in transit are exempt from the provisions of the bill. Current federal transportation of hazardous substances regulations were determined to be sufficient.

---Household items such as food, drugs, goods used for personal use are exempted as are substances in small quantities not representing a health hazard. Thus, no substances like salt or bug spray off the shelf are included. However, some items like sand (silicates) are on the list when used in concentrations (like sandblasting) which have been shown to represent real health hazards, but not for most common situations.

---Although the technical assistance activities and pre-implementation tasks of the Department of Labor would take effect immediately, employers would not be required to comply before July 1, 1984, to ensure that information is available.

At a hearing of the Resources Committee on May 11 representatives of business, labor and the Administration testified in support of the committee substitute.

Either I or a member of my staff will be available to present testimony or to answer any questions you or the Finance Committee may have when it considers the bill. Please let me know if I can be of further assistance.

Alaska State Legislature

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ARLISS STURGULEWSKI



POUCH V
STATE CAPITOL
JUNEAU, ALASKA 99811
(907) 465-3834
(907) 465-3835

Senate

Committee on Resources

May 17, 1983

Memo

To: Senate Finance Committee Co-Chairman John Sackett
Senate Finance Committee Co-Chairman Don Bennett

From: Senator Bettye Fahrenkamp

Subject: Hearing May 19, SB 79, "Right to Know" bill

Thank you for scheduling a hearing on this important legislation. I am a co-sponsor of the bill and would strongly commend to you the committee substitute which unanimously passed the Senate Resources Committee.

Following Resources Committee hearings on the bill this session in Juneau and Fairbanks, I asked staff to meet with concerned interest groups to try to work out problems which were widely acknowledged in the bill as originally drafted. Among these problems were:

---Coverage of as many as 40,000 substances to be dealt with by employers.

---Inclusion of "household" substances like salt, sand, bug spray and others.

---Coverage of transportation industry where many break-in-transit handlings but no substance use were involved.

---Requirement of labeling of substance containers, piping systems.

---Reporting requirements to the State Department of Labor potentially involving extensive paperwork for employers and the state.

---Possible duplication and conflicts iwth federal OSHA regulations to be promulgated in the near future.

However, most agreed that the basic intent of the legislation to communicate the identity, health hazards and proper handling methods for hazardous and toxic substances to employees by employers was desireable.

A meeting was held in Juneau May 2 and 3 with representatives of the following groups to try to arrive at consensus legislation: Committee staff, Sen. Josephson's office, Alaska Environmental Lobby, Alaska Employer's Committee, Alaska General Contractors, Sohio, Arco, Alaska Health Project, Alaska District Council of Laborers, Alaska Department of Labor and Alaska Trucking Association.

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POUCH V
STATE CAPITAL
JUNEAU, ALASKA 99811
(907) 465-3834
(907) 465-3835

Senate

Committee on Resources

June 22, 1983

Representative Terry Martin
Pouch V
Juneau, Alaska 99801

Dear Terry,

As you know, the House Finance Committee passed out CSSB 79, the so-called "Right to Know" bill dealing with hazardous and toxic substances in the workplace. I understand that you raised concerns at the meeting that the bill contained a "loophole" in that goods in transit were specifically exempted from coverage in the legislation.

Let me assure you that the Resources Committee did not intend that employees of the transportation industry receive less protections and information than provided other employees under the terms of SB 79. Rather, after long discussions and study it was concluded that existing federal and state law and regulation more than adequately covered employees and goods conveyed by truck, air and rail in the State.

Specifically, the Hazardous Materials Transportation Act and its implementing regulations (49 CFR 100-177) require explicit packaging, labeling, handling procedures, driver information and other requirements for hundreds of hazardous substances transported by truck and rail. The substances listed and the information to be provided to drivers goes beyond that required in SB 79. The federal Department of Transportation enforces these regulations for all carriers engaged in interstate commerce.

The State also has regulations which track the federal regulations (3AAC 62, Motor Carrier Safety Code, Sec. 500). The Alaska Transportation Commission enforces these regulations for hazardous materials shipped within the state.

In addition, the Federal Aviation Administration enforces an even stricter set of regulations for the air shipment of hazardous materials due to the special passenger dangers involved. The Alaska Railroad also has a separate enforcement program for hazardous materials shipped by rail in the state.

The Alaska Transportation Commission reports that based on their inspections, most drivers are aware of what hazardous goods they are carrying and what the safety precautions involved are. Thus, I feel that additional law governing goods in transit is unnecessary.

I hope this information is helpful to you and might assure you that all employees in the state will be receiving information on hazardous or toxic substances with which they may come in contact. If I can provide you addi-

tional information, please let me know. I hope that you might lend your support for this important legislation when it reaches the House floor.

With warm regards.

Sincerely,

Bettye Fahrenkamp
Alaska State Senator

Alaska Health Project

P. O. Box 1037, Anchorage, Alaska 99510 (907) 272-8734

Board of Directors

Ray Brown, Vice President Western Alaska Building Trades	Roofers, 1818 W. Northern Lights, Anch 99503	W: 272-4311
Paul Dunham, Labor Representative	SR Box 2060W Anchorage 99507	H: 344-7202
Daryl Eygabroad, Business Agent Machinists Local 601	130 W. Int'l Airport Rd Anchorage 99502	W: 562-2627 H: 248-3319
David Gottstein, Purchasing Manager, Carr-Gottstein	SRA Box 4439, Anchorage 99502	W: 561-1944 H:
Mick Hotrum District Council of Laborers	Laborers Hall, 315 Barnette, Fairbanks 99701	W: 456-4584
Susan Johnson, Program Coord., MOA Health Department	PO Box 1027 Anchorage 99510	W: 264-4756 H: 563-6904
Dan Middaugh, Member Asbestos Workers Local 97	7814 Raymar Ct. Anchorage 99502	H: 349-4878
Eric Myers Research Analyst	3911 Peterkin Ave Anchorage 99504	H: 279-6719
Helen Anne Myers, Ph. D WAMI Medical Education Program	SR Box 40027 Fairbanks 99701	W: 474-7731 H: 456-1676
Deborah Nuccio Physician Assistant	2531 Northrup Anchorage 99504	H: 277-4194
Holli Ploog, Attorney Dichter & Ploog	701 W. 58th Ave Anchorage 99502	W: 561-1158 H: 278-3715
Virginia Posid, RN, BSN Home Health Care, Inc	3395 Katlian Eagle River 99577	W: 561-2162 H: 694-3360

Staff

Steven Kadish, Executive Director	1135 I Street Anchorage 99501	H: 276-5832
Lawrence D. Weiss, Ph. D., MS Deputy Director	830 W. 21st Anchorage 99503	H: 338-6432
Brenda Duffey, Editor & Office Manager		H: 345-7712

NCSL COMPREHENSIVE TOXIC SUBSTANCES MANAGEMENT PROJECT:
PROGRESS REPORT TO THE NCSL NATURAL RESOURCES AND ENVIRONMENT COMMITTEE
April, 1983

I. INTRODUCTION

A toxic substance may be defined as any substance potentially harmful to human health or the environment and includes, but is not limited to: hazardous waste; chemicals used or manufactured in the workplace, homes or schools; chemicals transported or spilled in accidents; chemicals used or discarded in hospitals, etc. By the phrase "comprehensive substance management", we refer to the overall coordinated or intergrated management of toxics in air, land and water, and in occupational and public settings.

Rising awareness of toxic substances has resulted in increasing state legislative activity. States are assuming more responsibility for controlling, regulating, and enforcing chemcial practices.

Exposure to toxic substances is most serious in the workplace--an estimated one in four workers is exposed either full or part-time to toxic substances regulated by the Occupational Safety and Health Administration. In addition, air and waste pollution, food additives, drugs and consumer products, and asbestos in schools and homes are substances that alarm the public.

The State legislative role in managing toxics has increased significantly as demonstrated by legislative actions in the following areas:

- Labeling of substances
- Any aspects of confindential business information
- Worker "right-to-know"
- Community "right-to-know"
- Victim compensation
- Any aspect of liability
- Statute of limitations on exposure
- Chemical-specific (e.g., asbestos legislation)
- Emergencies (e.g., spills)
- Information-gathering authorities (e.g., morality, morbidity, industry-reporting, or other monitoring)
- Institution or government/industry task forces, blue ribbon panels, etc. or any purpose of cooperation to control toxic substances
- Government organization or reorganization directed to control toxics (e.g., establishment of toxic spill coordination office, state "EPA", health department reorganization, etc.
- Research authorizations or studies that address any or all of the above.

Many toxic substance control programs authorized by federal legislation require state action and states are faced with implementing many of these programs. States are aware, however, that duplicating federal government programs is expensive. Comprehensive management of state efforts, then, could be cost-effective, or maximize limited state resources.

II. NCSL PROJECT DESCRIPTION & ACTIVITIES

To help states avoid duplication of efforts and make some determination as to potential cost-effectiveness of comprehensive state management programs, the NCSL project aims to clarify the area of toxics management and develop background documents that focus on the potentials for cost-effective management. This project will also perform trend analysis on state activities that will be informative to the states.

Since the project began in September last year, NCSL undertook a preliminary, informal survey to identify the various entities in the legislatures that would have some authority over toxic substances. The purview was found to be extensive and includes:

1) Substantive Committees: Approximately 350 committees have review authority over various aspects of federal toxics laws; these committees' responsibilities may vary according to state predilections and do not necessarily correlate to congressional authorities over U.S. agencies;

2) Joint Review and Evaluation Committees: There are approximately 20 entities of this type formalized in the states whose common responsibility is to evaluate or otherwise analyze a state program or project; reviews may be conducted of executive or legislative branch programs or projects;

3) Fiscal Offices: Over 90 of these that perform a variety of oversight support functions;

4) Administration Rules and Regulations Committees: 42 legislatures have committees which are responsible for reviewing agency regulations.

5) Government Operations Committees: Approximately 40 (some overlap with other categories) responsible for the evaluation and maintenance of state functions.

If a similar survey had been conducted in 1970, the results would have revealed almost no activity in categories 2, 4, and 5 above. At least two conclusions can be drawn from this general survey: 1) state executive branches no longer have the complete say in matters of state governmetnal management; 2) oversight of management at the state level has become more diffuse in that more players are now involved at the legislative level. Virtually every entity in every category listed above would have some degree of responsibility or authority over toxics management. Taken together, the potential for state legislatures to involve themselves in toxics management is rather astonishing in light of the general perception that legislatures are non-management oriented bodies.

In light of the above, the remaining months of the project will be spent doing two things:

1) Performing a 50-state survey of all legislation introducted in the area of toxics for 1983:

2) Performing an assessment that will help determine:
   a. Cost to the state of comprehensive vs. non-comprehensive programs,
   b. Assistance states may need on any facet of toxics policies
   c. Trends in state toxics policies.

The assessment will focus on selected groups in categories 2-5 mentioned above. A final summary will be prepared and available in July this year, prior to the NCSL Annual Meeting.

** For additional information contact: Rhett Spear, NCSL Project Manager (303) 292-6600.

NATIONAL CONFERENCE OF STATE LEGISLATURES
POLICY ADOPTED APRIL 1983

COMMITTEE: Joint Transportation and Communications Committee and Natural Resoures Committee

TRANSPORTATION OF HAZARDOUS MATERIALS

The transportation of hazardous materials (defined by U.S. DOT as a substance or material in a quanity and form which may pose an unreasonable risk to health and safety) by all modes is an essential activity in our technologically complex society, one upon which all sectors of the economy are highly dependent. There is, however, a growing concern among government officials, particularly at the state and local levels, reflecting a general public apprehension over the hazards that the transportation of these materials may entail.

U.S. DOT has estimated that each year more than 4.5 billion tons of hazardous materials are transported. Each day, more than 2.5 million hazardous materials shipments move through the United States by truck, air, rail, and pipeline. By the end of this decade, the total number of shipments is expected to double.

Recongnizing the need to "protect the nation adequately against the risks to life and property inherent in the transportation of hazardous materials in commerce," Congress enacted the Hazardous Materials Transportation Act (HMTA) of 1976 and authorized the Secretary of Transportation to issue uniform regulations for all types of hazardous materials being transported in interstate commerce, and in intrastate commerce affecting interstate commerce. To carry out the Act, the Secretary created the Materials Transportation Bureau (MTB) to assume full responsibility for both issuing and enforcing regulations for all modes of transportation. Additionally, the Act preempts state and local regulations which are inconsistent with regulations promulgated under the Act.

NCSL is concerned that the HMTA fails to provide a clear definition of the roles and responsibilities of various levels of government. NCSL also believes that a serious lack of adequate federal financial and manpower resources has contributed to the inability of the federal government to prevent hazardous materials transportation incidents and to the inability of state and local governments to respond to such incidents.

For example, U.S. DOT reported that in 1980 of the 16,000 reported incidents involving hazardous materials, approximately 14,000 occurred on highways. However, in that same year U.S. DOT was able to commit only 47 federal personnel to highway inspection and enforcement nationwide.

NCSL is concerned about the following four interrelated issues: 1) the complexity of existing hazardous materials transportation regulations administered by various federal agencies (DOT, EPA, NRC) including the identification and definition of hazardous materials; 2) the lack of sufficient financial and manpower resources at the state and federal level to ensure necessary levels of cargo inspection and enforcement of laws and

regulations relating to hazardous materials transportation; 3) the lack of comprehensive and coordinated training programs and emergency planning and response; 4) the preemption of state and local laws and regulations designed to ensure adequate protection of public health and safety, in light of the federal government's lack of financial manpower resources need to effectively enforce federal regulations. Therefore, NCSL calls upon the Congress and the Administration to enact refinements to the Hazardous Materials Transportation Act. NCSL believes that the following principals should underlie amendments to the Act:

- The role of U.S. Dot should be more clearly defined. Specifically, U.S. DOT should be mandated to promulgate technical standards and criteria for the manufacture of hazardous materials containers, hazardous materials classification and definition, description, packaging, marking, labeling, documentation, and placarding of equipment for transporation. These requirements should be nationally uniform, and U.S. DOT should be directed to assume full enforcement responsibility.

- U.S. DOT should be directed to promulgate performance standards for hazardous materials shipments in commerce. This provision recongnizes that unique local circumstances may justify the promulgation of certain state and local regulations. Such regulations should be allowed to stand if they meet the performance standards and do not impose an undue burden on commerce.

- States are the proper level of goverument to assure the comprehensive enforcement of hazardous materials transportation regulations for shipments in commerce. However, if the federal government shifts this responsibility to the states, there must be an assurance of adequate and predictable financial assistance to support training of enforcement personnel and development of adequate state data systems.

- The federal goverument should assure that adequate and predictable funding is available for the development of state and local emergency response programs and for the training of emergency response personnel.

NCSL believes that states must also take action to improve their capability in managing the transportation of hazardous materials. In order to assure a system which protects public health and safety, NCSL urges states to adopt federal regulations governing the transportation of hazardous materials which include:

- uniform definition and identification of hazardous materials and

- standards governing hazardous materials in commerce.

Additionally, states should establish:

- authority to adequately enforce the regulations;

- a lead state agency for hazardous materials enforcement and emergency response efforts; and

- authority to develop a comprehensive emergency response plan and should encourage the private sector's involvement.

Finally, NCSL understands the need for the free flow of commerce and the need for state and lcoal governments to strive for greater regulatory unifomity with respect to hazardous materials transportation. However, NCSL also believes that such strides will only be made by state and local governments, if they are assured that adequate and predictable financial resources will be made available to assure comprehensive enforcement of the regulations and the development of adequate emergency response programs.

NCSL also strongly believes that a study of the feasibility of and need for establishing a national prenotification system should be conducted by the federal government and should include: 1) an analysis of existing state prenotification systems; 2) an examination of the relationship between state prenotification systems and state's ability to carry out their responsibilities for inspection and enforcement, as well as for emergency response; and 3) the development of criteria for use in determining the types and qantities of hazardous materials for which prenotification should be required.

RIGHT TO KNOW

An Act Relating to Hazardous and Toxic Substances

A Comparison of House Bill 197 and Senate Bill 79

1. JURISDICTION

The House Bill includes language which may help clarify the jurisdiction of the proposed Senate legislation. The House bill excludes from hazardous and toxic substances definitions of A) substances that because fo their physical state, volume or concentration do not pose a health risk upon exposure; and B) substances that are goods, drugs, cosmetics, or tobacco products intended for personal consumption.

2. ACCESS TO INFORMATION

Employee's representatives are excluded from requesting information in the proposed House bill. A collective bargaining agent, or the designated representative of the employee other than a physician would not have access to basic Material Safety Data Sheet (MSDS) information. The Senate bill allows the employer, the designated representative of the employer, or the collective bargaining agent access to the health hazard information.

3. LABELING

The proposed Senate legislation requires that containers and piping systems that contain toxic or hazardous materials be labeled with the chemical and common name of the substance, health hazards and symptoms, procedures to protect from overexposure, and treatment for overexposure. The label on these substances is similiar in concept to labels required on all food products. In the case of hazardous and toxic substances, the label allows the user to know what he or she is being exposed to. No labeling is required in the House bill.

4. PUBLIC DISCLOSURE

In the House bill, the Department of Labor has the option of disclosing to the public information concerning hazardous or toxic substances and the circumstances under which the public might be affected. In other words, local fire and health departments responding to emergencies, neighboring residents who may be exposed, nor the family of the worker may not have access to basic MSDS information. This is public information in the Senate proposal except where protected by trade secret provisions.

5. EMPLOYEE ON-SITE PROTECTION

In the Senate bill, an employee, a designated representative, or the collective bargaining agent, may request a MSDS on a substance. The employer has five working days to provide this information. An employer who fails to provide this information may not require the requesting employee to be exposed to this substance until the information has been provided. This means that the employee would not have to work with the substance, but still be available for work. The House bill has no language protecting the employee in this manner.

6. WAIVERS VOID

A waiver of a provision of the bill by an employee or applicant for employment is against public policy and is void in the Senate legislation. The House bill does not discuss this issue.

DRAFT CS FOR SB 79

For an Act entitled: "An Act relating to hazardous and toxic substances in the workplace;and providing for an effective date."

Purpose

The purpose of this act is to inform employees of the identity, health hazards, proper handling procedures and emergency treatments involving hazardous and toxic substances in the workplace through a communication and training program to be adopted by employers.

Substances Covered

The following chemicals shall be considered hazardous or toxic substances for purposes of this act:

1) Chemicals listed in 29 CFR Part 1910, Subpart Z, Toxic and Hazardous Substances, "General Industry Standards", Occupational Safety and Health Administration;

2) Chemicals listed in "Threshold Limit Values for Chemical Substances and Physical Agents in the Work Environment", American Conference of Governmental Industrial Hygienists (Latest Edition);

3) Substances for which material safety data sheets are required under regulation by the the Occupational Safety and Health Administration; and

4) Substances identified by the state Department of Labor on a case-by-case basis pursuant to the Administrative Procedures Act [which pose a health hazard to employees.] ?

Excluded from the list of hazardous or toxic substances covered by this act are:

1) Substances that because of their physical state, volume, or concentration do not pose a health hazard upon exposure;

2) Substances that are goods, drugs, cosmetics, or tobacco products intended for personal consumption; (make sure "goods" covers foods, bug spray--make sure "consumption" means "use" not just "eat").

3) Substances while in transit; and

4) Substances identified by the state Department of Labor on a case-by-case basis pursuant to the Administrative Procedures Act.

Importation of Substances

All hazardous or toxic substances covered by this Act imported to the state shall be accompanied by a material safety data sheet, Form 20 of the Occupational Health and Safety Administration or equivalent information.

If an MSDS or equivalent information has accompanied a previous shipment to the same "shipee" (consignee?) , such information is not required.

Employer to Provide Hazardous SUbstance Information

1. Employers shall post in a conspicuous place where similar notices are normally posted, such as where employees report for work, a notice approved by the state Department of Labor summarizing provisions of this Act and the employees' rights to information and training on hazardous and toxic substances.

2. Employers shall post in a conspicuous place where notices are normally posted, such as where employees report for work, material safety data sheets, OSHA Form 20s or equivalent information for each substance covered by this Act in the workplace to which the employee may be exposed

    1) under normal conditions of work; or
    2) during a reasonably foreseeable emergency, including equipment failure and rupture of containers.

At the option of the employer, instead of posting each MSDS he may post a notice of the chemical and product names of each substance to which an employee may be exposed to in the workplace and identify another location in which is accessible to the employee where he can inspect material safety data sheets, for each of the substances listed.

or near the workplace

or equivalent information

3. Employers shall institute a training program or incorporate into an existing training program for employees prior to an initial assignment or prior to changing assignments informing the employee of

    1) the location, properties, and known or suspected acute and chronic health effects of the hazardous or toxic substances to which the employee is routinely exposed in the workplace;

    2) the nature of the operations that could result in exposure to hazardous or toxic substances, as well as any necessary handling or hygienic practices or precautions; and

    3) the location, purpose, proper use, and limitations of personal protective equipment used in the workplace.

4. Employers shall provide MSDSs for any substance covered by this act to any employee upon request.

    If MSDS information not available, the employer shall contact the manufacturer, ~~wholesaler~~ or Department of Labor within three working days (excluding Sat., Sun. and Holidays) for the information. and/or any/ copies/ any/ information / obtained/

    If an MSDS or equivalent information in writing is not given the employee within 15 days, the substance shall be removed from the workplace.

    This provision is not to in any way alter, deny or abrogate any rights of an employee to not work in a hazardous situation under existing law or regs.

    The provision requiring removal of a substance from a workplace shall not apply in the case of substances for which MSDS or equivalent information is not required by OSHA regulations.

Department of Labor authorities, responsibilities

The Department of Labor authorized to issue regulations implementing the provisions and purposes of this Act.

* The DOL shall compile and make available to employers ~~and the public~~ a listing of hazardous and toxic substances covered by this Act by the date of enactment.

* The DOL shall compile and keep current MSDSs and other relevant information for all substances covered by this Act by the date of enactment.

The DOL is authorized to provide assistance upon request to employers in identifying and obtaining information on hazzardous and toxic substances and in developing training programs required by the Act.

* The DOL shall approve and make available a notice pursuant to Act by date of enactment.

Definitions

1. "Employer" means a person, including the state and political subdivisions of the state, who has one or more employees, but for purposes of this Act employer shall mean a person who employees persons in a place of employment other than a place that is primarily a personal residence.

2. "Employee" means a person who works for an employer, but for purposes of this Act, "employee" does not include a person employed in a place that is primarily a personal residence.

3. "Health hazard" means a chemical which, upon exposure, may result in the occurrence of acute or chronic health effects in employees. The term "health hazard" includes chemicals which are carcinogens, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic system, agents which damage the lung, cutaneous hazards or eye hazards.

4. "Workplace" means an establishment at one geographical location containing one or more work areas.

5. "Material Safety Data Sheet (MSDS)" means printed material concerning a hazardous or toxic chemical which is prepared in accordance with regulations of the Occupational Safety and Health Administration.

6. "Transit" means conveyed by a mode of transportation including trucks, railroad aircraft in a sealed or unopened container or package.

Enactment

This Act takes effect July 1, 1984.

* We would like this information in advance of the effective date, such as January 1, 1983 or probably March 1 at the latest. But employers would not have to comply with information and training rqquirements before July 1, 1984.

Alaska Health Project

P. O. Box 1037, Anchorage, Alaska 99510 (907) 272-8734

January 13, 1983

Dear Pat,

I am enclosing a draft of bill on the right of workers and the community to know about their exposure to hazardous materials. You should also find some general articles about this subject enclosed.

There is great interest in this bill. Several Senators and Representatives are interested in sponsoring this bill. Labor, environmental and health agencies would like to see a Right to Know law enacted. I can fill you in on names and organizations as needed.

Betty Fahrenkamp has been recommended by Vic Fischer, Arliss Sturgulewski and others to be the first name on the bill in the Senate. Mick Hotrum of the District Council of Laborers in Fairbanks has been trying to reach Betty to see if she is interested in sponsoring this Right to Know bill. Mick, a friend of Betty's, has had a hard time trying to reach her now that she is in Juneau.

Could you see that she or the appropriate staff person (might it be you?) gets this information? This is an exciting and winnable piece of legislation.

I wish you luck down there. I will miss not seeing you as often. Is there a going-away guitar/singing send-off planned? Please let us know.

Take of yourself.

Steve

Steven Kadish

A BILL

For an act entitled: "An Act relating to hazardous or toxic substances; and providing for an effective date."

Definitions used in this Act:

"Department" means the Department of Labor.

"Employee" means any person currently or formerly employed by, or an applicant for employment with an employer, except domestic workers or casual laborers employed at the employer's place of residence.

"Employer" means any individual, partnership, corporation or association engaged in a business who has employees including the State and its political subdivisions. The term "employer" does not include the employment of domestic workers or casual laborers employed at the place of residence of his or her employer. Where the employees of one employer are present at the workplace of another employer, pursuant to an agreement between the employers, "employer" means the employer having control or custody of the workplace.

"Workplace" means any location away from the employee's home where an employee performs a work-related duty in the course of his or her employment.

"CAS number" means the unique identification number assigned by the Chemical Abstracts Service to specific chemical substances.

"Chemical name" means the scientific designation of a substance in accordance with the nomenclature system developed by the International Union of Pure and Applied Chemistry or the system developed by the Chemical Abstracts Service.

"Exposure" or "Expose" means a situation arising from work operation or usage where an employee or purchaser may ingest, inhale, absorb through the skin or eyes, or otherwise come into contact with a hazardous or toxic substance.

"Hazardous Substance" means a chemical that (a) is listed in the US Department of Transportation Hazardous Materials Table, 49 C.F.R. 172.101; and (b) meets one or more of the following criteria for hazard class:

(i) is a combustible substance;

(ii) is a compressed gas;

(iii) is an explosive;

(iv) is a flammable substance;

(v) is an organic peroxide; or

(vi) is an oxidizer; or

(c) is listed in a regulation adopted by the Department under AS 18.60.030(12);

"Toxic Substance" means a chemical that is (a) listed in the Toxic and Hazardous Substances section of the regulations of the Occupational Health and Safety Act in 29 C.F.R. Part 1910, Subpart Z; (b) listed in the most recent edition of the National Institute for Occupational Safety and Health Registry of Toxic Effects of Chemical Substances; or (c) listed in a regulation adopted by the Department under AS 18.60.030(12).

The Department shall adopt regulation specifying the hazardous and toxic substances that are to be reported under this section.

DUTIES OF EMPLOYERS:

Every employer using a toxic or hazardous substance in the workplace shall provide to the Department a material safety data sheet setting forth the following information. The Department shall assist the employer in the development of this information. The employer shall file and update this information annually with the Department.

1. The Chemical Name, CAS Number, and the common name of the toxic and hazardous substance.

2. The trade name of the chemical and other commonly used name.

3. The permissable exposure-level issued under the Occupational Safety and Health Act of 1970, as amended, 29 U.S.C. 651, et seq, or the National Institute of Occupational Safety and Health recommendation.

4. The knowm and suspected acute and chronic effects of exposure and reactivity of such substance.

5. The symptoms of the effects.

6. The potential for flammability, explosion and reactivity of such substance.

7. Appropriate emergency treatment.

8. Proper conditions for safe use and exposure to the toxic or hazardous substance.

9. Procedures for cleanup of leaks and spills of the toxic or hazardous substances.

10. The name and address of the manufacturer.

11. The month and year that the information was compiled.

The employer shall ensure that material safety data sheets for each toxic and hazardous substance or mixture are readily available upon request to employees for examination and copying.

Posting Requirements. Every employer shall post a sign in every workplace at the location or locations where notices to employees are normally posted, to inform employees that they or their collective bargaining agent or designated representative have a right to information from their employer regarding the toxic and hazardous substances found in the workplace and a description of the toxic and hazardous effects of these substances and the circumstance under which these effects are produced.

An alphabetical list by chemical and common name of all toxic and hazardous substances must be prominently displayed in the department where the substance is used or stored.

Information regarding the toxic and hazardous substances found in the workplace and a description of the toxic and hazardous effects of these substances and the circumstances under which these effects are produced shall be presented at the offer of employment for potential employees.

Trade Secret. When a manufacturer or employer considers the identity of or other information concerning toxic chemical substance to be a protectable trade secret ~~whose~~ of which disclosure would compromise ~~his~~ the employer's competitive advantage, ~~he~~ the employer may register this information with the Department provided that the information is already registered as a trade secret pursuant to any provision of Federal law or the information is not registered as a trade secret but is related to a proprietary process the disclosure of which would compromise the employers competitive position provided that where the ingredients of the substance may be ascertained by qualitative analysis then the registration provision herein shall not apply.

The Department shall inform employers, employees and their representatives as to the known and suspected toxic and hazardous effects and the circumstances under which these effects are produced of those toxic and hazardous substances whose identity has been registered as a trade secret with the Department.

In the event that toxic substance is registered with the Department as a component of trade secret or otherwise protected as a proprietary process, the employer pursuant to procedures established by the Department shall inform employees or their representatives as to the effects of this toxic substances and the circumstances under which these effects are produced but shall not be required to divulge the specific identity of the substance.

Labeling of Toxic and Hazardous Substances. Any manufacturer or user of toxic or hazardous substances must clearly label every container larger than one gallon that contains a toxic or hazardous substance, and must make certain that the label contains the following information:

1. the common and chemical name
2. the hazards and health risks associated with use of exposure to the substance
3. routes of exposure such as inhalation, orally or through the skin
4. symptoms of overexposure
5. potential for fire, explosion, reactivity with other chemicals

6. emergency procedures in case of overexposure

7. the need and proper use of personal protective equipment

The toxic and hazardous substances content of a piping system shall be identified by labels applied on the pipe body close to valves flanges, branches, and pipe reactors, and where pipes pass through walls or floors, or enter or leave the ground. On straight pipe runs, labels shall be applied in a manner which will ensure reasonable visibility to employees in the applicable work areas.

The employer shall ensure that each label required by this section is prominently affixed to the container or the piping system and displayed in such a manner that employees can easily identify the substances that are present.

Employee Information. Each employer shall provide the material safety data sheet information of the toxic and hazardous substances which he uses or produces in the manufacture of any item, product or material, or which he uses or produces for purposes or research, experimentation or treatment, for each of his new employees, during the first month of their employment.

All such information shall be provided to the extent practicable, in informal and readily understandable language. Each employer shall also provide such information for any employee who is transferred from one job to another by the employer, within one month of such transfer, if the the employee is exposed to additional toxic or hazardous substances in his new job.

Educational Program. Every employer shall institute an education and training program for employees exposed to toxic or hazardous substances.

~~The education and training program shall commence prior to initial assignment and shall be repeated at least annually thereafter.~~ Additional instruction must be provided whenever the potential for exposure to toxic or hazardous substances is altered.

The education and training program shall include, but need not be limited to,

the following:

1. the chemical names, CAS Numbers, and common name of the toxic or hazardous substance,

2. the known and suspected acute and chronic effects of exposure to toxic or hazardous substance identified on the label

3. the symptoms of effects of exposure to toxic or hazardous substance identified of the label

4. appropriate emergency treatment

5. the potential for flammability, explosion and reactivity of substances

6. proper conditions for safe use and exposure to the toxic or hazardous substance

7. procedures for cleanup of leaks and spills of the toxic or hazardous substance

8. the location or toxic or hazardous substances to which the employee may be exposed

9. the nature of the operations that could result in exposure to these hazardous or toxic substances

10. Proper use, purpose, and limitation of personal protective equipment required by another occupational safety and health standard or otherwise used in the workplace.

The Department shall ensure that the employer shall institute an education and training program for employees exposed to toxic or hazardous substances, by requiring the employer to submit the program for approval and monitoring.

RESPONSIBILITIES OF THE DEPARTMENT. In addition to other duties the Department shall receive and maintain from the users and manufacturers of toxic or hazardous substances tne following:

1. material safety data sheets of all toxic and hazardous substances

2. the location of use and storage of all toxic and hazardous substances

3. an alphabetical list of all toxic and hazardous substances.

The Department shall make available to the public, upon request, all information required to be submitted under the provisions of this ordinance except where disclosure is expressly prohibited.

The Department shall conduct periodic inspection of workplaces using or manufacturing toxic or hazardous substances. These inspections are to be performed to ensure that workplaces meet the requirements of this act.

The Department shall have the authority to issue citation for any violations of this ordinance.

The Department shall also have the authority to respond to employee or citizen complaints under these provisions.

Upon request of an employer, the Department shall provide such employer with all the information concerning the employer's toxic substances which is available to the Department at the time of the request, and which is relevant to the information requirements of this act.

The Department shall develop a program to inform employers and employees of their duties and rights under this act. The Department shall adopt regulations to implement this code.

EMPLOYEES' RIGHTS

Employees, their representatives, or the recognized or certified collective bargaining agent may request in writing and shall receive from employers all information relating to toxic or hazardous substances which the employer is required to maintain pursuant to this act.

If an employee, or his representative, has made an request for information on such a substance, and the employer has not supplied such information within five working days, the employer shall not require the employee to work with the substance until the information has been provided to the employee.

No employer shall discharge, or cause to be discharged, or otherwise discipline, or in any manner discriminate against any employee or prospective employee because that person has exercised any right, made any claim or filed any complaint or suit or has instituted, or caused to be instituted, any proceeding under this act, or has testified or is about to testify, in any proceeding in his own behalf or on the behalf or others, nor shall any remuneration, position, seniority, or other benefits be lost for exercise of any right provided by this act.

An employee representative shall have the right to accompany the inspector during opening or closing conferences and to participate in the walkaround inspection.

Pay shall be provided for employees participating in the opening and closing conferences and in the inspection.

Complaint Procedure. Any employee who believes that he or she has been discharged, disciplined, or otherwise discriminated against by any person in violation or this act may file a complaint with the Department.

Any waiver by an employee, former employee, or applicant for employment of the benefits or requirements of this act is against public policy and is null and void.

Employees or their representatives bringing suit under this act upon obtaining a favorable order or judgement of the court are entitled to an award of attorney fees costs and expenses incurred to specialists for time involved in preparing for and testifying at the trial of the cause.

RECORDS

All documents and records required by this act which are in the possession of the Department are public records, except as otherwise specifically provided in this chapter.

SEVERABILITY

If any provision of this code or the application thereof to any person or circumstance is held invalid, the invalidity does not affect other provisions or applications of the section or related sections which can be given effect without the invalid provision or application, and to this end those provisions are severable.

This Act takes effect January 1, 1984.

Alaska State Legislature

BETTYE FAHRENKAMP
CHAIRMAN
ROBERT H. ZIEGLER, SR.
VICE-CHAIRMAN
DICK ELIASON - PAUL FISCHER
VIC FISCHER - BOB MULCAHY
ARLISS STURGULEWSKI



POUCH V
STATE CAPITOL
JUNEAU, ALASKA 99811
(907) 465-3834
(907) 465-3835

Senate

Committee on Resources

February 28, 1983

Memo

To: Bettye
From: Pat
Subject: Hearing on SB 79, "Right to Know" bill, Feb. 28, 3:00pm Beltz Rm.

This bill has been pushed by labor groups and is based on a national model legislation designed to protect workers who handle, transport, and use hazardous and toxic substances in the workplace. The premise is that if an employee knows what he is handling, how to handle it safely, and what to do in case of emergency we can improve the overall health of our workforce.

10 States have thus far enacted this legislation in one form or another. On the federal level, OSHA has proposed some draft regulations addressing this issue on a national level, but labor has strongly criticized them and implementation appears years away.

SB 79 requires an employer to provide a list to the Department of Labor of hazardous or toxic substances which he uses, stores or transports along with the effects, the conditions for safe use and exposure associated with the substances. This list shall be available to employees, including all applicants for employment, and their agents (unions). Employers utilizing a personal residence as a workplace would be excluded from coverage.

Hazardous and toxic substances would be defined as those listed by the US DOT, those in regs by OSHA and those on the National Institute for Occupational Safety and Health registry. No specific exemptions are given.

Containers of more than one gallon of the substances must be labeled by the name, hazards, exposure treatment, and safe handling procedures. Also, pipes and fixtures in workplace must be labeled.

Employers would be required to provide employees at least annual safety education programs including names, exposure treatment, cleanup procedures.etc.

QUESTIONS ON SB 79

Most of the controversy surrounding the bill stems from the following:

---- Who should be responsible for information? SB 79 would have all employers responsible except using personal residences. HB 197 requires manufacturers to develop information and pass in on to wholesalers and then, in turn, to purchasers. Presumably this would only apply to Alaskan manufacturers?

---- What substances should be covered? SB 79 starts with combined lists of substances from DOT, OSHA, and NIOSH lists. How many substances are on these lists? (NIOSH list reported to have 35,000-40,000 substances) HB 197 requires state DOL to issue regs identifying covered substances. Presumably they would only name substances pertinent to Alaska situations. HB 197 also exempts from coverage substances not considered health risks due to amounts, etc. and substances used for personal consumption. (foods, drugs, tobacco products, etc.) 3 states use OSHA reg list of 400, Calif. uses list of 700, N.Y. uses NIOSH list of 40,000.

---- What substances and manufacturing businesses are there currently in Alaska which could represent significant worker or community health hazards? (asettling gas manufacture, dry cleaners, PCB use,)

----- Should containers of substances be labeled as to their hazards, safe handling procedures, etc? SB 79 requires labeling of all containers of one gallon or more plus pipes and fixtures. HB 197 only requires posting in the work-place of substances used.
What labeling is currently being done on hazardous substances coming from Outside?

----- Who should get information from employers? SB 79 would give information to employees, applicants for employment, and agents. Information on file with state DOL would presumably be available to public except for "trade secrets". HB 197 would give information only to new employees, to other employees on request, and would limit DOL information to employees, physicians and other specified concerned persons. DOL "may" make information available to public.

----- How much would this legislation cost the State for enforcement and other actions (Fiscal note for $128,400) and employers? ($??)

COMPARISON BETWEEN SB 79 and PROPOSED OSHA STANDARD

SUBJECT	SB 79	Proposed OSHA 1910.1200
SCOPE--APPLICABILITY	All employers	Employers in SICs 20-39 (manufacturing)
LABELING	Pipes, valves, exits and every container of one gallon or more	Placarding of area accepted instead of labeling. Does not address labeling of pipes
LABEL CONTENTS	Chemical name Hazards Symptoms of over exposure Procedures in case of over exposure Personal protective equipment needed	Chemical name Hazards
SAFETY EDUCATION HAZARD DETERMINATION AND COMMUNICATION PROGRAM	Must be established DOL will monitor Annual training Employees must be informed of the data on the material safety data sheet (MSDS)	Must be established At initial assignment and whenever new hazardous chemical is introduced Employees must be informed of MSDS information and of the requirements of 1910.1200
EMPLOYEE ACCESS TO MSDS	If copy not provided to employee within 5 days employee can refuse to work with the hazardous or toxic substance	Employees given the right to access to MSDS but no provisions for when employer fails to provide within reasonable time.
LABELING PRACTICE	No provision	Containers less than 10 gals need not be labeled if transferred from labeled container if intended for the immediate use of employee who performs the transfer.
TRADE SECRETS	No mention--covered by AS 18.60.099	Several provisions
DEFINITIONS	Hazardous and toxic substances defined	Hazardous chemicals and Health hazards defined

COMPARISON BETWEEN SB 79 AND PROPOSED OSHA STANDARD

SUBJECT	SB79	Proposed OSHA 1910.1200
RECORDKEEPING	Requires employer to provide department annually with material safety data sheets (MSDS) Requires employer to keep MSDS to provide information to employees Retention period not specified	Requires employer to make available to department and employees MSDS. MSDS need only be retained as long as the substance is in the workplace.

Alaska State Legislature

BETTYE FAHRENKAMP, CHAIRMAN
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ARLISS STURGULEWSKI

POUCH V
STATE CAPITOL
JUNEAU, ALASKA 99811
(907) 465-3834
(907) 465-3835

Senate

Committee on Resources

May 11, 1983

Memo

To: Senate Resources Committee Members

From: Senate Resources Committee Staff

Subject: Hearing on SB 79, "Right to Know" legislation concerning hazardous and toxic substances in the workplace, May 11, 3:00pm , Beltz Room

Following hearings on the bill in Juneau and Fairbanks the Chairman asked staff to meet with concerned interest groups to try to work out problems which were widely acknowledged in the bill as originally drafted. Among these problems identified included:

---coverage of as many as 40,000 substances to be dealt with by employers.

---inclusion of "household" type substances salt, sand, bug spray and others.

---coverage of transportation industry where many break-in-transit handlings but no substance use were involved.

---Requirement of labeling of substance containers, piping systems.

---Reporting requirements to the State Department of Labor potentially involving extensive paperwork for employers and the state.

---Possible duplication and conflicts with federal OSHA regulations to be promulgated in the near future.

However, most agreed that the basic intent of the legislation to communicate the identity, health hazards and proper handling methods for hazardous and toxic substances to employees by employers was desireable.

Beginning in April a staff redraft of the bill was circulated to an ad hoc group of concerned individuals and interest groups. Following comments on this draft a meeting was held in Juneau May 2 and 3 with representatives from the following groups to try to arrive at consensus legislation:

Committee staff, Sen. Josephson's office, Alaska Environmental Lobby, Alaska Employer's Committee, Alaska General Contractors, Sohio, Arco, Alaska Health Project, Alaska District Council of Laborers, Alaska Department of Labor, Alaska Trucking Association.

The group proceeded under the following assumptions and objectives:

---that it was desireable to pursue legislation this session.

---that federal OSHA regulations would probably be published around July 1 of this year.

---that while federal OSHA regulations would cover several aspects of this legislation most employers in Alaska would not be covered.

---that it was desireable and possible to cover most Alaskan employers in a manner which would not duplicate or conflict with federal OSHA regulations.

---that any legislation pursued this session should represent a basic, simplified employer-to-employee communication system involving a minimum of paperwork or expense.

Provisions of the CS

The group agreed to a draft CS containing the following general provisions:

---The CS tracks the proposed OSHA regulations for the substances covered. Two basic lists of chemicals for which study and exposure limits have been set would be covered plus additional substances which would be covered by OSHA regulation following performance-based testing. The combined lists (large overlap) would cover approximately 600-700 chemical substances to be considered "hazardous" or "toxic" under the bill.

---Employers would be required to post a notice of hazardous and toxic substances in their workplaces with information on health hazards, handling procedures, and other information. Employers would also be required to provide safety training on these substances to new employees and reassignment of employees for substances they would be exposed to.

---The information required to be supplied by employers would be in the same form as required under OSHA regulation. This information would not have to be produced by employers but would come from manufacturers as required by the OSHA regs, would be required on all substances imported into Alaska (to cover middleman wholesalers not covered by federal regs), and would be on file with the state Department of Labor. In fact, information on most, if not all, the substances covered by the bill is currently available.

---No labeling or reporting requirements are included in the CS. Labeling will be required of all manufacturers under OSHA regulations and the reporting requirements were determined not to be critical to the basic communication to employees of substance information.

---Substances while in transit are exempt from the provisions of the bill. Current federal transportation of hazardous substances regulations were determined to be sufficient.

---Household items such as food, drugs, goods used for personal use are exempted as are substances in small quantities not representing a health hazard. Thus, no substances like salt or bug spray off the shelf are included. However, some items like sand (silicates) are on the list when used in concentrations (like sandblasting) which have been shown to represent real health hazards, but not for most common situations.

---Although the technical assistance activities and pre-implementation tasks of the Department of Labor would take effect immediately, employers would not be required to comply before July 1, 1984, to ensure that information is available.

FLOOR STATEMENT, SB 79, "RIGHT TO KNOW"

There is a Resources Committe Substitute and a Resources Letter of Intent.

BACKGROUND

ORIGINAL BILL HAD LOTS OF PROBLEMS WITH NUMBERS AND TYPES OF SUBSTANCES COVERED, REPORTING REQUIREMENTS, POSSIBLE CONFLICTS WITH PENDING OSHA REGS, LABELING

WE SAT DOWN WITH ALL CONCERNED INTEREST GROUPS AND CAME UP WITH CONSENSUS CS WHICH WAS AGREED TO BY THE FOLLOWING INTERESTS:

---ALASKA EMPLOYERS COMMITTEE WHICH INCLUDES TRUCKING, MINING, TIMBER, OIL, DRY CLEANING, GENERAL CONTRACTORS, RETAILERS, SEAFOOD PROCESSORS AND OTHER INDUSTRIES AND EMPLOYERS.

---ALASKA ENVIRONMENTAL LOBBY

---ORGANIZED LABOR (DISTRICT COUNCIL OF LABORERS, PAINTERS, OTHERS)

---HEALTH ORGANIZATIONS (ALASKA HEALTH PROJECT)

---STATE DEPARTMENT OF LABOR

BILL'S PROVISIONS

----EMPLOYERS TO POST NOTICE OF TERMS OF ACT, HAZARDOUS AND TOXIC SUBSTANCES WHICH EMPLOYEES MAY BE EXPOSED TO.

----EMPLOYERS TO CONDUCT SAFETY TRAINING OF NEW AND TRANSFERRING EMPLOYEES ON PROPER USE, HARMFUL EFFECTS ON SUBSTANCES WHICH THEY HANDLE OR EXPOSED TO.

----NO REPORTING TO STATE REQUIREMENTS

----NO LABELING REQUIREMENTS

----GOODS IN TRANSIT EXEMPTED BECAUSE ALREADY COVERED UNDER EXISTING LAW

----SUBSTANCES TO BE COVERED ON WIDELY ACKNOWLEDGED LIST OF TRULY HAZARDOUS SUBSTANCES--ABOUT 600-700--SAME LIST AS CONTAINED IN PENDING OSHA REGS.

----NO PERSONAL USE ITEMS SUBSTANCES COVERED OR SUBSTANCES IN AMOUNTS NOT A HEALTH HAZARD.

----REQUIREMENTS WOULD NOT TAKE EFFECT UNTIL JULY 1, 1984 TO GIVE EMPLOYERS TIME TO COMPLY AND FOR STATE AND MANUFACTURERS TIME TO DEVELOP ALL REQUIRED INFORMATION FOR USE BY EMPLOYERS.

----REQUIREMENTS ALL TRACK PENDING OSHA REGS, NO DUPLICATION, CONTRADICTIONS

April 20, 1983

Honorable Joe P. Josephson
Alaska State Senator
Room 508, Capitol Building
Pouch V
Juneau, Alaska 99811

Dear Senator Josephson:

Enclosed is a Sea-Land position paper on Senate Bill No. 79, which was introduced by yourself, Senator Sturgulewski, Senator Fischer and Senator Fahrenkamp.

We, as Sea-Land, as well as the entire transportation industry are regulated by the Handling of Dangerous and Hazardous Materials Rules and Regulations of the United States Department of Transportation for Interstate and Foreign Commerce. This includes shipping, trucking, railroad and barge companies.

I have taken the liberty to enclose eight different attachments to explain the procedures that Sea-Land Service, Inc., uses in complying with the Federal [illegible] Rules and Regulations. As you can appreciate, we are now required to comply with DOT; and if we were compelled to further comply with Senate Bill 79, [illegible] the transportation industry would be forced to duplicate our work load to greater degree. One must remember the transportation industry is only transporting these products; we are not using them or are we using them to manufacture another substance.

It is our desire that the transportation industry be exempt from this Senate Bill 79 in Interstate and Foreign Commerce.

Thanking you in advance for taking the time to reconsider our position; and if there are any questions that you might have regarding our procedures, please feel free to call upon us.

Sincerely,

HLS:kt
Enclosures

SEA-LAND SERVICE, INC.'S POSITION ON SENATE BILL NO. 79: AN ACT RELATING TO TOXIC AND HAZARDOUS SUBSTANCES IN THE WORKPLACE; AND PROVIDING FOR AN EFFECTIVE DATE.

Sea-Land is definitely of the opinion that transportation companies in the State of Alaska should be exempt from complying with SB 79.

Reason: United States Department of Transportation has in effect definite rules and regulations as to the handling of dangerous and hazardous materials in the transport of interstate and foreign commerce. These rules and regulations are for the truck, rail and water industries. Besides DOT, the water carriers who are involved in foreign traffic must abide by the International Maritime Consultative Organization (IMCO) rules and regulations. If the transportation companies in the State of Alaska were required to abide by the requirements in SB 79, as well as the DOT and IMCO, it would increase and considerably duplicate the workload which exists today. In the case of employees of transportation companies, they are not using or working with the substance as in manufacturing; only handling and transporting these substances under the rules and regulations of DOT.

Sea-Land Policy: We have a corporate Hazardous Commodities Review Committee at our headquarters that has the responsibility to set policy for our worldwide operations:

1. Keep all manuals pertaining to hazardous commodities up to date.

2. Update worldwide computer system and information relative to hazardous commodities.

3. Update corporate educational programs for all terminals.

4. Collect and distribute all new rules and regulations from DOT and IMCO to all terminals.

Sea-Land's Computer System for Hazardous Commodities:

I. We are very proud of this system as it is kept up with the latest information on all commodities that we are allowed to transport under DOT and IMCO. The computer printout gives us the:

   Reference Number
   DOT Class
   Name
   IMCO Name
   Notes (for stowage purposes)
   DOT Label
   IMCO Label

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   Name
   IMCO Name
   Notes (for stowage purposes)
   DOT Label
   IMCO Label

Supplemental IMCO Instruction
DOT Placard
IMCO Class
Stowage Information
UN Number
CCFP
OCFP
Tanker
Reefer
ADR Class
Marginal Number
Number
Special Cargo
Properties of Material
Emergency Equipment Needed In Case
Emergency Action for Fire
Emergency Action for Spill
First Aid Instructions.

Attachment IA and IB (Actual copy of computer run of two hazardous commodities -- Sulphuric Acid and Chlorocetic Acid, Liquid).

II. Corporate Procedure: Carriage of Hazardous Materials by Sea-Land. These are procedures to follow in our day to day operation showing which procedures to follow as to type of material.

Attachment II (actual copy).

III. Corporate Procedure: Reporting of Hazardous Materials Incidents.

Attachment III (actual copy).

IV. Corporate Procedure: Booking of Hazardous Materials.

Attachment IV (actual copy).

V. Corporate Procedure: Hazardous Materials Placards.

Attachment V (actual copy).

VI. Corporate Procedure: Processing of Notice of Alleged Violation of the U.S. Hazardous Materials Regulations.

Attachment VI (actual copy).

VII. Dangerous Cargo Manifest: This is made up for each voyage and copies are in the originating terminal, on board vessel, destination terminal, and in the master computer. We know exactly how many vanloads of hazardous material are aboard, what their contents are, where they are stowed, flash point, van number, stowage location, class name, quantity, type of packaging in van, and number of pounds in shipment.

Attachment VIIA (copy of ship's Dangerous Cargo Manifest for the Domestic (Alaska) Service (DOT).

Attachment VIIB (copy of ship's Dangerous Cargo Manifest for the Foreign (Far East) Service (IMCO).

VIII. Placards Used on Vans Carrying DOT and IMCO Vans: When within the United States, all vans with hazardous materials in the load must be placarded with DOT placards; when a van is destined to a foreign country, it must carry the IMCO placards when they are loaded to a vessel. Reason: There are some differences in the placarding of the various materials, and the IMCO regulations are through a United Nations Treaty Agreement.

Attachment VIIIA (booklet showing DOT placards).

Attachment VIIIB (poster showing IMCO placards).

REF NO = 0066015 DOT CLASS = CORROSIVE MATERIAL PAGE=

NAME = SULFURIC ACID

DOT NAME = SULFURIC ACID

IMCO NAME = SULFURIC ACID

NOTES = STOWAGE:UNDER STOWAGE IN METAL DRUMS ONLY,AWAY FROM FLUORIDES.& ALL OTHER SUBSTANCES IN CLASS 8.0 EXCEPT NITRIC ACIDS & SULPHUR TRIOXIDE (RQ-1000)

DOT LABEL = CORROSIVE MATERIAL

IMCO LABL = CORROSIVE

SUPL IMCO = NONE

DOT PLCRD = COR.M IMCO CLASS = 8.0 STOW INFO = 1*Q UN NO = 1830

CCFP = OCFP = TANKER = NO REEFER = UNK

ADR CLASS = 8 MARGINAL NO = 2801 NUMBER = 1C SPEC CARGO =

0066015 PROPERTIES PAGE=

SOLUBLE IN WATER; TOXIC; TOXIC VAPORS FROM DECOMPOSITION ON HEATING, REACTS VIOLENTLY WITH ALKALI METALS AND ALKALI METAL HYDROXIDES; CORROSIVE ACID; EXPLODES (AND DANGEROUS REACTIONS) WITH WATER (OR STEAM);

0066015 EMERGENCY EQUIPMENT PAGE=

POSITIVE PRESSURE DEMAND AIR PACK, PLASTIC OR RUBBER PROTECTIVE GLOVES, BOOTS, COAT AND PANTS; LOW VELOCITY FOG APPLICATOR, EXPLOSION PROOF ELECTRICAL EQUIPMENT; ABSORBENT MATERIAL (DIATOMACEOUS EARTH OR VERMICULITE) FACE AND EYE PROTECTION; FIRE FIGHTING FOAM;

0066015 EMERGENCY ACTION FIRE PAGE=

USE DRY CHEMICAL. CO2 MAY WORK. IF WATER IS USED, USE LARGE AMOUNTS. CHEMICALS REACT WITH WATER. ACIDS MAY BE NEUTRALIZED WITH WATER. ACIDS MAY BE NEUTRALIZED WITH SODA ASH OR LIME. STOP VENTILATION. EXPLOSIVE MIXTURE - SEE PROPERTIES.

0066015 EMERGENCY ACTION SPILL PAGE=

REMOVE ALL SOURCES OF IGNITION. USE EXPLOSION PROOF EQUIPMENT ONLY. WASH OVERBOARD WITH COPIOUS AMOUNTS OF WATER. ABSORB WITH DIATOMACEOUS EARTH. KEEP

PERSONNEL UPWIND, SHUTDOWN VENTILATION UNTIL SITUATION EVALUATED. SEE PROPERTIES.

0066015 FIRST AID PAGE=

SKIN-CONTACT---FLUSH WITH LARGE AMOUNTS OF WATER, TREAT AS BURN; IN EYES---FLUSH WITH LARGE AMOUNTS OF WATER (AT LEAST 15 MINUTES), CONTACT DOCTOR AND LOOK UP SPECIFIC TREATMENT FOR CHEMICAL IN MEDICAL GUIDE BOOKS AS NEEDED.

APR 28 1983

Alaska Public
Employees Association APEA
State Headquarters: 340 N. Franklin, Juneau, AK 99801 (907) 586-2334

TO: Senator Bettye Fahrenkamp

FROM: Cherie Shelley
Executive Director

DATE: April 27, 1983

SUBJECT: SB 79

The Alaska Public Employees Association supports your efforts to promote a safer workplace for all employees. The requirements of SB 79 are consistent with an enlightened view of employer - employee relations.

Employees should have ready access to information pertaining to potentially harmful substances found in the workplace. Passage of this legislation will increase the awareness of both employers and employees to safety hazards. The information disclosure and employee training provisions will undoubtably help to prevent serious injury or death in the event of an accident.

All employees should know the potential hazards associated with their employment. This legislation will give employees the information necessary to deal with industrial accidents and promote safe working conditions.

CS/rm

Fairbanks Field Office
825-D College Road
Fairbanks, AK 99701
Telephone: (907) 456-5412

Anchorage Field Office
833 Gambell Street, Suite A
Anchorage, AK 99501
Telephone: (907) 274-1688

Juneau Field Office
227 4th Street
Juneau, AK 99801
Telephone: (907) 586-6305

I think the language on page 1 & 3 language might be helpful.

AS IT DIED IN '82

Original sponsor: Rogers

Offered: 4/2/82
Referred: Finance

IN THE HOUSE

BY THE LABOR AND COMMERCE COMMITTEE

CS FOR HOUSE BILL NO. 806 (L&C)

IN THE LEGISLATURE OF THE STATE OF ALASKA

TWELFTH LEGISLATURE - SECOND SESSION

A BILL

For an Act entitled: "An Act relating to hazardous or toxic substances; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. AS 18.60.030 is amended by adding a new paragraph to read:

(12) adopt regulations further defining "hazardous substance" (AS 18.60.105(11)) and "toxic substance" (AS 18.60.105(12)) and excluding from those definitions

(A) substances that because of their physical state, volume, or concentration do not pose a health risk upon exposure; and

(B) substances that are goods, drugs, cosmetics, or tobacco products intended for personal consumption.

* Sec. 2. AS 18.60 is amended by adding new sections to read:

Sec. AS 18.60.051. MANUFACTURER TO PROVIDE HAZARDOUS OR TOXIC SUBSTANCE INFORMATION. (a) The manufacturer of a hazardous or toxic substance shall prepare and provide a person who purchases the hazardous or toxic substance from the manufacturer with information specified in (b) of this section that, to the best of the manufacturer's knowledge, is current, accurate, and complete, based on information then reasonably available to the manufacturer.

(b) The information that a manufacturer shall provide as required in (a) of this section includes

(1) the chemical name, common name, and the CAS number of the hazardous or toxic substance;

(2) the hazards or other risks in the use of the hazardous or toxic substance, including

(A) the potential for fire, explosion, or reactivity;

(B) the known or suspected acute and chronic health effects or risks from exposure;

(C) the potential avenues of exposure and symptoms of overexposure;

(3) the proper precautions, handling practices, necessary personal protective equipment, and other safety precautions in the use of or exposure to the substance;

(4) the emergency procedures for spills, fire, disposal, and first aid;

(5) a description in lay terms, if not otherwise provided, on either a separate sheet or with the body of the information specified in this section, of the specific potential health risks posed by the substance intended to alert a person reading the information;

(6) the month and year that the information was compiled and the name and address of the manufacturer responsible for preparing the information.

Sec. AS 18.60.052. WHOLESALER TO PROVIDE HAZARDOUS OR TOXIC SUBSTANCE INFORMATION. (a) Except as provided in (b) of this section, a wholesaler who sells a hazardous or toxic substance shall provide a purchaser of the hazardous or toxic substance at the time of sale with a copy of the most recent information listed under AS 18.60.051 unless the purchaser indicates that

(1) he possesses that information; or

(2) he does not intend to use the substance in a workplace frequented by persons other than the purchaser.

(b) The commissioner shall adopt regulations identifying the types

of hazardous or toxic substances that are required by federal law to be labeled in a manner equivalent to the requirements of (a) of this section. Those types of hazardous or toxic substances are excepted from the provisions of (a) of this section.

Sec. 18.60.071. EMPLOYER TO PROVIDE HAZARDOUS SUBSTANCE INFORMATION AND TRAINING. (a) An employer shall post in the workplace of his employees the information listed in AS 18.60.051 if, as a result of workplace operations, there is a hazardous or toxic substance present in the workplace in a manner that employees may be exposed

(1) under normal conditions of work; or

(2) in a reasonably foreseeable emergency resulting from workplace operations, including but not limited to equipment failure, rupture of containers, or failure of control equipment, that may or do result in a release of a hazardous or toxic substance into the workplace.

(b) An employer required to comply with (a) of this section shall furnish each new employee and, on request, any other employee with

(1) a copy of the information posted in accordance with (a) of this section; and

(2) training at the employer's expense calculated to candidly inform the employee of

(A) the location, properties, and known or suspected acute and chronic health effects of the hazardous or toxic substances to which the employee is routinely exposed in the workplace;

(B) the nature of the operations that could result in exposure to these hazardous or toxic substances as well as any necessary handling or hygienic practices or precautions;

(C) the purpose, proper use, and limitation of personal

protective equipment required by another occupational safety and health standard or otherwise used in the workplace; and

(D) information required by AS 18.60.051.

Sec. 18.60.072. REPORTS TO BE FILED WITH DEPARTMENT. (a) A manufacturer, wholesaler, and employer who are subject to the requirements of AS 18.60.051, 18.60.052, and 18.60.071, respectively, shall file with the department an annual report that includes

(1) the information provided to purchasers and employees in accordance with AS 18.60.051, 18.60.052, or 18.60.071 for each hazardous or toxic substance specified by the department under (d) of this section;

(2) the safety procedures and equipment actually used in the workplace;

(3) the quantities of hazardous or toxic substances being used or produced for those substances required by the department under (d) of this section to be reported; and

(4) other information considered appropriate by the department.

(b) A change in circumstances that would require modification of the report filed under this section shall be immediately reported to the department.

(c) The department shall comply with AS 18.60.099 to ensure protection of trade secrets divulged in the reports filed under this section.

(d) The department shall adopt regulations specifying the hazardous or toxic substances that are to be reported under this section.

Sec. 18.60.073. ACCESS TO RECORDS. (a) An employee, prospective employee, or former employee of a manufacturer or employer subject to AS 18.60.072 and physicians designated by any of these persons may

examine and copy a report filed with the department under AS 18.60.072 except for that information considered a trade secret under AS 18.60.-099.

(b) An employee, prospective employee, former employee, a representative of the commissioner, and physicians designated by any of these persons may examine and copy exposure measurements taken to monitor employee exposure to hazardous or toxic substances in the workplace.

(c) The department may require an employee or former employee of a manufacturer or employer subject to AS 18.60.072 to furnish health and exposure records and other information pertinent to an investigation by the department of violations of AS 18.60.051, 18.60.052, or 18.60.071 - 18.60.073.

(d) The commissioner shall adopt regulations pertaining to access to records and information that is required by AS 18.60.051, 18.60.052, and 18.60.071 - 18.60.073. The regulations shall ensure that the department, a purchaser of hazardous or toxic substances, and an employee exposed to or who believes he is exposed to hazardous or toxic substances have ready access to all information that is relevant to the purposes of AS 18.60.051, 18.60.052, or 18.60.071 - 18.60.073 and not exempted from disclosure as trade secrets.

Sec. 18.60.074. PUBLIC DISCLOSURE OF HAZARDOUS OR TOXIC SUBSTANCE INFORMATION. The department may disclose to the public information concerning hazardous or toxic substances and the circumstances under which the public might be affected.

* Sec. 3. AS 18.60.105 is amended by adding new paragraphs to read:

(6) "CAS number" means the unique identification number assigned by the Chemical Abstracts Service to specific chemical substances;

(7) "chemical name" means the scientific designation of a

substance in accordance with the nomenclature system developed by the International Union of Pure and Applied Chemistry or the system developed by the Chemical Abstracts Service;

(8) "common name" means a designation or identification such as code name, code number, trade name, or brand name used to identify a substance other than by its chemical name;

(9) "expose" or "exposure" means a situation arising from work operation or usage where an employee or purchaser may ingest, inhale, absorb through the skin or eyes, or otherwise come into contact with a hazardous or toxic substance;

(10) "manufacturer" means a person who produces, synthesizes, extracts, or otherwise makes a hazardous or toxic substance in the state;

(11) "hazardous substance" means a chemical that

(A) is listed in the United States Department of Transportation Hazardous Materials Table, 49 C.F.R. 172.101; and

(B) meets one or more of the following criteria for hazard class:

(i) is a combustible substance;

(ii) is a compressed gas;

(iii) is an explosive;

(iv) is a flammable substance;

(v) is an organic peroxide; or

(vi) is an oxidizer; or

(C) is listed in a regulation adopted by the department under AS 18.60.030(12);

(12) "toxic substance" means a chemical that is

(A) listed in the Toxic and Hazardous Substances section of the regulations of the Occupational Health and Safety Act in 29

C.F.R. Part 1910, Subpart Z;

(B) listed in the most recent edition of the National Institute for Occupational Safety and Health Registry of Toxic Effects of Chemical Substances; or

(C) listed in a regulation adopted by the department under AS 18.60.030(12);

(13) "wholesaler" means a dealer, distributor, or jobber who sells a hazardous or toxic substance in the state to a person for use in a workplace in a manner that subjects an employer to the requirements of AS 18.60.071 or to a person who sells, or intends to sell, directly to the consumer.

* Sec. 4. This Act takes effect January 1, 1983.

Bill No. Committee Substitute for House Bill 806

Date March 12, 1982

Title "An Act relating to hazardous or toxic substances."

Contact: Judy Knight
465-270

Richard Arab
465-4856

As part of its occupational safety and health program, the Department of Labor enforces regulations to protect employees from certain hazardous and toxic substances, and provides consultation and training services to employers and employees on the safe handling and use of these substances. The department's occupational safety and health staff can presently only cover approximately seven percent of Alaska worksites during a year. Because it has historically been difficult to identify specific workplaces in the state where toxic and hazardous substances are present, the reporting provisions of this bill would enhance the department's efforts to direct its limited occupational safety and health resources to those workplaces where hazardous exposures actually exist.

Often employers and employees are not aware of the toxic or other harmful qualities of a particular substance being used or handled in the workplace. The labeling and training requirements provided in this bill would go a long way toward filling this void. This would, in turn, effect implementation of protective measures or controls by the employer to safeguard his employees.

Many employees would, no doubt, look to the Department of Labor for assisting them in providing the required training and in implementing effective protective measures. Accordingly, if this bill is passed, we would anticipate an increase in the demand for consultative and training services. A fiscal note is attached which reflects the costs associated with providing the increased services.

POSITION PAPER/Department of Labor

TWELFTH LEGISLATURE

FISCAL NOTE

REQUEST
Bill/Resolution No. Committee Substitute for House Bill 806
Title "An Act relating to hazardous or toxic substances."
Requested by House Labor and Commerce Date 3/16/82

II. FISCAL DETAIL
Agency Affected Labor
Program Category Affected Worker Protection
BRU, Program, or Subprogram(s) Affected Occupational Safety and Health
(Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)

EXPENDITURES (Thousands of Dollars)

	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
100 PERSONAL SERVICES	0	74.1	78.1	85.9	94.5	103.9
200 TRAVEL	0	9.3	4.8	5.3	5.8	6.4
300 CONTRACTUAL	0	23.9	26.3	28.9	31.8	35.0
400 COMMODITIES	0	2.0	2.2	2.4	2.7	2.9
500 EQUIPMENT	0	2.0	0	0	0	3.0
600 LAND & STRUCTURES						
700 GRANTS, CLAIMS, ETC.						
TOTAL	0	111.6	111.4	122.5	134.8	151.2

FUNDING (Thousands of Dollars)

GENERAL FUND	0	111.6	111.4	122.5	134.8	151.2
FEDERAL FUNDS						
OTHER (Specify Fund Source)						

POSITIONS

FULL TIME	0	2	2	2	2	2
PART TIME						
TEMPORARY						

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

Assumes that the intent of the bill is to minimize harmful exposures to toxic and hazardous substances in work places in the state, and that the Department of Labor is to take a lead role in this effort.

As a result of this bill, two positions, an industrial hygienist and a clerk typist, will be required.

This note assumes an effective date of July 1, 1982 and inflation rate of 10% per year.

POSITION PAPER/Department of Health & Social Service

POSITION PAPER
CS for House Bill No. 806 (L&C)

"An Act relating to hazard , or toxic substances."

House Bill No. 806 requires the manufacturer and seller of hazardous or toxic substances to provide to the purchasers of these substances complete information as to the characteristics and precautions required when using. Any employer utilizing a substance included under this act must post a copy of the information for the employees to review plus provide training and safety gear. The employer must file with the Departme it of Labor annually, complete disclosures with regards to his activities and usage of the hazardous and toxic substances.

This bill imposes reasonable guideline concerning handling of toxic and hazardous substances in manufacture and selling.

Minor recommendations include the following:

1) Under Section 18.60.051 consider adding "significant levels of toxic impurities if they exist in a mixture."

2) Under Section 18.60.071 consider change of mandatory requirements depending on size of employer e.g. less than ten.

3) Under Section 18.60.105 consider substances manufactured outside of the State and shipped in.

4) Under Section 18 60.073c the confidentiality of medical records may be breached if it is left that the Department may "require."

The Department supports the passage of this Bill.

Recommended by: E. S. Rabeau

E. S. Rabeau, M.D., Director
Division of Public Health

Date: March 15, 1982

Approved by: Helen D. Beirne

Helen D. Beirne Commissioner
Department of Health and
Social Services

Date: 3-16-82

The fiscal impact of this bill on the Department of Health and Social Services

THE LEGISLATURE OF THE STATE OF ALASKA
TWELFTH LEGISLATURE

FISCAL NOTE

I. REQUEST
Bill/Resolution No. House Bill No. 806
Title "An Act relating to hazardous or toxic substances."
Requested by Rogers Date 2-22-82

II. FISCAL DETAIL
Agency Affected Department of Health and Social Services
Program Category Affected Health/Public Health
BRU, Program, Or Subprogram(s) Affected Communicable Disease Control/Epidemiology
(Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)

EXPENDITURES (Thousands of Dollars)

	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
100 PERSONAL SERVICES		0				
200 TRAVEL		3.0	3.3	3.6	4.0	4.4
300 CONTRACTUAL		3.0	3.3	3.6	4.0	4.4
400 COMMODITIES		3.0	3.3	3.6	4.0	4.4
500 EQUIPMENT		1.0	1.2	1.3	1.5	1.6
600 LAND & STRUCTURES						
700 GRANTS,CLAIMS,ETC.						
TOTAL		10.0	11.1	12.1	13.5	14.8

FUNDING (Thousands of Dollars)

GENERAL FUND		10.0	11.1	12.1	13.5	14.8
FEDERAL FUNDS						
OTHER (Specify Source)						

POSITIONS

FULL TIME						
PART TIME						
TEMPORARY						

III. ANALYSIS (See Fiscal Note Preparation Instruction, Section III)

All inflation at 10%

This fiscal note covers the travel costs, training seminars, commodities and testing equipment that must be utilized by our Epidemiologists in investigating the effects of exposure in humans. As the petrochemical industry develops in Alaska more and more problems will develop, very little of the acute and chronic health effects will be known and when the risks are known they tend to be understated. As problems develop it will be incumbent upon the Epidemiologist to do in depth investigations.

The fiscal impact of this bill on the Department of Health and Social Services

ARCO Alaska, Inc.
Post Office Box 360
Anchorage, Alaska 99510
Telephone 907 277 5637

March 24, 1982

Nancy Lord
Administrative Assistant
c/o Representative Brian Rogers
Pouch V
Juneau, Alaska 99811

Dear Ms. Lord:

To follow-up on our March 17 conversation after the public testimony on HB 806, I believe we agree on many aspects of the bill. However, there are portions of the bill that require changes which will retain the objective(s) of this bill but limit the unnecessary burden that is present in this bill. Enclosed is a copy of the testimony that has been forwarded to the committee. As my attempt to document the items we discussed, the following points are forwarded. Please realize these points have not been reviewed by ARCO and should be considered as ideas for suggested changes and not an ARCO position. These comments are submitted to address the draft dated March 15, 1982.

1. Page #1, line #15 - I support the change made to the 3/15/82 draft. The 2/15/82 draft seemed to develop another definition for "hazardous."

2. Page #2, line #9 - Recommend you add a reference to OSHA form number twenty (20) or its equivalent as an item number seven (7). OSHA form #20 is a reasonable format to follow and that guidance could be added to the bill. I stress "or its equivalent" because several manufacturers use a similar form which is equivalent and there should not be a need to rewrite that information on one standard state or federal form.

3. Page #2, line #10 - This section requires issuance of a MSDS for all wholesale and retail sales transactions. I don't believe the purpose of this bill is to require a gas station or grocery store operator to supply the customer with a MSDS. Clarification of what is desired would be valuable to the bill.

4. Page #2, line #23 - The requirement to "post" this information is burdensome, potentially expensive, and marginally effective. A reasonable alternative is to require that the information be made available to the employees, (e.g. ...employer shall supply, or make otherwise available, in the workplace ...)

5. Page #2, line #23 - My testimony on "workplace" applies.

6. Page #3, line #5 - The requirement to "furnish" this information "on an annual basis" is unnecessary. Suggest ...shall furnish, by providing the information, training or similar method, each new...

7. Page #3, line #7 - If comment #4 above is added to the bill, a similar change will be needed here. E.g. ...the information described by section (a); and ...

8. Page #3, line #25 - What is desired by this annual report? As written the bill requires information that may have been previously submitted by the "manufacturer, seller and employer" and part of the information required may have been submitted by another manufacturer, seller or employer. I realize you want adequate reports but the bill doesn't provide intent nor direction in order to determine what is adequate.

9. Page #4, line #10 - The "prospective" employee language of the bill may authorize anyone to review the medical files of all individuals working in Alaska. Also, I believe section 073 needs to be modified to allow access only by "documented, need to know" language. The section seems to over stress "freedom of information" and inadequately addresses "confidentiality of personnel records" including employee health records.

10. Page #5, line #25 - The term "hazardous substance" is a very popular but ill-defined term. I believe the bill is designed to protect employees and should address only those items that apply to the employee work place. There are several lists available which could apply but this bill should be limited to documented occupational hazard(s). Adding the DOT regulations to this bill may be a quick answer to a definition but it is also an incorrect answer. I recommend that you delete section (11)(B) and add guidance and authorization for DOSH to develop a list that is important in Alaska.

11. Page #6, line #7 thru 13 - The first portion of this definition seems good but subsection (C), beginning on line #14, is basically a catch-all statement which distracts from rather than enhances this bill. Many chemicals induced in man or experimental animals can have an affect on either man or animal but the concentration,

method of transfer, availability in the work place etc. aren't considered in this portion of the definition. I recommend you either delete subsection (C) or, if you believe it is necessary, expand on the idea so that it is interpretable by the employer and enforceable by DOSH.

Note on comments #10 & 11 - Words such as hazardous, toxic, environmental and subsistence are all terms that are constantly being used in Alaska. Unless meaning definitions are provided there is a good chance that misuse of these words will continue.

Sincerely,

P. N. Hellstrom

Peter N. Hellstrom
Environmental Coordinator

PNH:jms

Enclosure

cc: Representative Terry Martin, Chairman
Representative Bernie Bylsma
Representative Terry Gardiner
Representative Dick Randolph
Representative Brian Rogers
Jeff Barry

THE LEGISLATURE OF THE STATE OF ...

TWELFTH LEGISLATURE

FISCAL NOTE

I. REQUEST

Bill/Resolution No. Committee Substitute for House Bill 806 am (L&C)

Title "An Act relating to hazardous or toxic substances."

Requested by House Labor and Commerce Committee Date 4/1/82

II. FISCAL DETAIL

Agency Affected Labor

Program Category Affected Worker Protection

BRU, Program, or Subprogram(s) Affected Occunational Safety & Health

(Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)

EXPENDITURES (Thousands of Dollars)

		FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
100	PERSONAL SERVICES	0	36.1	66.0	72.6	79.9	87.9
200	TRAVEL	0	6.9	5.2	5.7	6.3	7.0
300	CONTRACTUAL	0	12.6	24.2	26.7	29.3	32.2
400	COMMODITIES	0	1.0	1.7	1.8	2.0	2.2
500	EQUIPMENT	0	2.0	0	0	0	3.0
600	LAND & STRUCTURES						
700	GRANTS, CLAIMS, ETC.						
	TOTAL	0	58.6	97.1	106.8	117.5	132.3

FUNDING (Thousands of Dollars)

GENERAL FUND	0	58.6	97.1	106.8	117.5	132.3
FEDERAL FUNDS						
OTHER (Specify Fund Source)						

POSITIONS

FULL TIME		0	1	1	1	1	1
PART TIME	SEASONAL	0	1	1	1	1	1
TEMPORARY							

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

Assumes that the intent of the bill is to minimize harmful exposures to toxic and hazardous substances in work places in the state, and that the Department of Labor is to take a lead role in this effort.

As a result of this bill, two poisitions, an industrial hygienist and a seasonal (6 months) clerk typist, will be required.

This note assumes an effective date of January 1, 1983 and inflation rate of 10% per year.

IV. DATE 4/1/82 PREPARED BY Nico Bus

AGENCY Department of Labor

PHONE 465-2720

Original: Legislative Finance

cc: Budget and Management

Prime Sponsor (First Legislator Named)

33-001 (Rev. 12/81)

DL-32

	POSITION TITLE				RANGE/STEP	BARG. UNIT.	LOCATION	GOV.	APPROV.	DISAPP.
1	Industrial Hygienist (Voluntary Compliance)				508	LTC	Anchorage			
	TYPE OF POSITION	STAFF MONTHS	RP No.	PCN No.	PRIORITY		FORM 12 PAGE/LINE	LTC.		
2	PFT	6	CSHB806 AM	NOT ASSIGNED			N/A			

	TYPE OF EXPENDITURE		AMOUNT
	1	2	3
4	PERSONAL SERVICES: SALARY 3,146/month X 6 months	18,876	
5	BENEFITS 15.92%	3,005	
6	SBS	1,094	
7	FIXED BENEFITS	960	
8	TOTAL PERSONAL SERVICES 01		23,935
9	TRAVEL 02		6,675
0	CONTRACTUAL 03		7,850
1	COMMODITIES 04		500
2	EQUIPMENT 05		2,000
3	OTHER		
4	TOTAL COST		41,160

	RECEIPT CODE	FUNDING SOURCE	
5		FED RCPTS. 1002	
6		GF MATCH. 1003	
7	100	GEN. FUND 1004	41,160
8		I-A RCPTS 1005	
9		PGM RCPTS 1028	
0		OTHER	
1	CONTINUATION		
2	ADDITION	X	

FOR B&M USE ONLY

AA KEY NUMBER _____ COLUMN NO. ____

JUSTIFICATION:

The Industrial Hygienist will evaluate and follow-up on the data filed with the department under the provisions of AS 18.60.072; will conduct research into which hazardous and toxic substances should be covered by the bill and develop the necessary regulations to carry out the intent of the bill; and will respond in a timely manner to the increase in requests for consultation and training services that will be experienced as a result of the focus this bill places on toxic and hazardous substances.

Included in the contractual services costs are $1,600 for space rent and 15.97% of salary for Management Services support.

One time costs are $4,000 for moving expenses, $500 in travel costs for training and $2,000 for equipment.

IV. DATE 4/1/82 PREPARED BY Nico Bus
AGENCY Department of Labor
PHONE 465-2720

Original: Legislative Finance
cc: Budget and Management
Prime Sponsor (First Legislator Named)

33-001 (Rev. 12/81)

AGENCY Labor PROGRAM Worker Protection

BRU Occupational Safety & Health

COMPONENT Occupational Safety & Health

13 REQUEST FOR NEW POSITION

Page 1 of 2 REVISED DATE

FY 83

DL-

TYPE OF POSITION	STAFF MONTHS	DPN #	PCN No.	PRIORITY	LOCATION	CBU	APPROVAL	DISAP
Seasonal	6	CSHB806	Not Assigned	BB 6	Anchorage			
Clerk Typist III					FORM 12 PAGE/LINE N/A	LEG.		

TYPE OF EXPENDITURE		AMOUNT
1	2	3
PERSONAL SERVICES:		
SALARY 1,530/month x 6	9,180	
BENEFITS 15.92%	1,461	
SBS	563	
FIXED BENEFITS	960	
TOTAL PERSONAL SERVICES (1)		12,164
TRAVEL (2)		
CONTRACTUAL (4)		4,734
COMMODITIES (5)		500
EQUIPMENT (7)		
OTHER:		
TOTAL COST		17,398

FY CODE	FUNDING SOURCE	
	FY BUDGETS	
	SEPARATE	
100	GENERAL FUND	17,398
	FY BUDGETS	
	PROGRAM RECEIPTS	
	OTHER	

CONTINUATION ____
APPLICATION X

FOR OMB USE ONLY

KEY NUMBER _____ COLUMN NO. _____

JUSTIFICATION:

A seasonal clerk typist position will be needed to process the reports and other documents which will result from this bill.

Included in the contractual services costs are $1,600 for space rent and 15.97% of salary for Management Services support.

PREPARED BY Nico Bus
AGENCY Department of Labor
PHONE 465-2720

IV. DATE 4/1/82

Original: Legislative Finance
cc: Budget and Management
Prime Sponsor (First Legislator Named)

33-001 (Rev. 12/81)

AGENCY Labor PROGRAM Worker Protection

BAU Occupational Safety & Health

COMPONENT Occupational Safety & Health

13 REQUEST FOR NEW POSITION

JAN 13 1981 SB 79

Resource Development Council
for Alaska, Inc.

444 West 7th Avenue, Anchorage, Alaska 99501
Box 516, Anchorage, Alaska 99510 - 907/278-9615

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Dr. Arthur Hippler
Robert Huck
Frank H. Jones
Gene Rutledge
Dale Tubbs

December 19, 1980

Dear Friend:

The controversy over production of chemicals is bound to become heated as projects for manufacturing petrochemicals in Alaska move forward.

Environmental groups and the Alaska Public Interest Group (AKpirg) are marshalling forces to oppose such projects with time-worn scare tactics used to stop plant construction in other states.

It is important for those of us who have faith in technology and stringent environmental laws to be knowledgeable of the facts behind charges being leveled. We must be prepared to speak out at public hearings and other forums whenever necessary.

Herbert D. Doan, recipient of the 1980 Louis Pasteur Humanitarian Medal, chairman of Doan Resources Corporation and member of Dow Chemical's board of directors discusses the pros and cons of chemicals development in the enclosed speech.

Please let me know if you would like additional copies.

Sincerely,

RESOURCE DEVELOPMENT COUNCIL
for Alaska, Inc.

Paula Easley

Paula P. Easley
Executive Director

Alaska Health Project

P. O. Box 1037, Anchorage, Alaska 99510 (907) 272-6734

March 7, 1983

Pat Pourchot
Senator Bettye Fahrenkamp
Pouch V
Juneau, AK 99811

Dear Pat,

Enclosed please find a new draft of SB 79. This draft is based upon discussions with over 15 legislators and their aides, and the testimony at the hearing.

In the draft I have incorporated parts of both SB 79 and HB 197 in a form that more closely resembles HB 197.

I have also enclosed a two-page sheet with some of the questions and answers that were asked of me when I was in Juneau, a letter from the Anchorage Municipal Health Commission of their support of SB 79 and Right to Know, and a copy of OSHA form 20.

I hope that you find this information useful. I would be happy to discuss any of the enclosures with you at any time.

Please let me know if you need any more information.

Sincerely,

Steven Kadish
Executive Director

cc: John Hartle
Henry Lancaster

MECHANICAL CONTRACTORS

of Fairbanks, Inc.

P.O. BOX 74796 ☆ FAIRBANKS, ALASKA 99707-4796

MEMBERSHIP ROSTER

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456-2022

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Fairbanks, AK 99701
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Fairbanks, AK 99707
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Perfection Mechanical, Inc.
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Fairbanks, AK 99701
456-5979

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Fairbanks, AK 99701
452-3923

Sandstrom Plumbing
P.O. Box 2414
Fairbanks, AK 99707
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P.O. Box 1189
Fairbanks, AK 99707
452-1792

Tag, Inc.
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Fairbanks, AK 99706
456-5371

Universal Mechanical
P.O. Box 2499
Fairbanks, AK 99707
456-7493

Western Mechanical, Inc.
P.O. Box 60067
Fairbanks, AK 99706
452-1831

Whitney Brothers Plumbing
P.O. Box 926
Fairbanks, AK 99707
479-3171

Wise Mechanical
3801 South Cushman
Fairbanks, AK 99701
456-7143

Yukon Services
P.O. Box 60129
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SERVING ALASKANS SINCE 1949 • ANCHORAGE • FAIRBANKS • KENAI • KODIAK • MEMBER OF THE NATIONAL HOME FURNISHINGS ASSOCIATION

March 10, 1983

TO: Senator Fahrenkamp

RE: Senate Bill No. 79

Let this letter serve to inform you of our companys opposition to Senate Bill No. 79 in its present form.

As an employer whose primary purpose for storing such items as might be covered under the "toxic and hazardous substances act" would be for janitorial or resale of common household care items, feel this bill is too far rearching in its application. Floor wax and furniture polish although combustible if improperly handled are no more or less hazardous through signing and annual reporting than observing the practice of use and storage suggestions provided on the manufacturers label.

Yes, we share concern for employee and environmental safety, but the sweeping requirement of compliance in this bill goes beyond reasonable expectations. Retail concerns would bear considerable increased costs to comply which in term would be included in prices to consumers for questionable benefit.

Respectfully submitted,

NERLAND'S HOME FURNISHINGS, INC.

Larry Snider

Larry Snider
Vice President

Mick Hotrem - Labor

SB - 79

Every year hundreds of thousands of workers become ill and die as a result of exposure to toxic substances on their jobs. Thousands are injured because of unhealthful or unsafe conditions that could have been prevented. Workers, particularly organized workers, are becoming more concerned about their working conditions and more aware of their rights to a safe, healthful workplace.

Since 1974, OSHA has issued ten health standards that include asbestos, fourteen cancer-causing chemicals, vinyl chloride, coke oven emissions, dibromochloropropane, (DBCP), acrylonitrite, arsenic, benzene, lead, and cotton dust. These regulation provide fewer worker rights and simply limit the total exposure to the worker by prescribing limits on the amount of airborne material or air pollution allowed in the workers' breathing zone. Thus the hazards from dust, solvents, fumes, gases, and mists on the job are regulated by comparing air samples in the workers breathing zone with the allowable limits listed in the safety and health regulations.

Unfortunately, the laws to protect workers from health hazards often take far too long to develop. In the interim, hundreds of workers may become ill from a chemicals' toxic effects. There are many hazardous substances for which there are no standards, and there are no requirements for environmental monitoring, worker education, physical examinations or labeling. Very few plastics, paints, or solvents which can cause damage to eyes, skin, and lungs have useful warning labels. Without enough information about the potential hazard of a material, a worker cannot take precautions.

Every employee has the right to know about hazardous materials and can obtain this information through Material Safety Data Sheets that are easily obtained by the employer from the manufacturer if the Material Safety Data Sheets are not already attached to the material. There is very little effort required by the employer to provide this information but history has proven time and time again that the employer will not voluntarily improve the safety or working conditions of his employees if there is any cost or time involved.

No one wishes their employees to become ill or injured, but economics are the ruling factors. Records show that both physicians and employers knew since the 1930's that asbestos causes cancer. Since 1900 they have known that asbestos can scar lung tissue. But it wasn't until 1973 that somewhat effective regulations were passed to limit worker exposure to asbestos on the job. Of the one million current and former asbestos workers in this country, more than 300,000 can expect to die from cancer.

I urge you to support SB79 as every worker has the right to know what he is working with and what precautions to take to protect himself if necessary.

George Mick Hotrum
Business Safety Representative
Alaska State District Council of Laborers
315 Barnette
Fairbanks, Alaska 99701

MECHANICAL CONTRACTORS

of Fairbanks, Inc.

P.O. BOX 74796 ☆ FAIRBANKS, ALASKA 99707-4796

State of Alaska
13th Legislature

Attention: Resources Committee

Subject: Senate Bill # 79
"An Act relating to hazardous and toxic substances; and providing for an effective date."

We are extremely concerned about the ramifications of Senate Bill # 79. Although we wholly support the apparent intent of this bill (to assure the safety of Alaskan workers), the potential adverse effects appear to be enormous in terms of regulatory burden, litigation potential, time, and taxpayer expense.

In lieu of Senate Bill # 79, we recommend promulgation of the forthcoming Federal regulation.

Mechanical Contractors of Fairbanks

Eugene R. Rutland

Eugene R. Rutland,
President

Attachments: Membership Roster

cc/AGC

Municipality of Anchorage

POUCH 6-650
ANCHORAGE, ALASKA 99502-0650
(907) 264-4111

TONY KNOWLES, MAYOR

DEPARTMENT OF PLANNING

March 1, 1983

The Honorable Tony Knowles
Mayor, Municipality of Anchorage
Pouch 6-650
Anchorage, Alaska 99502

Dear Mayor Knowles:

At the February 23, 1983 meeting, the Anchorage Municipal Health Commission voted to endorse Senate Bill 79, "The Worker Right-To-Know" as it currently reads.

The Municipal Health Commission believes that it is the right of every individual to know if he/she is exposed to any hazardous materials in the working environment.

We appreciate this opportunity to address this public health issue.

If we may be of any assistance, please let us know.

Sincerely,

Stephen P. Lesko

Stephen P. Lesko, Chairman
Municipal Health Commission

SPL:EMB:bd

FEB 2 8 1983

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February 23, 1983

Bettye Fahrenkamp, Chairman
Senate Committee on Resources
Pouch V
Juneau, Alaska 99811

Regarding: SB 79

Dear Bettye:

I want to thank you for your most welcome letter and your comments.

I don't believe that any conscience employer could oppose the intent of SB 79 but there has to be a less burdensome way of meeting objectives.

As some examples:

If the State needs to identify "sources" and users of toxic & hazardous substances would not a simple submission of the chemical name be sufficient rather than the 10 items requested (on a yearly basis, no less?) per 18.60.065 (a) or a one time submittal of data with only yearly updates required for changes.

Paragraph (b) of 18.60.065 would require that all employees and applicants (why applicants?) be submitted documents regarding toxic and hazarodus substances. It should be obvious that many employers have employees that would never be exposed to or come in to "contact" with any given toxic or hazardous substance that the employer might use; as an example an employer could have a process taking place in one building while several miles away he might have employees engaged in different tasks with the toxic and hazardous substances being maintained in only one building. Section 18.60.067 relating to education programs differentiates employees by specifying that only

Santone
Certified Master Drycleaner

Bettye Fahrenkamp

those exposed or those who may be exposed. Could not paragraph (b) of section 18.60.065 do the same?

Section 18.6066 paragraph (a) relates to the labeling of toxic and hazardous materials. I believe this is the responsibility of the manufactures and it is my understanding that Federal Legislation is now in progress that would accomplish this goal. Even paragraph (b) presents some problems in that I do not believe it would be reasonable to request every employer who uses natural gas for example to have to place such "all encompassing" labels in so many different places along the pipe route.

18.60.105, paragraph (8) (A) really creates a broadness that I believe was not the intent of "you" the authors. By adoping the simple listing as used by the Department of Trasportaion any employer with motorized vehicles would be affected as would all grocery stores (as they have peroxides and bleechs (oxidizers) on their shelves; also caught in this broadness would be employers who have co_2 bottles for their soft drinks (a compressed gas). Paragraph 9 would seem to be closer to the objectives of this legislation and would accomplish same without the broadness of paragraph 8.

Bettye, I do hope that you can see some of these same problems as I do with the existing language of SB 79. I thank you also for taking the time to read this and look forward to a teleconference regarding this bill.

Sincerely Yours,

Tim R Crawford
General Manager

cc: Joe Josephson
Vic Fisher
Arliss Sturgulewski

Amendments proposed.

18.60.065(a). Add a subsection which reads:

"The quantity and location of the substance."

Reason: The department and/or employees should make this information available to state and local fire and emergency agencies to enable them to preplan for potential accidents. It is important to know specifically where and how much substance may be involved.

In the same section add a subsection which reads:

"the nationally recognized procedures for controlling and extinguishing fires involving substances."

Reason: The majority of fire departments in Alaska are volunteer and should not be left to their own devices to deal with emergency incidents involving substances.

18.60.066(a) Page 2, line 27. Revise "one gallon or more" to incorporate some of the following substances and their appropriate measurments:

1. Explosives are often cylindrical "sticks", packaged in boxes. Blasting agents are pellets, packaged in sacks. Both are measured by weight.

2. Radioactive isotopes, utilized in medical facitlites and by the petroleum industry are measured by weight. Thus the the term "gallon" is not a proper measure for all substances.

18.60.066(a) Page 5, line 25. Insert after (vi) as subsection:

"(vii) a radioacitve material."

Jay Nelson, Exec. Dir.
Alaska Environmental
Lobby

SENATE Bill - 79 -

~~File HA~~
File: SB 79

MEMORANDUM

TO: Pat Pourchot
Administrative Assistant
Senate Resources Committe
Alaska State Legislature

April 5, 1983

465-2700

FROM: Judy Knight
Special Assistant
Department of Labor

SUBJECT: Draft Committee Substitute for Senate Bill 79

The Department of Labor has reviewed the draft committee substitute for Senate Bill 79, and has the following comments.

1. The term "routinely" used in Section 18.60.071(b)(2)(A) should be deleted. Employees should be aware of the location, properties, health effects, etc., of all hazardous or toxic substances to which they will be exposed to in the workplace, whether or not the exposure is "routine." While adverse health effects may result only after prolonged or continuous exposure to certain substances, there are substances which can be harmful without a cumulative or routine exposure.

2. Section 18.60.072(a) requires that manufactures, wholesalers, and employers each submit to the department the material safety data sheet or its equivalent. It is not necessary that the department receive the same information from three sources. Our suggestion would be that only manufacturers and wholesalers provide this information; and that employers simply inform the department of the chemical names, CAS numbers, quantities, and safety procedures for hazardous and toxic substances in their workplaces. The department would be able to request a copy of the material safety data sheet, if for some reason it did not have it already on file. We have redrafted Section 18.60.072 to eliminate this duplication, and a copy is attached for your consideration.

3. The department is opposed to the definitions of "employee" and "employer" provided in AS 18.60.105(3) and (4); specifically the exclusion of persons employed in a place that is primarily a personal residence. The effects of exposure to hazardous and toxic substances are the same whether the exposure occurs in a commercial establishment or in a personal residence, and the department

feels that the exclusion of these workers is without justification. The department also takes exception to the provision relating to multi-employer worksites in the definition of "employer." This provision may render the provisions of this bill virtually unenforceable at multi-employer worksites, as each employer will disclaim that he has control of the workplace. Historically, the department has held each employer responsible for the health and safety of his employees; and a departure from this with respect to these particular requirements may result in extensive litigation in determining which employer has control of the worksite.

We would also point out that the statutes referenced in subsections (3) and (4) - AS 18.60.065 - 18.60.067-are incorrect. These specific statutes are not contained in either the existing law or the draft bill.

We appreciate the opportunity to review and comment on this draft bill; and we would be pleased to meet with you to further explore the concerns we have expressed, if you wish.

Thank you.

JK:EP:kmc
k:19

ALASKA SAFETY ADVISORY COUNCIL

Membership List

Name/Address	Phone #	SS#	Represents
Ken Sheppard (Chairman) 2952 Wentworth Anchorage, AK 99503	277-7252	091-01-5184	Public
Danny Sanchez (Vice Chairman) North Star Borough Fairbanks, AK 99707	452-4761	574-20-9589	Local
Kenneth Burns (Secretary) 3160 West 71st Avenue Anchorage, AK 99509	248-2642 (work) 243-8442 (home)	587-42-0455	Industry
Bill Schneider (Treasurer) P.O. Box 4-2500 Anchorage, AK 99502	276-5354	517-58-7295	Industry
Donald A. Bell 111 Stedman Street Ketchikan, AK 99901	225-6114	533-07-3893	Industry
Robert M. Erickson 2042 Eastridge Drive Anchorage, AK 99501	276-4334	535-42-6833	Union
Jim Johnson 201 Behrends Avenue Juneau, AK 99801	586-3850 (work) 586-6052 (home)	507-28-8558	Union
Vacant	----------	----------	Labor
John E. Orbeck 1735 Bridgewater Drive Fairbanks, AK 99701	474-6793 (work) 456-3072 (home)	574-14-4670	Union
Dave Rasley SR 20220 Fairbanks, AK 99701	452-8231	476-28-8091	Union
Harold Ritchie 3111 "C" Street Anchorage, AK 99503	276-5111	453-16-8177	Industry
Laren Sickles 701 "C" Street Anchorage, AK 99513	271-4710	534-30-6384	Federal
Vern Smith 5331 Minnesota Drive Anchorage, AK 99502	276-2363	532-20-8181	Industry

R 2/83

AtlanticRichfieldCompany Public Affairs
Alaska State and Local Government Relations
Mailing Address: 134 Franklin Street
Juneau, Alaska 99801
Telephone 907 586 3680

Beverly Ward
Associate Director

March 31, 1983

Memo:

To: Senate Resources Committee Staff

From: Beverly Ward BAW

Subject: ARCO comments on draft CS SB 79

Attention: Pat Pourchot

Thank you for allowing me an opportunity to have some input into the draft committee substitute bill on hazardous and toxic substances in the workplace.

Comments Atlantic Richfield has made previously before the Senate Resources Committee should still be considered valid and representative of our company position. Specifically, I refer to the fact that our company believes that no state or local legislation should be passed until the federal OSHA regulations go into effect sometime this summer. As a large multi-state employer, we believe it imperative to have federal legislation rather than individual states' legislation in order for us to comply in an efficient manner. Following the enactment of federal regulations, we will be glad to work diligently with the State Legislature to produce legislation which will address any specific areas not covered in federal legislation which is necessary in Alaska.

With that in mind, we do have some comments which we would like to make about the draft committee substitute.

The draft represents a vast improvement over other versions of the bill, including HB 197. You have made a conscientious attempt to address the most onerous provisions which we pointed out. There are a few other areas we would like to address.

On page 3, line 2 of your draft, Section 18.60.071, EMPLOYERS TO PROVIDE SUBSTANCE INFORMATION AND TRAINING: We believe that more leeway should be given to the employer in where and how that information is to be presented. It would be impossible to post on a company bulletin board every Material Safety Data Sheet for every substance found in the workplace. Instead, a large notice advising employees where they may obtain that information is preferable. There will be hundreds if not thousands of MSDSs found in large companies such as ours. It simply would not be possible to permanently post all of them.

They properly should be filed in an easily accessible location and cross referenced for easy use. As a compromise, possibly any time a new MSDS is prepared or updated, it should be posted in the workplace for 30 days, then filed permanently with other such information.

On line 24 of the same page, where an employer who fails to provide the information within 30 days cannot require an employee to work. If the employer has requested the information from the manufacturer but has not received it within 30 days, the employer should be able to notify the State Department of Labor and the employee that the information has been requested but has not been received, and thus the company is unable to comply. That might spur the manufacturer to provide the information in a more timely manner or allow the State or the employer to obtain the information from another source.

On page 4, line 20, ACCESS TO RECORDS, we prefer the language found below:

> If the identity by chemical name of a substance or of a hazardous component of a mixture is a trade secret, that fact shall be noted on the MSDS. Where specific chemical identity is withheld under a trade secret claim, the specific identity must be disclosed upon request from an employee's authorized physician when needed for medical treatment and under an appropriate confidentiality agreement with the physician.

It is most important to communicate the potential hazards of the industrial chemicals. Specific chemical identification is not always necessary to ensure effective hazards communications. Where disclosing specific chemical identities would jeopardize trade secrets, less revealing means of identifying substances can be equally effective, such as providing common, generic or trade name descriptions. Chemical Abstractive Service Numbers is a system which, due to its inherent limitations, is not useful for many hazard communication programs. In emergency situations, verbal agreements with physicians may be appropriate.

On page 5, line 15 (B), in the list of hazardous substances, we believe that those items should be defined. The terms "combustible substance" or "flammable substance" may mean different things to different people. Clearly defined terms, within the legislation, will save a lot of time and argument

later, as the Department of Labor establishes regulations. We will be glad to assist you in preparing a DEFINITIONS section of the bill, which should contain information such as the following definitions:

> (ii) a compressed gas: means a gas or mixture of gases having, in a container, an absolute pressure exceeding 40 psi at 70° F (21.1° C), or, regardless of the pressure at 130° F (54.4° C); or any flammable liquid having a vapor pressure exceeding 40 psi at 100° F (37.8° C), as determined by American National Standard Method of Test for Vapor Pressure of Petroleum Products (Reid Method), Z11.44-1973 (ASTM D323-72).
>
> (vi) an oxidizer: means a chemical that promotes oxidation readily and on contact with combustible material may cause fire.

On page 5, line 22 (C), the Department of Labor can list in a regulation any other substance. We believe that there should be some guidelines set forth in the legislation to specify exactly what method or criterion DOL will use to establish that a substance is "hazardous." At a time when the Legislature is increasingly wary of administrative regulations and is seeking to ensure that the Legislature has oversight responsibilities of such regulations, it seems that it would be inappropriate to give unchecked authority to DOL to establish a list of hazardous substances.

On page 5, line 27, the draft bill includes the NIOSH registry, which contains 59,000 substances. As we have testified earlier, this list is much too inclusive, and contains such common items as salt, vitamin C, ink, straw, sugar, and sand. In your cover letter, accompanying the draft, you mention that the intent would be "for the DOL to use discretion in the formulation of the list and specifically to exclude a) substances which because of their amounts do not pose a health hazard and b) substances used for personal consumption." Although that would be the intent, it is not mentioned in the bill. It is our feeling that even a letter of intent which would accompany the legislation is not adequate. If the NIOSH list has been included in the legislation, some overly-zealous bureaucrat may someday try to enforce it to the letter.

With regard to the entire section dealing with a definition of hazardous and toxic substances, we do support inclusion of the

U.S. Department of Transportation Hazardous Materials Table, C.F.R. 172.101 and the Toxic and Hazardous Substances section of the regulations of the Occupational Health and Safety Act in 29 C.F.R. Part 1910, Subpart Z.

If you have any questions about this commentary or if you would like my assistance in preparing other language, please do not hesitate to call upon me. We all have obligation to make this legislation the best possible for everyone affected, and, to that end, we offer our utmost cooperation.

Retype of wire transmittal

MEMORANDUM

TO: Senate Resources Committee Staff
FROM: Alaska Employers' Committee
DATE: April 4, 1983

The Alaska Employers' Committee (AEC) strongly disagrees with several statements contained in the March 24, 1983 Senate Resources Committee Staff memorandum. Detailed below are those portions of the memorandum with which we take exception.

MEMORANDUM

1. "Senator Fahrenkamp has acknowledged the problems in the current bill and directed staff to pursue a committee substitute with concerned interest groups under the assumption that most persons were in basic accord with the general intent and purposes of the legislation and that state law would not necessarily duplicate federal efforts."

COMMENT: The AEC contends state enacted legislation would either duplicate or conflict with federal regulation or legislation.

Bill Schneider
276-5354

MEMORANDUM

2. "It is our conclusion that existing federal OSHA law and regulation is quite limited to only setting workplace exposure levels to a very few toxic substances such as asbestos and does not deal with "right to know" provisions per se."

COMMENT: AEC contends the federal OSHA regulation is not limited. OSHA 29 CFR 1900.1200 Section (3) of the proposed regulation states: "Any mixture which is comprised of at least one (1) percent (by weight or volume) of any chemical determined to be hazardous shall also be considered hazardous for purposes of this section, unless the mixture has been evaluated as a whole and the data indicates it is not hazardous."

MEMORANDUM

3. "It was also concluded that proposed OSHA regulations may or may not be adopted this summer or by any other time certain."

COMMENT: Undersecretary of Labor for OSHA, Thorne Auchter, testified before the United States Senate Labor Appropriations Committee on March 2, 1983 that federal regulation will be published this summer. As head of the federal OSHA program, Auchter is in the best position to know the time frame for these regulations.

MEMORANDUM

4. "It was found, however, that federal and state law and regulations do require substantial labeling requirments for hazardous and radioactive substances which are shipped or transported."

COMMENT: SB 79 does not include any labeling requirements, rather Material Safety Data Sheets (MSDS). Under proposed federal regulations MSDS's must be provided by all manufacturers. Therefore, hazardous and toxic substances manufactured in the Lower 48 and shipped to Alaska will be covered with the federal regulations MSDS provisions. State regulations do not apply to manufacturers outside Alaska.

In conclusion, AEC recommends federal regulation as an eminently practical, comprehensive means to improving safety and health in the Alaska workplace and thus state legislation should be delayed until federal regulations are published. Federal regulation includes all defined hazardous and toxic substances while state regulation applies only to those substances manufactured in the state.

rec 4-4-83

ECONOMICS LABORATORY, INC.
OSBORN BUILDING, ST. PAUL, MINNESOTA 55102

March 31, 1983

Ms. Sandra Schubert
Alaska State Senate Committee
on Resources
Pouch V State Capitol
Juneau, Alaska 99811

Dear Sandra:

I very much appreciated receiving your rough draft committee substitute for S.B. 79.

I am submitting comments on the right to know issue and primarily on behalf of Economics Laboratory and also on behalf of the 400 member Chemical Specialties Manufacturers Association.

Although Economics Laboratory does not have any plants or manufacturing facilities in Alaska, we do manufacture and distribute in Alaska cleaning products for institutional and industrial uses. We have close to 1,000 different products, most of which would be covered by a right to know law. Our interest is on behalf of our customers which would include restaurants, nursing homes, hospitals, dairies, food processing plants, manufacturing facilities with metal finishing and metal cleaning processes and numerous other businesses that have cleaning and sanitizing responsibilities.

I would like to offer some specific recommendations based on our experience in working with this issue in other states. Perhaps some of the specific language I can offer would be of assistance to you in hammering out a solution to your bill:

1) Your definition of "toxic substance" becomes very, very broad when you include the most recent addition of the National Institute for Occupational Safety and Health Registry. The NIOSH Registry contains in excess of 45,000 substances and being listed on the Registry does not necessarily mean they are toxic only that they have been tested for toxicity. Because the Registry includes things such as sugar, salt, aspirin, iodine, corn oil, cellophane and numerous other common substances found in virtually every workplace, this list alone will make virtually everything toxic. Your inclusion of the Subpart Z list under this definition is much more reasonable. The total number of substances covered is something in excess of 400 and will be much more manageable.

2) Your definition of "hazardous substances" makes sense particularly because you include specific criteria for determining what is hazardous. I would like to suggest that your differentiation between hazardous substance and toxic substance is somewhat arbitrarily defined. Toxicity is a single portion of the broader definition of hazardous.

I would like to suggest that you have one category of hazardous substance which would also include mixtures. This is important because you have not addressed the issue of how much of a hazardous substance has to be in a mixture before the whole mixture is hazardous. In many, many cases, hazardous mixtures will take on completely different qualities than the individual hazardous substances contained in them.

I think a good way of dealing with this is to have one definition of hazardous substance and I would like to suggest that you base it on the criteria as defined in the American National Standards Institute. I have enclosed some language that we have used in a bill in Minnesota that defines the criteria used in ANSI that applies to both acute and chronic health hazards. In addition, I have also included the exemptions that I think you might find useful so that you're not bringing too many substances and products under the preview of the bill that really shouldn't be included.

This portion of the bill is very important, but as I am sure you well know, it becomes very technical. I hope this particular section will be of some assistance to you.

3) Your requirements under "reports to be filed with the Department" may be difficult to implement as it appears to apply to manufacturers outside of the state of Alaska. Although we would fit that definition as a manufacturer and we probably could comply by sending you safety data sheets for virtually everything that we manufacture, you may have difficulty enforcing this with other companies that ship safety data sheets into your state. You may also have difficulty in requiring manufacturers to keep up with the quantities of hazardous or toxic substances that are shipped into the state. I am sure that we would have no idea what that number would be and I'm not sure that that would be of particular value to the Department. I would urge you to rethink the necessity of having these reports filed particularly because of the confusion they may cause.

4) Unless listed elsewhere, I do not see any reference to trade secret considerations. Depending on how much information we would have to give for a mixture that contains a hazardous substance, many companies will have reservations about providing all of the information about their products because of trade secret considerations unless the information is going to an authorized physician for medical care. I am also including some trade secret language that is being considered in Minnesota and I would urge you to consider this as part of your bill.

Perhaps one of your most important considerations in putting your bill together is to consider the greatest impact that laws like this will have on small employers and small businesses. Many of these provisions can apply to restaurants, gas stations, dry cleaners, nursing homes and a whole range of businesses that ordinarily are not considered manufacturers. Although their workers should have some measure of protection against legitimately hazardous substances, great care must be given to not overly burden the employer with unreasonable requirements.

I hope these suggestions will be of some assistance to you. If you have further questions regarding my suggested language, I would be happy to discuss these with you in greater detail. Although I rarely have occasion to get to Alaska, if you felt I might be able to assist you in further drafting, I would be happy to consider the possibility of joining you to do that. Thanks very much for your consideration.

Best regards,

Jeff Peterson

Jeffrey K. Peterson, Manager
State Legislative Affairs

JKP/mv
Enclosure

Rec. 4-4-83

SOURDOUGH EXPRESS, INC. 98
DEPENDABLE SERVICE SINCE

• P. O. Box 73398
• 600 Driveway St.
• Fairbanks,
• Alaska 99707

• Telephone
(907) 452-1181
• Telex
090-35493

April 1,1983

Senate Resource committee
State Capital
Pouch V
Juneau, Ak 99811

Ref: Ad hoc Review Committee for SB 79
March 24,1983

Dear Senator Fahrenkamp:

My group and I have reviewed the referenced documents and find that we are still in disagreement with many of the provisions thereof. We feel that this is not the time for the State Of Alaska to try and create legislation that will not conflict with the legislation that is being promulgated by the Federal government.

We are an industry that is already regulated to the point of having to provide our employees and the general public with knowledge of all of the hazardous materials that we consume and transport. To overlay these regulations with a new set, that will have to be modified at a later date, will cause us the undue burden of having to establish a program to deal with your legislation and then in a short time have to establish a new program that will retrain our employees to bring them into compliance with the Federal Regulations.

The modifications that you have made to your bill are still such that they subject business, small and large, to a onerous bureaucratic burden. There are far too may items in your bill that are left open to subjective interpretation which require legal clafification that will result in delays in productivity. We feel that when the State Of Alaska is required to create legislation in this area it should attempt to protect the safety of the workforce and at the same time create conditions for business that will not allow indiscriminate interference with productivity- something your bill does not provide.

In closing, Senator, we would recommend that the time spent on this bill be brought to a close. Please do not report this bill out of committee but wait for the Federal government to provide leadership in this area.

If I can be of further assistance to you in this matter please do not hesitate to contact me.

Sincerely,

Larry Kelly

LK/ls

SB 79

George Riley, Health and Safety Officer
University of Alaska, Fairbanks 474-6205

Two commercial companies already publish MSDS on all 400 OSHA chemicals (General Electric is one). Cost for a complete set is $400. Suggests Dept. of Labor purchase a set and xerox requested MSDS for companies on request. (Xeroxing should be OK, cause GE's intent was to make the information public.) Thinks this would cover 98% of all requests.

Sec. 3 (c) "an employer who fails to provide information within 30 working days of a request may not requrie the employee to be exposed..."

Riley says that under existing DOL and OSHA regulations, the employee has the right to refuse to work with a substance (however, language isn't real clear, but it has been defended in court). Feels SB 79 shouldn't require that an employee wait 30 days, but that employer should be made to respond immediately. Employer could place a call to DOL for information so the employees can be taken out of risk immediately; then allow 30 days to actually get an MSDS to the employee.

Prefers annual report to DOL. It wouldn't be expensive or burdensome for an employer to submit a 1-page report if the MSDS are on file. Feels an annual report is necessary to keep the program active.

S. 4-4-83

APR 4 1983

alaska international air

P.O. Box 6769 • 6441 South Air Park Place • Anchorage, Alaska 99502

March 29, 1983

Senator Bettye Fahrenkamp
State of Alaska
Pouch V
Juneau, Alaska 99811 (Mail Stop 3100)

Dear Senator Fahrenkamp:

We have received a copy of Senate Bill 79 concerning toxic and hazardous substance safety. As Alaska's largest all cargo air carrier, AIA complies with all Federal regulations regarding, recognition, labeling and transporting of hazardous or toxic material by air - no small compliance matter itself. After reviewing SB 79, we note that the bill as written would impose a number of new requirements on Alaskan air carriers in addition to (and potentially in conflict with) those imposed on us by the Federal government.

As a result of this potential "double jeopardy" regulation of hazardous material, we see two major problem areas.

1. Hazardous material moved to Alaska from Outside for shipment beyond Anchorage or Fairbanks would have to conform with the proposed new State regulations before it could be accepted for shipment within the State. The additional labeling and packaging requirements would be costly, time consuming, and require additional man-hours, thereby increasing the cost to the consumer. The additional information required to be presented to anyone who may come in contact with toxic or hazardous material would increase the already burdensome paperwork requirements because of the literallly hundreds of types of material handled.

2. We believe that these additional requirements and restrictions would encourage shippers to camouflage their hazardous materials as regular freight, thereby endangering personnel and equipment who would not know that they were transporting hazardous materials. These additional requirements would also impose an administrative burden on our sub-contractors in the Bush and could result in their refusal to haul hazardous material. This would place a hardship on people residing in Bush communities.

AIA feels that operating as an all cargo air carrier in accordance with existing Federal regulations provides for more than adequate safety for its personnel and equipment. Accordingly, we do not see the need for additional State regulation in this area and respectfully urge that you reconsider your position on Senate Bill 79.

Sincerely,

Jerry W. Eastep
Vice President
Sales and Services

s

alaska state hospital association

319 Seward St., Juneau, Alaska 99801 • (907) 586-1790

REPRESENTING ACUTE, LONG TERM AND OUTPATIENT FACILITIES

APR 4 1983

Chairman of the Board
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Anchorage

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Kodiak Island Hospital
Kodiak

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Anchorage

Alternate Trustee Delegate to American Hospital Association
Robert Jensen
Central Peninsula Hospital
Soldotna

Physician Member of the Board
Keith Brownsberger, M.D.
Anchorage

President
Dennis L. DeWitt
Juneau

March 31, 1983

The Honorable Joe Josephson
Senator
Pouch V
Juneau, Alaska 99811

Subject: Senate Bill 79

Dear Senator Josephson:

The Alaska State Hospital Association has reviewed Senate Bill 79 and must respectfully inform you of our opposition.

Currently, hospitals are inspected by state licensure agencies and many of their clinical labs are inspected by the Joint Commission on the Accreditation of Hospitals and the College of American Pathologists. OSHA and Environmental Protection Agency regulations apply to the workplace and hazardous substances. Most health facilities as a protection against liability, conduct regular safety inspections, in conjunction with their malpractice and workers compensation carriers, to discover and eliminate potential hazards not only to the workforce, but to patients, visitors and the general public.

We believe the proposed reporting process will be expensive to administer, not only for the health facility, but also for the state. It has all the appearance of APOC, reams of reports, costly to produce and store, about which no one cares.

The Alaska State Hospital Association believes that the passage of SB 79 would only serve to unnecessarily increase the operating budgets of health facilities and the State of Alaska without improving the place of employment for health facility employees. Thus we believe it ought not be enacted.

Sincerely,

Dennis L. DeWitt
President

DLD:hb

cc: Bettye Fahrenkamp, Chairman,(S) Resources Comm.
Alaska State Chamber of Commerce

INTERNATIONAL BROTHERHOOD OF PAINTERS AND ALLIED TRADES

A.F.L.-C.I.O.

LOCAL UNION #1555

P.O. Box 1428 Fairbanks, Alaska 99707 (907) 456-5045

SHAWN A. MERRICK
Business Manager
Financial Secretary

APR 4 1983

March 30, 1983

Alaska State Legislature
Senate Committee on Resources
Pouch V
Juneau, AK 99811

ATTENTION: Bettye Fahrenkamp
Pat Pourchot
Sandra Schubert

RE: Rough Draft Committee
Senate Bill 79

Dear Committee:

After reviewing the Rough Draft of SB 79, I have several problems with language and time requirements.

The first is Page 2, Cover Letter, Item 1(a), "Substances because of their amounts do not present health hazards." We believe this needs further definition as to the meaning of this sentence.

Second, Item 5, "An employer would be allowed 30 days to provide information upon request. After 30 days an employee cannot be made to work with a substance." We feel 30 days is too long and that possible damage from some substances could already be taking place. We feel perhaps 7 days would be a safer time limit.

Third, Page 4 of the Bill, Section 4(c), "The Department shall adopt regulations specifying the hazardous or toxic substances to be reported under this Section." We feel there should be some time table as to when this will be done.

Sincerely,

Shawn A. Merrick
Business Manager

SAM/gt

Alaska Health Project

P. O. Box 1037, Anchorage, Alaska 99510 (907) 272-8734

APR 4 1983

March 31, 1983

Pat Pourchot
Senator Bettye Fahrenkamp
Pouch V
Juneau, AK 99811

Dear Pat,

I have reviewed the Senate Resource Committee draft of SB 79. My comments are as follows:

1. Sec. 18.60.071 Employer to Provide Hazardous Substance Information (b), page 3, line 11. Please change to: An employer required to comply with (a) of this section shall provide to each new employee, and to other employees annually and at other times necessary to assure that an employee remains adequately informed about dealing with the substances.

2. Sec. 18.60.071 Employer to Provide Hazardous Substance Information (d), page 3, line 29. Please include: "upon request", after the word "employers"

3. Sec. 18.60.072 Reports to be Filed with the Department.
I am concerned that there is no indication as to when these reports would be filed. These reports serve as one of the only voluntary checks on employers to assure compliance. Without regular reporting requirements included, the effectiveness of this section is severely diminished.

4. Sec. 18.60.072 Reports to be Filed with the Department (b), page 4, line 15. I suppose the word "promptly" is deliberately vague. However, there should be some indication in terms of days to define this concept.

5. Sec. 18.60.072 Reports to be Filed with the Department (c).
This section calls for the Department to adopt regulation specifying the hazardous or toxic substances to be reported. It is a crucial passage. Without specific details as to when and how these substances are specified by the Department, the adoption of this entire Act may become meaningless. I understand that the intent of this section is to allow for the flexibility to select those toxic and hazardous substances in use in Alaska. However, as this section is written, there is no requirement that any hazardous or toxic substance ever be specified.

I recommend language that requires the Department to review the lists of toxic and hazardous substances specified in this Act by a given time and set of criteria. For example, the Department would have 90 days to determine the procedure and criteria to specify the hazardous and or toxic substances which are to be covered by this Act. The Department would then have 180 days to review the Toxic and Hazardous Substances Section of the US Occupational Safety and Health Act (about 300 - 400 substances), and so on.

I appreciate the opportunity to comment. Please let me know how I can be of further assistance.

Sincerely,

Steven Kadish
Executive Director

cc: John Hartle
Henry Lancaster
Melissa Fouse
Ray Brown
Daryl Eygabroad
Art Robson
Mick Hotrum
Mike Andrews
Nina Mollett
Helen Myers
Jay Nelson
Deborah Williams

1/13/82

POSITION PAPER/TESTIMONY/ALASKA EMPLOYERS' COMMITTEE

Bill No.: House Bill 197

Title: "An Act relating to hazardous and toxic substances and providing for an effective date."

Contact: Bill Schneider
276-5354

T. J. Thrasher
276-1149

My name is Bill Schneider and with me today is T. J. Thrasher. We presently serve as Co-Chairmen of the Alaska Employers' Committee (AEC). The Alaska Employers' Committee represents over 5,000 employers, including:

Associated General Contractors, Alaska Trucking Association, Alaska Retail Association, Alaska Seafood Processors, Alaska Loggers Association, Alaska Miners Association, Alaska Support Industry Alliance, Anchorage Laundry and Dry Cleaners Association, Resource Development Council, SOHIO and many individual Alaskan employers.

AEC has directed Ms. Thrasher and myself to be here today and present our Committee views on HB 197. We fully support the goal of this bill, that is, a safe and healthful Alaska workplace.

Unfortunately, this Bill creates many costly hurdles and pitfalls on the path towards worker safety.

More importantly, however, there is a key ingredient missing from this Bill - - common sense.

As someone who has spent over 12 years in the safety profession, I can tell you that the most important tool available in the prevention of accidents, on or off the job, is common sense. Allow me to briefly illustrate the absence of common sense from HB 197.

Most of the goods utilized in Alaska are shipped up from manufacturers in the Lower 48. Several thousand tons of different materials arrive annually by ship, plane and truck.

Under HB 197, over 40,000 of these substances will potentially be classified as toxic or hazardous.

Detailed scientific information must be provided on each of these substances: CAS numbers, chemical names, potential risks, etc.

Our Committee agrees that this information should be provided by the manufacturers as they are the experts on the substances they produce.

But, as we stated before, the manufacturers of almost all of the goods utilized in this state are not here but, rather they are located outside of Alaska and are consequently are not covered by this Bill.

There is an alternative course to follow on this path towards workplace safety. It makes sense and I encourage the Committee to give it serious consideration.

The Federal hazard communication regulations covering toxic and hazardous substances will go into effect this summer, according to Thorne Auchter, Undersecretary of Labor for OSHA.

These regulations will apply to all states and will require manufacturers to provide toxic information on their products.

According to the March 24, 1983 Bureau of National Affairs, Regulatory and Legal Developments, Newsletter the final draft of the federal regulations not only cover the manufacturers but, also the distributors of chemicals.

> "All aspects of the supply chain" must be covered to make the rule effective, the agency (OSHA) said in defense of the new scope, which would apply the same duties to importers as it would to chemical manufacturers, and would require distributors to ship labeled containers and "provide downstream purchasers with access to an appropriate material safety data sheet."

Under HB 197, the Alaska employers would shoulder the burden of providing this information. And in most instances, the employer, lacking the expertise and

staff, would have to go back to the manufacturer to acquire this information. In other words, a costly, duplicative route could easily be avoided by adopting the federal regulations into our State codes.

With this in mind the Alaska Employer's Committee urges you to closely scrutinize the proposed federal regulations and if you believe tha adjustments are necessary they can be dealt with after the federal regulations have been adopted. The Alaska Employer's Committee stands ready to assist the Committee in any manner appropriate.

Thank you for your time and I am available for any questions that the Committee might have.

Norstar, with assets of about $3.5 billion and deposits of about $2.9 billion is the eleventh-largest banking organization in New York. Northeast, which is the third-largest banking organization in Maine, has assets of about $551 million and deposits of $465 million. The transaction is valued at about $51 million.

The Fed's March 21 order points out that both Maine and New York recently have passed laws which allow out-of-state bank holding companies to enter the state. Maine's law allows acqusition of a banking institution in Maine by a bank holding company that controls a bank located in another state as long as that other state authorizes the acqusition of a financial institution in that state by a Maine bank holding company under terms no more restrictive than those imposed under Maine law. New York has a similar provision.

The Fed ruled that conditions for approval of such acquistions under New York law are not more restrictive than those provided under the Maine statute and consequently approved the application.

The acquistion will not eliminate any existing competition in the Maine market, the Fed said, and is unlikely to have any significant adverse effects on probably future competition in Maine. The Fed pointed out that there are a number of probably future entrants into the Maine market from out-of-state institutions. There are about 20 New York institutions that might enter the market, and about five Massachusetts banking organizations that could be considered as future entrants.

Massachusetts recently passed a law that allows out-of-state banks to enter the state, but only if the out-of-state organizations are located in New England.

The Fed also ruled that Norstar could acquire Northeast Consumer Services Corp., which is Northeast's credit-card issuing, financing and servicing subsidiary, and Northeast Data Processing Corp., the holding company's data processing subsidiary.

- 6 -

JOB SAFETY: OSHA'S DRAFT LABELING RULE TIGHTENS TRADE SECRET PROVISIONS

A draft Occupational Safety and Health Administration final rule on hazard communication would depart from the agency's March 1982 proposal by tightening trade secret provisions, widening industry coverage to include chemical distributors and importers, and strengthening the agency's position that state rules will be pre-empted by the federal action.

Procedures for hazard determination, preparation of material safety data sheets, and container labeling, as well as the rule's effective dates, also would be changed from those enumerated in the proposal. The draft final rule, shown to BNA, was prepared by agency staff and was submitted to OSHA Administrator Thorne Auchter. If approved by Auchter, it will be sent on to the Labor Department and the Office of Management and Budget for review, according to an agency spokesman.

Many provisions, such as those governing employee training, the obligation of chemical companies to label their products and provide users with material safety data sheets, and the right of employees to gain access to the data sheets, remained essentially unchanged from the March proposal for a flexible, performance-oriented rule.

Trade secret provisions in the draft final rule, however, would eliminate a proposed exception for certain narrowly defined "high-hazard" chemicals, such as carcinogens, mutagens, and teratogens, the identities of which the proposal said must be disclosed under any circumstances. Recognizing that "chemical identity information can constitute a bona fide trade secret," the draft rule extends protection to any chemical identity that the manufacturer can substantiate as a trade secret, regardless of the hazard posed.

Unlike the proposal, however, which granted trade secret access only to treating physicians with a need to know, the draft rule would allow trade secret disclosure to "any

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health professional" involved in providing occupational health services. Confidentiality agreements may be required. The agreements may require the health professional to state the occupational health purpose for the information, but they may not require posting of penalty bonds or payment of liquidated damages, unless the party requesting the data agrees to their imposition.

In conducting hazard evaluations for chemicals, employers must find hazardous in any occupational setting those chemicals already regulated by OSHA standards or listed in the American Conference of Governmental Industrial Hygienists table of threshold limit values. Suspected or confirmed carcinogens identified by the International Agency for Research on Cancer and the National Toxicology Program similarly must be listed as carcinogens.

In an attempt to answer testimony at hearings last summer that the rule provided no guidance to employers on what constitutes a "scientifically well-established hazard" that must be listed in warning information, the draft rule included two mandatory appendices. One discussed the difficulty in definitely identifying all possible health effects and indicated the broad hazard determination approach intended by the rule, and gave definitions for certain acute hazards.

The other appendix listed reference sources for hazard data and would specify that both human and animal data should be used in determining a chemical's hazard. The appendix stated, "If an available study indicates that an adverse health effect is likely to occur, and that study is conducted according to scientific principles and results in statistically significant findings, the employer is required to report it whether he agrees with the finding or not." The listing need not imply the employer's approval or disapproval of the study, however.

Procedures for evaluating a mixture in cases where it has not been evaluated as a whole were changed to require disclosure of all ingredients posing physical hazards. Health hazards of a mixture component need be disclosed only if the component constitutes 1 percent or more of the total—0.1 percent or more of the total if a carcinogen—or may be released under normal conditions of use in such a way that even a small quantity exceeds an OSHA permissible exposure limit or otherwise poses a hazard.

In another departure from the proposal, the draft final rule would extend coverage to importers and distributors of chemicals. "All aspects of the supply chain" must be covered to make the rule effective, the agency said in defense of the new scope, which would apply the same duties to importers as it would to chemical manufacturers, and would require distributors to ship labeled containers and "provide downstream purchasers with access to an appropriate material safety data sheet."

Laboratories, which were excluded in the proposal, were included in the draft final rule only to the extent that they must maintain labels on incoming containers, keep data sheets they have received, and train employees in hazard recognition and avoidance.

A brief section on pre-emption expressly would limit state responsibility in hazard communication to enforcement of rules promulgated under state plans as detailed in Section 18(b) of the Occupational Safety and Health Act. This presumably would rule out state jurisdiction in the six states under federal OSHA that have enacted right-to-know laws. Approximately nine others without state plans are considering or have considered passing their own legislation.

Effective dates in the draft final rule were pulled back by a year, with manufacturers expected to comply within two years of final publication and users within 30 months.

- 0 -

BANKING: LaFALCE PUSHES FOR HIGHER PERCENTAGE OF EXPORTS FOR TRADING COMPANIES

Bank-affiliated export trading companies should not conduct 49 percent of their business in imports but should only import incidentally to their main business, House Banking

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Northern Alaska Environmental Center

218 DRIVEWAY
FAIRBANKS, ALASKA 99701
(907) 452-5021

April 6, 1983

Senate Committee on Resources
Pat Pourchot
Pouch V
State Capital
Juneau, Ak. 99811

Dear Pat,

The Northern Alaska Environmental Center would like to endorse Helen Myers' letter to you regarding the draft Committee Substitute for SB 79, and add the following comments.

We feel that the committee substitute is drastically and unnecessarily watered down from the original bill. We are particularly concerned about the removal of requirements for labelling containers; and about the thirty day period an employer would have to supply information on hazardous substances BEFORE an employee could refuse to work with them. The problem with these substances is that many of them could do a good deal of harm in that 30 day period. No employee should be asked to work with any toxic material until he or she is fully informed as to its composisition and possible effects. The original section requiring that applicants for jobs be informed about hazardous materials they may be asked to work with should also be reinstated, so that the applicants can make an informed judgment as to whether they want the job.

In general, the only reasonable criticisms which were made of the original SB 79 bill had to do with certain materials which it seemed unnecessary to include; and perhaps with the paperwork problem. The memo on the draft Committee Substitute stating that "most persons testified in support of the basic intent and purposes," but "expressed concern" with the "unreasonable economic and bureaucratic burdens on employers and the state" is misleading. There WAS a majority in strong support of the bill; there were also a number of employers who expressed "agreement" with the concept but with none of the provisions, and who, it seemed fairly clear, had no interest in any right-to-know legislation with teeth. Our main fear, that this testimony would result in a compromise without teeth, will be realized unless the draft committee substitute is revised to something much closer to the original bill.

Thank you very much.

Yours truly,
Nina Mollett
Nina Mollett
Associate Director

APR 7 1983

SR Box 40027
Fairbanks, AK. 99701
2 April 1983

Bettye Fahrenkamp, Chairman
Senate Committee on Resources
Pouch V
Juneau, Alaska, 99811

Dear Senator Fahrenkamp:

I have been asked by the Northern Alaska Environmental Center to comment on Draft CSSB 79 (RES) sent to the center for review. However, I am not a member of the Center; my point of view is primarily that of a health professional, thus the changes I am suggesting are aimed at preventive measures for protecting safety and health. In general I find the draft to be a very positive response to comments such as were presented at the hearing in Fairbanks.

Section 18.60.051

I feel that there should be some sort of labelling on containers of toxic and hazardous materials to alert users to the dangers of the substances and to proper handling. I think this is particulary important in remote regions such as will be encountered in Alaska, where material data safety sheets may not always be readily accessible. Perhaps existing legislation already covers this problem adequately for Alaskan manufacturers. I do not think all the material in the safety sheets necessarily needs to be on the label, however.

Move the descriptions of the symptoms of overexposure from part (b.2.C) to part (b.5). This will result in a description anyone can understand, and should be more useful.

I concur with the omission of minimum exposure levels from the data sheets. Practically speaking, the information is of little use if the levels at the workplace cannot be measured. Anyone in possession of the instruments needed to measure exposure levels would most likely also have access to the minimum exposure data. Such a person would have to be consulted if safe exposure levels became a question.

Section 18.60.052

Having gone to great lengths to protect employees from exposure, I see no reason to not provide similar protection to any user such as a purchaser. Therefore, change the wording of part (a) after "unless" to:

(1) the purchaser indicates the purchaser already possesses the information; or

(2) the information is provided on a label.

Section 18.60.071

Part (a). If this wording does not include the substances under Sec. 18.60.052.(b), it should.

Part (b). Information should also be available to union or management safety officers upon request. An employee may fear being fired if he himself requests the information, particularly if he intends to pursue the action available to him under Part (c) of this section.

Part (b.2). Training is an essential part of the intent of the protection provided under this bill. For instance, an employee who diligently reads all labels and acts appropriately is in a better position to protect himself from the mishandling of substances by other employees if he is aware of the potential hazards which may affect him but are not under his direct control. It may be worthwhile to consider whether the successful passing of a test demonstrating knowledge of the effects and proper use of substances can substitute for the necessity of an employee attending a training session. As written, this part does not specify the frequency of training sessions. In the absence of proficiency testing, I would recommend yearly intervals or testing whenever there has been a 50% turnover in the work force at risk.

Part (c). Damaging exposure to some of the substances affected by this bill can occur in the space of hours or less. Therefore, if the proper label or material safety data sheet is not available to a concerned user, he should not be required to handle the substance. Having the worker use the substance in ignorance for any period of time can defeat the purpose of prevention of mishaps. One purpose this bill can serve is to make sure the information necessary for safe handling is <u>always</u> readily available, so that exposure can be <u>prevented</u>, not reacted to. To reduce abuse of this provision, some wording permitting verbal communication with an authoritative source of information to suffice could be written in. If this Act does not take effect until January of 1984 employers should have adequate time to assemble the material safety data sheets they need.

In this respect, also, I feel having as much information on labels as is practicably possible will help to avoid abuse of the provision not to have to work with the substance in the absence of adequate information.

Section 18.60.105(3)

The provision in the original version of the bill, which voided waivers of the provisions of the bill, should be retained. While an individual employee may not be concerned about his own health, the protection of the health of coworkers is also at stake.

I sincerely appreciate the attention given to these comments, and hope they prove to be of assistance in the development

of what I consider to be a very commendable piece of legislation.

Sincerely,

Helen Anne Myers

Helen Anne Myers, PhD
Asst. Prof. of Medical Sciences
Board Member, Alaska Health Project

(These comments should not be taken to represent the opinion of either the WAMI Program or the Alaska Health Project)

I do want to be of further help. Could you send material to me at the above address? - it would be quicker than via the Environmental Center. Phone: 456-1676 home 474-7731 work

Alaska State Legislature

Official Business

Pouch V
State Capitol
Juneau, Alaska 99811

M E M O R A N D U M

May 12, 1983

TO: Senator Bettye Fahrenkamp
Chair, Senate Resources Committee

FROM: Senator Joe P. Josephson JPJ

SUBJECT: Senate Bill 79, "An Act relating to toxic and hazardous substances in the workplace; and providing for an effective date."

Chair Fahrenkamp and members of the Senate Resources Committee:

I would like to express my sincere appreciation for this opportunity to once again address the issue of improved worker safety in Alaska. Since the introduction of SB 79 on January 27, I have been deluged with information, POMs and news articles applauding and criticizing the need for such legislation. I would like to commend you and your staff for enduring the long hours of testimony, negotiations and renegotiations needed to produce the committee substitute under consideration today.

CSSB 79 is a compromise bill without undue restrictions on red tape that affords Alaska workers the opportunity to make reasonable choices. The class of workers affected by this bill will be educated in the use and disposal of toxic and hazardous substances in their work environment. They will be able to ascertain accurate and up-to-date information about substances in their work environment without undue burdens or obstacles. And, probably the most significant aspect of the bill rests in the fact that the Alaska worker will know that the state is enhancing its commitment to worker safety. The role of the Department of Labor will be responsible for accumulating valuable information for worker inquiry. The Department will develop monitoring procedures to insure that the education programs provided by employers are adequate. The Department will be available to answer questions about particular occupations with respect to toxic or hazardous substances.

Madame Chair, the bill has come a long way this session and has seen quite a facelift, but I think that the major premise of "worker right to know" has been preserved and has been presented in a reasonable manner. I support the bill and encourage the committee to vote in favor of it.

JPJ/tl



Alaska Environmental Lobby, Inc.

419 6th Street, Suite 328 Juneau, Alaska 99801 907-586-2345

28 February 1983

TO: Senate Resources Committee

FROM: Jay W. Nelson,Executive Director AEL

SUBJECT: SB-79 "Worker Right to Know"

The AEL would like to come out strongly in support of SB-79. We commend Senator Josephson for sponsoring and committee members for co-sponsoring this important piece of legislation.

While I am sure that the specifics of this bill will change as it wends its way through the legislative process, it is the basic thrust of this bill that all parties must keep in mind————Workers have a fundamental Right to Know what chemicals they are working with and the dangers of exposure to those chemicals.

It is essential that this fact remain central to all disscussions of this legislation. We are trying to protect workers by providing them with the knowledge to protect themselves.

Many of the chemicals covered under this legislation are extremely (and immediately) toxic. However many chemicals are insidious in there health effects ———effects which may result in disease or disability days, months and even years later. Without specific information on the dangers of such hazardous and toxic substances, workers have no way to know the dangers. For this reason alone a "Right to Know" bill is essential.

I will not go through further reasons for supporting this piece of legislation—— ——because that would cloud the central issue--Health and Safety of Workers.

I would, however, like to address one other point on this topic, the role of state government in this issue. You may hear it said,"Just wait for the Federal government regulations". To this I would say,"Why? These are Alaskan workers you are trying to protect". It is important to pass this bill and protect these workers now.

Recently the State of Alaska went through a process of reevaluating its relationship with the federal government. In a series of recommendations the Alaska Statehood Commission repeatedly stressed the need for Alaska to seize the initiative from the federal government and exercise all of the powers of a sovereign state. "Worker Right to Know" legislation represents a clear case where the state can and should exercise its power to protect the rights and interests of Alaskan citizens. The State of Alaska should not passively wait for a federal government "solution".

The hazardous and toxic materials problem is occurring now. The time to act is now.



APR 25 1983

Alaska Environmental Lobby, Inc.

419 6th Street, Suite 328 Juneau, Alaska 99801 907-586-2345

April 21, 1983

To: Members of the Alaska Senate.

From: Jay Nelson, Executive Director
David Wigglesworth, Issues Specialist

Subject: Senate Bill 79, an act relating to hazardous substances in the workplace.

Enclosed are two articles concerning SB 79. SB 79 requires that the use and composition of certain hazardous and toxic materials found in the workplace are made known to the workers exposed to them, so that preventive health measures can be taken.

To date, nine (9) states and several major cities have passed right-to-know laws similar to SB 79. Right-to-know legislation has been introduced into thirteen other states this year. Public officials are taking action on worker safety because of their lack of confidence in the federal government's ability to protect the health of workers.

Some of you may know that the US Occupational Safety and Health Administration(OSHA) is just now preparing to reintroduce health and safety standards for workers. While a step in the right direction, the proposed federal legislation would cover only 5% of Alaskan workplaces disregarding the workers in transportation, agriculture, construction, and other non-manufacturing occupations. Furthermore, the proposed federal regulations would not make it mandatory that employers obtain and maintain information on the toxic and hazardous materials used by their businesses.

Support for SB 79 covers a wide range of the Alaska public including the Department of Labor, the Alaska Jaycees, the Sheffield Administration, the Alaska Public Employees Assoc., the Alaska Health Project, the Alaska League of Women Voters, the Asbestos Workers Union, the Inland Boatmans Union, the Anchorage Municipal Health Commission,the Alaska Environmental Lobby, the Anchorage Environmental Health Advisory Committee, the Alaska Public Health Association.

It is the fundamental right of workers to know about the types

(over)

of hazardous materials to which they are exposed to in the workplace. The legislature needs to act now to protect Alaskan workers.

We are available at any time to discuss this piece of legislation.

ment by the Field Brothers has altered nor diminished our long-term plans for continued improvements in the newspaper and we remain as steadfast as ever in providing our readers with the best newspaper that talent and en-

ests."

Marshall Field noted that the family has owned newspapers in Chicago since 1941. The statement said the company "anticipates that The Chicago Sun-Times will be one of the assets offered for

pendent Press Service.

The syndicate, headquartered in Irvine, Calif., distributes columns, cartoons and features worldwide to more than 2,000 dailies and weeklies.

The news service was

Times:

• Field Electronic Publishing, established in 1981 to develop and test the first commercial teletext experiment approved by the Federal Communications Commission.

Daily News April 16, 1983 - SATURDAY

Bill asks employer's danger advice

By ROBERTA GRAHAM
Daily News business reporter

Gov. Bill Sheffield has said he strongly favors a bill that would require employers to advise workers of the presence of cancer-causing chemicals in the workplace and to label hazardous substance containers, according to Department of Labor Commissioner Jim Robinson.

Robinson, attending a forum Friday on safety and health in the workplace, announced Sheffield's endorsement of the Senate amended version the bill nicknamed the right-to-know legislation.

Robinson said the governor asked the labor department to take the lead in ensuring the bill is passed.

"He's asked us to lobby Anchorage and Kenai and Fairbanks legislators. He's asked us to push for the bill," Robinson said.

The legislation is currently being opposed by business, which prefers more lenient, proposed federal standards, and supported by labor and consumer groups.

It calls for a manufacturer or a wholesaler, when selling a hazardous or toxic substance, to provide the purchaser a list of those chemicals.

Under the bill, that information must then be posted in the workplace, such as the lunchroom or on an employee billboard. Additionally, it would require the employer, within 30 days, to provide the information to any worker.

Federal agenices have identified some 65,000 cancer-causing agents. But the bill would require the state labor department to draw up a list of only those chemicals used in Alaska. It specifically exempts foods, cosmetics, drugs, tobacco or substances used for personal consumption because most of these items already are regulated by federal statutes.

The employer would be required to train all employees as to the hazards of the chemicals, the potential long-term affects and how to properly handle them.

And, it would give an em-

ployee, who believes he has been exposed to toxic chemicals, access to corporate records.

The Senate Resources Committee has held several hearings on S.79 and recently has drafted a substitute bill — the version which the governor likes.

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Speaker calls for healthy workplace

By ROBERTA GRAHAM
Daily News business reporter

Local and state governments need to become more active in promoting health and safety in the workplace and not rely on the federal government to do the work, said Eula Bingham, keynote speaker at a safety forum sponsored Friday by the Alaska Health Project.

Bingham, administrator of the Occupational Safety and Health Administration under former President Jimmy Carter and now professor of environmental health, University of Cincinnati, said she was pessimistic about future involvement of federal agencies in promoting healthy workers and a safe working environment.

But she stressed that consumer and activist groups can push for a stronger federal involvement by pressing political candidates for their views before election day.

"We're just not getting the strong federal support we need," she said.

Citing drastic budget cuts of federal enforcement agencies and cutbacks of public health officials, Bingham said workplace accidents are occurring at increasing levels.

"It has been estimated that there are approximately 12,000 deaths associated with occupational exposure. There have been 5,000 respiratory cancer deaths — including leukemia, colon and bladder cancer, and 16,000 heart attacks all associated with occupational exposure," she said.

[] Gov. Sheffield favors an Alaska bill that would require employers to advise workers of cancer-causing agents they may be handling. See Bill, Page B-6

"And these numbers don't include early retirements, belated cancer deaths, skeletal diseases or reproductive failures," she said.

"The government is acting as if there are no diseases and if we look at what's happened over the past two years, it's apparent we're turning our backs on workers — on diseased workers. And we may be ignoring future generations," she said.

Specifically, Bingham criticized the Reagan Administration for its lax attitude toward implementing standards that would govern a worker's right to know what cancer-causing substances are present in the workplace — standards which she worked for two years to develop.

"Delay is the name of the game," she said.

Bingham proposed that state or local governments adopt generic standards to protect workers including:

- A regular medical inspection of the workplace;
- Medical removal protection standards allowing a worker overexposed to chemicals to take another job in the same business;
- Building codes that require health and safety plans, and
- A generic monitoring standard for chemicals in the workplace.

The seminar, sponsored by the Alaska Health Project and the Alaska Humanities Forum, drew more than 100 representatives of business, labor and consumer organizations.

"Environmental questions of the workplace has become as important as those environmental issues involving land and water resources," said Steven Deutsch, University of Oregon professor and specialist in the field of worker health and safety.

"We're at a point now in our society where most people suffer anxiety over whether they're going to keep their jobs," he said. "And problems with stress in the workplace is heightened when a community goes through rapid growth as Anchorage is doing now."

Competition for jobs will increase at the same time technology is replacing 2 percent of all office workers per year, he said.

"You think that you can get a jump on solving these problems by looking at what other communities have done. But to date, Alaska has done nothing and the time is upon you," he said.

Unemployment drops in Alaska

ALASKA STATE CHAMBER OF COMMERCE

MAR 2 1983

TESTIMONY ON SB 79
2/28/83

SENATE RESOURCES COMMITTEE

Madam Chairman, members of the committee, my name is J.P. Tangen, and I am an attorney in Juneau with the firm of Robertson, Monagle, Eastaugh & Bradley. I am also a Vice Chairman of the Alaska State Chamber of Commerce and Chairman of its legislative committee. I am here today representing the State Chamber, Alaska's largest federation of businesses with over 500 members across the State.

It would be no exaggeration to state that the State Chamber represents virtually every major employer in Alaska, and a large portion of the smaller employers. I cannot think of a single one who would be in favor of SB 79.

This is not because employers lack concern for the employees health and safety, but because most are overburdened with existing State and Federal regulations and a new set of OSHA regulations covering this same area of toxic and hazardous material will be out shortly. Employers do not need duplicative regulations.

Even if SB 79 were adopted, there is no evidence that it will accomplish the promotion of health and safety. There is plenty of evidence that it will create an unfair burden of administrative reporting, greatly increasing the cost of business, which as you know eventually must be passed on to the consumer. The price of goods and services in Alaska is high enough as it is.

The bill is simply too burdensome on employers. There are too many substances involved and it would be impossible to ask any employer, large or small, to keep track of the thousands of substances named, and insure that those he stores, ships, or sells are properly labeled with proper notices posted.

Madam Chairman, in short, because of its duplicative nature, and tremendous administrative overkill, I strongly urge your committee to mark SB 79 do not pass.

THE FOLLOWING DOCUMENT(S) MAY NOT FILM LEGIBLY BECAUSE OF POOR QUALITY OF THE ORIGINAL.

Give to Betty

THE PRECEDING DOCUMENT(S) MAY NOT FILM LEGIBLY BECAUSE OF POOR QUALITY OF THE ORIGINAL.

Bill No. Senate Bill 79

Date February 3, 1983

Title "An Act relating to toxic and hazardous substances in the workplace"

Contact: Judy Knight
465-2700

Richard Arab
465-4856

As part of its occupational safety and health program, the Department of Labor enforces regulations to protect employees from certain hazardous and toxic substances, and provides consultation and training services to employers and employees on the safe handling and use of these substances. Because it has historically been difficult to identify specific workplaces in the state where toxic and hazardous substances are present, the reporting provisions of this bill may enhance the department's efforts to direct its limited occupational safety and health resources to those workplaces where hazardous exposures actually exist.

Often employers and employees are not aware of the toxic or other harmful qualities of a particular substance being used or handled in the workplace. The labeling and training requirements provided in this bill would go a long way toward filling this void. This would, in turn, effect implementation of protective measures or controls by the employer to safeguard employees.

It should be noted however that in the absence of a federal law that requires manufacturers to provide the information required in this bill, Alaska employers may not be able to obtain and provide it to the Department or to employees (most toxic and hazardous substances are not manufactured in Alaska). Accordingly, the Department's recommendation would be that the bill be amended to hold wholesalers, rather than employers, responsible for obtaining the information from the manufacturers and providing it to buyers. Since there are more wholesalers in the state than there are manufacturers, this amendment would effect a larger universe for compliance with the provisions of the bill. We would also point out that the existing language in the bill, as well as the amendment we are proposing in this regard, may pose legal questions with respect to interstate commerce.

The department also recommends that Sec. 18.60.066(a)(5) and 18.60.067 (b)(9) be amended to clarify that these provisions specifically relate to personal protective equipment.

If this bill is passed many employers will, no doubt, look to the Department of Labor for assistance in providing the required training and in implementing effective protective measures. Accordingly, we would anticipate an increase in the demand for consultative and training services. A fiscal note is attached which reflects the costs associated with providing the increased services.

APPROVED BY Jim Robinson

DATE 2/22/83

POSITION PAPER/Department of Labor

STATE OF ALASKA
FINAL STATEMENT OF FISCAL IMPACT

Bill No: Senate Bill 79 Date on Bill: February 3, 1983
Title: "An Act relating to toxic and hazardous substances in the workplace"
Sponsor: Josephson, Sturgulewski, Fischer
Requestor: Senate Resources

1. Estimated fiscal impacts on:

a. Expenditures:

(Thousands of Dollars)

			FY 83	FY 84	FY 85	FY 86		
Capital								
Operating				126.4	114.0	120.9		
Total								

b. Revenues:

Revenue							

2. Source of funds to offset fiscal impact of bill:

N/A

3. Assumptions:

The Department will collect and disseminate information regarding hazardous chemicals and/or substances to the general public, and as a result will also be making increased work site inspections.

4. This statement has been reviewed by the OMB in the Office of the Governor. It may be considered to represent the policy of the Sheffield Administration and the final estimate of fiscal impact.

Prepared By: NB Robert J. Bacolas Phone: 465-4856
Division: Labor Standards and Safety Date: February 22, 1983

Approved by Commissioner: NB Jim Robison Date: February 22, 1983
Department: Labor

Reviewed by OMB: Date:
Phone:

5. Distribution:
Original to Legislative Finance
Copy to Department
Copy to Sponsor
Copy to Requestor

2/8/83

Detail Analysis for House Bill 79

Under this bill the Department of Labor will be responsible for collecting and disseminating information regarding hazardous chemicals and/or substances at work or storage sites in Alaska.

An Industrial Hygenist position in Anchorage will be required to review and respond to requests about the effects of hazardous chemicals or substances, recommend remedial action if required, and communicate this information to the requestor. In addition one clerical position will be required to provide support for the hygenist.

In addition to the Personal Services costs associated with the Industrial Hygenist and the clerical position there will be a need to increase the department's current contract for laboratory services ($5,000), as well as it's management services and rent allocation ($7,479 and $6,800 respectively). All other costs in Contractual Services are normal operating costs. Additionally, the Industrial Hygenist position will require various scientific measuring and sampling equipment ($7,700), as well as basic office equipment. The travel budget for FY '84 includes $7,500 for recruiting and relocation expenses for the hygenist position and $5,000 needed for extensive in-state travel to visit Alaskan work sites.

Line item costs are as follows:

	FY '84
Personal Services	$ 71,550
Travel	12,500
Contractual	29,525
Commodities	1,500
Equipment	13,300
TOTAL:	$128,375

One time items are $13,300 for equipment and $7,500 for travel.

from Rosa King AGC

DOES THE INFORMATION BELOW MEAN ANYTHING TO YOU?

IF NOT, YOU HAVE TWO CHOICES:

1. VOTE NO ON SB 79 AND HB 197, OR

2. LEARN. THESE ARE ONLY A FEW OF THE 39,000 TOXIC SUBSTANCES THAT ALASKA EMPLOYERS MUST RECOGNIZE IF SB 79 OR HB 197 IS PASSED.

GRID I 10

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH RTECS JULY 1982

scu-mus LD50:17500 ug/kg ARZNAD 17,305,67

..., CARVACROL, 5-(2-(N-(2-CHLOROETHYL)-N-ETHYLAMINO)ETHOXY)-, BENZYLATE, HYDROCHLORIDE
UPDATE: 7907 CAS NUMBER: 73790-26-8 MOLECULAR WEIGHT: 440.45 MOLECULAR FORMULA: C23-H30-Cl-N-O3 .Cl-H
SYNONYMS: 5-(2-(N-(2-CHLOROETHYL)-N-ETHYLAMINO)ETHOXY)CARVACRYL BENZYLATE HYDROCHLORIDE * WV 843 *
TOXICITY AND DATA REFERENCES:
scu-mus LD50:30 mg/kg ARZNAD 17,305,67

FI1525000. CARVACROL, 5-(2-(N-(2-CHLOROETHYL)-N-ETHYL...INO)ETHOXY)-, 1,5-NAPHTHALENEDISULFONATE
UPDATE: 7907 CAS NUMBER: 73771-66-1 MOLECULAR WEIGHT: 588.18 MOLECULAR FORMULA: C16-H26-Cl-N-O2 .C10-H8-O...
SYNONYMS: 5-(2-(N-(2-CHLOROETHYL)-N-ETHYLAMINO)ETHOXY)CARVACROL 1,5-NAPHTHALENEDISULFONATE * WV 798 *
TOXICITY AND DATA REFERENCES:
scu-mus LD50:50 mg/kg ARZNAD 17,305,67

FI1550000. CARVACROL, 5-(2-(N-(2-CHLOROETHYL)-N-ETHYLAMINO)ETHOXY)-, 3,4,5-TRIMETHOXYBENZYLATE HYDROCHLORIDE
UPDATE: 7907 CAS NUMBER: 73771-67-2 MOLECULAR WEIGHT: 506.60 MOLECULAR FORMULA: C26-H36-Cl-N-O6 .Cl-H
SYNONYMS: 5-(2-((2-CHLOROETHYL)ETHYLAMINO)ETHOXY)CARVACROL 3,4,5-TRIMETHOXYBENZYLATE HYDROCHLORIDE * WV 799 *
TOXICITY AND DATA REFERENCES:
scu-mus LD50:25 mg/kg ARZNAD 17,305,67

FI1575000. CARVACROL, 5-(2-(DIMETHYLAMINO)ETHOXY)-, ACETATE (ester)
UPDATE: 8108 CAS NUMBER: 54-32-0 MOLECULAR WEIGHT: 279.42 MOLECULAR FORMULA: C16-H25-N-O3
SYNONYMS: 6-ACETOXYTHYMOL 2-(DIMETHYLAMINO)ETHYL ETHER * ((6-ACETOXYTHYMOXY)ETHYL)DIMETHYLAMINE * (2-(4-ACETOXY-2-ISOPROPYL-5-METHYLPHENOXY)ETHYL)DIMETHYLAMINE * ARLYTENE * 4-DIMETHYLAMINOETHOXYCARVACROL * 5-(2-(DIMETHYLAMINO)ETHOXY)CARVACROL ACETATE * 4-(2-DIMETHYLAMINOETHOXY)-5-ISOPROPYL-2-METHYLPHENYL ACETATE * 4-(2-DIMETHYLAMINOETHOXY)-2-METHYL-5-ISOPROPYLPHENYL ACETATE * MOXILITE * MOXISYLYTE * MOXISYLYTE * OPILON * PHENOL, 4-(2-(DIMETHYLAMINO)ETHOXY)-2-METHYL-5-(1-METHYLETHYL)-, ACETATE (ester) (9CI) * SYMPAL * THYMOXAMINE * VASOKLIN *
TOXICITY AND DATA REFERENCES:
orl-mus LD50:208 mg/kg 12VXAS 8,105:,68
scu-mus LD50:160 mg/kg ARZNAD 17,305,67
ivn-mus LD50:38200 ug/kg ARZNAD 17,305,67

FI1600000. CARVACROL, 5-(2-(N,N-DIMETHYLAMINO)ETHOXY)-, ACETATE, HYDROCHLORIDE
UPDATE: 8108 CAS NUMBER: 964-52-3 MOLECULAR WEIGHT: 315.80 MOLECULAR FORMULA: C16-H25-N-O3 .Cl-H
SYNONYMS: 5-(2-(N,N-DIMETHYLAMINO)ETHOXY)CARVACROL ACETATE HYDROCHLORIDE * MOXISYLYTE HYDROCHLORIDE * OPILON HYDROCHLORIDE * THYMOXAMINE HYDROCHLORIDE * WV 365 *
TOXICITY AND DATA REFERENCES:
orl-mus LD50:255 mg/kg JPPMAB 32,209,80
scu-mus LD50:160 mg/kg ARZNAD 17,305,67

FI1650000. CARVACROL, 5-(2-(N,N-DIMETHYLAMINO)ETHOXY)-, BENZYLATE, HYDROCHLORIDE
UPDATE: 7907 CAS NUMBER: 73771-68-3 MOLECULAR WEIGHT: 377.95 MOLECULAR FORMULA: C21-H27-N-O3 .Cl-H
SYNONYMS: 5-(2-(N,N-DIMETHYLAMINO)ETHOXY)CARVACROL BENZYLATE HYDROCHLORIDE * WV 835 *
TOXICITY AND DATA REFERENCES:
scu-mus LD50:1000 mg/kg ARZNAD 17,305,67

TOXICITY DATA HAS NOT BEEN EVALUATED.
OMISSION OF A SUBSTANCE OR NOTATION DOES NOT IMPLY ANY RELIEF FROM REGULATORY RESPONSIBILITY.

GRID J 10

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February 28, 1983

Bettye Fahrenkamp, Chairman
Senate Committee on Resources
Pouch V
Juneau, Alaska 99811

REGARDING: SB #79

Refference: My previous letters dated 2/8/83 & 2/23/83

Dear Bettye:

I just learned that AS 18.60.105, Section 9, Part (B) which refers to substances listed in the NIOSH Register of Toxic Effects of Chemical Substances would cover some 39,000 substances including salt and sand. WOW-somebody has got to be kidding around just a little.

It is my understanding that OSHA'S proposed regulations covering the same area of intent as "your" bill will only cover some 500/600 substances.

Rather than building another bureaucratic monster eating tons of paperwork and at great cost to the consumer would it not be much more prudent to wait for the Federal Regulations and then create additional legislation if required?

Sincerely Yours,

Tim R Crawford

Tim R Crawford
General Manager

cc: Joe Josephson
Vic Fisher
Arliss Sturgulewski

Santone
Certified Master Drycleaner

MAR 1 1983

Louisiana-Pacific Corporation

Ketchikan Division

Post Office Box 6600
Ketchikan, Alaska 99901 U.S.A.
Telephone: 907-225-2151
Telex: 099-55-251
Answer back: KAYPULCO KET

February 25, 1983

The Honorable Robert Ziegler
Alaska State Senate
Pouch V
Juneau, Alaska 99801

The Honorable Ron Wendte
Alaska State House of Representatives
Pouch V
Juneau, Alaska 99801

The Honorable Jack McBride
Alaska State House of Representatives
Pouch V
Juneau, Alaska 99801

RE: SENATE BILL NO. 79

Dear Bob:

In reference to Senate Bill No. 79, "an Act relating to Toxic and Hazardous Substances in the Work Place; and providing for an effective date," as amended in Sec. 18.60.065 to read Toxic and Hazardous Substance Safety information, Louisiana-Pacific Ketchikan Division would like to submit the following brief statement:

Louisiana-Pacific Corporation has always maintained that the Health and Safety of its employees is a first and foremost concern in its operations. We are all aware of the increased cost of medical attention, costs incurred in lost production, and the economic impact of an industrial injury or illness. We are extremely concerned over the introduction of Senate Bill No. 79.

It is our contention that the Act is redundant. Existing state and federal agencies already have regulations implemented covering the intent of the provisions of the Act.

The Honorable Robert Ziegler
The Honorable Ron Wendte
The Honorable Jack McBride
February 25, 1983
Two

Re: Senate Bill No. 79

Our industry is one of the more over-regulated industries in the country. It appears to us that the manpower and money resources of our state could and should be spent in areas more productive and that excessive over-regulation should be avoided.

Sincerely,

Martin

Martin E. Pihl, Controller
and Administrative Assistant
to the General Manager

akt

cc Honorable Betty Fahrenkamp ✓
Alaska State Senate
Pouch V
Juneau, Alaska 99801

Wally Kubley
Room 602, Baranof Hotel
Juneau, Alaska 99801

TESTIMONY

SB 79

LEGISLATURE, STATE OF ALASKA

Interstate Commerce

13TH LEGISLATURE

FIRST SESSION

FEBRUARY 23, 1983

Title of the Bill: "An Act relating to toxic and hazardous substances in the workplace and providing for an effective date".

Sponsors: Josephson, Sturgulewski, Fischer, Fahrenkamp.

Introduced: 1/27/83

Referred by: Resource Committee

Good afternoon. My name is Bill Schneider and with me today is T. J. Thrasher. We presently serve as Co-Chairmen of the Alaska Employers' Committee. The Alaska Employers' Committee represents over 4000 Alaskan employers, including:

2500 Associatd General Contractors, Alaska Trucking Association, Alaska Retail Association, ~~Alaska~~ Pacific Seafood Processors, Assoc. Alaska Loggers Association, Alaska Miners Assocation, Alaska Support Industry Alliance, Anchorage Laundry and Dry Cleaners Association, Coal Exploration and Alaska Hotel and

A.E.C. has directed Ms. Thrasher and myself to be here today and present our committee's views on SB 79. We understand the intention of this bill is to promote safety and health in the Alaska workplace. We fully support and endorse this concept. However, upon closely examining SB 79, we find no evidence that the bill will accomplish its intention. Instead, the bill provides a massive regulatory burden, additional bureauracy and unreasonable expense to Alaska's taxpayers. We have noted a few of the bill's provisions that illustrate some of the more obvious pitfalls.

1. SB 79 covers over 39,000 substances listed as toxic in the NIOSH Register of Toxic Effects of Chemical Substances or RTECS. Included in this list are such items as salt, sugar, sand, and portland cement. SB 79 also includes the DOT CFR hazardous list that includes wet hair as a hazardous item.

2. Record-keeping requirements are mandated by SB 79 for all employers who manufacture, transport, store or use a toxic or hazardous substance in the state. Annual reports must be filed with the State Department of Labor. For illustration purposes, we have chosen sand, which is defined as a toxic substance by RTECS and is, therefore, under SB 79 and see how the record-keeping requirements would apply to sand.

To begin with, there will be five different classes of employers, the

1. manufacturer
2. transporter (air, water, rail, truck)
3. warehouse
4. retailer
5. user

who handle, and accordingly, would be required to keep and file identical material safety data sheets, MSD's, containing the following information: (1) chemical name, chemical abstract service number and common name of sand; (2) the trade name of sand; (3) the known or suspected acute or chronic effects of exposure to sand; (4) the potential flammability of sand; (5) the potential explosiveness of sand; (6) the appropriate medical treatment to be applied in an emergency involving sand; (7) the procedures for cleanup of leaks or spills of sand; and (8) the name and address of the manufacturers of sand.

Magnify this record-keeping burden by the 39,000 substances covered in this bill, and then multiply it by the thousands of Alaskan employers, and the result is tons upon tons of paperwork.

In summary, the Alaska Employers' Committee feels that SB 79 generates unnecessary expense to the State's consumers, taxpayers and employers without commensurate health protection in the workplace. We have been informed by federal OSHA that federal regulation covering this same area will go into effect this year. Therefore, SB 79 would provide a duplicate set of regulations and conflicts would be inevitable. The few states that have passed their own toxic bills are presently experiencing this very problem. We strongly advocate that the state promulgate the federal regulation. Employee protection will be uniformly provided.

We appreciate the Committee's time and we are available for any questions the Committee might have.

Testimony of

ATLANTIC RICHFIELD COMPANY

Before the

Alaska Senate Resources Committee

on SB 79

February 28, 1983

Madam Chairman, members of the Committee, I am Beverly Ward, associate director, state and local government relations, for Atlantic Richfield Company. Thank you for inviting me to share with you some of the views of my Company on SB 79, "An Act relating to toxic and hazardous substances in the workplace; and providing for an effective date."

Atlantic Richfield recognizes the importance of identifying hazards and disseminating necessary information on precautionary measures to both state and private sector employees.

We believe that an effective program should contain three important elements:

(1) There should be a uniform program instead of many overlapping and potentially incompatible federal, state and local laws and regulations.

(2) Any program should be based on risk assessment and the communication of identified hazards; and

(3) Standards should be performance-based to maximize flexibility, effectiveness, and to reduce unnecessary costs.

Unfortunately, SB 79 is deficient in all of these key areas.

The Need for a Uniform Program

On March 19, 1982, the Occupational Safety and Health Administration proposed a hazards communication rule on which extensive comment has been received from all sectors of the public. When made final later this year, OSHA's rule is expected to result in requirements that we believe will adequately address the majority of hazards communication issues. Atlantic Richfield Company fully supports OSHA's efforts to promulgate a federal hazards communication rule. As a multistate employer, we believe a federal rule is necessary in order to avoid the confusion and unnecessary costs of duplicative and conflicting requirements at the state and local level. In addition to industry costs, Alaska taxpayers would bear the unnecessary costs of administering a new program that requires a great deal of paperwork.

A proliferation of conflicting and technically inconsistent requirements at the federal, state or local levels presents significant difficulties for compliance at the expense of effective hazards communication. Thus, enactment of an Alaska law now would be premature because of the potential for redundancy or inconsistency with federal requirements.

As an example of this potential for inconsistency, SB 79 requires a material safety data sheet (MSDS) which is similar, but not identical, to the OSHA Form 20. (Section 1 of the bill, amending Section 18.60.065(a)). Atlantic Richfield believes that SB 79 should allow the use of the OSHA Form 20, or an equivalent form, for the MSDS.

Moreover, SB 79 requires that an employer provide an MSDS to each employee, or a collective bargaining agent or designated representative of the employee, within five working days of a request for the information. (Section 1 of the bill, amending Section 18.60.065(b)). This section should either be deleted or should include an alternative solution for the employer who makes a good faith effort, upon request, to obtain the MSDS from the manufacturer and does not receive it within 30 days. After 30 days, the employer should be required only to notify the state and the employee that no MSDS has been received.

Another troublesome inconsistency between SB 79 and the federal rule is in the area of trade secret protection. In developing its proposal, OSHA acknowledged the need to resolve the potential conflict between hazards communication and trade secret protection. Atlantic Richfield Company believes that trade secret information should be protected, except when special emergency circumstances warrant disclosure to physicians or other health or safety personnel. SB 79 does not provide for such protection. In fact, by requiring that an employer provide each employee and applicant for employment a copy of every MSDS for substances to which the employee may be exposed, the bill creates a definite risk that trade secrets would be divulged. (Section 1 of the bill, amending Section 18.60.065(b)).

The Importance of Risk Assessment

An effective hazards communication program should be based on risk assessment and the communication of identified hazards. In SB 79 (Section 5 of the bill, amending Section 18.60.105 (8)(A) a full definition should then be given for each of the physical properties listed, such as "A strong oxidizer: A chemical that promotes oxidation readily and on contact with combustible material may cause fire."

Guidance in the form of a full definition should also be given for what is "defined as a hazardous substance by the department" (subsection (8)(B)) and for what is "defined as a toxic substance by the department" (subsection (8)(C). Otherwise, the department could interpret literally any substance as "hazardous" or "toxic."

The bill specifies that materials in the "Registry of Toxic Effects of Chemical Substances" published by the National Institute for Occupational Safety and Health be designated as "toxic substances" (subsection (9)(B)). However, this is inappropriate because the registry lists over 168,000 chemicals, including many common substances which are toxic or hazardous only at high doses, but which frequently are present in the workplace only at levels that are insignificant or that create no risk to the employee. Sodium chloride (table salt), sucrose (sugar) and ascorbic acid (vitamin C) are examples of such substances.

Mandatory identification of all chemicals in a workplace, regardless of the degree of risk involved, would likely result in ineffective communication or non-communication. Employers should be required to warn or inform employees about the hazards of a chemical only when that chemical is known to be in the workplace in a physical state, volume, or concentration which may cause substantial injury or illness during normal use or in a foreseeable emergency.

Additionally, there should be a provision exempting employers from providing an MSDS for hazardous waste. The contents of hazardous waste vary greatly, and MSDSs are already required for products utilized in processes that generate the waste.

The Advantages of a Performance-Based Standard

OSHA advocates a "simple performance-oriented standard," and many companies already have in place effective hazards communication programs. The attached Atlantic Richfield Company position on hazards communication outlines some of the elements an effective performance-oriented hazards communication program could include.

As OSHA states, "There may be many ways to reach the goal of adequate hazards communication." Unfortunately, SB 79 does not allow for this performance-oriented approach.

For example, SB 79 requires that an MSDS for each toxic or hazardous substance be submitted annually to the department. (Section 1 of the bill, amending Section 18.30.065(a)). This is a duplicative and costly requirement. New MSDSs should only be required when revisions to them are made by the manufacturers. Under subsection (b), they should be "made available," not "provided" to employees. Also, an employer who sells toxic or hazardous substances should be required to make MSDSs available. The seller may be the only source of an MSDS, in some instances.

Subsection (d) of the same section requires that an employer prominently display signs in the workplace notifying employees of the provisions of this section. Atlantic Richfield believes that it would be more helpful to post signs at the place where employees report to work, due to the scattered and diverse nature of the oil industry in its daily operation.

A particularly burdensome provision of SB 79 is the labeling section (Section 1 of the bill, amending Section 18.60.066). It would require extensive labeling of toxic and hazardous substances in containers as small as one gallon and on complex piping systems. Atlantic Richfield has serious concerns about this provision. First, during the course of a day different product streams can flow through the same piping system. How do you label this kind of a system -- with different labels different times of the day, or with labels that include every conceivable product? How does the employee respond in an emergency, if the system contains all the labels?

Secondly, the information required on the label is also required on the MSDS, so repeating it would be burdensome and duplicative. Moreover, a refinery may have as many as 2,500 valves and 1,000 feet of flanges, making it impossible to label them all; and, labels on exterior piping would be difficult to maintain in harsh weather conditions.

Atlantic Richfield Company believes that the labeling provision should either be deleted, or that labels should be required only on containers holding no less than 55 gallons or 500 pounds. Also, labels should be required not in every area, but in the nearest area where a list could be posted and maintained.

Another inconsistency with a performance-based program is found in the employee safety education program section (Section 1 of the bill, amending 18.60.067). Atlantic Richfield believes that instead of instructing employees on each toxic and hazardous substance, generic instruction could be given for groups of similar materials. Also, a limit should be put on requirements for the program.

Finally, in the definition of "employer" (Section 4 of the bill, amending 18.60.105 (4)), state employers appear to be exempt. Atlantic Richfield believes that state employees are entitled to the same degree of protection and hazards information as private employees.

Summary

Atlantic Richfield Company recognizes its responsibilities to its employees. As a multistate employer, we are concerned about the many conflicting federal, state, and local laws and regulations covering the identification and labeling of chemicals. We agree with OSHA that the most effective hazards communication program would be a uniform program at the federal level. It should be based on risk assessment and the communication of identified hazards, and the standards should be performance-based.

Therefore, we strongly oppose the enactment of a bill such as SB 79 prior to the promulgation of the final OSHA rule.

CBC:cam

Govt. Relations/Govt'l Issues

2/28/83

POSITION STATEMENT OF ATLANTIC RICHFIELD COMPANY ON HAZARDS COMMUNICATION TO EMPLOYEES

The number and types of chemical substances manufactured, processed, and used in the United States have been increasing steadily in recent years. Since many of these substances may pose health and safety risks, the Atlantic Richfield Company recognizes the importance of identifying hazards and disseminating necessary information on precautionary measures to employees and consumers.

There already are many differing federal, state and local laws and regulations covering the identification and labeling of chemicals. Atlantic Richfield, a multistate employer, is concerned that further adoption of state and/or local hazards communication legislation and regulation will result in additional conflicting and technically inconsistent requirements among governing bodies. Such a situation would present significant difficulties for compliance without a noteworthy increase in protection. Further, resources required to meet a variety of unique and differing hazards communication requirements could actually detract from the orderly development and updating of basic health and safety information. Finally, states in which a number of local governing bodies develop their own hazards communication regulations could discourage industrial growth by multistate employers. The following points represent Atlantic Richfield Company's views on the composition of an effective, uniform hazards communication program.

HAZARDS COMMUNICATION TO EMPLOYEES

Atlantic Richfield Company acknowledges and supports regulatory efforts to ensure employee protection and believes the most effective program would be a performance-based rule at the federal level. State and local efforts to enact employee hazards communication laws should be deferred until the Federal Occupational Safety and Health Administration (OSHA) finalizes its hazards communication rule.

However, if state and local governments believe it is necessary to proceed with their own programs, they should:

- strive for consistency with any existing local, state and federal laws, regulations and proposals;
- limit initial coverage to specific, high priority concerns;
- include provisions for reconsidering the need for their own programs if a governing entity with broader authority, such as OSHA, adopts similar regulations.

Any regulation should be based on a performance standard. Effective and enforceable performance standards should state a specific goal or end result to be achieved so that the regulated know what performance is expected and the regulators have a standard against which to measure achievement of the end result. A performance-based rather than a specification-language rule has the following advantages:

- o The most effective method or methods can be selected to alert employees about the varying hazards associated with chemical and physical agents in a particular workplace and to provide specific handling instructions.

- o An effective hazards communication program, which already may have been developed to meet the needs of a specific workplace, can continue to be used, encouraging a more efficient use of manpower resources and maximizing cost effectiveness.

An effective performance-oriented hazards communication program for employees could consist of some or all of the following elements:

1. Identification of Risk

   (a) Identify the chemical substances and physical agents in the workplace and the potential for exposure to the employee under normal work conditions and foreseeable emergencies. The potential for exposure could be characterized by a number of criteria, such as the route of exposure and presently available control measures.

   (b) In conjunction with (a), obtain from a supplier the inherent hazards of the substance or enough information on the properties of any purchased chemical substance, consistent with protection of trade secrets, to enable an employer's technical experts to assess adequately the material's hazards.

   (c) Systematically evaluate the inventoried substances to determine the risks they present in the workplace. This evaluation of risk should be based on the hazards and exposure information developed and collected by the employer and should recognize the varying relationships between the degree of hazard and the potential for exposure as well as the evolving nature of scientific evidence for establishing adverse effects.

   (d) Keep workplace risk evaluations, with supporting documentation, current and accurate. This could be accomplished by reviewing: significant new information from suppliers, the results of company testing and auditing programs, and published scientific data. Keep workplace inventories current and accurate in consideration of the industry and processes involved.

2. Communication to Employees

   (a) Communicate to employees the nature of the hazards and the safe handling procedures for substances found in the workplace. This process should allow for the use of one or more communication techniques to transmit effectively the potential seriousness of the hazard and the potential for harmful exposure.

   Communication techniques could include, but not be limited to, training programs, direct oral instructions by supervisors, and written material such as Material Safety Data Sheets (MSDS's), labels, placards, alphanumerical codes, color codes, pictures, drawings, and/or symbols.

(b) Employees should have access to information concerning the identity, general characteristics and harmful properties of the substances to which they may be exposed. When substances are known to have harmful effects and are classified as trade secrets, employees should be provided with enough information to ensure they know how to handle the substances safely and are aware of the harmful effects of exposure to the substances.

(c) Notify affected employees of new hazards information within a reasonable time.

(d) The confidentiality of trade secret information should be protected. However, it is recognized that there will be situations where disclosure to health professionals will be necessary. Special emergency circumstances may warrant disclosure to physicians or other health or safety personnel. However, confidentiality agreements will be required from third parties, where appropriate, in order to protect a company's trade secret information.

3. Education and Training of Employees

(a) A program should be developed to educate and train employees about hazards warning systems in the workplace, employee rights under applicable hazards communication laws and regulations, and the availability of hazards information concerning the substances and physical agents to which they are or may be exposed. This education and training program may include, or expand as necessary, existing company efforts.

(b) Records should be kept documenting the training sessions that are conducted. These records could include information about each training session such as attendees, subjects covered, copies of handouts, training aids, and date of session.

(c) Procedures should be established for updating educational and training programs in a timely manner.

4. Hazards Communication Program Review

(a) The Hazards Communication Program should be available for review by employees and regulatory bodies, such as the federal OSHA or comparable agencies at the State level.

(b) In addition, the Hazards Communication Program should undergo periodic internal review by employers to ensure its effectiveness. Records documenting employee training programs should be included in the review. Procedures for conducting such review should be developed, allowing for employee input and feedback.

HAZARDS COMMUNICATION TO CUSTOMERS

When selling to companies for workplace use, manufacturers should provide enough information on the properties of a chemical substance or product, consistent with protection of trade secrets, as discussed in Section 2(d),

to enable the purchaser's technical experts to assess adequately the hazards posed by the material and to determine the necessary precautions that must be taken to minimize any risks associated with the identified employee exposure to such materials.

Govt. Relations / Govt'l Issues
5/05/82

February 28, 1983

WRITTEN TESTIMONY REGARDING SENATE BILL 79 by Sen. JOE JOSEPHSON

Senator Fahrenkamp and members of the Resources Committee:

I appreciate your scheduling of the hearing today on Senate Bill 79.

As you know, SB 79 would require that Alaska workers be warned about hazardous and toxic substances in the work environment, trained in the use of these substances, and given a measure of protection -- for later medical treatment and diagnostic reference, if necessary -- through provision for employer reports of the presence and quantity of hazardous and toxic substances.

Because the HESS Committee, which I chair, is meeting at the same time as your Committee, I am today submitting written testimony. I understand that in another hearing of the Resources Committee on this bill, I may have the opportunity to discuss with you any questions or concerns which any of you may have regarding any provision of SB 79.

In brief, I have sponsored SB 79 because Alaska is changing rapidly. Alaska has entered the industrial age. Studies have identified scores of sites where hazardous and toxic substances are found.

In fact, since the last legislature adjourned in 1982, we have witnessed in Alaska several incidents which point towards the need for SB 79.

On the Parks Highway, a truck carrying transformers containing PCBs, a cancer-causing substance, created a health hazard when the transformers began to leak. The boxes in

in which the transformers had been put were not labeled so as to indicate the contents or health hazards of PCB exposure.

In Ketchikan, the use of a wood preservative on a rooftop, on a windy day, caused residents of one neighborhood to spend their weekend vomiting, coughing, and complaining of stomach cramps.

Near Livengood, a truck transporting a class 8 poison, MMT, caught fire. The driver had no information about, or training in, the handling of the poison. The haul road was closed for 7 hours, and three Alaskans suffered serious pulmonary disorders.

We cannot prevent the use of hazardous or toxic substances in the Alaskan economy. But we can, and must, warn Alaskan workers of the presence of these substances, trian them in their use and handling, and provide a record for future reference when exposure has occurred.

It may be asserted to you that Alaska should do nothing, and await the promulgation of rules by OSHA, the Occupational Safety and Health Administration of the federal government. It is correct that OSHA has held hearings on "right to know" standards. And I would certainly support a national standard in the interests of uniformity in interstate commerce.

But the OSHA hearings only concerned manufacturing-- a

very small portion of the Alaska workforce. And in this field, as in many others, national rules-- assuming their adoption-- would not necessarily preclude states from adopting rules that are no less stringent than the federal ones. Even if OSHA proceeds to promulgate rules that have been the subject of its hearings, the fact is that at least 60 million American transportation, agricultural, construction, and other workers would not be covered by the OSHA approach.

Moreover, the Alaska legislature, in considering SB79, is not breaking new ground for state action. Atleast nine states, and several major cities, have passed right-to-know laws, and at least 13 other states are considering similar measures in 1983.

The Department of Labor has endorsed legislation, and I welcome that support.

I would like to say a word about the fiscal note. The Department correctly reported about the cost of the measure to the Department as an agency which would administer a statute. But savings to the State, as a government, and to the Alaska economy, through fewer health emergencies, fewer law suits, fewer road closures, lost work-days, Medicaid and general medical assostance claims, workers' compensation proceedings, and through higher preductivity, could not be recorded on the fiscal note format. I hope that the Committee will keep these positive economic offects in mind as you consider SB79.

As I noted, events between legislative sessions point up the need for action now. It has been estimated that OSHA regulations, even if adopted, and even if adequate, may not be in place for years. In fact, I am indebted for that estimate not to the supporters of SB 79 who come from the labor movement, and not to the supporters of SB 79 who come from the environmental or health communities, but to a trade magazine, Chemical Week.

SB 79 has broad public support. It is my hope that this session will include the passage of right-to-know legislation as one of its achievements.

I will be pleased to work with you and your staff in the coming days on any technical details, so that a verson of SB 79 can reach the Senate floor soon, and with the broadest possible support consistent with the objectives I have mentioned.

Thank you, Madame chairman, for the opportunity to present this testimony today.

Joe Josephson
Senator

IN REFERENCE TO SENATE BILL 79, "AN ACT RELATING TO TOXIC AND HAZARDOUS SUBSTANCES IN THE WORK PLACE, AND PROVIDING FOR AN EFFECTIVE DATE" AS AMENDED IN SEC. 18.60.065, TO READ TOXIC AND HAZARDOUS SUBSTANCE SAFETY INFORMATION, LOUISIANA-PACIFIC KETCHIKAN DIVISION WOULD LIKE TO SUBMIT THE FOLLOWING BRIEF STATEMENT...

"LOUISIANA-PACIFIC CORPORATION HAS ALWAYS MAINTAINED THAT THE HEALTH AND SAFETY OF ITS EMPLOYEES IS A FIRST AND FOREMOST CONCERN IN ITS OPERATIONS. WE ALL ARE AWARE OF THE INCREASED COST OF MEDICAL ATTENTION, COSTS INCURRED IN LOST PRODUCTION, AND THE ECONOMIC IMPACT OF AN INDUSTRIAL INJURY OR ILLNESS. WE ARE EXTREMELY CONCERNED OVER THE INTRODUCTION OF SENATE BILL 79. IT IS OUR CONTENTION THAT THE ACT IS REDUNDANT. EXISTING STATE AND FEDERAL AGENCIES ALREADY HAVE REGULATIONS IMPLEMENTED COVERING THE INTENT OF THE PROVISIONS OF THE ACT.

OUR INDUSTRY IS ONE OF THE MORE OVER-REGULATED INDUSTRIES IN THE COUNTRY. IT APPEARS TO US THAT THE MANPOWER AND MONEY RESOURCES OF OUR STATE COULD AND SHOULD BE SPENT IN AREAS MORE PRODUCTIVE AND THAT EXCESSIVE OVER-REGULATION SHOULD BE AVOIDED.

SINCERELY,

s/MARTIN R. PHIL, CONTROLLER

AND ADMINISTRATIVE ASSISTANT TO THE GENERAL MANAGER.

Louisiana Pacific Corp.

LEGAL SERVICES
PLUMBERS & STEAMFITTERS, LOCAL 375
3568 GERAGHTY STREET
FAIRBANKS, ALASKA 99701
(907) 479-6281

MICHAEL P. McCONAHY
Attorney

ARTHUR LYLE ROBSON
Attorney

APR 11 1983

March 31, 1983

Senator Bettye Fahrenkamp
Chairman of Senate Committee on Resources
Pouch B
Juneau, AK 99811

RE: Committee Substitute for SB 79

Dear Bettye:

I have received the redraft of SB 79 and in general I agree that it is a work that should meet all the objections with no problem at all. There are two areas in which I have reservation. The first area is the provision that a person may be forced to work thirty days with a substance before being told what it is which is found in the new AS 18.60.0710 (c). In the stronger bill as originally drafted, there were enough protections where this would not present a problem. In the bill as it is drafted now, it would appear that all hazardous substances can be placed in the work place and no material safety data sheet has to be provided until thirty days after the first employee protest.

My second observation relates to the area of labeling. This is much more fairly covered under the proposed redraft that the Alaska Health Project provided and I am enclosing a xerox of that to see what sort of labeling or availability of the MSDS should be covered in the bill. Maybe even the sensible thing to do would be to let the labor department determine this. In any event, unless something radical is done with response to my two observations, I think that the issue will no longer be any more controversial than mothers and apple pie.

Congratulations!

Sincerely yours,

ARTHUR LYLE ROBSON
Prepaid Legal Services

ALR:SMJ

cc: Steven Kadish



Alaska Environmental Lobby, Inc.

419 6th Street, Suite 328 Juneau, Alaska 99801 907-586-2345

3 April 1983

To: Senate Resources Committee Staff
From: Jay Nelson, Executive Director, AEL
Subject: SB-79, "Worker Right to Know"

You are to be commended for the time and effort being made to reach a concensus on this legislation. Also, I thank you for the opportunity to comment upon the 24 March draft of SB-79.

The legislation seems to be making progress in many areas but one eliminated item, that I feel strongly should be included, is the labeling requirements. Both workers and emergency personnel with find this section critical under certain circumstances. The key, of course, is to require labeling without making it too burdensome, bureaucratic or expensive. The implicit question is, "Do workers have a right to know, and what are the costs we are willing to bear to protect those workers?"

Certainly some middle ground must exist on this issue. I understand the problems with excessive labeling requirements, but perhaps the threshold limits could be raised (ie. only quantities over 40 gallons and 50 pounds). Attached are the sections of a previous SB-79 draft that I feel need reworking, not elimination. I would like to discuss this further with you.

Thank you for including me in this and future discussions on SB-79. I appreciate your time.

Section 18.60.069. LABELING OF TOXIC AND HAZARDOUS SUBSTANCES.

(a) A manufacturer or wholesaler in the state shall affix in a prominent place on each container that contains 40 gallon or more or 50 pounds or more of the substance a lavel containing the following information:

(1) the commone and chemical names of the substance;

(2) the hazards and health risks associated with use of or exposure to the substance;

(3) the symptoms of overexposure to the substance;

(4) the appropriate procedures to follow in case of overexposure to the substance; and

(5) the need for and instructions for the proper use of equipment to protect a person from overexposure to the substance.

(b) An employer shall identify toxic or hazardous substances that are contained in piping systems in the workplace by affixing labels prominently on the pipe body or by posting in common areas labeling charts that can be easily coordinated to match the proper piping systems. The choice of labeling methods may be based upon economic considerations. Locations of labels shall include

(1) valve flanges, branches, mixing areas, and

(2) exits and entry points in walls, floors, and the ground;

(3) walls, floors and the ground where workers congregate regularly or where they may be expected to congregate on a daily basis.

(c) In an area where toxic or hazardous substances are stored or used an employer shall prominently display an alphabetical list of the chemical and common names of the substances.



Alaska Environmental Lobby, Inc.

419 6th Street, Suite 328 Juneau, Alaska 99801 907-586-2345

April 13, 1983

Pat Pourchot
Senator Bettye Fahrenkamp
Pouch V
Juneau, Alaska 99811

Dear Pat,

The enclosed comments should be considered as a supplement to the comments that I made regarding SB 79. David Wigglesworth has been following the development of regulations concerning hazardous and toxic substances in Alaska for approximately one year . He is now employed by the Alaska Environmental Lobby and will be following the Right-To-Kno legislation. Thank you for allowing him to comment at this time

Sincerely

Jay Nelson

Jay Nelson
Director Alaska Environmental Lobby



Alaska Environmental Lobby, Inc.

419 6th Street, Suite 328 Juneau, Alaska 99801 907-586-2345

General Comments Concerning
the Rough Draft Committee
Substitute for SB 79

April 13, 1983

Pat Pourchot
Senator Bettye Fahrenkamp
Pouch V
Juneau, Alaska 99811

Dear Pat,

I have reviewed the Committee Substitute for SB 79. My comments are as follows:

So long as we continue to use hazardous materials in our daily lives, we must all vigorously insist that the health and safety off Alaskan workers be protected. SB 79 shows an effort to reach this goal, but the Committee Substitute draft has some problems, as well. For example:

1. Sec. 18.60.071 (line 11, b). New language should be added to include the following: An employer required to comply with (a) of this section shall provide to each new employee and, to any other employee at least once per year and in the native language of the employee,...

2. Sec. 18.60.071. An additional requirement should be added after line 23 (c). This amendment would read as follows: (d) Resources where the employee may obtain more information about the hazardous and toxic materials associated with his or her workplace.

3. Sec. 18.60.272. There seems to be no time requirement for filing a report with the Dept. of Labor. This section should include language that requires annual

reports be filed with department. Perhaps, an easy way to do this would be to include such information on applications for business licenses.

4. Sec. 18.60.272 part 4(c). This section should include a time limit on how long the department has to adopt regulations specifying the hazardous and toxic substances to be reported. The regulations should include those substances found on the DOT, OSHA, and NIOSH lists(except those excluded by section 18.60.030 of SB 79.

5. The Substitute Draft does not include discussions on labeling. Hazardous substances should be labeled in the workplace.

Thank you for allowing me a grace period for my comments on the new senate draft. Two questions that come to mind when looking at the new developments with the OSHA Bill is whether the federal legislation will cover present and future workplaces in Alaska and whether the Bill addresses the nature of hazardous and toxic chemicals in Alaska-specific workplaces and environments ?

I look forward to discussing my comments with you and the workgroup.

Sincerely,

David T. Wigglesworth

David Wigglesworth
Environmental Lobby

SATURDAY

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ANCHORAGE, ALASKA, SATURDAY, JUNE 25, 1983



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Governor expected to OK hazardous materials bill

By ROBERTA GRAHAM
Daily News business reporter

Gov. Bill Sheffield is expected to sign into law a bill requiring employers to inform workers of the p esence of hazardous materials in the workplace and how those chemicals might affect them.

The final draft of the measure was supported by industry, labor unions and environmentalists.

The Senate version of the bill was approved by the House on a 39-0 vote. If signed the law would become effective July 1, 1984.

The measure would require the Department of Labor to draw up a list of 800 known carcinogens from a roster of more than 60,000 known cancer-causing substances kept by the federal Occupational Safety and Health Administration and the American Conference of Governmental Industrial Hygenists.

All products containing chemicals on the list and coming into the state would be required by law to have an accompanying data sheet listing known hazards.

Employers would be required to post notices declaring the presence of the substances in the workplace. They would have to supply a data sheet to workers within 20 days of a request for one.

The labor department also would be required to help

See Back Page, HAZARDOUS



Associate

Lech Walesa m of talks with go

causing changes in the homosexual communities across the United States and arousing new fears of homosexuals.

Hazardous materials bill is expected to win Sheffield's approval

Continued from Page A-1

employers come up with a training program on the proper use in handling the substances.

But the new law would exempt all substances in transit — those chemicals transported in a sealed or unopened container already covered by the federal Hazardous Materials Transportation Act.

It also would exempt all food, drugs, cosmetics and tobacco products intended for personal consumption.

"This bill is the product of a lot of work by everyone including industry," said Anchorage Sen. Joe Josephson, author of the Senate version. "I think the vote in the House shows that consensus."

"The governor supports the bill, and I would think he will sign it without any problem at all," Department of Labor Commissioner Jim Robinson said. "We're really kind of excited about it and really appreciate all the hard work that went into it. There were times when the groups weren't communicating with each other, but once they sat down and worked things out, it went very smoothly."

An early version was opposed by companies because they said it was too complicated and would have overlapped with other state laws governing hazardous chemicals.

Industry lobbyists said that since legislation was about to be passed by Congress, federal rather than state standards should govern how employers inform and train workers to recognize cancer-causing chemicals in the workplace.

But the bill was reworked by a consortium of business and environmental representatives to exempt transportation firms already covered by the hazardous transportation law and to ensure that only those chemicals used in Alaska were included on the mandatory list of 800.

Bill Schneider, president of the Associated General Contractors, a group that opposed the initial bill, labeled the final version "managable for those businesses who have to implement it, and useful to workers who need to know."

Steve Kadish, executive director for the Alaska Health Project and avid supporter of the measure, said it is significant for two reasons.

"It not only talks about the 800 substances that both workers and employers will have to know the effects of, but it also brings about a whole new era of how chemicals in the workplace could affect your health.

"The other significant thing is that it demonstrates how labor can work with management in a coalition to pass landmark legislation."

Sheffield

Continued from Page A-1

ens to eliminate his package.

The governor said it appeared the legislature's capital budget would be from $550 million to $600 million, a figure he said was reasonable in light of improved revenue forecasts. House and Senate sources said the budget could be as high as $625 million.

Among the governor's biggest concerns is the possible elimination of several of his projects to improve the economic climate of western Alaska. He proposes spending $10.4 million for two harbors in the Pribilof Islands to de-



Syrians send Arafat packin

Continued from Page A-1

capital, Arafat said his expulsion was "part of a Syrian-Libyan plot against the Palestinian revolution." He charged that Syrian forces had encircled his guerrillas in the Bekaa and asked, "Are the Palestinians going to be victims of a new carnage after Beirut?"

The immediate effect of the expulsion of Arafat and Wazir from Syria and the Bekaa will be to leave their supporters there lenderless. Wazir had been personally supervising efforts to contain the rebels in the Bekaa Valley.

In an interview broadcast

his Al Fatah guerrilla facti became overt.

Although the Syrian ar occupies Tripoli and north l banon, thousands of pro-A fat Fatah guerrillas are s tioned in the area, and city's largest Lebanese M lem militia is anti-Syri Since it is on the coast, Ara and his supporters would have to go through Damas to reach it.

SANA, the official Syr news agency, said Arafat v expelled because of his ac sations that Syrian tar helped the mutineers in his Fatah guerrilla faction ov run loyalist positiions in

MAR 3 0 1983

Alaska Health Project

P. O. Box 1037, Anchorage, Alaska 99510 (907) 272-8734

March 24, 1983

Pat Pourchot
Senator Bettye Fahrenkamp
Pouch V
Juneau, AK 99811

Dear Pat,

Thanks for the hearing summary and the article.

I am enclosing a list of our Board of Directors and Professional Resources Committee that were requested at the hearing in Juneau. I believe that it was Senator Eliason that specifically requested that this information be made available to the Committee

I hope to hear from you soon about a new draft of SB 79.

Sincerely,

Steven Kadish
Executive Director

cc Eliason 4-11-83

Alaska Health Project

P. O. Box 1037, Anchorage, Alaska 99510 (907) 272-8734

Professional Resources Committee Members

Jan Bolt, R.N., B.S.N., C.C.R.N., Health Educator, Thermal Unit, Providence Hospital

Michael Carroll, M.D., Oncologist

Chancy Croft, Attorney, Croft, Thurlow and Duggan

Neil Fried, Labor Economist, Alaska Department of Labor

Stan Godsoe, Chief of Consultation and Training, Alaska Department of Labor, Occupational Safety and Health Section

Owen Hanley, M.D., Internist

Ray Jorgenson, Chief Industrial Hygienist, Alaska Department of Labor, Occupational Safety and Health Section

Tom Kosatsky, M.D., Medical Epidemiologist, State of Alaska

Bob Landau, Assistant Attorney General, State of Alaska

Leonard Limtiaco, Industrial Hygienist, U.S. Occupational Safety and Health Administration

Wayne Myers, M.D., Director, WAMI Program, University of Alaska, Fairbanks

Eric Olson, Attorney

Stacie Pascal, Loss Control Representative

George Riley, Safety Officer, University of Alaska, Fairbanks

Art Robson, Attorney

Eric Shortt, Industrial Hygienist, Alaska Department of Labor, Occupational Safety and Health Section

John Sims, Director, Office of Mineral Development

Deborah Williams, Attorney, Smith and Gruening

Daniel Bacon, Environmental & Industrial Hygiene Analyst, Chemical & Geological Labs

Bill Blythe, Industrial Hygienist, Alaska Department of Labor, Occupational Safety and Health Section

Doris Heilman, MD, Obstetrician, Fairbanks Clinic

Joe O'Connell, Attorney, Alaska Legal Services

Danny Sanchez, Safety Officer, Fairbanks North Star Borough

John Middaugh, MD, State Epidemiologist, Department of Health & Social Services

Alaska Health Project

P. O. Box 1037, Anchorage, Alaska 99510 (907) 272-8734

Board of Directors

Ray Brown, Vice President Western Alaska Building Trades	Roofers, 1818 W. Northern Lights, Anch 99503	W: 272-4311
Paul Dunham, Labor Representative	SR Box 2060W[illegible] Anchorage 99507	H: 344-7202
Daryl Eygabroad, Business Agent Machinists Local 601	130 W. Int'l Airport Rd Anchorage 99502	W: 562-2627 H: 248-3319
David Gottstein, Purchasing Manager, Carr-Gottstein	SRA Box 4439, Anchorage 99502	W: 561-1944 H:
Mick Hotrum District Council of Laborers	Laborers Hall, 315 Barnette, Fairbanks 99701	W: 456-4584
Susan Johnson, Program Coord., MOA Health Department	PO Box 1037 Anchorage 99510	W: 264-4756 H: 563-6904
Dan Middaugh, Member Asbestos Workers Local 97	7814 Raymar Ct. Anchorage 99502	H: 349-4878
Eric Myers Research Analyst	3911 Peterkin Ave Anchorage 99504	H: 279-6719
Helen Anne Myers, Ph. D WAMI Medical Education Program	SR Box 40027 Fairbanks 99701	W: 474-7731 H: 456-1676
Deborah Nuccio Physician Assistant	2531 Northrup Anchorage 99504	H: 277-4194
Holli Ploog, Attorney Dichter & Ploog	701 W. 58th Ave Anchorage 99502	W: 561-1158 H: 278-3715
Virginia Posid, RN, BSN Home Health Care, Inc	3395 Katlian Eagle River 99577	W: 561-2162 H: 694-3360

Staff

Steven Kadish, Executive Director	1135 I Street Anchorage 99501	H: 276-5832
Lawrence D. Weiss, Ph. D., MS Deputy Director	830 W. 21st Anchorage 99503	H: 338-6432
Brenda Duffey, Editor & Office Manager		H: 345-7712

ALASKA EMPLOYERS' COMMITTEE

MEMBERSHIP:

Associated General Contractors
Alaska Trucking Association
Alaska Retail Association
Alaska Seafood Processors
Alaska Loggers Association
Alaska Miners Association
Alaska Support Industry Alliance
Anchorage Laundry & Dry Cleaners Association
Resource Development Council
SOHIO

In the Legislature,
The Senate
State of Alaska

The Honorable:
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Jan Faiks
Frank Ferguson
Paul A. Fischer
Vic Fischer
Don Gilman
Rick Halford
Joe P. Josephson
Tim Kelly
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Bill Ray
Patrick Rodey
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Arliss Sturgulewski
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In the Legislature,
The House of Representatives
State of Alaska

The Honorable:
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Albert P. Adams
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Robert H. Bettisworth
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Don Clocksin
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Mike Davis
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Jack McBride
Mike Miller (D)
Mike Miller (R)
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John Ringstad
Richard Schultz
Mike Szymanski
Mae Tischer
Rick Uehling
Anthony Vaska
Jerry Ward
Ron Wendte
Fred F. Zharoff

The Alaska Employers' Committee (AEC) opposes HB 197 and SB 79, "toxic and hazardous substances in the workplace".

AEC's membership includes over 5,000 Alaskan employers who strongly believe in a safe and healthful workplace.

Unfortunately, neither HB 197 nor SB 79 increase safety and health in the workplace.

We have included AEC's testimony on HB 197 (which is similar to SB 79) to further illustrate the Bills' flaws. The highlights of the testimony are:

1. Federal regulation will be published this summer and chemical manufacturers and distributors will be uniformly covered. Alaskan employers will receive the necessary information, known as Material Safety Data Sheets (MSDS's).

2. Under HB 197 and SB 79, the outside manufacturers and suppliers are not covered. AEC feels that these manufacturers are the most knowledgeable and therefore should provide the "downstream employers" with the MSDS's.

On behalf of the AEC, I am available to respond to any questions you might have.

William E. Schneider
Co-Chairman
Alaska Employers' Committee

P. O. Box 4-2500
Anchorage, AK 99509
907/276-5354

POSITION PAPER/TESTIMONY/ALASKA EMPLOYERS' COMMITTEE

Bill No.: House Bill 197

Title: "An Act relating to hazardous and toxic substances and providing for an effective date."

Contact: Bill Schneider
276-5354

T. J. Thrasher
276-1149

My name is Bill Schneider and with me today is T. J. Thrasher. We presently serve as Co-Chairmen of the Alaska Employers' Committee (AEC). The Alaska Employers' Committee represents over 5,000 employers, including:

Associated General Contractors, Alaska Trucking Association, Alaska Retail Association, Alaska Seafood Processors, Alaska Loggers Association, Alaska Miners Association, Alaska Support Industry Alliance, Anchorage Laundry and Dry Cleaners Association, Resource Development Council and many individual Alaskan employers.

AEC has directed Ms. Thrasher and myself to be here today and present our Committee views on HB 197. We fully support the goal of this bill, that is, a safe and healthful Alaska workplace.

Unfortunately, this Bill creates many costly hurdles and pitfalls on the path towards worker safety.

More importantly, however, there is a key ingredient missing from this Bill -- common sense.

As someone who has spent over 12 years in the safety profession, I can tell you that the most important tool available in the prevention of accidents, on or off the job, is common sense. Allow me to briefly illustrate the absence of common sense from HB 197.

Most of the goods utilized in Alaska are shipped up from the Lower 48. Several thousand tons of different materials arrive annually by ship, plane and truck.

Under HB 197, over 40,000 of these substances will potentially be classified as toxic or hazardous.

Detailed scientific information must be provided on each of these substances: CAS numbers, chemical names, potential risks, etc.

I agree this information should be provided for selected substances by the manufacturer. They have the expertise to provide the information required by this Bill.

But, as we all know, the manufacturers of almost all of the goods utilized in this state are not here. They are located outside of Alaska and are not covered by this Bill.

There is an alternative course to follow on this path towards workplace safety. It makes sense and I encourage the Committee to give it serious consideration.

The Federal hazard communication covering toxic and hazardous substances will go into effect this summer, according to Thorne Auchter, Undersecretary of Labor for OSHA.

This regulation will apply to all states and will require manufacturers to provide toxic information on their products.

Under HB 197, Alaska employers, with the assistance of the State Department of Labor, must provide the same information. And in many instances, the employer and State will go back to the manufacturer to acquire this information. A costly, duplicative route which can easily be avoided by adopting the federal regulation into our State codes.

Our Committee sees other objectionable provisions of HB 197, but we will reserve those comments unless the Committee seeks that information.

Thank you for your time and I am available for any questions the Committee might have.

TELEPHONE
(907) 479-6281

ARTHUR LYLE ROBSON
MICHAEL P. McCONAHY
ATTORNEYS
3568 GERAGHTY STREET
FAIRBANKS, ALASKA 99701

ATTORNEYS FOR THE
MEMBERS OF U/A LOCAL 375
PLUMBERS & STEAMFITTERS

MEMORANDUM

TO: BETTYE FAHRENKAMP & EVERYBODY

MAY 2 - 1983

FROM: ARTHUR LYLE ROBSON

DATE: APRIL 28, 1983

RE: SB 79 - RIGHT TO KNOW - LEGISLATION

Having gone to Juneau this week, I cannot repeat again next. I note that House Bill 304 comes up on Monday, May 2nd, as well as the meeting on SB 79, and that in all probability, Sacket's attempt to repeal Davis/Bacon will come up on Tuesday, May 3rd. I simply have too many other things to do.

With respect to the Right to Know Bill, I make the following observation:

1. Waiting for the OSHA action is now no longer a viable option from any point of view.

2. Although the publication may be this July, it is two years before it comes into effect.

3. It regulates only manufacturers (of which we have none in Alaska), distributors (who are the trucking lines who squawk most about the regulation), and importers (who are not really a factor in most toxic substances). There is no regulation of the Alaskan work place, with the exception of trucking lines. It might be worth while to note that trucking lines already have extensive regulation along these lines which is uniform only in the sense of the uniform disregard for same.

4. I recommend that we move on to mark up forthwith because if we don't get going, we'll never get there. There is no indication that the legislature will be any better or differently organized next time around and, therefore, it is no more likely that anything will be accomplished a year from now.

5. I wouldn't worry about OSHA preemption. OSHA is primarily a process of regulation, not statute, and the regulations are only in conflict with state law if the state law is more liberal, that is, less protective, of the worker. Under those circumstances, the OSHA statutes would preempt or set aside of the state law. It appears that there is no possibility of that because of the watered down nature of the OSHA regulations which may become effective in a couple of years.

6. On the definition of substances covered, I still favor having DOL determine which items from the specific lists are to be covered. There should be a provision indicating that they must act within six months of the enactment or effective date of the statute and within sixty days on individual product questions being raised or revisions in the lists which are the source of our itemization of hazardous materials.

7. On training, we would, of course, want to take advantage of in-place training programs. I don't feel that conducting programs in or writing material safety data sheets in any of the multitude of native languages spoken in Alaska will be productive. These languages are primarily spoken and only recently has the University attempted to make them into written languages. The number of individuals who could read them on any job would, therefore, be minimal.

8. I still oppose a thirty day grace period for supplying an MSDS. These could be made available by the Department of Labor even if they were a nominal charge such as 3¢ or 5¢ to pick some up. Under those circumstances, thirty days is completely adequate for mandatory handling of a toxic substance without being supplied with an MSDS.

9. With respect to reports to be filed with DOL, as far as I am concerned, the reports need only indicate (1) what toxic substances are covered, (2) where the information is available to workers, (3) whether the information has been made available to fire and police, and (4) a copy of any applicable MSDS's.

10. The trade secrets situation is a Red Herring and for my money could be ignored. Any language to put in to protect trade secrets should require someone impartial to determine that there really is a trade secret involved.

11. Miscellaneous definitions can be picked up by the DOL in regulations.

12. I view some labeling requirements as essential. If a pallet of something catches fire, it seems futile to run to a stack of MSDS's and try to decipher from the color of the flames what it is that's burning. Color coding can be useful in refineries, etc.

13. I don't care about the anti-waiver provisions because I suspect that the law will find these to be a matter of common law. The Alaska Supreme Court just doesn't buy that sort of stuff.

14. I see no reasons to exempt hospitals because their problem lies with pharmaceuticals and these are already covered and

won't be part of this bill. Hospitals simply like to get an exemption from everything related to labor legislation. They have been quite successful so far and in this state at least are often very abusive employers.

15. With respect to transportation and where Alaska rules become effective, the states that have these laws have no problem, providing that shipping within the borders of the state requires the necessary labeling and MSDS. We would likewise not have a problem. However, if it will make peace with the trucking industry, we could provide that labeling and MSDS requirements attached only at the first trans-shipment or unloading. They might want to talk to Dick Currington on this because he is the person in Alaska probably most aware of the transportation requirements under which shippers already operate.

I will be glad to brain storm on this at any time; I just need a week to recover from the time off this week lobbying.

Sincerely,

ARTHUR LYLE ROBSON, Attorney
for Members of U.A. Local 375
Plumbers & Steamfitters

ALR:CLM

c.c. Nina Mollett - Northern Alaska Environmental Center
Mick Hotrum - Laborers Union No. 942
Steve Kadish - Alaska Health Project
All Fairbanks Union Organizations

Alaska Health Project

P. O. Box 1037, Anchorage, Alaska 99510 (907) 272-8734

Contacts: Steve Kadish or
Brenda Duffey, 272-8734 &
274-5054

For immediate release: 8/4/83

Editor: Photo available on request.

-- Alaskans Have a Right to Know --

This summer Alaska's Governor Bill Sheffield signed into law right-to-know legislation (S.B. 79) to provide information to workers about hazardous and toxic substances in the workplace.

The bill passed Alaska's Senate 17 to 1 and breezed through the House 39 to 0. It was supported by health, labor, and environmental groups.

"I'm delighted that the legislature has enacted this bill so quickly. It enjoys wide public support," said Sen. Joe Josephson (D) of Anchorage, one of the bill's sponsors.

Initially the right-to-know legislation was opposed by industry representatives for being too inclusive, broad, and overreaching. They also said the bill was unnecessary because a proposed U.S. Occupational Safety and Health Administration (OSHA) right-to-know regulation would be adequate.

"The Alaskan bill includes all affected Alaskan employers and employees in contrast to the pending federal regulation which only deals with manufacturers. According to Alaska Department of Labor estimates, less than 5 percent of Alaskan employers would have been covered by the proposed federal regulation," said Alaska Health Project Executive Director Steven Kadish.

Kadish's group, Alaska Health Project, supported the Alaskan legislation and worked with different groups involved to reach a bill that was agreeable to the diverse interests.

(more)

"Never let it be said that business interests are only out for a buck or that environmentalists never compromise," Alaska Sen. Bettye Fahrenkamp (D) said about passage of the right-to-know legislation which she co-sponsored with Josephson, Sen. Vic Fischer (D), and Sen. Arliss Sturgulewski (R).

"Passage of this legislation marks the first time that a coalition of health, labor, and environmental groups has formed to protect workers' health in Alaska," Kadish said.

The bill requires that information on health hazards accompanies products containing any one of about 800 known hazardous substances when they are imported into the state. It also calls for employers to post notices and provide training in workplaces where the hazardous materials are used.

The new law gives employees the right to request information on possibly hazardous substances they are working with. If an employer does not have that information, the measure allows the employer three working days to request the information from the state Department of Labor or the manufacturer. If the employee requesting information does not receive a response from the employer within 15 calendar days, the employee has the right to refuse working with the hazardous substance until the information is made available.

"Without enough information about the potential hazard of a material, a worker cannot take precautions to prevent an accident or illness," said Nick Hotrum, a business and safety representative for the Alaska District Council of Laborers.

(more)

In addition to support from health, labor, environmental groups -- and the eventual support of industry representatives -- the right-to-know bill has enthusiastic backing from Alaska's Department of Labor.

"We are pleased that Governor Sheffield has signed S.B. 79 into law. With so many hazardous and toxic substances used in and around the workplace it is very important that the working men and women in Alaska be informed as to what they are handling.

"This department stands ready to assist employers in their safety education programs and to provide information as to the requirements of this law," said Commissioner of Labor Jim Robison.

In discussing the legislation, Kadish pointed out two areas he feels are shortcomings of the bill.

"The bill does not provide for specific labeling of individual products, nor does it require any reporting to the state about specific hazardous materials," he said.

"Some of us will want to monitor the contributions it makes and be ready to offer amendments (to the bill) if experience shows them to be necessary," Josephson commented.

A representative from one of the grass roots environmental groups that supported the legislation cited possible implications the bill has for the community.

"Although the right-to-know bill is a landmark bill for workers, it also marks a potential turning point for community health and environmental protection. The bill could provide the impetus for communities to demand their right to know about toxic substances they are exposed to on a daily basis.

"Furthermore, information gathered on the types, quantities, and hazards of substances used by industry will assist state and local environmental protection groups in managing wastes that result from industry's activities," said David Wigglesworth of the Alaska Center for the Environment.

(30)

Sponsor - Has written an issue paper - Copy in bill file

Alaska Health Project

417 West Eighth Avenue — P. O. Box 10-1087, Anchorage, Alaska 99510 -- (907) 276-2864

November 22, 1983

Richard Arab
Department of Labor
Occupational Safety & Health
P.O. Box 1149
Juneau, Alaska 99811

Dear Richard:

As you requested, I have reviewed S.B. 79 and have several comments and questions.

1. Definition of Exposure. The worker right to know law is based upon employee exposure to toxic and hazardous substances on the job. However, "exposure" is not clearly defined in the bill. I recommend that the definition of exposure reflect the standards of U.S. Occupational Safety and Health Administration (OSHA), American Conference of Governmental Industrial Hygienists, and Alaska Department of Labor. If more than one of these agencies has an exposure standard on a particular substance, then the standard which minimizes the worker's exposure to that substance should be the selected limit.

   However, the requirements of the law should be effective not just in cases where the exposure exceeds the standard, but for all instances where the employee may be exposed including "equipment failure and rupture of containers." In other words, if potential circumstances arise that expose the worker to harmful amounts of a hazardous substance, then the right to know law should be enforced.

2. Regulated Substances. The list of regulated substances may not necessarily coincide with those chemicals now regulated by the Alaska Department of Labor. The list of regulated substances should be a compilation of those chemicals listed in, 1) the latest edition of "Threshold Limit Values for Chemical Substances and Physical Agents In The Work Environment," American Conference on Governmental Industrial Hygienists, 2) 29 CFR Part 1910, Subpart 7, Toxic And Hazardous Substances, "General Industry Standards," Occupational Safety and Health Administration, and 3) others the Alaska Department of Labor now regulates that are not included in either of these two lists. As stated in the law, the number of regulated substances may be expanded if the Alaska Department of Labor chooses to add a substance and if OSHA Form 20 or equivalent information is required under OSHA regulations.

3. Definitions of New Work Assignment. The description of the conditions for safety education before an employee performs a new work assignment (18.60.66) appear clear to me, however, several others have asked me about this. I would recommend a fuller definition perhaps with some examples.

4. In-State Manufacturers. Sec. 18.60.065 requires that substances imported into the state to be accompanied by the OSHA Form 20 or equivalent information. There is no discussion of in-state manufacturers or Alaskan made products. The same requirements should be applied to the Alaska manufacturers as to those outside the state. This point needs further clarification.

5. Material Safety Data Sheet Information. All material safety data sheets (MSDS) are not equal. Some are comprehensive and accurate, and others are vague and incomplete. The intent of the law was to provide employees with all the information on the material safety data sheet. Can the state require a completed material safety data sheet? In my opinion, the provision of the piece of paper does not fulfill the obligations of the law. What options are available?

6. Refusing Work. In the case where 1) 15 days have passed since requesting OSHA Form 20 information on a particular material, and the employee has not received the health and safety material, and 2) the employer has not taken "measures to assure that employees are not exposed to the substance," may the employee legally refuse to work with the substance?

7. Enforcement. Regulations complete with penalties need to be developed and distributed. As this may take some time, I hope you can begin this process as soon as possible. Furthermore, Alaska Department of Labor Safety and Health staff need to be informed of their new responsibilities.

I hope you found these comments useful. Alaska Health Project is pleased with the progress to date on S.B. 79's implementation. We would be happy to assist you in whatever way we can.

Sincerely,

Steven Kadish
Executive Director

cc: Max Andrews
Kevin Dougherty
Senator Fahrenkamp
Senator Vic Fisher
Stan Godsoe
Mick Hotrum
Senator Josephson
Art Robson
Senator Sturgulewski

Chemical Hazard Communication

U.S. Department of Labor
Raymond J. Donovan, Secretary

Occupational Safety and Health Administration
Thorne G. Auchter, Assistant Secretary

1983

OSHA 3084

Chemicals in the Workplace

Approximately 25 million workers—about one in four in the nation's work force—are exposed to one or more chemical hazards. There are an estimated 575,000 existing chemical products, and hundreds of new ones being introduced annually. This poses a serious problem for exposed workers.

Chemical exposure may cause or contribute to many serious health effects such as heart ailments, kidney and lung damage, sterility, cancer, burns, and rashes. Some chemicals may also be safety hazards and have the potential to cause fires and explosions and other serious accidents.

Because of the seriousness of these safety and health problems and the lack of information available to many employees and employers, the Occupational Safety and Health Administration (OSHA) has issued a new final standard entitled "Hazard Communication" (29 CFR 1910.1200). The goal of the standard is to reduce the incidence of chemical source illnesses and injuries in the manufacturing industries.

The purpose of the hazard communication standard is to establish uniform requirements to make sure that the hazards of all chemicals produced, imported, or used within the United States' manufacturing sector [Standard Industrial Classification (SIC) Codes 20 through 39] are evaluated, and that this hazard information is transmitted to affected employers and employees.

Chemical manufacturers and importers must convey hazard information to downstream employers by means of labels on containers and material safety data sheets (MSDS). In addition, all covered employers are required to have a hazard communication program to provide the information to their employees by means of container labeling and other forms of warning, MSDS, and training.

This will ensure that all employers receive the information they need to inform and train their employees properly and to design and put in place employee protection programs. It will also provide necessary hazard information to employees, so they can participate in, and support, the protective measures instituted in their workplaces.

Hazard Evaluation

The quality of the hazard communication program is largely dependent on the adequacy and accuracy of the hazard assessment.

Chemical manufacturers and importers are required to review the available scientific evidence concerning the hazards of the chemicals they produce or import, and to report the information they find to their employees and to manufacturing employers who purchase their products. Downstream employers can rely on the evaluation performed by the chemical manufacturer or importer to establish their hazard communication programs.

The chemical manufacturers, importers, and employers are responsible for the quality of the hazard determinations they perform. Each chemical is to be evaluated for its potential to cause adverse health effects and its potential to pose physical hazards, such as flammability. (Definitions of hazards covered are included in the standard.) Chemicals which are listed in one of the following sources are to be considered hazardous in all cases:

- 29 CFR 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA), and
- Threshold Limit Values for Chemical Substances and Physical Agents in the Work Environment, American Conference of Governmental Industrial Hygienists (ACGIH).

In addition, chemicals which have been evaluated and found to be a suspect or confirmed carcinogen in the following sources are to be reported as such:

- National Toxicology Program (NTP), Annual Report on Carcinogens,
- International Agency for Research on Cancer (IARC), Monographs, and
- 29 CFR 1910, Subpart Z, Toxic and Hazardous Substances, Occupational and Health Administration (OSHA).

Written Hazard Communication Program

Employers must establish a written, comprehensive hazard communication program which includes provisions for container labeling, material safety data sheets, and an employee training program. It must also contain a list of the hazardous chemicals in each work area, the means the employer will use to inform employees of the hazards of non-routine tasks (for example, the cleaning of reactor vessels), hazards associated with chemicals in unlabeled pipes, and the way the employer will inform contractors in manufacturing facilities of the hazards to which their employees may be exposed.

The written program does not have to be lengthy or complicated and some employers may be able to rely on existing hazard communication programs to comply with the above requirements. The written program must be available to employees, their designated representatives, the Assistant Secretary for Occupational Safety and Health, and the Director of the National Institute for Occupational Safety and Health (NIOSH).

Labels and Other Forms of Warning

Chemical manufacturers, importers, and distributors must be sure that containers of hazardous chemicals leaving the workplace are labeled, tagged or marked with the identity, appropriate hazard warnings, and the name and address of the manufacturer or other responsible party.

In the workplace, each container must be labeled, tagged or marked with the identity of hazardous chemicals contained therein, and must show hazard warnings appropriate for employee protection. The hazard warning can be any type of message, words, pictures, or symbols which convey the hazards of the chemical(s) in the container. Labels must be legible, in English (plus other languages, if desired), and prominently displayed.

Several exemptions to in-plant individual container labels are given:

- Employers can post signs or placards which convey the hazard information if there are a number of stationary containers within a work area which have similar contents and hazards.
- Various types of standard operating procedures, process sheets, batch tickets, blend tickets, and similar written materials can be substituted for container labels on stationary process equipment if they contain the same information and are readily available to employees in the work area.
- Employers are not required to label portable containers, into which hazardous chemicals are transferred from labeled containers, and which are intended only for the immediate use of the employee who makes the transfer.
- Employers are not required to label pipes or piping systems.

Material Safety Data Sheets (MSDS)

Chemical manufacturers and importers must develop material safety data sheets for each hazardous chemical they produce or import. Employers are responsible for obtaining or developing a MSDS for each hazardous chemical used in their workplaces.

The following summarizes the MSDS section in the standard 29 CFR 1910.1200. Each MSDS must be in English and include information regarding the specific chemical identity of the hazardous chemical(s) involved and the common names.

Beyond the identity information, the employer must provide information on the physical and chemical characteristics of the hazardous chemical; known acute and chronic health effects and related health information; exposure limits; whether the chemical is considered to be a carcinogen by NTP, IARC, or OSHA; precautionary measures; emergency and first aid procedures; and the identification of the organization responsible for preparing the sheet.

Copies of the material safety data sheet for hazardous chemicals in a given work site are to be readily accessible to employees in that area. As a source of detailed information on hazards, they must be located close to workers, and readily available to them during each workshift.

Employee Information and Training

Employers must establish a training and information program for employees exposed to hazardous chemicals in their work area at the time of initial assignment and whenever a new hazard is introduced into their work area. When this standard takes effect, all employees covered by the standard must have received training equivalent to the required initial assignment training.

Information

The discussion topics must include, at least:

- The existence of this hazard communication standard and the requirements of the standard.
- The components of the hazard communication program in the employees' workplaces.
- Operations in their work area where hazardous chemicals are present.
- Where the employer will be keeping the written hazard evaluation procedures, communications program, lists of hazardous chemicals, and the required material safety data sheets.

Training

The employee training plan must consist of:

- How the hazard communication program is implemented in that workplace, how to read and interpret information on labels and MSDS, and how employees can obtain and use the available hazard information.
- The hazards of the chemicals in the work area.

- Measures employees can take to protect themselves from the hazards.
- Specific procedures put into effect by the employer to provide protection such as work practices and the use of personal protective equipment (PPE).
- Methods and observations—such as visual appearance or smell—workers can use to detect the presence of a hazardous chemical they may be exposed to.

Trade Secrets

A "trade secret" is something that gives an employer an opportunity to obtain an advantage over competitors who do not know it or use it. For example, a trade secret may be a confidential device, pattern, information, or chemical make-up. Chemical industry trade secrets are generally formulas, process data, or a "specific chemical identity." The latter is the type of trade secret information referred to in the hazard communication standard. The term includes the chemical name, the Chemical Abstracts Services (CAS) Registry Number, or any other specific information which reveals the precise designation. It does not include common names.

The standard strikes a balance between the need to protect exposed employees and the employer's need to maintain the confidentiality of a *bona fide* trade secret. This is done by providing for limited disclosure to health professionals who are furnishing medical or other occupational health services to exposed employees, under specified conditions of need and confidentiality.

Medical Emergency

The chemical manufacturer, importer, or employer must immediately disclose the specific chemical identity of a hazardous chemical to a treating physician or nurse when the information is needed for proper emergency or first aid treatment. As soon as circumstances permit, the chemical manufacturer, importer, or employer may obtain a written statement of need and a confidentiality agreement.

Under the contingency described here, the treating physician or nurse has the ultimate responsibility for determining that a medical emergency exists. At the time of the emergency, the professional judgment of the physician or nurse regarding the situation must form the basis for triggering the immediate disclosure requirement. Because the chemical manufacturer, importer, or employer can demand a written statement of need and a confidentiality agreement to be completed after the emergency is abated, further disclosure of the trade secret can be effectively controlled.

Non-Emergency Situation

In non-emergency situations, chemical manufacturers, importers, or employers must disclose the withheld specific chemical identity to health professionals providing medical or other occupational health services to exposed employees if certain conditions are met. In this context, "health professionals" include physicians, industrial hygienists, toxicologists, or epidemiologists.

The request for information must be in writing and must describe with reasonable detail the medical or occupational health need for the information. The request of the health professional will be considered if the information will be used for one or more of the following activities:

- To assess the hazards of the chemicals to which employees will be exposed.
- To conduct or assess sampling of the workplace atmosphere to determine employee exposure levels.
- To conduct pre-assignment or periodic medical surveillance of exposed employees.
- To provide medical treatment to exposed employees.
- To select or assess appropriate personal protective equipment for exposed employees.
- To design or assess engineering controls or other protective measures for exposed employees.
- To conduct studies to determine the health effects of exposure.

The health professional must also specify why alternative information is insufficient. The request for information must explain in detail why disclosure of the specific chemical identity is essential, and include the procedures to be used to protect the confidentiality of the information. It must include an agreement not to use the information for any purpose other than the health need stated or to release it under any circumstances, except to OSHA.

The standard further describes in detail the steps that will be followed in the event that an employer decides not to disclose the specific chemical identity requested by the health professional.

U.S. Department of Labor
Regional Offices for the Occupational Safety and Health Administration

Region I
(CT, MA, ME, NH, RI, VT)
16-18 North Street
1 Dock Square Building
4th Floor
Boston, MA 02109
Telephone: (617) 223-6710

Region II
(NJ, NY, Puerto Rico, Virgin Islands)
1 Astor Plaza, Room 3445
1515 Broadway
New York, NY 10036
Telephone: (212) 944-3426

Region III
(DC, DE, MD, PA, VA, WV)
Gateway Building, Suite 2100
3535 Market Street
Philadelphia, PA 19104
Telephone: (215) 596-1201

Region IV
(AL, FL, GA, KY, MS, NC, SC, TN)
1375 Peachtree Street, N.E.
Suite 587
Atlanta, GA 30367
Telephone: (404) 881-3573

Region V
(IL, IN, MI, MN, OH, WI)
230 South Dearborn Street
32nd Floor, Room 3244
Chicago, IL 60604
Telephone: (312) 353-2220

Region VI
(AR, LA, NM, OK, TX)
555 Griffin Square Bldg., Room 602
Dallas, TX 75202
Telephone: (214) 767-4731

Region VII
(IA, KS, MO, NE)
911 Walnut Street, Room 406
Kansas City, MO 64106
Telephone: (816) 374-5861

Region VIII
(CO, MT, ND, SD, UT, WY)
Federal Building, Room 1554
1961 Stout Street
Denver, CO 80294
Telephone: (303) 837-3061

Region IX
(AZ, CA, HI, NV, American Samoa, Guam, Pacific Trust Territories)
Box 36017
450 Golden Gate Avenue
San Francisco, CA 94102
Telephone: (415) 556-7260

Region X
(AK, ID, OR, WA)
Federal Office Building
Room 6003
909 First Avenue
Seattle, WA 98174
Telephone: (206) 442-5930

About This Pamphlet

The information contained in this flyer is not considered as a substitute for any provisions of the Occupational Safety and Health Act of 1970 or for any standards issued by the Occupational Safety and Health Administration.

14670

GPO 908-126

TLVs®
Threshold Limit Values
for
Chemical Substances
and
Physical Agents
in the
Work Environment
with
Intended Changes
for
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Documentation of the Threshold Limit Values® A separate companion piece to the TLVs is issued by ACGIH under this title. This publication gives the pertinent scientific information and data with reference to literature sources that were used to base each limit. Each documentation also contains a statement defining the type of response against which the limit is safeguarding the worker. For a better understanding of the TLVs it is essential that the Documentation be consulted when the TLVs are being used.

The Fourth Edition (1980), including the 1981 and 1982 Supplemental Documentations, is available at $70 per single copy. The Supplemental Documentations are also available as separate publications at $10 per single copy. Either may be ordered from the Publications Office, ACGIH.

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ACGIH
6500 Glenway Ave., Bldg. D-5
Cincinnati, OH 45211

TLVs®
Threshold Limit Values for Chemical Substances in Work Air Adopted by ACGIH for 1982

PREFACE
CHEMICAL CONTAMINANTS

Threshold limit values refer to airborne concentrations of substances and represent conditions under which it is believed that nearly all workers may be repeatedly exposed day after day without adverse effect. Because of wide variation in individual susceptibility, however, a small percentage of workers may experience discomfort from some substances at concentrations at or below the threshold limit; a smaller percentage may be affected more seriously by aggravation of a pre-existing condition or by development of an occupational illness.

Threshold limits are based on the best available information from industrial experience, from experimental human and animal studies, and, when possible, from a combination of the three. The basis on which the values are established may differ from substance to substance; protection against impairment of health may be a guiding factor for some, whereas reasonable freedom from irritation, narcosis, nuisance or other forms of stress may form the basis for others.

The amount and nature of the information available for establishing a TLV varies from substance to substance; consequently, the precision of the estimated TLV is also subject to variation and the latest *Documentation* should be consulted in order to assess the extent of the data available for a given substance.

These limits are intended for use in the practice of industrial hygiene and should be interpreted and applied only by a person trained in this discipline. They are not intended for use, or for modification for use, (1) as a relative index of hazard or toxicity, (2) in the evaluation or control of community air pollution nuisances, (3) in estimating the toxic potential of continuous, uninterrupted exposures or other extended work periods, (4) as proof or disproof of an existing disease or physical condition, or (5) for adoption by countries whose working conditions differ from those in the United States of America and where substances and processes differ.

The TLV-TWA should be used as guides in the control of health hazards and should not be used as fine lines between safe and dangerous concentrations.

In spite of the fact that serious injury is not believed likely as a result of exposure to the threshold limit concentrations, the best practice is to maintain concentrations of all atmospheric contaminants as low as is practical.

Legal Status. The Threshold Limit Values, as issued by ACGIH, are recommendations and should be used as guidelines for good practices. Wherever these values (of whatever year) have been used or included by reference in Federal and/or State statutes and registers, the TLVs do have the force and effects of law.

"Notice of Intent." At the beginning of each year, proposed actions of the Committee for the forthcoming year are issued in the form of a "Notice of Intended Changes." This Notice provides not only an opportunity for comment, *but solicits suggestions of substances to be added to the list.* The suggestions *should be accompanied by substantiating evidence.* The list of Intended Changes follows the Adopted Values in the TLV booklet. Values listed in parenthesis in the "Adopted" list are to be used during the period in which a proposed change for that Value is listed in the Notice of Intended Changes.

Definitions. Three categories of Threshold Limit Values (TLVs) are specified herein, as follows:

a) Threshold Limit Value-Time Weighted Average (TLV-TWA) — the time-weighted average concentration for a normal 8-hour workday and a 40-hour workweek, to which nearly all workers may be repeatedly exposed, day after day, without adverse effect.

b) Threshold Limit Value-Short Term Exposure Limit (TLV-STEL) — the concentration to which workers can be exposed continuously for a short period of time without suffering from 1) irritation, 2) chronic or irreversible tissue change, or 3) narcosis of sufficient degree to increase the likelihood of accidental injury, impair self-rescue or materially reduce work efficiency, and provided that the daily TLV-TWA also is not exceeded. It is not a separate independent exposure limit, rather it supplements the time-weighted average (TWA) limit where there are recognized acute effects from a substance whose toxic effects are primarily of a chronic nature. STELs are recommended only where toxic effects have been reported from high short-term exposures in either humans or animals.

A STEL is defined as a 15-minute time-weighted average exposure which should not be exceeded at any time during a work day even if the eight-hour time-weighted average is within the TLV. Exposures

at the STEL should not be longer than 15 minutes and should not be repeated more than four times per day. There should be at least 60 minutes between successive exposures at the STEL. An averaging period other than 15 minutes may be recommended when this is warrented by observed biological effects.

c) Threshold Limit Value-Ceiling (TLV-C) — the concentration that should not be exceeded even instantaneously.

For some substances, e.g., irritant gases, only one category, the TLV-Celling, may be relevant. For other substances, either two or three categories may be relevant, depending upon their physiologic action. It is important to observe that if any one of these three TLVs is exceeded, a potential hazard from that substance is presumed to exist.

The committee holds to the opinion that limits based on physical irritation should be considered no less binding than those based on physical impairment. There is increasing evidence that physical irritation may initiate, promote or accelerate physical impairment through interaction with other chemical or biologic agents.

Time-Weighted Average vs Ceiling Limits. Time-weighted averages permit excursions above the limit provided they are compensated by equivalent excursions below the limit during the workday. In some instances it may be permissible to calculate the average concentration for a workweek rather than for a workday. The relationship between threshold limit and permissible excursion is a rule of thumb and in certain cases may not apply. The amount by which threshold limits may be exceeded for short periods without injury to health depends upon a number of factors such as the nature of the contaminant, whether very high concentrations — even for short periods — produce acute poisoning, whether the effects are cumulative, the frequency with which high concentrations occur, and the duration of such periods. All-factors must be taken into consideration in arriving at a decision as to whether a hazardous condition exists.

Although the time-weighted average concentration provides the most satisfactory, practical way of monitoring airborne agents for compliance with the limits, there are certain substances for which it is inappropriate. In the latter group are substances which are predominantly fast acting and whose threshold limit is more appropriately based on this particular response. Substances with this type of response are best controlled by a ceiling "C" limit that should not

be exceeded. It is implicit in these definitions that the manner of sampling to determine noncompliance with the limits for each group must differ; a single brief sample, that is applicable to a "C" limit, is not appropriate to the time-weighted limit; here, a sufficient number of samples are needed to permit a time-weighted average concentration throughout a complete cycle of operations or throughout the work shift.

Whereas the ceiling limit places a definite boundary which concentrations should not be permitted to exceed, the time-weighted average limit requires an explicit limit to the excursions that are permissible above the listed values. It should be noted that the same factors are used by the Committee in determining the magnitude of the value of the STELs, or whether to include or exclude a substance for a "C" listing.

"Skin" Notation. Listed substances followed by the designation "Skin" refer to the potential contribution to the overall exposure by the cutaneous route including mucous membranes and eye, either by air borne, or more particularly, by direct contact with the substance. Vehicles can alter skin absorption. This attention-calling designation is intended to suggest appropriate measures for the prevention of cutaneous absorption so that the threshold limit is not invalidated.

Mixtures. Special consideration should be given also to the application of the TLVs in assessing the health hazards which may be associated with exposure to mixtures of two or more substances. A brief discussion of basic considerations involved in developing threshold limit values for mixtures, and methods for their development, amplified by specific examples are given in Appendix C.

Nuisance Particulates. In contrast to fibrogenic dusts which cause scar tissue to be formed in lungs when inhaled in excessive amounts, so-called "nuisance" dusts have a long history of little adverse effect on lungs and do not produce significant organic disease or toxic effect when exposures are kept under reasonable control. The nuisance dusts have also been called (biologically) "inert" dusts, but the latter term is inappropriate to the extent that there is no dust which does not evoke some cellular response in the lung when inhaled in sufficient amount. However, the lung-tissue reaction caused by inhalation of nuisance dusts has the following characteristics: (1) The architecture of the air spaces remains intact. (2) Collagen (scar tissue) is not formed to a significant

extent. (3) The tissue reaction is potentially reversible.

Excessive concentrations of nuisance dusts in the workroom air may seriously reduce visibility, may cause unpleasant deposits in the eyes, ears and nasal passages (Portland Cement dust), or cause injury to the skin or mucous membranes by chemical or mechanical action per se or by the rigorous skin cleansing procedures necessary for their removal.

A threshold limit of 10 mg/m³, or 30 mppcf, of total dust < 1% quartz, or, 5 mg/m³ respirable dust is recommended for substances in these categories and for which no specific threshold limits have been assigned. This limit, for a normal workday, does not apply to brief exposures at higher concentrations. Neither does it apply to those substances which may cause physiologic impairment at lower concentrations but for which a threshold limit has not yet been adopted. Some nuisance particulates are given in Appendix D.

Simple Asphyxiants — "Inert" Gases or Vapors. A number of gases and vapors, when present in high concentrations in air, act primarily as simple asphyxiants without other significant physiologic effects. A TLV may not be recommended for each simple asphyxiant because the limiting factor is the available oxygen. The minimal oxygen content should be 18 percent by volume under normal atmospheric pressure (equivalent to a partial pressure, pO_2 of 135 mm Hg). Atmospheres deficient in O_2 do not provide adequate warning and most simple asphyxiants are odorless. Several simple asphyxiants present an explosion hazard. Account should be taken of this factor in limiting the concentration of the asphyxiant. Specific examples are listed in Appendix E.

Physical Factors. It is recognized that such physical factors as heat, ultraviolet and ionizing radiation, humidity, abnormal pressure (altitude) and the like may place added stress on the body so that the effects from exposure at a threshold limit may be altered. Most of these stresses act adversely to increase the toxic response of a substance. *Although most threshold limits have built-in safety factors to guard against adverse effects to moderate deviations* from normal environments, the safety factors of most substances are not of such a magnitude as to take care of gross deviations. For example, continuous work at temperatures above 90°F, or overtime extending the workweek more than 25%, might be considered gross deviations. In such instances judgment must be exercised in the proper adjustments of the Threshold Limit Values.

Biologic Limit Values (BLVs). Other means exist and may be necessary for monitoring worker exposure other than reliance on the Threshold Limit Values for industrial air, namely, the Biologic Limit Values. These values represent limiting amounts of substances (or their effects) to which the worker may be exposed without hazard to health or well-being as determined in *his* tissues and fluids or in *his* exhaled breath. The biologic measurements on which the BLVs are based can furnish two kinds of information useful in the control of worker exposure: (1) measure of the individual worker's over-all exposure; (2) measure of the worker's individual and characteristic response. Measurements of response furnish a superior estimate of the physiologic status of the worker, and may be made of (a) changes in amount of some critical biochemical constituent, (b) changes in activity of a critical enzyme, (c) changes in some physiologic function. Measurement of exposure may be made by (1) determining in blood, urine, hair, nails, in body tissues and fluids, the amount of substance to which the worker was exposed; (2) determination of the amount of the metabolite(s) of the substance in tissues and fluids; (3) determination of the amount of the substance in the exhaled breath. The biologic limits may be used as an adjunct to the TLVs for air, *or in place of them*. The BLVs, and their associated procedures for determining compliance with them, should thus be regarded as an effective means of providing health surveillance of the worker.

Tests are available (J. Occup. Med. 15: 564, 1973; Ann. N.Y. Acad. Sci., *151, Art. 2:* 968, 1968) that may be used to detect those individuals hypersusceptible to a variety of industrial chemicals (respiratory irritants, hemolytic chemicals, organic isocyanates, carbon disulfide).

Unlisted Substances. Many substances present or handled in industrial processes do not appear on the TLV list. In a number of instances the material is rarely present as a particulate, vapor or other airborne contaminant, and a TLV is not necessary. In other cases sufficient information to warrant development of a TLV, even on a tentative basis, is not available to the Committee. Other substances, of low toxicity, could be included in Appendix D pertaining to nuisance particulates. This list (as well as Appendix E) is not meant to be all inclusive; the substances serve only as examples.

In addition there are some substances of not inconsiderable toxicity, which have been omitted primarily because only a limited number of workers

(e.g., employees of a single plant) are known to have potential exposure to possibly harmful concentrations.

Operational Guidelines: The ACGIH Board of Directors has adopted operational guidelines for the Chemical Agents TLV Committee. These guidelines prescribe: charge, authority, policies, membership, organization, and operating procedures. The policies include the appeals procedures. Copies of the guidelines document are available from the Publications Office at a cost of $5 per copy.

		ADOPTED VALUES			
		TWA		STEL	
Substance	[CAS #]	ppm[a]	mg/m³[b]	ppm[a]	mg/m³[b]
Acetaldehyde	[75-07-0]	100	180	150	270
Acetic acid	[64-19-7]	10	25	15	37
Acetic anhydride	[108-24-7]	C 5	C 20	—	—
*Acetone	[67-64-1]	750	1,780	1,000	2,375
Acetonitrile	[75-05-8] — Skin	40	70	60	105
Acetylene	[74-86-2]	E	—	—	—
Acetylene dichloride, see 1, 2-Dichloroethylene					
Acetylene tetrabromide	[79-27-6]	1	15	1.5	20
Acetylsalicylic acid (Asprin)	[50-78-2]	—	5	—	—
Acrolein	[107-02-8]	0.1	0.25	0.3	0.8
Acrylamide	[79-06-1] — Skin	—	0.3	—	0.6
Acrylic acid	[79-10-7]	10	30	—	—
‡Acrylonitrile	[107-13-1] — Skin	(2, A1a)	(4.5, A1a)	—	—
Aldrin	[309-00-2] — Skin	—	0.25	—	0.75
Allyl alcohol	[107-18-6] — Skin	2	5	4	10
Allyl chloride	[107-05-1]	1	3	2	6
Allyl glycidyl ether (AGE)	[106-92-3] — Skin	5	22	10	44
Allyl propyl disulfide	[2179-59-1]	2	12	3	18
α-Alumina	[1344-28-1]	—	D	—	20
Aluminum	[7429-90-5]				
Metal & oxide		—	10	—	20
Pyro powders		—	5	—	—
Welding fumes		—	5	—	—
Soluble salts		—	2	—	—
Alkyls (NOC†)		—	2	—	—
4-Aminodiphenyl	[92-67-1] — Skin	—	A1b	—	A1b
2-Aminoethanol, see Ethanolamine					
2-Aminopyridine	[504-29-0]	0.5	2	2	4
3-Amino 1, 2, 4-triazole, see Amitrol					
Amitrol	[61-82-5]	A2	A2	—	—
Ammonia	[7664-41-7]	25	18	35	27
Ammonium chloride fume	[12125-02-9]	—	10	—	20

Capital letters A, B, D & E refer to Appendices; C denotes ceiling limit.
Footnotes (a thru l) see Page 34.
*1982 Addition
‡See Notices of Intended Changes

Substance	[CAS #]	ADOPTED VALUES TWA ppm[a]	TWA mg/m³[b]	STEL ppm[a]	STEL mg/m³[b]
Ammonium sulfamate	[7773-06-0]	—	10	—	20
n-Amyl acetate	[628-63-7]	100	530	150	800
sec-Amyl acetate	[626-38-0]	125	670	150	800
Aniline	[62-53-3] & homologues — Skin	2	10	5	20
Anisidine	[29191-52-4] (o-, p-isomers) — Skin	0.1	0.5	—	—
Antimony	[7440-36-0] & compounds, as Sb	—	0.5	—	—
Antimony trioxide	[1327-33-9] Handling and use, as Sb	—	0.5	—	—
	Production	—	A2	—	—
ANTU	[86-88-4]	—	0.3	—	0.9
Argon	[7440-37-1]	E	—	—	—
Arsenic	[7440-38-2] & soluble compounds, as As	—	0.2	—	—
Arsenic trioxide production	[1327-53-3]	—	A2	—	—
Arsine	[7784-42-1]	0.05	0.2	—	—
Asbestos	[1332-21-4], see MINERAL DUSTS	—	A1a	—	A1a
Asphalt (petroleum) fumes	[8052-42-4]	—	5	—	10
‡Atrazine	[1912-24-9]	—	(10)	—	—
Azinphos-methyl	[86-50-0] — Skin	—	0.2	—	0.6
Barium	[7440-39-3], soluble compounds, as Ba	—	0.5	—	—
Benomyl	[17804-35-2]	0.8	10	1.3	15
Benzene	[71-43-2]	10, A2	30, A2	25, A2	75, A2
*Benzidine	[92-87-5] — Skin	—	A1b	—	A1b
p-Benzoquinone, see Quinone					
Benzoyl peroxide	[94-36-0]	—	5	—	—
Benzo(a)pyrene	[50-32-8]	—	A2	—	A2
Benzyl chloride	[100-44-7]	1	5	—	—
Beryllium	[7440-41-7]	—	0.002, A2	—	—
Biphenyl	[92-52-4]	0.2	1.5	0.6	4
Bismuth telluride	[1304-82-1]	—	10	—	20

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*1982 Addition
‡See Notices of Intended Changes.

Substance	[CAS #]	ADOPTED VALUES TWA ppm[a]	TWA mg/m³[b]	STEL ppm[a]	STEL mg/m³[b]
	Se-doped	—	5	—	10
Borates, tetra, sodium salts	[1303-96-4], Anhydrous	—	1	—	—
	Decahydrate	—	5	—	—
	Pentahydrate	—	1	—	—
Boron oxide	[1303-86-2]	—	10	—	20
Boron tribromide	[10294-33-4]	1	10	3	30
Boron trifluoride	[7637-07-2]	C 1	C 3	—	—
Bromacil	[314-40-9]	1	10	2	20
Bromine	[7726-95-6]	0.1	0.7	0.3	2
Bromine pentafluoride	[7789-30-2]	0.1	0.7	0.3	2
Bromochloromethane, see Chlorobromomethane					
Bromoform	[75-25-2] — Skin	0.5	5	—	—
Butadiene (1, 3-butadiene)	[106-99-0]	1,000	2,200	1,250	2,750
Butane	[106-97-8]	800	1,900	—	—
Butanethiol, see Butyl mercaptan					
2-Butanone, see Methyl ethyl ketone (MEK)					
2-Butoxyethanol	[111-76-2] — Skin	25	120	75	360
n-Butyl acetate	[123-86-4]	150	710	200	950
sec-Butyl acetate	[105-46-4]	200	950	250	1,190
tert-Butyl acetate	[540-88-5]	200	950	250	1,190
Butyl acrylate	[141-32-2]	10	55	—	—
n-Butyl alcohol	[71-36-3] — Skin	C 50	C 150	—	—
sec-Butyl alcohol	[78-92-2]	100	305	150	455
tert-Butyl alcohol	[75-65-0]	100	300	150	450
Butylamine	[109-73-9] — Skin	C 5	C 15	—	—
tert-Butyl chromate, as CrO_3	[1189-85-1] — Skin	—	C 0.1	—	—
n-Butyl glycidyl ether (BGE)	[2426-08-6]	25	135	—	—
n-Butyl lactate	[138-22-7]	5	25	—	—
Butyl mercaptan	[109-79-5]	0.5	1.5	—	—
o-s, c-Butylphenol	[89-72-5] — Skin	5	30	—	—
p-tert-Butyltoluene	[98-51-1]	10	60	20	120

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Footnotes (a thru t) see Page 34.

Substance [CAS #]	ADOPTED VALUES TWA ppm[a]	TWA mg/m³[b]	STEL ppm[a]	STEL mg/m³[b]
Cadmium [7440-43-9] Dust & salts, as Cd	—	0.05	—	0.2
Cadmium oxide [1306-19-0] Fume, as Cd	—	C 0.05	—	—
‡ Production, as Cd	—	(A2)	—	—
Calcium carbonate/ marble [1317-65-3]	—	D	—	20
Calcium cyanamide [156-62-7]	—	0.5	—	1
Calcium hydroxide [1305-62-0]	—	5	—	—
Calcium oxide [1305-78-8]	—	2	—	—
Calcium silicate [1344-95-2]	—	D	—	—
Camphor, synthetic [76-22-2]	2	12	3	18
Caprolactam [105-60-2] Dust	—	1	—	3
Vapor	5	20	10	40
Captafol [2425-06-1] — Skin	—	0.1	—	—
Captan [133-06-2]	—	5	—	15
Carbaryl [63-25-2]	—	5	—	10
Carbofuran [1563-66-2]	—	0.1	—	—
Carbon black [7440-44-0]	—	3.5	—	7
Carbon dioxide [124-38-9]	5,000	9,000	15,000	27,000
Carbon disulfide [75-15-0] — Skin	10	30	—	—
Carbon monoxide [630-08-0]	50	55	400	440
Carbon tetrabromide [558-13-4]	0.1	1.4	0.3	4
Carbon tetrachloride [56-23-5] — Skin	5, A2	30, A2	20, A2	125, A2
Carbonyl chloride, see Phosgene				
Carbonyl fluoride [353-50-4]	2	5	5	15
Catechol (Pyrocatechol) [120-80-9]	5	20	—	—
Cellulose (paper fiber) [9004-34-6]	—	D	—	20
Cesium hydroxide [21351-79-1]	—	2	—	—
Chlordane [57-74-9] — Skin	—	0.5	—	2

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Footnotes (a thru l) see Page 34.
‡See Notice of Intended Changes.

Substance [CAS #]	ADOPTED VALUES TWA ppm[a]	TWA mg/m³[b]	STEL ppm[a]	STEL mg/m³[b]
Chlorinated camphene [8001-35-2] — Skin	—	0.5	—	1
Chlorinated diphenyl oxide [55720-99-5]	—	0.5	—	2
Chlorine [7782-50-5]	1	3	3	9
Chlorine dioxide [10049-04-4]	0.1	0.3	0.3	0.9
Chlorine trifluoride [7790-91-2]	C 0.1	C 0.4	—	—
Chloroacetaldehyde [107-20-0]	C 1	C 3	—	—
α-Chloroacetophenone [532-27-4] (Phenacyl chloride)	0.05	0.3	—	—
Chloroacetyl chloride [79-04-9]	0.05	0.2	—	—
Chlorobenzene [108-90-7] (Monochlorobenzene)	75	350	—	—
‡o-Chlorobenzylidene malononitrile [2698-41-1] — Skin	(0.05)	(0.4)	—	—
Chlorobromomethane [74-97-5]	200	1,050	250	1,300
2-Chloro-1, 3-butadiene, see β Chloroprene				
Chlorodifluoromethane [75-45-6]	1,000	3,500	1,250	4,375
Chlorodiphenyl (42% Chlorine) [53469-21-9] — Skin	—	1	—	2
Chlorodiphenyl (54% Chlorine) [11097-69-1] — Skin	—	0.5	—	1
1-Chloro, 2, 3-epoxy-propane, see Epichlorohydrin				
2-Chloroethanol, see Ethylene chlorohydrin				
Chloroethylene, see Vinyl chloride				
Chloroform [67-66-3]	10, A2	50, A2	50, A2	225, A2
bis-Chloromethyl ether [542-88-1]	0.001, A1a	0.005, A1a	—	—
1-Chloro-1-nitropropane [600-25-9]	2	10	—	—
Chloropentafluoroethane [76-15-3]	1,000	6,320	—	—

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Footnotes (a thru l) see Page 34.
‡See Notice of Intended Changes.

Substance [CAS #]	ADOPTED VALUES TWA ppm[a]	TWA mg/m³[b]	STEL ppm[a]	STEL mg/m³[b]
Chloropicrin [76-06-2]	0.1	0.7	0.3	2
β-Chloroprene [126-99-8] — Skin	10	45	—	—
o-Chlorostyrene [1331-28-8]	50	285	75	430
o-Chlorotoluene [95-49-8] — Skin	50	250	75	375
2-Chloro- 6-(trichloromethyl) pyridine, see Nitrapyrin				
Chlorpyrifos [2921-88-2] — Skin	—	0.2	—	0.6
Chromite ore processing (Chromate), as Cr.	—	0.05, A1a	—	—
Chromium [7440-47-3] Metal	—	0.5	—	—
Soluble chromic, chromus salts, as Cr.	—	0.5	—	—
Chromium (II) compounds, as Cr	—	0.5	—	—
Chromium (III) compounds, as Cr	—	0.5	—	—
Chromium (VI) compounds, as Cr				
Water soluble	—	0.05	—	—
Certain water insoluble	—	0.05, A1a	—	—
Chromyl chloride [14977-61-8]	0.025	0.15	—	—
Chrysene [218-01-9]	A2	A2	—	—
Clopidol [2971-90-6]	—	10	—	20
Coal tar pitch volatiles [8007-45-2], as benzene solubles	—	0.2, A1a	—	—
‡Cobalt [7440-48-4], as Co metal, dust & fume	—	(0.1)	—	—
Copper [7440-50-8] Fume	—	0.2	—	—
Dusts & mists, as Cu	—	1	—	2
Cotton dust, raw	—	0.2[k]	—	0.6
Cresol [1319-77-3], all isomeres — Skin	5	22	—	—
Crotonaldehyde [123-73-9]	2	6	6	18
Crufomate [299-86-5]	—	5	—	20
Cumene [98-82-8] — Skin	50	245	75	365

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Footnotes (a thru f) see Page 34.
‡See Notice of Intended Changes.
k) See p. 36.

Substance [CAS #]	ADOPTED VALUES TWA ppm[a]	TWA mg/m³[b]	STEL ppm[a]	STEL mg/m³[b]
Cyanamide [420-04-2]	—	2	—	—
Cyanides [151-50-8; 143-33-9], as CN — Skin	—	5	—	—
Cyanogen [460-19-5]	10	20	—	—
Cyanogen chloride [506-77-4]	C 0.3	C 0.6	—	—
Cyclohexane [110-82-7]	300	1,050	375	1,300
Cyclohexanol [108-93-0]	50	200	—	—
Cyclohexanone [108-94-1]	25	100	100	400
Cyclohexene [110-83-8]	300	1,015	—	—
Cyclohexylamine [108-91-8] — Skin	10	40	—	—
Cyclonite [121-82-4] — Skin	—	1.5	—	3
Cyclopentadiene [542-92-7]	75	200	150	400
Cyclopentane [287-92-3]	600	1,720	900	2,580
Cyhexatin [13121-70-5]	—	5	—	10
2, 4-D [94-75-7]	—	10	—	20
DDT (Dichlorodiphenyl-trichloroethane) [50-29-3]	—	1	—	3
Decaborane [17702-41-9] — Skin	0.05	0.3	0.15	0.9
Demetron [8065-48-3] — Skin	0.01	0.1	0.03	0.3
Diacetone alcohol [123-42-2]	50	240	75	360
1, 2-Diaminoethane, see Ethylenediamine				
Diazinon [333-41-5] — Skin	—	0.1	—	0.3
Diazomethane [334-88-3]	0.2	0.4	—	—
Diborane [19287-45-7]	0.1	0.1	—	—
1, 2-Dibromoethane, see Ethylene dibromide				
2-N-Dibutylaminoethanol [102-81-8] — Skin	2	14	4	28
Dibutyl phosphate	1	5	2	10
Dibutyl phthalate [84-74-2]	—	5	—	10
Dichloroacetylene [7572-29-4]	C 0.1	C 0.4	—	—
o-Dichlorobenzene [95-50-1]	C 50	C 300	—	—
p-Dichlorobenzene [106-46-7]	75	450	110	675
3, 3'-Dichlorobenzidene [91-94-11] — Skin	—	A2	—	A2

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Footnotes (a thru f) see Page 34.

Substance [CAS #]	ADOPTED VALUES TWA ppm[a]	TWA mg/m³[b]	STEL ppm[a]	STEL mg/m³[b]
Dichlorodifluoromethane [75-71-8]	1,000	4,950	1,250	6,200
1, 3-Dichloro-5, 5-dimethyl hydantoin [118-52-5]	—	0.2	—	0.4
1, 1-Dichloroethane [75-34-3]	200	810	250	1,010
1, 2-Dichloroethane, see Ethylene dichloride				
1, 1-Dichloroethylene, see Vinylidene chloride				
1, 2-Dichloroethylene [540-59-0]	200	790	250	1,000
Dichloroethyl ether [111-44-4] — Skin	5	30	10	60
Dichlorofluoromethane [75-43-4]	10	—	—	—
Dichloromethane, see Methylene chloride				
1, 1-Dichloro-1-nitroethane [594-72-9]	2	10	10	60
1, 2-Dichloropropane, see Propylene dichloride				
Dichloropropene [542-75-6] — Skin	1	5	10	50
2, 2-Dichloropropionic acid [75-99-0]	1	6	—	—
Dichlorotetrafluoroethane [76-14-2]	1,000	7,000	1,250	8,750
Dichlorvos [62-73-7] — Skin	0.1	1	0.3	3
Dicrotophos [141-66-2] — Skin	—	0.25	—	—
Dicyclopentadiene [77-73-6]	5	30	—	—
Dicyclopentadienyl iron [102-54-5]	—	10	—	20
Dieldrin [60-57-1] — Skin	—	0.25	—	0.75
Diethanolamine [111-42-2]	3	15	—	—
Diethylamine [109-89-7]	10	30	25	75
Diethylaminoethanol [100-37-8] — Skin	10	50	—	—
Diethylene triamine [111-40-0] — Skin	1	4	—	—
Diethyl ether, see Ethyl ether				
Diethyl ketone [96-22-0]	200	705	—	—
Diethyl phthalate [84-66-2]	—	5	—	10
Difluorodibromomethane [75-61-6]	100	860	150	1,290

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Footnotes (a thru f) see Page 34.

Substance [CAS #]	ADOPTED VALUES TWA ppm[a]	TWA mg/m³[b]	STEL ppm[a]	STEL mg/m³[b]
Diglycidyl ether (DGE) [2238-07-5]	0.1	0.5	—	—
Dihydroxybenzene, see Hydroquinone				
Diisobutyl ketone [108-83-8]	25	150	—	—
Diisopropylamine [108-18-9] — Skin	5	20	—	—
Dimethoxymethane, see Methylal				
Dimethyl acetamide [127-19-5] — Skin	10	35	15	50
Dimethylamine [124-40-3]	10	18	—	—
Dimethylaminobenzene, see Xylidene				
Dimethylaniline [121-69-7] (N, N-Dimethylaniline) — Skin	5	25	10	50
Dimethylbenzene, see Xylene				
Dimethyl carbamyl chloride [79-44-7]	A2	A2	—	—
Dimethyl-1, 2-dibromo-2-dichloroethyl phosphate, see Naled				
Dimethylformamide [68-12-2] — Skin	10	30	20	60
2, 6-Dimethyl-4-heptanone, see Diisobutyl ketone				
1, 1-Dimethylhydrazine [57-14-7] — Skin	0.5, A2	1, A2	1, A2	2, A2
Dimethylphthalate [131-11-3]	—	5	—	10
Dimethyl sulfate [77-78-1] — Skin	0.1, A2	0.5, A2	—	—
Dinitolmide [148-01-6]	—	5	—	10
Dinitrobenzene [528-29-0] (all isomers) — Skin	0.15	1	0.5	3
Dinitro-o-cresol [534-52-1] — Skin	—	0.2	—	0.6
3, 5-Dinitro-o-toluamide, see Dinitolmide				
Dinitrotoluene [121-14-2] — Skin	—	1.5	—	3
Dioxane, tech. grade [123-91-1] — Skin	25	90	100	360
Dioxathion [78-34-2] — Skin	—	0.2	—	—
Diphenyl, see Biphenyl				
Diphenylamine [122-39-4]	—	10	—	20
Diphenylmethane diisocyanate, see Methylene bisphenyl isocyanate				

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Footnotes (a thru f) see Page 34.

Substance [CAS #]	ADOPTED VALUES TWA ppm[a]	TWA mg/m³[b]	STEL ppm[a]	STEL mg/m³[b]
Dipropylene glycol methyl ether [34590-94-8] — Skin	100	600	150	900
Dipropyl ketone [123-19-3]	50	235	—	—
Diquat [85-00-7]	—	0.5	—	1
Di-sec, octyl phthalate [117-81-7] (Di-2-ethyl-hexylphthalate)	—	5	—	10
Disulfiram [97-77-8]	—	2	—	5
Disulfoton [298-04-4]	—	0.1	—	0.3
2, 6-Ditert. butyl-p-cresol [128-37-0]	—	10	—	20
Diuron [330-54-1]	—	10	—	—
Divinyl benzene [108-57-6]	10	50	—	—
Emery [112-62-9]	—	D	—	20
Endosulfan [115-29-7] — Skin	—	0.1	—	0.3
Endrin [72-20-8] — Skin	—	0.1	—	0.3
Epichlorohydrin [106-89-8] — Skin	2	10	5	20
EPN [2104-64-5] — Skin	—	0.5	—	2
1, 2-Epoxypropane, see Propylene oxide				
2, 3-Epoxy-1-propanol, see Glycidol				
Ethane [74-84-0]	E	—	—	—
Ethanethiol, see Ethyl mercaptan				
Ethanolamine [141-43-5]	3	8	6	15
Ethion [563-12-2] — Skin	—	0.4	—	—
‡2-Ethoxyethanol [110-80-5] — Skin	(50)	(185)	(100)	(370)
‡2-Ethoxyethyl acetate [111-15-9] — Skin	(50)	(270)	(100)	(540)
Ethyl acetate [141-78-6]	400	1,400	—	—
Ethyl acrylate [140-88-5] — Skin	5	20	25	100
Ethyl alcohol (Ethanol) [46-17-5]	1,000	1,900	—	—
Ethylamine [75-04-7]	10	18	—	—
Ethyl amyl ketone [41-85-5]	25	130	—	—
Ethyl benzene [100-41-4]	100	435	125	545
Ethyl bromide [74-96-4]	200	890	250	1,110
Ethyl butyl ketone [106-35-4]	50	230	75	345
Ethyl chloride [75-00-3]	1,000	2,600	1,250	3,250

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‡See Notice of Intended Changes.

Substance [CAS #]	ADOPTED VALUES TWA ppm[a]	TWA mg/m³[b]	STEL ppm[a]	STEL mg/m³[b]
Ethylene [74-85-1]	E	—	—	—
Ethylene chlorohydrin [107-07-3] — Skin	C 1	C 3	—	—
Ethylenediamine [107-15-3]	10	25	—	—
*Ethylene dibromide [106-93-4] — Skin	A2	A2	—	—
Ethylene dichloride [107-06-2]	10	40	15	60
Ethylene glycol [107-21-1]				
‡ Particulate	—	(10)	—	(20)
Vapor	C 50	C 125	—	—
‡Ethylene glycol dinitrate [628-96-6] — Skin	(0.02)	(0.1)	(0.05)	(0.3)
Ethylene glycol methyl ether acetate, see 2-Methoxyethyl acetate				
‡Ethylene oxide [75-21-8]	(10)	(20)	—	—
Ethyleneimine [151-56-4] — Skin	0.5	1	—	—
Ethyl ether [60-29-7]	400	1,200	500	1,500
Ethyl formate [109-94-4]	100	300	150	450
Ethylidene chloride, see 1, 1-Dichloroethane				
Ethylidene norbornene [16219-75-3]	C 5	C 25	—	—
Ethyl mercaptan [75-08-1]	0.5	1	2	3
*N-Ethylmorpholine [100-74-3] — Skin	5	40	20	95
Ethyl silicate [78-10-4]	10	85	30	255
Fensulfothion [115-90-2]	—	0.1	—	—
‡Fenthion [55-38-9]	—	(0.1)	—	(0.3)
Ferbam [14484-64-1]	—	10	—	20
Ferrovanadium dust [12604-58-9]	—	1	—	0.3
Fibrous glass dust	—	10	—	—
Fluorides, as F	—	2.5	—	—
Fluorine [7782-41-4]	1	2	2	4
Fluorotrichloromethane, see Trichlorofluoromethane				
Fonofos [944-22-9] — Skin	—	0.1	—	—
‡Formaldehyde [50-00-0]	(C 2)	(C 3)	—	—
Formamide [75-12-7]	20	30	30	45
Formic acid [64-18-6]	5	9	—	—
Furfural [98-01-1] — Skin	2	8	10	40
*Furfuryl alcohol [98-00-0] — Skin	10	40	15	60
*Gasoline [8006-61-9]	300	900	500	1,500

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*1982 Addition.
‡See Notice of Intended Changes.

Substance [CAS #]	ADOPTED VALUES TWA ppm[a]	TWA mg/m³[b]	STEL ppm[a]	STEL mg/m³[b]
Germanium tetrahydride [7782-65-2]	0.2	0.6	0.6	1.8
Glass, fibrous or dust, see Fibrous glass dust				
Glutaraldehyde [111-30-8]	C 0.2	C 0.7	—	—
Glycerin mist [56-81-5]	—	D	—	—
Glycidol [556-52-5]	25	75	100	300
Glycol monoethyl ether, see 2-Ethoxyethanol				
Graphite (Natural) [7782-42-5], see MINERAL DUSTS				
Graphite (Synthetic)	—	D	—	—
Gypsum [10101-4-4]	—	D	—	20
Hafnium [7440-58-6]	—	0.5	—	1.5
Helium [7440-59-7]	E	—	—	—
Heptachlor [76-44-8] — Skin	—	0.5	—	2
Heptane [142-82-5] (n-Heptane)	400	1,600	500	2,000
2-Heptanone, see Methyl n-amyl ketone				
3-Heptanone, see Ethyl butyl ketone				
*Hexachlorobutadiene [76-68-3]	0.02, A2	0.24, A2	—	—
Hexachlorocyclopentadiene [77-47-4]	0.01	0.1	0.03	0.3
*Hexachloroethane [67-72-1] — Skin	10	100	—	—
Hexachloronaphthalene [1335-87-1] — Skin	—	0.2	—	0.6
Hexafluoroacetone [684-16-2]	0.1	0.7	0.3	2
Hexamethyl phosphoramide [680-31-9] — Skin	A2	A2	—	—
*Hexane (n-Hexane) [110-54-3]	50	180	—	—
* Other isomers	500	1,800	1,000	3,600
2-Hexanone, see Methyl n-butyl ketone				
Hexone, see Methyl isobutyl ketone				
sec-Hexyl acetate [142-92-7]	50	300	—	—
Hexylene glycol [107-41-5]	C 25	C 125	—	—
Hydrazine [302-01-2] — Skin	0.1, A2	0.1, A2	—	—
Hydrogen [1333-74-0]	E	—	—	—
Hydrogenated terphenyls [92-94-4]	0.5	5	—	—

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*1982 Addition.

Substance [CAS #]	ADOPTED VALUES TWA ppm[a]	TWA mg/m³[b]	STEL ppm[a]	STEL mg/m³[b]
Hydrogen bromide [10035-10-6]	3	10	—	—
Hydrogen chloride [7647-01-1]	C 5	C 7	—	—
Hydrogen cyanide [74-90-8] — Skin	C 10	C 10	—	—
Hydrogen fluoride [7664-39-3], as F	3	2.5	6	5
Hydrogen peroxide [7722-84-1]	1	1.5	2	3
Hydrogen selenide [7783-07-5], as Se	0.05	0.2	—	—
Hydrogen sulfide [7783-06-4]	10	14	15	21
Hydroquinone [123-31-9]	—	2	—	4
4-Hydroxy-4-methyl-2 pentanone, see Diacetone alcohol				
2-Hydroxypropyl acrylate [999-61-1] — Skin	0.5	3	—	—
Indene [95-13-6]	10	45	15	70
Indium [7440-74-6] & compounds, as In	—	0.1	—	0.3
Iodine [7553-56-2]	C 0.1	C 1	—	—
Iodoform [75-47-8]	0.6	10	1	20
Iron oxide fume (Fe_2O_3) [1309-37-1], as Fe	B3	5	—	10
*Iron pentacarbonyl [13463-40-6], as Fe	0.1	0.8	0.2	0.16
Iron salts, soluble, as Fe	—	1	—	2
Isoamyl acetate [123-92-2]	100	525	125	655
Isoamyl alcohol [123-51-3]	100	360	125	450
Isobutyl acetate [110-19-0]	150	700	187	875
Isobutyl alcohol [78-83-1]	50	150	75	225
Isooctyl alcohol [26952-21-6]	50	270	—	—
Isophorone [78-59-1]	C 5	C 25	—	—
Isophorone diisocyanate — Skin	0.01	0.09	—	—
Isopropoxyethanol [109-59-1]	25	105	75	320
Isopropyl acetate [108-21-4]	250	950	310	1,185
Isopropyl alcohol [67-63-0]	400	980	500	1,225
Isopropylamine [75-31-0]	5	12	10	24

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*1982 Addition.

Substance [CAS #]	ADOPTED VALUES TWA ppm[a]	TWA mg/m³[b]	STEL ppm[a]	STEL mg/m³[b]
N-Isopropylaniline [643-28-7] — Skin	2	10	5	20
Isopropyl ether [108-20-3]	250	1,050	310	1,320
Isopropyl glycidyl ether [4016-14-2] (IGE)	50	240	75	360
Kaolin	—	D	—	20
Ketene [463-51-4]	0.5	0.9	1.5	3
Lead [7439-92-1], inorg., dusts & fumes, as Pb	—	0.15	—	0.45
‡Lead arsenate [10102-48-4], as Pb	—	(0.15)	—	(0.45)
Lead chromate [18454-12-1], as Cr	—	0.05, A2	—	—
Limestone [1317-65-3]	—	D	—	20
Lindane [58-89-9] — Skin	—	0.5	—	1.5
Lithium hydride [7580-67-8]	—	0.025	—	—
L.P.G. (Liquified petroleum gas)	1,000	1,800	1,250	2,250
Magnesite [546-90-0]	—	D	—	20
Magnesium oxide fume [1309-48-4]	—	10	—	—
Malathion [121-75-5] — Skin	—	10	—	—
Maleic anhydride [108-31-6]	0.25	1	—	—
Manganese [7439-96-5], as Mn				
Dust & compounds	—	C 5	—	—
Fume	—	1	—	3
Manganese cyclopentadienyl tricarbonyl [12108-13-3], as Mn — Skin	—	0.1	—	0.3
Manganese tetroxide	—	1	—	—
Marble/calcium carbonate [1317-65-3]	—	D	—	20
Mercury [7439-97-6], as Hg — Skin				
Alkyl compounds	—	0.01	—	0.03
All forms except alkyl				
* Vapor	—	0.05	—	—
* Aryl & inorganic compounds	—	0.1	—	—
Mesityl oxide [141-79-7]	15	60	25	100
Methacrylic acid [79-41-4]	20	70	—	—

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Substance [CAS #]	ADOPTED VALUES TWA ppm[a]	TWA mg/m³[b]	STEL ppm[a]	STEL mg/m³[b]
Methane [74-82-8]	E	—	—	—
Methanethiol, see Methyl mercaptan				
Methomyl [16752-77-5] — Skin	—	2.5	—	—
Methoxychlor [72-43-5]	—	10	—	—
‡2-Methoxyethanol [109-86-4] — Skin	(25)	(80)	(35)	(120)
‡2-Methoxyethyl acetate [110-49-6] — Skin	(25)	(120)	(35)	(170)
*4-Methoxyphenol [150-76-5]	—	5	—	—
Methyl acetate [79-20-9]	200	610	250	760
Methyl acetylene [74-99-7]	1,000	1,650	1,250	2,040
Methyl acetylene-propadiene mixture (MAPP)	1,000	1,800	1,250	2,250
Methyl acrylate [96-33-3] — Skin	10	35	—	—
Methylacrylonitrile [126-98-7] — Skin	1	3	2	6
Methylal [109-87-5]	1,000	3,100	1,250	3,875
Methyl alcohol [67-56-1] (methanol) — Skin	200	260	250	310
Methylamine [74-89-5]	10	12	—	—
Methyl amyl alcohol, see Methyl isobutyl carbinol				
Methyl n-amyl ketone [591-78-6]	50	235	100	465
*N-Methyl aniline [100-61-8] — Skin	0.5	2	1	5
Methyl bromide [74-83-9] — Skin	5	20	15	60
Methyl n-butyl ketone [591-78-6]	5	20	—	—
Methyl chloride [74-87-3]	50	105	100	205
Methyl chloroform [71-55-6]	350	1,900	450	2,450
Methyl 2-cyanoacrylate [137-05-3]	2	8	4	16
Methylcyclohexane [108-87-2]	400	1,600	500	2,000
Methylcyclohexanol [25639-42-3]	50	235	75	350
o-Methylcyclohexanone [583-60-8] — Skin	50	230	75	345

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Substance [CAS #]	ADOPTED VALUES TWA ppm[a]	TWA mg/m³[b]	STEL ppm[a]	STEL mg/m³[b]
Methylcyclopentadienyl manganese tricarbonyl, [12108-13-3] — Skin, as Mn	—	0.2	—	0.6
Methyl demeton [8022-00-2] — Skin	—	0.5	—	1.5
Methylene bisphenyl isocyanate (MDI) [101-68-8]	C 0.02	C 0.2	—	—
Methylene chloride [75-09-2]	100	360	500	1,700
4, 4'-Methylene bis (2-chloroaniline) [101-14-4] — Skin	0.02, A2	0.22, A2	—	—
Methylene bis(4-cyclohexylisocyanate) [101-68-8]	C 0.01	C 0.11	—	—
4, 4-Methylene dianiline [101-77-9] — Skin	0.1	0.8	0.5	4
Methyl ethyl ketone (MEK) [78-93-3]	200	590	300	885
Methyl ethyl ketone peroxide [1338-23-4]	C 0.2	C 1.5	—	—
Methyl formate [107-31-3]	100	250	150	375
5-Methyl-3-heptanone, see Ethyl amyl ketone				
Methyl hydrazine [60-34-4] — Skin	C 0.2, A2	C 0.35, A2	—	—
Methyl iodide [74-88-4] — Skin	2, A2	10, A2	5, A2	30, A2
*Methyl isoamyl ketone [110-12-3]	50	240	—	—
Methyl isobutyl carbinol [105 30-6] — Skin	25	100	40	165
Methyl isobutyl ketone [108-10-1]	50	205	75	300
Methyl isocyanate [624-83-9] — Skin	0.02	0.05	—	—
Methyl isopropyl ketone [563-80-4]	200	705	—	—
Methyl mercaptan [74-93-1]	0.5	1	—	—
Methyl methacrylate [80-62-6]	100	410	125	510

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*1982 Addition.

Substance [CAS #]	ADOPTED VALUES TWA ppm[a]	TWA mg/m³[b]	STEL ppm[a]	STEL mg/m³[b]
Methyl parathion [298-00-0] — Skin	—	0.2	—	0.6
Methyl propyl ketone [107-87-9]	200	700	250	875
Methyl silicate [681-84-5]	1	6	5	30
α-Methyl styrene [98-83-9]	50	240	100	485
Mevinphos [7786-34-7] — Skin	0.01	0.1	0.03	0.3
Molybdenum [7439-98-7], as Mo				
Soluble compounds	—	5	—	10
Insoluble compounds	—	10	—	20
Monocrotophos [6923-22-4]	—	0.25	—	—
Morpholine [110-91-8] — Skin	20	70	30	105
Naled [300-76-5]	—	3	—	6
Naphthalene [91-20-3]	10	50	15	75
β-Naphthylamine [91-59-8]	—	A1b	—	A1b
Neon [7440-01-9]	E	—	—	—
Nickel carbonyl, as Ni	0.05	0.35	—	—
Nickel [7440-02-0]				
Metal	—	1	—	—
Soluble compounds, as Ni	—	0.1	—	0.3
Nickel carbonyl [13463-39-3], as Ni	0.05	0.35	—	—
Nickel sulfide roasting, fume & dust, as Ni	—	1, A1a	—	—
Nicotine [54-11-5] — Skin	—	0.5	—	1.5
Nitrapyrin [1929-82-4]	—	10	—	20
Nitric acid [7697-37-2]	2	5	4	10
Nitric oxide [10102-43-9]	25	30	35	45
*p-Nitroaniline [100-01-6] — Skin	—	3	—	—
Nitrobenzene — Skin	1	5	2	10
‡p-Nitrochlorobenzene [98-95-3] — Skin	—	(1)	—	(2)
4-Nitrodiphenyl [92-93-3]	—	A1b	—	A1b
Nitroethane [79-24-3]	100	310	150	465
Nitrogen dioxide [10102-44-0]	3	6	5	10

Capital letters A, B, D & E refer to Appendices; C denotes ceiling limit.
Footnotes (a thru f) see Page 34.
*1982 Addition.
‡See Notice of Intended Changes.

Substance [CAS #]	ADOPTED VALUES TWA ppm[a]	TWA mg/m³[b]	STEL ppm[a]	STEL mg/m³[b]
Nitrogen trifluoride [7783-54-2]	10	30	15	45
‡Nitroglycerin (NG) [55-63-0] — Skin	(0.02)	(0.2)	(0.05)	(0.5)
Nitromethane [75-52-5]	100	250	150	375
†1-Nitropropane [108-03-2]	25	90	35	135
‡2-Nitropropane [79-46-9]	(C 25, A2)	(C 90, A2)	—	—
N-Nitrosodimethylamine [62-75-9] (dimethylnitrosoamine) — Skin	—	A2	—	A2
*Nitrotoluene [99-08-1] — Skin	2	11	—	—
Nitrotrichloromethane, see Chloropicrin				
Nonane [111-84-2]	200	1,050	250	1,300
Octachloronaphthalene [2234-13-1] — Skin	—	0.1	—	0.3
Octane [111-65-9]	300	1,450	375	1,800
Oil mist, mineral	—	5[c]	—	10
Osmium tetroxide [20816-12-0], as Os	0.0002	0.002	0.0006	0.006
Oxalic acid [144-62-7]	—	1	—	2
Oxygen difluoride [7783-41-7]	0.05	0.1	0.15	0.3
Ozone [10028-15-6]	0.1	0.2	0.3	0.6
Paraffin wax fume [8002-74-2]	—	2	—	6
Paraquat [1910-42-5], respirable sizes	—	0.1	—	—
Parathion [56-38-2] — Skin	—	0.1	—	0.3
Particulate polycyclic aromatic hydrocarbons (PPAH), see Coal tar pitch volatiles				
Pentaborane [19624-22-7]	0.005	0.01	0.015	0.03
Pentachloronaphthalene [1321-64-8]	—	0.5	—	2
Pentachlorophenol [87-86-5] — Skin	—	0.5	—	1.5
Pentaerythritol [115-77-5]	—	D	—	20
Pentane [109-66-0]	600	1,800	750	2,250
2-Pentanone, see Methyl propyl ketone				
‡Perchloroethylene [127-18-4]	50	335	(—)	(—)

Capital letters A, B, D & E refer to Appendices; C denotes ceiling limit.
Footnotes (a thru f) see Page 34.
*1982 Addition.
†NOC = Not otherwise classified.
‡See Notice of Intended Changes.

Substance [CAS #]	ADOPTED VALUES TWA ppm[a]	TWA mg/m³[b]	STEL ppm[a]	STEL mg/m³[b]
Perchloromethyl mercaptan [594-42-3]	0.1	0.8	—	—
Perchloryl fluoride [7616-94-6]	3	14	6	28
Phenol [108-95-2] — Skin	5	19	10	38
Phenothiazine [92-84-2] — Skin	—	5	—	10
N-Phenyl-beta-naphthylamine [135-88-6]	A2	A2	—	—
p-Phenylene diamine [106-50-3] — Skin	—	0.1	—	—
Phenyl ether [101-84-8], vapor	1	7	2	14
Phenylethylene, see Styrene, monomer				
*Phenyl glycidyl ether (PGE) [122-60-1]	1	6	—	—
‡Phenylhydrazine [100-63-0] — Skin	(5)	(20)	(10)	(45)
Phenyl mercaptan [108-98-5]	0.5	2	—	—
Phenylphosphine [638-21-1]	C 0.05	C 0.25	—	—
Phorate [298-02-2] — Skin	—	0.05	—	0.2
Phosdrin, see Mevinphos				
Phosgene [75-44-5]	0.1	0.4	—	—
Phosphine [3803-51-2]	0.3	0.4	1	1
Phosphoric acid [7664-38-2]	—	1	—	3
Phosphorus [7723-14-0] (yellow)	—	0.1	—	0.3
*Phosphorus oxychloride [10026-13-8]	0.1	0.6	0.5	3
Phosphorus pentachloride [10026-13-8]	0.1	1	—	—
Phosphorus pentasulfide [1314-80-3]	—	1	—	3
*Phosphorus trichloride [7719-12-2]	0.2	1.5	0.5	3
Phthalic anhydride [85-44-9]	1	6	4	24
m-Phthalodinitrile [626-17-5]	–	5	—	—
Picloram [1918-02-1]	—	10	—	20

Capital letters A, B, D & E refer to Appendices; C denotes ceiling limit.
Footnotes (a thru f) see Page 34.
*1982 Addition.
‡See Notice of Intended Changes.

Substance [CAS #]	ADOPTED VALUES TWA ppm[a]	TWA mg/m³[b]	STEL ppm[a]	STEL mg/m³[b]
Picric acid [88-89-1] — Skin	—	0.1	—	0.3
Pindone [83-26-1]	—	0.1	—	0.3
*Piperazine dihydrochloride [142-64-3]	—	5	—	—
2-Pivalyl-1, 3-indandione, see Pindone				
Plaster of Paris	—	D	—	20
Platinum [7440-06-4]				
Metal	—	1	—	—
Soluble salts, as Pt	—	0.002	—	—
Polychlorobiphenyls, see Chlorodiphenyls				
Polytetrafluoroethylene decomposition products	—	B1	—	B1
Potassium hydroxide [1310-58-3]	—	C 2	—	—
Propane [74-98-6]	E	—	—	—
Propane sultone [1120-71-4]	A2	A2	—	—
Propargyl alcohol [107-19-7] — Skin	1	2	3	6
β-Propiolactone [57-57-8]	0.5, A2	1.5, A2	1, A2	3, A2
Propionic acid [79-09-4]	10	30	15	45
Propoxur [114-26-1]	—	0.5	—	2
n-Propyl acetate [109-60-4]	200	840	250	1,050
Propyl alcohol [71-23-8] — Skin	200	500	250	625
n-Propyl nitrate [627-13-4]	25	105	40	470
Propylene [115-07-1]	E	—	—	—
Propylene dichloride [78-87-5]	75	350	110	510
‡Propylene glycol dinitrate [6423-43-4] (PGDN) — Skin	(0.02)	(0.1)	(0.05)	(0.3)
Propylene glycol monomethyl ether [107-98-2]	100	360	150	540
‡Propylene imine [75-55-8] — Skin	(2)	(5)	—	—
Propylene oxide [75-56-9]	20	50	—	—
Propyne, see Methyl acetylene				
Pyrethrum [8003-34-7]	—	5	—	10
Pyridine [110-86-1]	5	15	10	30
Quinone [106-51-4]	0.1	0.4	0.3	1
RDX, see Cyclonite				

Capital letters A, B, D & E refer to Appendices; C denotes ceiling limit.
Footnotes (a thru f) see Page 34.
*1982 Addition.
‡See Notice of Intended Changes.

Substance [CAS #]	ADOPTED VALUES TWA ppm[a]	TWA mg/m³[b]	STEL ppm[a]	STEL mg/m³[b]
Resorcinol [108-46-3]	10	45	20	90
Rhodium [7440-16-6]				
* Metal	—	1	—	—
‡ Soluble salts, as Rh	—	(0.001)	—	(0.003)
Ronnel [299-84-3]	—	10	—	—
Rosin core solder pyrolysis products, as formaldehyde	—	0.1	—	0.3
Rotenone (commercial) [83-79-4]	—	5	—	10
Rouge	—	D	—	20
Rubber solvent (Naphtha)	400	1,600	—	—
Selenium compounds [7782-49-2], as Se	—	0.2	—	—
Selenium hexafluoride [7783-79-1], as Se	0.05	0.2	—	—
Sesone [136-78-7]	—	10	—	20
Silane, see Silicon tetrahydride				
Silicon [7440-21-3]	—	D	—	20
Silicon carbide [409-21-2]	—	D	—	20
‡Silicon tetrahydride [7803-62-5]	(0.5)	(0.7)	(1)	(1.5)
Silver [7440-22-4], as Ag				
Metal	—	0.1	—	—
Soluble compounds	—	0.01	—	—
Sodium azide [26628-22-8]	C 0.1	C 0.3	—	—
Sodium bisulfite [7631-90-5]	—	5	—	—
Sodium 2, 4-dichloro-phenoxyethyl sulfate, see Sesone				
Sodium fluoroacetate [62-74-8] — Skin	—	0.05	—	0.15
Sodium hydroxide [1310-73-2]	—	C 2	—	—
Sodium metabisulfite [7681-57-4]	—	5	—	—
Starch [9005-84-9]	—	D	—	20
Stibine [7803-52-3]	0.1	0.5	0.3	1.5
*Stoddard solvent [8052-41-3]	100	525	200	1,050
Strychnine [57-24-9]	—	0.15	—	0.45
Styrene, monomer [100-42-5]	50	215	100	425

Capital letters A, B, D & E refer to Appendices; C denotes ceiling limit.
Footnotes (a thru f) see Page 34.
*1982 Addition.
‡See Notice of Intended Changes.

Substance [CAS #]	ADOPTED VALUES TWA ppm[a]	TWA mg/m³[b]	STEL ppm[a]	STEL mg/m³[b]
Subtilisins [1395-21-7] (Proteolytic enzymes as 100% pure crystalline enzyme)	—C	0.00006[m]	—	—
Sucrose [57-50-1]	—	D	—	20
Sulfotep [3689-24-5] — Skin	—	0.2	—	0.6
Sulfur dioxide [7446-09-5]	2	5	5	10
Sulfur hexafluoride [2551-62-4]	1,000	6,000	1,250	7,500
Sulfuric acid [7864-93-9]	—	1	—	—
Sulfur monochloride [10025-67-9]	1	6	3	18
Sulfur pentafluoride [5714-22-7]	0.025	0.25	0.075	0.75
Sulfur tetrafluoride [7783-60-0]	0.1	0.4	0.3	1
Sulfuryl fluoride [2699-79-8]	5	20	10	40
Systox, see Demeton				
2, 4, 5-T [93-76-5]	—	10	—	20
Tantalum [7440-25-7]	—	5	—	10
TEDP, see Sulfotep				
Tellurium & compounds [13494-80-9], as Te		0.1	—	—
Tellurium hexafluoride [7783-80-4], as Te	0.02	0.2	—	—
Temephos [3383-96-8]	—	10	—	20
TEPP [107-49-3] — Skin	0.004	0.05	0.01	0.2
Terphenyls [92-94-4]	C 0.5	C 5	—	—
1, 1, 1, 2-Tetrachloro-2, 2-difluoroethane [76-11-9]	500	4,170	625	5,210
1, 1, 2, 2-Tetrachloro-1, 2-difluoroethane [76-12-0]	500	4,170	625	5,210
1, 1, 2, 2-Tetrachloroethane [79-34-5] — Skin	(5)	(35)	(10)	(70)
Tetrachloroethylene, see Perchloroethylene				
Tetrachloromethane, see Carbon tetrachloride				
Tetrachloronaphthalene [1335-88-2]	—	2	—	4
Tetraethyl lead [78-00-2], as Pb — Skin	—	0.100	—	0.3
Tetrahydrofuran [109-99-9]	200	590	250	735

Capital letters A, B, D & E refer to Appendices; C denotes ceiling limit.
Footnotes (a thru f) see Page 34.
m) See Page 36.

Substance [CAS #]	ADOPTED VALUES TWA ppm[a]	TWA mg/m³[b]	STEL ppm[a]	STEL mg/m³[b]
Tetramethyl lead [75-74-1], as Pb — Skin	—	0.150[n]	—	0.5
Tetramethyl succinonitrile [3333-52-6] — Skin	0.5	3	2	9
Tetranitromethane [509-14-8]	1	8	—	—
Tetrasodium pyrophosphate [7722-88-5]	—	5	—	—
Tetryl [479-45-8] (2, 4, 6-trinitrophenylmethylnitramine) — Skin	—	1.5	—	3.0
Thallium [7440-28-0] Soluble compounds, as Tl — Skin	—	0.1	—	—
4, 4'-Thiobis(6-tert. butyl-m-cresol) [96-69-5]	—	10	—	20
Thioglycolic acid [68-11-1]	1	5	—	—
Thiram [137-26-8]	—	5	—	10
Tin [7440-31-5]				
• Metal	—	2	—	4
• Oxide & inorganic compounds, except SnO_4, as Sn	—	2	—	4
Organic compounds, as Sn — Skin	—	0.1	—	0.2
Titanium dioxide [13463-67-7], as Ti	—	D	—	20
o-Tolidine [119-93-7]	A2	A2	—	—
Toluene [108-88-3] (toluol) — Skin	100	375	150	560
‡Toluene-2, 4-diisocyanate (TDI) [584-84-9]	(C 0.02)	(C 0.14)	—	—
‡o-Toluidine [95-53-4] — Skin	(2)	(9)	—	—
Toxaphene, see Chlorinated camphene				
Tributyl phosphate [126-73-8]	0.2	2.5	0.4	5
Trichloroacetic acid [76-03-9]	1	5	—	—
1, 2, 4-Trichlorobenzene [120-82-1]	5	40	—	—
1, 1, 1-Trichloroethane, see Methyl chloroform				

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Footnotes (a thru f) see Page 34.
•1982 Addition
‡See Notices of Intended Changes.

Substance	[CAS #]	ADOPTED VALUES TWA ppm[a]	TWA mg/m³[b]	STEL ppm[a]	STEL mg/m³[b]
1, 1, 2-Trichloroethane	[79-00-5] — Skin	10	45	20	90
‡Trichloroethylene	[79-01-6]	50	270	(150)	(805)
*Trichlorofluoromethane	[75-69-4]	C 1,000	C 5,600	—	—
Trichloromethane, see Chloroform					
Trichloronaphthalene	[1321-65-9]	—	5	—	10
Trichloronitromethane, see Chloropicrin					
1, 2, 3-Trichloropropane	[96-18-4]	50	300	75	450
1, 1, 2-Trichloro-1, 2, 2-trifluoroethane	[76-13-1]	1,000	7,600	1,250	9,500
Tricyclohexyltin hydroxide, see Cyhexatin					
‡Triethylamine	[121-44-8]	(25)	(100)	(40)	(160)
Trifluorobromomethane	[75-63-8]	1,000	6,100	1,200	7,300
Trimellitic anhydride	[552-30-7]	0.005	0.04	—	—
Trimethyl benzene	[25551-13-7]	25	125	35	170
*Trimethyl phosphite	[121-45-9]	2	10	5	25
2, 4, 6-Trinitrophenol, see Picric acid					
2, 4, 6-Trinitrophenyl-methylnitramine, see Tetryl					
*2, 4, 6-Trinitrotoluene (TNT)	[118-96-7] — Skin	—	0.5	—	3
Triorthocresyl phosphate	[78-30-8]	—	0.1	—	0.3
Triphenyl amine	[603-34-9]	—	5	—	—
Triphenyl phosphate	[115-86-6]	—	3	—	6
Tungsten	[7440-33-7], as W				
Insoluble compounds		—	5	—	10
Soluble compounds		—	1	—	3
Turpentine	[8006-64-2]	100	560	150	840
Uranium (natural)	[7440-61-1], Soluble & insoluble compounds, as U	—	0.2	—	0.6
Valeraldehyde	[110-62-3]	50	175	—	—

Capital letters A, B, D & E refer to Appendices; C denotes ceiling limit.
Footnotes (a thru f) see Page 34.
*1982 Addition
‡See Notices of Intended Changes.

Substance	[CAS #]	ADOPTED VALUES TWA ppm[a]	TWA mg/m³[b]	STEL ppm[a]	STEL mg/m³[b]
*Vanadium, as V_2O_5	[1314-62-1], respirable dust & fume	—	0.05	—	—
Vegetable oil mists		—	D	—	—
Vinyl acetate	[108-05-4]	10	30	20	60
Vinyl benzene, see Styrene					
Vinyl bromide	[593-60-2]	5, A2	20, A2	—	—
Vinyl chloride	[75-01-4]	5, A1a	10, A1a	—	—
Vinyl cyanide, see Acrylonitrile					
Vinyl cyclohexene dioxide	[106-87-6]	10, A2	60, A2	—	—
‡Vinylidene chloride	[75-5-4]	(10)	(40)	(20)	(80)
Vinyl toluene	[25013-15-4]	50	240	100	485
VM & P Naphtha	[8030-30-6]	300	1,350	400	1,800
Warfarin	[81-81-2]	—	0.1	—	0.3
Welding fumes (NOC†)		—	5, B2	—	B2
Wood dust (certain hard woods as beech & oak)		—	1	—	—
Soft wood		—	5	—	10
Xylene	[1330-20-7] (o-, m-, p-isomers) — Skin	100	435	150	655
m-Xylene α, α'-diamine	[1477-55-0]	—	C 0.1	—	—
*Xylidene	[1300-73-8] — Skin	2	10	—	—
Yttrium	[7440-65-5]	—	1	—	3
Zinc chloride fume	[7646-85-7]	—	1	—	2
Zinc chromate	[13530-65-9], as Cr	—	0.05, A2	—	—
Zinc oxide	[1314-13-2]				
Fume		—	5	—	10
Dust		—	D	—	—
Zinc stearate	[557-05-1]	—	D	—	20
Zirconium compounds	[7440-67-2], as Zr	—	5	—	10

Capital letters A, B, D & E refer to Appendices, C denotes ceiling limit.
Footnotes (a thru f) see Page 34.
*1982 Addition.
‡See Notice of Intended Changes

a) Parts of vapor or gas per million parts of contaminated air by volume at 25°C and 760 mm Hg pressure.
b) Approximate milligrams of substance per cubic meter of air.
d) < 7 μm in diameter.
e) As sampled by method that does not collect vapor.
f) For control of general room air, biologic monitoring is essential for personnel control.

Radioactivity: The Committee accepts the philosophy and recommendations of the National Council on Radiation Protection and Measurements (NCRP) for the ionizing radiation TLV. The NCRP is charted by Congress to, in part, collect, analyze, develop and disseminate information and recommendations about protection against radiation and about radiation measurements, quantities and units, including development of basic concepts in these areas. NCRP Report No. 39 (reference 1) provides basic philosophy and concepts leading to protection criteria established in the same report. Other NCRP reports address specific areas of radiation protection and, collectively, provide an excellent basis for establishing a sound program for radiation control. The Committee recommends the listed references as substantative documentation of a sound basis for ionizing radiation protection. The Committee also strongly recommends that all exposures to ionizing radiations be kept low as reasonably achievable within the stated guidance.

References:

1. *Basic Radiation Protection Criteria*. NCRP Report No. 39, issued January 15, 1971.
2. *Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure*. US Department of Commerce, National Bureau of Standards Handbook 69, issued June 5, 1959, with Addendum 1 Issued August 1963. Available as NCRP Report No. 22.

The above documents, as well as information on numerous other NCRP Reports addressing specific subjects in ionizing radiation protection are available from: NCRP Publications, PO Box 30175, Washington, DC 20014.

Substance	
SILICA, SiO_2	
Crystalline	
Quartz [1480-60-7]	TLV in mppcf[e]: $\frac{300^{h}}{\%\ \text{quartz} + 10}$ TLV for respirable dust in mg/m³: $\frac{10\ \text{mg/m}^3[i]}{\%\ \text{Respirable quartz} + 2}$ TLV for "total dust," respirable and nonrespirable: $\frac{30\ \text{mg/m}^3}{\%\ \text{quartz} + 3}$
Cristobalite [14464-46-1]	Use one-half the value calculated from the count or mass formulae for quartz.
Tridymite [15468-32-3]	Use one-half the value calculated from formulae for quartz.
Silica, fused [60676-86-0]	Use quartz formulae.
Tripoli [1317-95-9]	Use respirable[m] mass quartz formula
‡*Amorphous* [7631-86-9]	(20 mppcf[e])
SILICATES (< 1% quartz)	
Asbestos	
Amosite [12172-73-5]	0.5 fiber > 5μm/cc, A1a
Chrysotile [12001-29-5]	2 fibers > 5μm/cc, A1a
Crocidolite [12001-28-4]	0.2 fiber > 5μm/cc, A1a
Other forms	2 fibers > 5μm/cc, A1a
Graphite (natural) [7782-42-5]	15 mppcf
Mica [12001-26-2]	20 mppcf
Mineral wool fiber	10 mg/m³
Perlite	30 mppcf
Portland Cement	30 mppcf
Soapstone	20 mppcf
‡Talc (nonasbestiform) [14807-96-6]	(20 mppcf)
‡Talc (fibrous), (use Asbestos limit.)	

‡See Notice of Intended Changes.

COAL DUST

2 mg/m³ (respirable dust fraction < 5% quartz).
If > 5% quartz, use respirable mass formula.

NUISANCE PARTICULATES
(see Appendix D)

30 mppcf or 10 mg/m³[j]
of total dust < 1% quartz, or, 5 mg/m³ respirable dust.

Conversion factors:
mppcf × 35.3 = Million particles per cubic meter
= particles per cc

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g) Millions of particles per cubic foot of air, based on impinger samples counted by light-field technics.
h) The percentage of quartz in the formula is the amount determined from airborne samples, except in those instances in which other methods have been shown to be applicable.
i) Both concentration and percent quartz for the application of this limit are to be determined from the fraction passing a size-selector with the following characteristics:

Aerodynamic Diameter (μm) (unit density sphere)	% passing selector
≤ 2	90
2.5	75
3.5	50
5.0	25
10	0

j) containing < 1% quartz; if quartz content > 1%, use formulae for quartz.
k) Lint-free dust as measured by the vertical elutriator, cotton-dust sampler described in the *Transactions of the National Conference on Cotton Dust*, p. 33 by J. R. Lynch, (May 2, 1970).
l) As determined by the membrane filter method at 400–450X magnification (4 mm objective) phase contrast illumination.
m) Based on "high volume" sampling.
n) "Respirable" dust as defined by the British Medical Research Council Criteria,[1] and as sampled by a device producing equivalent result.[2]

(1) Hatch, T. E. and Gross: *Pulmonary Deposition and Retention of Inhaled Aerosols*, p. 149. Academic Press, New York, (1964).
(2) AIHA Aerosol Technology Committee: Interim Guide for Respirable Mass Sampling. *Am. Ind. Hyg. Assoc. J. 31(2)*:133 (1970).

NOTICE OF INTENDED CHANGES
(for 1982)

These substances, with their corresponding values, comprise those for which either a limit has been proposed for the first time, or for which a change in the "Adopted" listing has been proposed. In both cases, the proposed limits should be considered trial limits that will remain in the listing for a period of at least two years. If, after two years no evidence comes to light that questions the appropriateness of the values herein, the values will be reconsidered for the "Adopted" list. Documentation is available for each of these substances.

Substance (CAS #)	TWA ppm[a]	TWA mg/m³[b]	STEL ppm[a]	STEL mg/m³[b]
†Acrylonitrile [107-13-1] — Skin	2, A2	4.5, A2	—	—
Atrazine [1912-24-9]	—	5	—	—
Cadmium oxide production	—	0.05	—	—
o-Chlorobenzylidene malononitrile [2698-41-1]	C 0.05	C 0.4	—	—
Chloromethyl methyl ether [107-30-2]	A2	A2	—	—
Cobalt carbonyl, as Co	—	0.1	—	—
Cobalt hydrocarbonyl [16842-03-8], as Co	—	0.1	—	—
Cobalt metal, dust & fume [7440-48-4], as Co	—	0.05	—	0.1
Enflurane [13838-16-9]	75	575	—	—
†2-Ethoxyethanol [110-80-5] — Skin	5	19	—	—
†2-Ethoxyethyl acetate [111-15-9] — Skin	5	27	—	—
†Ethylene glycol [107-21-1], particulate DELETE, see Appendix G				
Ethylene glycol dinitrate (EGDN) [628-96-6] — Skin	0.05	0.3	0.1	0.6

Capital letters A, B, D & E refer to Appendices, C denotes ceiling limit.
†1982 Revision or Addition

Substance [CAS #]	TWA ppm[a]	TWA mg/m³[b]	STEL ppm[a]	STEL mg/m³[b]
†Ethylene oxide [75-21-8]	1, A2	2, A2	—	—
†Fenamiphos [22224-92-6] — Skin	—	0.1	—	—
Fenthion [55-38-9]	—	0.2	—	—
†Formaldehyde [50-00-0]	C 1, A2	C 1.5, A2	—	—
†Grain dust	—	4	—	—
Halothane [151-67-7]	50	400	—	—
Lead arsenate [10102-48-4], as $Pb_3(AsO_4)_2$	—	0.15	—	0.45
†2-Methoxyethanol [109-86-4] — Skin	5	16	—	—
†2-Methoxyethyl acetate [110-49-6] — Skin	5	24	—	—
†Metribuzin [21087-64-9]	—	5	—	—
p-Nitrochlorobenzene [100-00-5] — Skin	0.5	3	—	—
Nitroglycerin (NG) [55-63-0] — Skin	0.05	0.5	0.1	1
2-Nitropropane [79-46-9]	10, A2	35, A2	20, A2	70, A2
†Perchloroethylene [127-18-4] — Skin	50	335	200	1,340
Persulfates, alkali metal, as S_2O_8	—	2	—	—
Phenylhydrazine [100-63-0] — Skin	5, A2	20, A2	10, A2	45, A2
Propylene glycol dinitrate (PGDN) [6423-43-4] — Skin	0.05	0.3	0.1	0.6
Propylene imine [75-55-8] — Skin	2, A2	5, A2	—	—
†Rhodium, Insoluble compounds, as Rh	—	1	—	—
Soluble compounds, as Rh	—	0.01	—	—
Silicon tetrahydride (Silane) [7803-62-5]	5	7	—	—
†Sulprofos [35400-43-2]	—	1	—	—
Toluene-2, 4-diisocyanate (TDI) [584-84-9]	0.005	0.04	0.02	0.15
†o-Toluidine [95-53-4] — Skin	2, A2	9, A2	—	—
†Trichloroethylene [79-01-6]	50	270	200	1,080
Triethylamine [121-44-8]	10	40	15	60
Trimethylamine [75-50-3]	10	40	15	60
†Vinylidine chloride [75-35-4]	5	20	20	80

Capital letters A, B, D & E refer to Appendices; C denotes ceiling limit.
†1982 Revision or Addition.

NOTICE OF INTENDED CHANGES
MINERAL DUSTS

Substance	TLV
Diatomaceous earth, natural [60676-86-0]	1.5 mg/m³, Respirable dust
Silica, amorphous [7631-86-9]	6 mg/m³, Total dust (all sampled sizes) 3 mg/m³, Respirable dust (< 5 μm)
Talc (containing no fibers) [14807-96-6]	15 mppcf or 2 mg/m³, Respirable dust
Talc (fiber-containing)	2 fibers/cc, > 5 μm in length

APPENDIX A
Carcinogens

The Committee lists below those substances in industrial use that have proven carcinogenic in man, or have induced cancer in animals under appropriate experimental conditions. Present listing of those substances carcinogenic for man takes two forms: Those for which a TLV has been assigned (1a) and those for which environmental conditions have not been sufficiently defined to assign a TLV (1b).

A1a. *Human Carcinogens*. Substances, or substances associated with industrial processes, recognized to have carcinogenic or cocarcinogenic potential, with an assigned TLV:

	TLV
** Acrylonitrile — Skin	2 ppm
Asbestos	
Amosite	0.5 fiber > 5μm/cc
Chrysotile	2 fibers > 5μm/cc
Crocidolite	0.2 fiber > 5μm/cc
Other forms	2 fibers > 5μm/cc
bis (Chloromethyl) ether	0.001 ppm
Chromite ore processing (chromate)	0.05 mg/m³, as Cr
Chromium (VI), certain water insoluble compounds	0.05 mg/m³, as Cr

**See Notice of Intended Changes.

Coal tar pitch volatiles ..	0.2 mg/m³, as benzene solubles
Nickel sulfide roasting, fume & dust.....	1.0 mg/m³, as Ni
Vinyl chloride	5 ppm

• • •

A1b. *Human Carcinogens.* Substances, or substances associated with industrial processes, recognized to have carcinogenic potential without an assigned TLV:

4-Aminodiphenyl (p-Xenylamine) — Skin
‡ Benzidine — Skin
** Chloromethyl methyl ether
β-Naphthylamine
4-Nitrodiphenyl

For the substances in 1b no exposure or contact by any route — respiratory, skin or oral, as detected by the most sensitive methods — shall be permitted. The worker should be properly equipped to insure virtually no contact with the carcinogen.

A2. *Industrial Substances Suspect of Carcinogenic Potential for MAN.* Chemical substances or substances associated with industrial processes, which are suspect of inducing cancer, based on either (1) limited epidemiologic evidence, exclusive of clinical reports of single cases, or (2) demonstration of carcinogenesis in one or more animal species by appropriate methods.

† Acrylonitrile — Skin	2 ppm
Amitrol	—
Antimony trioxide production*	—
Arsenic trioxide production	—
Benzene	10 ppm
Benzo(a)pyrene	—
Beryllium	2.0 μg/m³
Cadmium oxide production	—
Carbon tetrachloride — Skin	5 ppm
Chloroform	10 ppm
Chloromethyl methyl ether	—

*Cigarette smoking can enhance the incidence of respiratory cancers from this or others of these substances or processes.
†1982 Addition.
‡1982 Adoption.
**See Notice of Intended Changes.

Chromates of lead and zinc, as Cr	0.05 mg/m³
Chrysene	—
3, 3'-Dichlorobenzidine — Skin	—
Dimethylcarbamyl chloride	—
1, 1-Dimethyl hydrazine — Skin	0.5 ppm
Dimethyl sulfate — Skin	0.1 ppm
‡ Ethylene dibromide — Skin	—
Ethylene oxide	1 ppm
† Formaldehyde	C 1 ppm
‡ Hexachlorobutadiene	0.02 ppm
Hexamethyl phosphoramide — Skin	—
Hydrazine — Skin	0.1 ppm
4, 4'-Methylene bis (2-chloroaniline) — Skin	0.02 ppm
Methyl hydrazine — Skin	C 0.2 ppm
Methyl iodide — Skin	2 ppm
2-Nitropropane	10 ppm
N-Nitrosodimethylamine — Skin	—
N-Phenyl-beta-naphthylamine	—
Phenylhydrazine — Skin	5 ppm
Propane sultone	—
beta-Propiolactone	0.5 ppm
Propylene imine — Skin	2 ppm
‡ o-Tolidine	—
† o-Toluidine — Skin	2 ppm
Vinyl bromide	5 ppm
Vinyl cyclohexene dioxide	10 ppm

For the above, worker exposure by all routes should be carefully controlled to levels consistent with the animal and human experience data (see Documentation), including those substances with a listed TLV.

THE COMMITTEE GUIDELINES FOR CLASSIFICATION OF EXPERIMENTAL ANIMAL CARCINOGENS

The following guidelines are offered in the present state of knowledge as an aid in classifying substances in the occupational environment found to be carcinogenic in experimental animals. A need was felt by the Threshold Limits Committee for such a classification in order to

†1982 Addition.
‡1982 Adoption.

take the first step in developing an appropriate TLV for occupational exposure.

Determination of Approximate Threshold of Response Requirement. In order to determine in which category to classify an experimental carcinogen for the purpose of assigning an industrial air limit (TLV), an approximate threshold of neoplastic response must be determined. Because of practical experimental difficulties, a precisely defined threshold cannot be attained. For the purposes of standard-setting, this is of little moment, as an appropriate risk, or safety, factor can be applied to the approximate threshold, the magnitude of which is dependent on the degree of potency of the carcinogenic response.

To obtain the best 'practical' threshold of neoplastic response, dosage decrements should be less than logarithmic. This becomes particularly important at levels greater than 10 ppm (or corresponding mg/m³). Accordingly, after a range-finding determination has been made by logarithmic decreases, two additional dosage levels are required within the levels of "effect" and "no effect" to approximate the true threshold of neoplastic response.

The second step should attempt to establish a metabolic relationship between animal and man for the particular substance found carcinogenic in animals. If the metabolic pathways are found comparable, the substance should be classed highly suspect as a carcinogen for man. If no such relation is found, the substance should remain listed as an experimental animal carcinogen until evidence to the contrary is found.

Proposed Classification of Experimental Animal Carcinogens. Substances occurring in the occupational environment found carcinogenic for animals may be grouped into three classes, those of high, intermediate and low potency. In evaluating the incidence of animal cancers, significant incidence of cancer is defined as a neoplastic response which represents, in the judgment of the Committee, a significant excess of cancers above that occurring in negative controls.

EXCEPTIONS: No substance is to be considered an occupational carcinogen of any practical significance which reacts by the respiratory route

at or above 1000 mg/m³ for the mouse, 2000 mg/m³ for the rat; by the dermal route, at or above 1500 mg/kg for the mouse, 3000 mg/kg for the rat; by the gastrointestinal route at or above 500 mg/kg/d for a lifetime, equivalent to about 100 g T.D. for the rat, 10 g T.D. for the mouse.

These dosage limitations exclude such substances as dioxane and trichlorethylene from consideration as carcinogens.

Examples: Dioxane — rats, hepatocellular and nasal tumors from 1015 mg/kg/d, oral

Trichloroethylene — female mice, tumors (30/98 @ 900 mg/kg/d), oral

Industrial Substances of High Carcinogenic Potency in Experimental Animals.

1. A substance to qualify as a carcinogen of high potency must fulfill one of the three following conditions in two animal species:

   1a. *Respiratory.* Elicit cancer from (1) dosages below 1 mg/m³ (or equivalent ppm) via the respiratory tract in 6- 7-hour daily repeated inhalation exposures throughout lifetime; or (2) from a single intratracheally administered dose not exceeding 1 mg of particulate, or liquid, per 100 ml or less of animal minute respiratory volume;

   Examples: bis-Chloromethyl ether, malignant tumors, rats, @ 0.47 mg/m³ (0.1 ppm) in 2 years;

   Hexamethyl phosphoramide, nasal squamous cell carcinoma, rats, @ 0.05 ppm, in 13 months

   OR

   1b. *Dermal.* Elicit cancer within 20 weeks by skin-painting, twice weekly at 2 mg/kg body weight or less per application for a total dose equal to or less than 1.5 mg, in a biologically inert vehicle;

Examples: 7, 12-Dimethylbenz(a)anthracene — skin tumors @ 0.12-0.8 mg T.D. in four weeks

Benzo(a)pyrene, mice 12 μg, 3X/wk for 18 mos. T.D. 2.6 mg, 90.9% skin tumors

OR

1c. *Gastrointestinal*. Elicit cancer by daily intake via the gastrointestinal tract, within six months, with a six-month holding period, at a dosage below 1 mg/kg body weight per day; total dose, rat, ≦ 50 mg; mouse, ≦ 3.5 mg;

Examples: 7, 12-Dimethylbenz(a)anthracene — mammary tumors from 10 mg 1X

3-Methylcholanthrene — Tumors @ 3 sites from 8 mg in 89 weeks

Benzo(a)pyrene, mice, 3.9% leukemias, from 30 mg T.D. 198 days

2. Elicit cancer by all three routes in at least two animal species at dose levels prescribed for high or intermediate potency.

Industrial Substances of Intermediate Carcinogenic Potency in Experimental Animals.

To qualify as a carcinogen of intermediate potency, a substance should elicit cancer in two animal species at dosages intermediate between those described in A3a and A3c by two routes of administration.

Example: Carbamic acid ethyl ester
Dermal, mammary tumors, mice, 100%, 63 weeks, 500–1400 mg T.D.
Gastrointestinal, various type tumors, mice 42 weeks, 320 mg T.D.

Gastrointestinal, various type tumors, rats, 60 weeks, 110–930 mg T.D.

Industrial Substances of Low Carcinogenic Potency in Experimental Animals.

To qualify as a carcinogen of low potency, a substance should elicit cancer in one animal

species by any *one* of three routes of administration at the following prescribed dosages and conditions:

1a. *Respiratory*. Elicit cancer from (1) dosages greater than 10 mg/m³ (or equivalent ppm) via the respiratory tract in 6- 7-hour, daily repeated inhalation exposures, for 12 months' exposure and 12 months' observation period; or (2) from intratracheally administered dosages totaling more than 10 mg of particulate or liquid per 100 ml or more of animal minute respiratory volume;

Examples: Beryl (beryllium aluminum silicate) malig. lung tumors, rats, @ 15 mg/m³ @ 17 months

Benzidine, var. tumors, rats, 10–20 mg/m³ @ > 13 mos.

OR

1b. *Dermal*. Elicit cancer by skin-painting of mice in twice weekly dosages of > 10 mg/kg body weight in a biologically inert vehicle for at least 75 weeks, i.e., ≧ 1.5g T.D.

Examples: Shale tar, mouse, 0.1 ml × 50 = 5g T.D. 59/60 skin tumors

Arsenic trioxide, man, dose unknown, but estimated to be high

1c. *Gastrointestinal*. Elicit cancer from daily oral dosages of 50 mg/kg/day or greater during the lifetime of the animal.

APPENDIX B
SUBSTANCES OF VARIABLE COMPOSITION

B1 *Polytetrafluoroethylene* decomposition products*. Thermal decomposition of the fluorocarbon chain in air leads to the formation of oxidized products containing carbon, fluorine and oxygen. Because these products decompose in part by hydrolysis in alkaline solution, they can be quantitatively determined in air as fluoride to provide an index of exposure. No TLV is recommended pending determination of the toxicity of the products, but air concentrations should be minimal.

B2 *Welding Fumes — Total Particulate (NOC)†*
TLV, 5 mg/m³

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*Trade Names: Algoflon, Fluon, Halon, Teflon, Tetran.
†Not otherwise classified (NOC).

Welding fumes cannot be classified simply. The composition and quantity of both are dependent on the alloy being welded and the process and electrodes used. Reliable analysis of fumes cannot be made without considering the nature of the welding process and system being examined; reactive metals and alloys such as aluminum and titanium are arc-welded in a protective, inert atmosphere such as argon. These arcs create relatively little fume, but an intense radiation which can produce ozone. Similar processes are used to arc-weld steels, also creating a relatively low level of fumes. Ferrous alloys also are arc-welded in oxidizing environments which generate considerable fume, and can produce carbon monoxide instead of ozone. Such fumes generally are composed of discreet particles of amorphous slags containing iron, manganese, silicon and other metallic constituents depending on the alloy system involved. Chromium and nickel compounds are found in fumes when stainless steels are arc-welded. Some coated and flux-cored electrodes are formulated with fluorides and the fumes associated with them can contain significantly more fluorides than oxides. Because of the above factors, arc-welding fumes frequently must be tested for individual constituents which are likely to be present to determine whether specific TLV's are exceeded. Conclusions based on total fume concentration are generally adequate if no toxic elements are present in welding rod, metal, or metal coating and conditions are not conducive to the formation of toxic gases.

Most welding, even with primitive ventilation, does not produce exposures inside the welding helmet above 5 mg/m³. That which does, should be controlled.

APPENDIX C
MIXTURES

C.1 THRESHOLD LIMIT VALUES FOR MIXTURES

When two or more hazardous substances, which act upon the same organ system, are present, their combined effect, rather than that of either individually, should be given primary consideration. In the absence of information to the contrary, the effects of the different hazards should be considered as additive. That is, if the sum of the following fractions,

$$\frac{C_1}{T_1} + \frac{C_2}{T_2} + \ldots \frac{C_n}{T_n}$$

exceeds unity, then the threshold limit of the mixture should be considered as being exceeded. C_1 indicates the observed atmospheric concentration, and T_1 the corresponding threshold limit (See Example 1A.a. and 1A.c.).

Exceptions to the above rule may be made when there is a good reason to believe that the chief effects of the different harmful substances are not in fact additive, but *independent* as when purely local effects on different organs of the body are produced by the various components of the mixture. In such cases the threshold limit ordinarily is exceeded only when at least one member of the series $\left(\frac{C_1}{T_1} + \text{or} + \frac{C_2}{T_2} \text{ etc.}\right)$ itself has a value exceeding unity (See Example 1A.c.).

Synergistic action or potentiation may occur with some combinations of atmospheric contaminants. Such cases at present must be determined individually. Potentiating or synergistic agents are not necessarily harmful by themselves. Potentiating effects of exposure to such agents by routes other than that of inhalation is also possible, e.g. imbibed alcohol and inhaled narcotic (trichloroethylene). Potentiation is characteristically exhibited at high concentrations, less probably at low.

When a given operation or process characteristically emits a number of harmful dusts, fumes, vapors or gases, it will frequently be only feasible to attempt to evaluate the hazard by measurement of a single substance. In such cases, the threshold limit used for this substance should be reduced by a suitable factor, the magnitude of which will depend on the number, toxicity and relative quantity of the other contaminants ordinarily present.

Examples of processes which are typically associated with two or more harmful atmospheric contaminants are welding, automobile repair, blasting, painting, lacquering, certain foundry operations, diesel exhausts, etc.

C.1A Examples of THRESHOLD LIMIT VALUES FOR MIXTURES

The following formulae apply only when the components in a mixture have similar toxicologic effects; they should not be used for mixtures with widely differing reactivities, e.g. hydrogen cyanide & sulfur dioxide. In such case the formula for Independent Effects (1A.c.) should be used.

1A.a. General case, where air is analyzed for each component:

a. *Additive effects. (Note: It is essential that the atmosphere be analyzed both qualitatively and quantitatively for each component present, in order to evaluate compliance or non-compliance with this calculated TLV.)*

$$\frac{C_1}{T_1} + \frac{C_2}{T_2} + \frac{C_3}{T_3} + \ldots = 1$$

Example No. 1A.a.: Air contains 400 ppm of acetone (TLV = 1000 ppm) 150 ppm of sec-butyl acetate (TLV = 200 ppm) and 100 ppm of 2-butanone (TLV = 200 ppm)

Atmospheric concentration of mixture = 400 + 150 + 100 = 650 ppm of mixture

$$\frac{400}{1000} + \frac{150}{200} + \frac{100}{200} = 0.4 + 0.75 + 0.5 = 1.65$$

Threshold Limit is exceeded.

1A.b. Special case when the source of contaminant is a liquid mixture and the atmospheric composition is *assumed* to be similar to that of the original material; e.g. on a time-weighted average exposure basis, all of the liquid (solvent) mixture eventually evaporates.

Additive effects (approximate solution)

1. The percent composition (by weight) of the liquid mixture is known, the TLVs of the constituents must be listed in mg/m³.

(Note: In order to evaluate compliance with this TLV, field sampling instruments should be calibrated, in the laboratory, for response t this specific quantitative and qualitative a vapor mixture, and also to fractional concentrations of this mixture; e.g., 1/2 the TLV; 1/10 the TLV; 2 × the TLV; 10 × the TLV; etc.)

TLV of mixture =

$$\frac{1}{\frac{f_a}{TLV_a} + \frac{f_b}{TLV_b} + \frac{f_c}{TLV_c} + \ldots \frac{f_n}{TLV_n}}$$

Example No. 1: Liquid contains (by weight)

50% heptane: TLV = 400 ppm or 1600 mg/m³
1 mg/m³ ≅ 0.25 ppm

30% methyl chloroform: TLV = 350 ppm or 1900 mg/m³
1 mg/m³ ≅ 0.18 ppm

20% pe chloroethylene: TLV = 100 ppm or 670 mg/m³
1 mg/m³ ≅ 0.15 ppm

$$\text{TLV of Mixture} = \frac{1}{\frac{0.5}{1600} + \frac{0.3}{1900} + \frac{0.2}{670}}$$

$$= \frac{1}{0.00031 + 0.00016 + 0.00030}$$

$$= \frac{1}{0.00077} = 1300 \text{ mg/m}^3$$

of this mixture
50% or (1300) (0.5) = 650 mg/m³ is heptane
30% or (1300) (0.3) = 390 mg/m³ is methyl chloroform
20% or (1300) (0.2) = 260 mg/m³ is perchloroethylene

These values can be converted to ppm as follows:

heptane: 650 mg/m³ × 0.25 = 162 ppm
methyl chloroform: 390 mg/m³ × 0.18 = 70 ppm
perchloroethylene: 260 mg/m³ × 0.15 = 39 ppm

TLV of mixture = 162 + 70 + 39 = 271 ppm, or 1300 mg/m³

1A.c. *Independent effects.*

Air contains 0.15 mg/m³ of lead (TLV, 0.15) and 0.7 mg/m³ of sulfuric acid (TLV, 1).

$$\frac{0.15}{0.15} = 1; \qquad \frac{0.7}{1} = 0.7$$

Threshold limit is not exceeded.

1B. TLV for Mixtures of Mineral Dusts.

For mixtures of biologically active mineral dusts the general formula for mixtures may be used.

For mixture containing 80% nonasbestiform talc and 20% quartz, the TLV for 100% of the mixture is given by:

$$TLV = \frac{1}{\frac{0.8}{20} + \frac{0.2}{2.7}} = 9 \text{ mppcf}$$

TLV of nonasbestiform talc (pure) = 20 mppcf
TLV of quartz (pure) =

$$\frac{300}{100 + 10} = \frac{300}{110} = 2.7 \text{ mppcf}$$

Essentially the same result will be obtained if the limit of the more (most) toxic component is used provided the effects are additive. In the above example the limit for 20% quartz is 10 mppcf.

For another mixture of 25% quartz, 25% amorphous silica and 50% talc:

25% quartz — TLV (pure) = 2.7 mppcf
25% amorphous silica — TLV (pure) = 20 mppcf
50% talc TLV (pure) = 20 mppcf

$$TLV = \frac{1}{\frac{0.25}{2.7} + \frac{0.25}{20} + \frac{0.5}{20}} = 8 \text{ mppcf}$$

The limit for 25% quartz approximates 9 mppcf.

APPENDIX D
Some Nuisance Particulates[o]
TLV, 30 mppcf or 10 mg/m³ of total dust < 1% quartz, or, 5 mg/m³ respirable dust

α-Alumina (Al_2O_3)	Plaster of Paris
Calcium carbonate	Portland Cement
Calcium silicate	Rouge
Cellulose (paper fiber)	Silicon
Emery	Silicon Carbide
Glycerin Mist	Starch
Graphite (synthetic)	Sucrose
Gypsum	Titanium Dioxide
Kaolin	Vegetable oil mists (except castor, cashew nut, or similar irritant oils)
Limestone	
Magnesite	
Marble	
Mineral Wool Fiber	Zinc Stearate
Pentaerythritol	Zinc oxide dust

o) When toxic impurities are not present, e.g. quartz < 1%.

APPENDIX E
Some Simple Asphyxiants[p]

Acetylene	Helium	Propane
Argon	Hydrogen	Propylene
Ethane	Methane	
Ethylene	Neon	

p) As defined on pg. 6.

APPENDIX F
Conversion of mppcf to Mass Concentration

Calculations for Conversion of Particle Count Concentration (by Standard Light Field — Midget Impinger Techniques), in mppcf, to Respirable Mass Concentration (by Respirable Sampler) in mg/m³.[11]

1. In 1967, Jacobsen and Tomb,[11] derived an empirical relationship of 5.6 mppcf to 1 milligram of respirable dust per cubic meter of air, based on 23 sets of samples, mostly coal dust. Studies on conversion factors have been undertaken and preliminary evidence suggests that the application of any single conversion factor may not be adequate for use in risk assessments, epidemiology studies, or setting TLVs.

   The following calculation results in an equivalence of 6.37 mppcf to 1 mg/m³ of respirable dust. Thus, an approximate ratio of 6 mppcf to 1 mg/m³ of respirable dust is suggested for conversion of TLVs from a count to a mass basis when the density and mass median diameter have not been determined.

2. Basic assumptions:

   a) Average density for silica containing dusts = 2.5 g/cm³ (2500 mg/cm³). Pulmonary significant dust densities may vary from 1.2 g/cm³ for coal dust to 3.1 g/cm³ for Portland Cement. Silica densities vary from 2.2 (amorphous) to 2.3 (cristobalite and tridymite) to 2.5 (alpha-quartz.) gms per cm³.

   b) The mass median diameter (mmd) of particles collected in midget impinger samplers and counted by the standard light field technique, *and* collected in a respirable sampler is approximately 1.5 μm or 1.5×10^{-4} cm. This assumption is, of course, quite arbitrary since the mmd of all dust clouds is quite variable, depending on many independent parameters, such as source of dust, age of

dust cloud, meteorological conditions, processes and equipment changes, etc. If the density and the mass median diameter of the dust particles are known, the nomograph in Figure 1 can be used to convert dust count concentrations (mppcf) to respirable mass concentrations (mg/m³).

3. Calculation:

a) vol. per particle: $4/3\ \pi\ r^3$; $r = 0.75 \times 10^{-4}$ cm
$= 4/3 \cdot \pi \cdot (0.75 \times 10^{-4})^3$
$= 1.77 \times 10^{-12}\ cm^3$

b) wt. per particle = vol. × density
$= 1.77 \times 10^{-12}\ cm^3 \times 2.5 \times 10^3\ mg/cm^3$
$= 4.425 \times 10^{-9}$ mg/particle

c) 1 particle/ft.³ = 35.5 part./m³
(since 35.5 cu ft = 1 cu m.)
10^6 part./ft³ = mppcf = 35.5×10^6 part./m³
wt. of 1 mppcf = 35.5×10^6 part./m³ × 4.425×10^{-9} mg/part.
1 mppcf = 0.157 mg/m³
or
6.37 mppcf = 1 mg/m³
or approximately 6 mpccf = 1 mg/m³.

Reference

1. Jacobson, M. and T. F. Tomb: Relationship Between Gravimetric Respirable Dust Concentration and Midget Impinger Number Concentration. *Am. Ind. Hyg. Assoc. J. 28*:554 (Nov.–Dec. 1967).

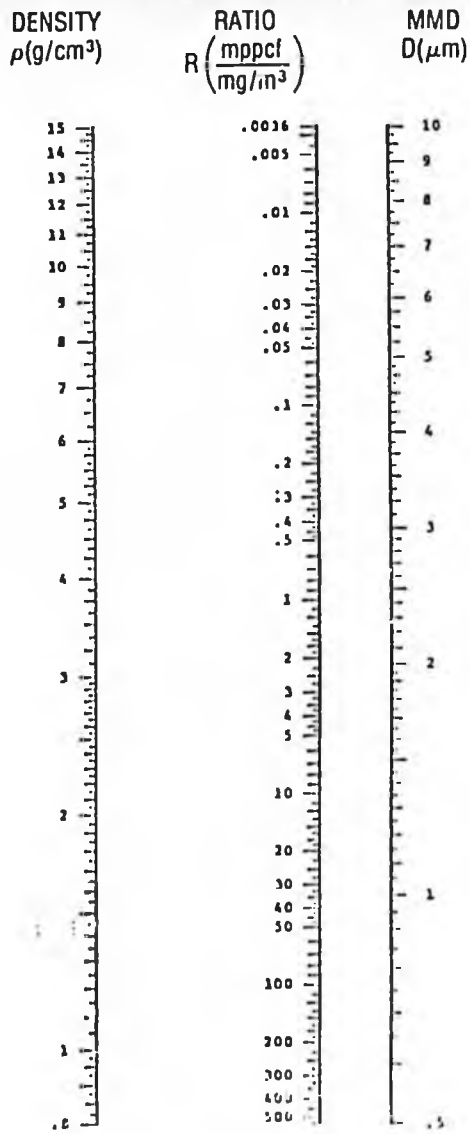


Figure 1 — Ratio of Particle Count — mppcf to Respirable Mass Concentration — mg/m³ (as a function of density and mmd)†

†Prepared by P. E. Caplan and R. J. Smith

Table 1

Equivalent TLVs in mppcf and mg/m³ (Respirable Mass) for Mineral Dusts†

Substance	Threshold Limit Value		
	Count mppcf	Resp. Mass mg/m³	Total Mass* mg/m³
Silica (SiO_2)			
Amorphous	20	(3)**	(6)
Cristobalite	1.5	0.05	0.15
Fused silica	3	0.1	0.3
Quartz	3	0.1	0.3
Tridymite	1.5	0.05	0.15
Coal Dust	(12)	2	(4)
Diatomaceous earth, natural	—	1.5	—
Graphite (natural)	15	(2.5)	(5)
Mica	20	(3)	(6)
Mineral wool fiber	—	(5)	10
Nuisance particulates	30	(5)	10
Perlite	30	(5)	(10)
Portland Cement	30	(5)	(10)
Soapstone	20	(3)	(6)
Tripoli	(3)	0.1	(0.3)

†Assuming that the mass median diameter is 1.5μm and density is 2.5 g/cm³.

*Unless otherwise specified, respirable mass is presumed to equal approximately 50% of total mass.

**All values in parentheses ( ) represent newly calculated values based on equivalence of 6 mppcf = 1 mg/m³ respirable mass and respirable mass = 50% total mass.

APPENDIX G
Chemical Substances and Other Issues Under Study[1]

Chemical Substances

Acetonitrile
Acetophenone
Acetyl acetone
Allyl chloride
Aluminum oxide
Asbestos
Bismuth telluride
Carbonyl fluoride
Cellulose
Chlorinated camphene (60%)
Chlorinated naphthalenes
Chlorine
bis-Chloromethyl ether
Copper dust & fume
Diatomaceous earth
Diethylenetriamine
Emery
Epichlorohydrin
Ethyl chloride
Ethylene dichloride
Graphite
Hexafluoroacetone
Isocyantes
Jet fuel
Methylenedianiline
Methyl methacrylate
Methyl tertiary butyl ether
Nickel, metal & soluble compounds
Nitrous oxide
Osmium tetroxide
"Other" glycol ethers
Piperizine
Propylene chloride
Propylene oxide
Silica, all forms
Silicon carbide
Silicon tetrahydride (Silane)
Styrene, monomer
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)
Tetrachloronaphthalene
Tin hydride
1,2,3-Trichloropropane
Trimellitic anhydride
m-Xylene 2,2'-diamine (MXDA, meta-meta-xylenediamine)

Other Issues

Dual vapor and particulate TLVs.[2]

Role of Biological Exposure Indices relative to air-borne contaminant TLVs.[2]

Role of STELs and Excursion limits.[2] STELs will be used for specific health effects and Excursion limits will be used for substances without a specific STEL.

Should mppcf values be retained (Appendix F)?

Should welding fume value (not otherwise classified, NOC) be retained or should specific analytical determinations be made for metals and other compounds and these values be compared to specific TLVs?

[1]Information, data especially, and comments are solicited to assist the committee in its deliberations and in the development of draft documents. Draft documentations are used by the committee to decide what action, if any to recommend on a given substance or question.

[2]Study papers appear in the *Annals of the American Conference of Governmental Industrial Hygienists*, Volume 3, *Transactions of the 1982 Meeting* (available late 1982).

APPENDIX H
Registered® Trade Names

Trade Name	Generic Name
Abate	Temephos
Ammate	Ammonium sulfamate
Azodrin	Monocrotophos
Baygon	Propoxur
Baytex	Fenthion
Bidrin	Dicrotophos
Bolstar	Sulprofos
Butyl Cellosolve	2-Butoxyethanol
Cellosolve acetate	2-Ethoxyethyl acetate
Coyden	Clopidol
Crag herbicide	Sesone
Dasanit	Fensulfothion
Delnav	Dioxathion
Dibrom	Naled
Difolatan	Captafol
Disyston	Disulfoton
Dursban	Chlorpyrifos
Dyfonate	Fonofos
Furadan	Carbofuran
Guthion	Azinphos-methyl
Lannate	Methomyl
Methyl Cellosolve	2-Methoxyethanol
Methyl Cellosolve acetate	2-Methoxyethyl acetate
Nemacur	Fenamiphos
Nialate	Ethion
N-Serve	Nitrapyrin
Pival	Pindone
Plictran	Cyhexatin
Sencor	Metribuzin
Sevin	Carbaryl
Teflon	Polytetrafluoroethylene
Thimet	Phorate
Thiodan	Endosulfan
Tordon	Picloram
Zoalene	Dinitolmide

TLVs®
Threshold Limit Values
for
Physical Agents
Adopted by
ACGIH
for 1982

1982 TLV PHYSICAL AGENTS COMMITTEE

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Peter A. Breysse, University of Washington
Thomas Cummings, Ontario Ministry of Labour
Irving H. Davis, Michigan Dept. of Public Health
Zory R. Glaser, Ph.D., Bureau of Radiological Health/FDA
Allan P. Heins, Ph.D., OSHA
LCDR Richard Johnson, USN
Edward J. Largent, Retired
John C. Mitchell, USAF
Anthony M. Muc, Ph.D., Ontario Ministry of Labour
David H. Sliney, USAEHA
COL Robert T. Wangemann, USA
Thomas K. Wilkinson, National Institutes of Health

CONSULTANTS

Gerald V. Coles
William E. Murray,
Wordie H. Parr, Ph.D.

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Any comments or questions regarding these limits, or requests to reprint should be addressed to:

Executive Secretary
American Conference of Governmental Industrial Hygienists
6500 Glenway Ave., Bldg. D-5
Cincinnati, OH 45211: (513) 661-7881

PREFACE

PHYSICAL AGENTS

These threshold limit values refer to levels of physical agents and represent conditions under which it is believed that nearly all workers may be repeatedly exposed day after day without adverse effect. Because of wide variations in individual susceptibility, exposure of an occasional individual at, or even below, the threshold limit may not prevent annoyance, aggravation of a pre-existing condition, or physiological damage.

These threshold limits are based on the best available information from industrial experience, from experimental human and animal studies, and when possible, from a combination of the three.

These limits are intended for use in the practice of industrial hygiene and should be interpreted and applied only by a person trained in this discipline. They are not intended for use, or for modification for use, (1) in the evaluation or control of the levels of physical agents in the community, (2) as proof or disproof of an existing physical disability, or (3) for adoption by countries whose working conditions differ from those in the United States of America.

These values are reviewed annually by the Committee on Threshold Limits for Physical Agents for revisions or additions, as further information becomes available.

Notice of Intent — At the beginning of each year, proposed actions of the Committee for the forthcoming year are issued in the form of a "Notice of Intent." This notice provides not only an opportunity for comment, but solicits suggestions of physical agents to be added to the list. The suggestions should be accompanied by substantiating evidence.

As Legislative Code — The Conference recognizes that the Threshold Limit Values may be adopted in legislative codes and regulations. If so used, the intent of the concepts contained in the Preface should be maintained and provisions should be made to keep the list current.

THRESHOLD LIMIT VALUES

HEAT STRESS

These Threshold Limit Values refer to heat stress conditions under which it is believed that nearly all workers may be repeatedly exposed without adverse health effects. The TLVs shown in Table 1 are based on the assumption that nearly all acclimatized, fully clothed workers with adequate water and salt intake should be able to function effectively under the given working conditions without exceeding a deep body temperature of 38°C.[1, 2]

Since measurement of deep body temperature is impractical for monitoring the workers' heat load, the measurement of environmental factors is required which most nearly correlate with deep body temperature and other physiological responses to heat. At the present time Wet Bulb Globe Temperature Index (WBGT) is the simplest and most suitable technique to measure the environmental factors. WBGT values are calculated by the following equations:

1. Outdoors with solar load:
   WBGT = 0.7 NWB + 0.2 GT + 0.1 DB
2. Indoors or Outdoors with no solar load:
   WBGT = 0.7 NWB + 0.3 GT

where:

WBGT = Wet Bulb Globe Temperature Index
NWB = Natural Wet-Bulb Temperature
DB = Dry-Bulb Temperature
GT = Globe Temperature

The determination of WBGT requires the use of a black globe thermometer, a natural (static) wet-bulb thermometer, and a dry-bulb thermometer.

Higher heat exposures than shown in Table 1 are permissible if the workers have been undergoing medical surveillance and it has been established that they are more tolerant to work in heat than the average worker. Workers should not be permitted to continue their work when their deep body temperature exceeds 38.0°C.

EVALUATION AND CONTROL

I. *Measurement of the Environment*

The instruments required are a dry-bulb, a natural wet-bulb, a globe thermometer, and a stand. The

TABLE 1

Permissible Heat Exposure Threshold Limit Values
(Values are given in °C. WBGT)

	Work Load		
Work — Rest Regimen	Light	Moderate	Heavy
Continuous work	30.0	26.7	25.0
75% Work — 25% Rest, Each hour	30.6	28.0	25.9
50% Work — 50% Rest, Each hour	31.4	29.4	27.9
25% Work — 75% Rest, Each hour	32.2	31.1	30.0

measurement of the environmental factors shall be performed as follows:

A. The range of the dry and the natural wet bulb thermometer shall be −5°C to 50°C with an accuracy of ±0.5°C. The dry bulb thermometer must be shielded from the sun and the other radiant surfaces of the environment without restricting the airflow around the bulb. The wick of the natural wet-bulb thermometer shall be kept wet with distilled water for at least 1/2 hour before the temperature reading is made. It is not enough to immerse the other end of the wick into a reservoir of distilled water and wait until the whole wick becomes wet by capillarity. The wick shall be wetted by direct application of water from a syringe 1/2 hour before each reading. The wick shall extend over the bulb of the thermometer, covering the stem about one additional bulb length. The wick should always be clean and new wicks should be washed before using.

B. A globe thermometer, consisting of a 15 cm. (6-inch) diameter hollow copper sphere painted on the outside with a matte black finish or equivalent, shall be used. The bulb or sensor of a thermometer (range −5°C to 100°C with an accuracy of ±0.5°C) must be fixed in the center of the sphere. The globe thermometer shall be exposed at least 25 minutes before it is read.

C. A stand shall be used to suspend the three thermometers so that they do not restrict free air flow around the bulbs, and the wet-bulb and globe thermometer are not shaded.

D. It is permissible to use any other type of temperature sensor that gives identical reading as that of a mercury thermometer under the same conditions.

E. The thermometers must be so placed that the readings are representative of the condition where the men work or rest, respectively.

The methodology outlined above is more fully explained by Minard.[3-4]

TABLE 2

Assessment of Work Load[9]

Average values of metabolic rate during different activities.

A. Body position and movement	kcal/min
Sitting	0.3
Standing	0.6
Walking	2.0–3.0
Walking up hill	add 0.8 per meter (yard) rise

B. Type of Work		Average kcal/min	Range kcal/min
Hand work			
	light	0.4	0.2–1.2
	heavy	0.9	
Work with one arm			
	light	1.0	0.7–2.5
	heavy	1.8	
Work with both arms			
	light	1.5	1.0–3.5
	heavy	2.5	
Work with body			
	light	3.5	2.5–15.0
	moderate	5.0	
	heavy	7.0	
	very heavy	9.0	

TABLE 3

Activity Examples[9]

Light hand work: writing, hand knitting

Heavy hand work: typewriting

Heavy work with one arm: hammering in nails (shoemaker, upholsterer)

Light work with two arms: filing metal, planing wood, raking of a garden

Moderate work with the body: cleaning a floor, beating a carpet

Heavy work with the body: railroad track laying, digging, barking trees

Sample Calculation

Assembly line work using a heavy hand tool.

A. Walking along	2.0 kcal/min
B. Intermediate value between heavy work with two arms and light work with the body	3.0 kcal/min
	5.0 kcal/min
C. Add for basal metabolism	1.0 kcal/min
Total	6.0 kcal/min

II. *Work Load Categories*

Heat produced by the body and the environmental heat together determine the total heat load. Therefore, if work is to be performed under hot environmental conditions, the workload category of each job shall be established and the heat exposure limit pertinent to the work load evaluated against the applicable standard in order to protect the worker from exposure beyond the permissible limit.

A. The work load category may be established by ranking each job into light, medium, and heavy categories on the basis of type of operation. Where the work load is ranked into one of said three categories, i.e.

(1) light work (up to 200 kcal/hr or 800 Btu/hr): e.g., sitting or standing to control machines, performing light hand or arm work,

(2) moderate work (200–350 kcal/hr or 800–1400 Btu/hr): e.g., walking about with moderate lifting and pushing,

(3) heavy work (350–500 kcal/hr or 1400–2000 Btu/hr): e.g., pick and shovel work,

the permissible heat exposure limit for that work load shall be determined from Table 1.

B. The ranking of the job may be performed either by measuring the worker's metabolic rate while performing his job or by estimating his metabolic rate with the use of Tables 2 and 3. Additional tables available in the literature[5-8] may be utilized also. When this method is used the permissible heat exposure limit can be determined by Figure 1.

III. *Work-Rest Regimen*

The permissible exposure limits specified in Table 1 and Figure 1 are based on the assumption that the WBGT value of the resting place is the same or very close to that of the work place. Where the WBGT of the work area is different from that of the rest area a time-weighted average value should be used for both environmental and metabolic heat. When time-weighted average values are used the appropriate curve on Figure 1 is the solid line labeled "continuous."

The time-weighted average metabolic rate (M) shall be determined by the equation:

$$\text{Av. } M = \frac{(M_1) \times (t_1) + (M_2) \times (t_2) + \ldots + (M_n) \times (t_n)}{(t_1) + (t_2) + \ldots + (t_n)}$$

Where M_1 M_2, M_n are estimated or measured metabolic rates for the various activities of the worker during the total time period. t_1, t_2, t_n are the elapsed times in minutes spent at the corresponding metabolic rate as determined by a time study.

The time-weighted average WBGT shall be determined by the equation:

$$\text{Av. WBGT} = \frac{(WBGT_1) \times (t_1) + (WBGT_2) \times t_2 + \ldots + (WBGT_n) \times (t_n)}{(t_1) + (t_2) + \ldots + (t_n)}$$

where $WBGT_1$, $WBGT_2$, $WBGT_n$ are calculated values of WBGT for the various work and rest areas occupied during total time periods. t_1, t_2, t_n are the elapsed times in minutes spent in the corresponding areas which are determined by a time study. Where exposure to hot environmental conditions is continuous for several hours or the entire work day, the time-weighted averages shall be calculated as hourly time-weighted average i.e., $t_1 + t_2 + \ldots + t_n = 60$ minutes. Where the exposure is intermittent, the time-weighted averages shall be calculated as two-hour time-weighted averages, i.e., $t_1 + t_2 + \ldots + t_n = 120$ minutes.

The permissible exposure limits for continuous work are applicable where there is a work-rest regimen of a 5-day work week and an 8-hour work day with a short morning and afternoon break (approximately 15 minutes) and a longer lunch break (approximately 30 minutes). Higher exposure limits are permitted if additional resting time is allowed. All breaks, including unscheduled pauses and administrative or operational waiting periods during work may be counted as rest time when additional rest allowance must be given because of high environmental temperatures.

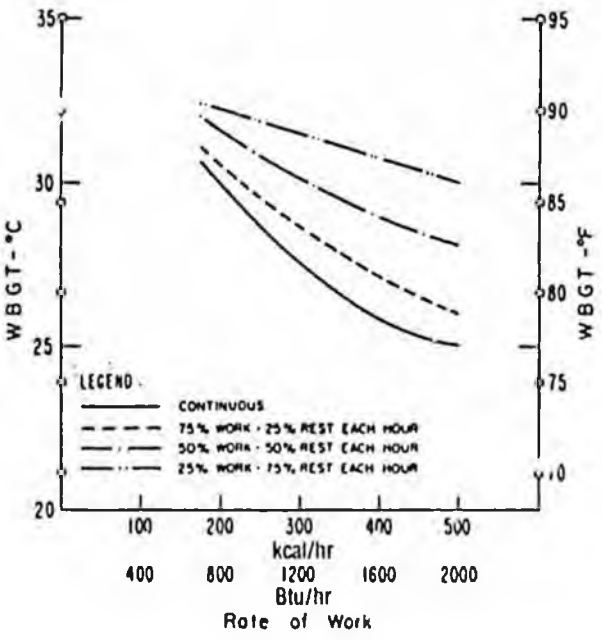


Figure 1 — Permissible Heat Exposure Threshold Limit Value

IV. *Water and Salt Supplementation*

During the hot season or when the worker is exposed to artificially generated heat, drinking water shall be made available to the workers in such a way that they are stimulated to frequently drink small amounts, i.e., one cup every 15–20 minutes (about 150 ml or 1/4 pint).

The water shall be kept reasonably cool (10°–15°C or 50.0°–60.0°F) and shall be placed close to the workplace so that the worker can reach it without abandoning the work area.

The workers should be encouraged to salt their food abundantly during the hot season and particularly during hot spells. If the workers are unacclimatized, salted drinking water shall be made available in a concentration of 0.1% (1g NaCl to 1.0 liter or 1 level tablespoon of salt to 15 quarts of water). The added salt shall be completely dissolved before the water is distributed, and the water shall be kept reasonably cool.

V. *Other Considerations*

A. *Clothing:* The permissible heat exposure TLVs are valid for light summer clothing as customarily worn by workers when working under hot environmental conditions. If special cothing is required for performing a particular job and this clothing is heavier or it impedes sweat evaporation or has higher insulation value, the worker's heat tolerance is reduced, and the permissible heat exposure limits indicated in Table 1 and Figure 1 are not applicable. For each job category where special clothing is required, the permissible heat exposure limit shall be established by an expert.

B. *Acclimatization and Fitness:* Acclimatization to heat involves a series of physiological and psychological adjustments that occur in an individual during his first week of exposure to hot environmental conditions. The recommended heat stress TLVs are valid for acclimated workers who are physically fit. Extra caution must be employed when unacclimated or physically un-fit workers must be exposed to heat stress conditions.

References:

1. *Health Factors Involved in Working Under Conditions of Heat Stress.* WHO Technical Report Series No. 412 (1969).
2. **Dukes-Dobos, F. N. and A. Henschel:** Development of Permissible Heat Exposure Limits for Occupational Work. *ASHRAE Journal 15(9):*57–62 (Sept. 1973).
3. **Minard, D.:** *Prevention of Heat Casualties in Marine Corps Recruits, Period of 1955–60, with Comparative Incidence Rates and Climatic Heat Stresses in Other Training Categories.* Research Report No. 4, Contract No. MR 005.01-0001.01, Naval Medical Research Institue, Bethesda, MD (Feb. 21, 1961). Published in *Military Medicine 126(44):*261–272 (April 1961).
4. **Minard, D. and R. L. O'Brien:** *Heat Casualties in the Navy and Marine Corps 1959–1962 with Appendices on the Field Use of the Wet Bulb-Globe Temperature Index.* Research Report No. 7, Contract No. MR 005.01-0001.01, Naval Medical Research Institute, Bethesda, MD (March 12, 1964).
5. **Astrand, Per-Olof and Kaare Rodahl.** *Textbook of Work Physiology.* McGraw-Hill Book Co., New York, San Francisco (1970).
6. Ergonomics Guide to Assessment of Metabolic and Cardiac Costs of Physical Work. *Am. Ind. Hyg. Assoc. J. 32:*560 (1971).
7. *Energy Requirements for Physical Work.* Research Progress Report No. 30. Purdue Farm Cardiac Project, Agricultural Experiment Station, West Lafayette, IN (1961).
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9. **Lehmann, G. E., A. Muller and H. Spitzer:** Der Kalorienbedarf bie Gewerblicher Arbeit *Arbeitsphysiol. 14:*166 (1950).

IONIZING RADIATION

The Committee accepts the philosophy and recommendations of the National Council on Radiation Protection and Measurements (NCRP) for the ionizing radiation TLV. The NCRP is charted by Congress to, in part, collect, analyze, develop and disseminate information and recommendations about protection against radiation and about radiation measurements, quantities and units, including development of basic concepts in these areas. NCRP Report No. 39 provides basic philosophy and concepts leading to protection criteria established in the same report.[1] Other NCRP reports address specific areas of radiation protection and, collectively, provide an excellent basis for establishing a sound program for radiation control. The Committee recommends the listed references as substantative documentation of a sound basis for ionizing radiation protection. The committee also strongly recommends that all exposures to ionizing radiations be kept as low as reasonably achievable within the stated guidance.

References:

1. *Basic Radiation Protection Criteria.* NCRP Report No. 39 (January 15, 1971).
2. *Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure.* National Bureau of Standards Handbook 69, (June 5, 1959), with *Addendum 1* (August 1963). Available as NCRP Report No. 22.

The above documents, as well as information on numerous other NCRP Reports addressing specific subjects in ionizing radiation protection are available from: NCRP Publications, PO Box 30175, Washington, DC 20014.

LASERS

The threshold limit values are for exposure to laser radiation under conditions to which nearly all workers may be exposed without adverse effects. The values should be used as guides in the control of exposures and should not be regarded as fine lines between safe and dangerous levels. They are based on the best available information from experimental studies.

Limiting Apertures

The TLVs expressed as radiant exposure or irradiance in this section may be averaged over an aperture of 1 mm except for TLVs for the eye in the spectral range of 400–1400 nm, which should be averaged over a 7 mm limiting aperture (pupil); and except for all TLVs for wavelengths between 0.1–1 mm where the limiting aperture is 10 mm. No modification of the TLVs is permitted for pupil sizes less than 7 mm.

The TLVs for "extended sources" apply to sources which subtend an angle greater than α (Table 7) which varies with exposure time. This angle is *not* the beam divergence of the source.

Correction Factors A and B (C_A and C_B)

The TLVs for ocular exposure in Tables 4 and 5 are to be used as given for all wavelength ranges. The TLVs for wavelengths between 700 nm and 1049 nm are to be increased by a uniformly extrapolated factor (C_A) as shown in Figure 2. Between 1049 nm and 1400 nm, the TLV has been increased by a factor (C_A) of five. For certain exposure times at wavelengths between 550 nm and 700 nm, correction factor (C_B) must be applied.

The TLVs for skin exposure are given in Table 6. The TLVs are to be increased by a factor (C_A) as shown in Figure 2 for wavelengths between 700 nm and 1400 nm. To aid in the determination of TLVs for exposure durations requiring calculations of fractional powers Figures 3, 4, 5 and 6 may be used.

Repetitively Pulsed Lasers

Since there are few experimental data for multiple pulses, caution must be used in the evaluation of such exposures. The protection standards for irradiance or radiant exposure in multiple pulse trains have the following limitations:

(1) The exposure from any single pulse in the train is limited to the protection standard for a single comparable pulse.

(2) The average irradiance for a group of pulses is limited to the protection standard as given in Tables 4, 5, or 7 of a single pulse of the same duration as the entire pulse group.

(3) When the Instantaneous Pulse Repetition Frequency (PRF) of any pulses within a train exceeds one, the protection standard applicable to each pulse is reduced as shown in Figure 6 for pulse durations less than 10^{-5} second. For pulses of greater duration, the following formula should be followed:

$$\text{Standard}\begin{pmatrix}\text{single pulse}\\ \text{in train}\end{pmatrix} = \frac{\text{Standard (pulse } n\tau)}{n}$$

where:

n = number of pulses in train
τ = duration of a single pulse in the train
Standard ($n\tau$) = protection standard of one pulse having a duration equal to $n\tau$ seconds.

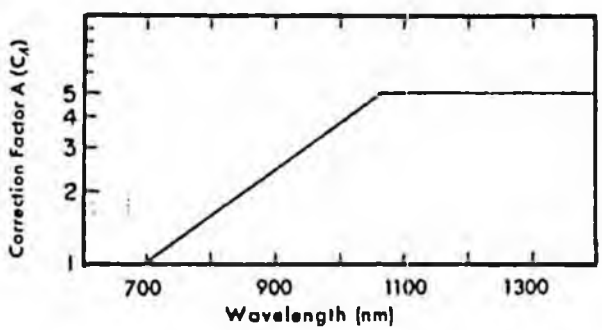


Figure 2 — TLV correction factor for $\lambda = 700 - 1400$ nm*

*For $\lambda = 700 - 1049$ nm, $C_A = 10^{[0.002(\lambda - 700)]}$
For $\lambda = 1050 - 1400$ nm, $C_A = 5$

TABLE 4

Threshold Limit Value for Direct Ocular Exposures
(Intrabeam Viewing) from a Laser Beam

Spectral Region	Wave Length	Exposure Time, (t) Seconds	TLV	
UVC	200 nm to 280 nm	10^{-9} to 3×10^{4}	3	mJ • cm^{-2}
UVB	280 nm to 302 nm	"	3	"
	303 nm	"	4	"
	304 nm	"	6	"
	305 nm	"	10	"
	306 nm	"	16	"
	307 nm	"	25	"
	308 nm	"	40	"
	309 nm	"	63	"
	310 nm	"	100	"
	311 nm	"	160	"
	312 nm	"	250	"
	313 nm	"	400	"
	314 nm	"	630	"

*not to exceed $0.56\ t^{1/4}$ J • cm^{-2} for $t \leq 10$ s.

UVA	315 nm to 400 nm	10^{-9} to 10	$.56\ t^{1/4}$ J • cm^{-2}
	" "	10 to 10^{3}	1.0 J • cm^{-2}
	" "	10^{3} to 3×10^{4}	1.0 mW • cm^{-2}
Light	400 nm to 700 nm	10^{-9} to 1.8×10^{-5}	5×10^{-7} J • cm^{-2}
	400 nm to 700 nm	1.8×10^{-5} to 10	$1.8\ (t/\sqrt{t})$ mJ • cm^{-2}
	400 nm to 549 nm	10 to 10^{4}	10 mJ • cm^{-2}
	550 nm to 700 nm	10 to T_1	$1.8\ (t/\sqrt{t})$ mJ • cm^{-2}
	550 nm to 700 nm	T_1 to 10^{4}	$10\ C_B$ mJ • cm^{-2}
	400 nm to 700 nm	10^{4} to 3×10^{4}	C_B μW • cm^{-2}
IR-A	700 nm to 1049 nm	10^{-9} to 1.8×10^{-5}	$5\ C_A \times 10^{-7}$ J • cm^{-2}
	700 nm to 1049 nm	1.8×10^{-5} to 10^{3}	$1.8\ C_A\ (t/\sqrt{t})$ mJ • cm^{-2}
	1050 nm to 1400 nm	10^{-9} to 10^{-4}	5×10^{-6} J • cm^{-2}
	1050 nm to 1400 nm	10^{-4} to 10^{3}	$9(t/\sqrt{t})$ mJ • cm^{-2}
	700 nm to 1400 nm	10^{3} to 3×10^{4}	$320\ C_A$ μW • cm^{-2}
IR-B & C	1.4 μm to 10^{3} μm	10^{-9} to 10^{-7}	10^{-2} J • cm^{2}
	" "	10^{-7} to 10	$0.56\ \sqrt{t}$ J • cm^{-2}
	" "	10 to 3×10^{4}	0.1 W • cm^{-2}

C_A – See Fig. 2.
$C_B = 1$ for $\lambda = 400$ to 549 nm; $C_B = 10^{[0.015\,(\lambda - 550)]}$ for $\lambda = 550$ to 700 nm.
$T_1 = 10$ s for $\lambda = 400$ to 549 nm; $T_1 = 10 \times 10^{[0.02\,(\lambda - 550)]}$ for $\lambda = 550$ to 700 n.

TABLE 5

Threshold Limit Values for Viewing a Diffuse Reflection of a Laser Beam or an Extended Source Laser

Spectral Region	Wave Length	Exposure Time, (t) Seconds	TLV
UV	200 nm to 400 nm	10^{-9} to 3×10^{4}	Same as Table 3
Light	400 nm to 700 nm	10^{-9} to 10	$10 \sqrt{t}$ J • cm^{-2} • sr^{-1}
	400 nm to 549 nm	10 to 10^{4}	21 J • cm^{-2} • sr^{-1}
	550 nm to 700 nm	10 to T_1	$3.83 (t/\sqrt{\ })$ J • cm^{-2} • sr^{-1}
	550 nm to 700 nm	T_1 to 10^{4}	$21 C_B$ J • cm^{-2} • sr^{-1}
	400 nm to 700 nm	10^{4} to 3×10^{4}	$2.1 C_B t \times 10^{-3}$ W • cm^{-2} • sr^{-1}
IR-A	700 nm to 1400 nm	10^{-9} to 10	$10 C_A \sqrt{t}$ J • cm^{-2} • sr^{-1}
	700 nm to 1400 nm	10 to 10^{3}	$3.83 C_A (t/\sqrt{t})$ J • cm^{-2} • sr^{-1}
	700 nm to 1400 nm	10^{3} to 3×10^{4}	$0.64 C_A$ W • cm^{-2} • sr^{-1}
IR-B & C	1.4 μm to 1 mm	10^{-9} to 3×10^{4}	Same as Table 3

C_A, C_B, and T_1 are the same as in footnote to Table 4.

TABLE 6

Threshold Limit Value for Skin Exposure from a Laser Beam

Spectral Region	Wave Length	Exposure Time, (t) Seconds	TLV
UV	200 nm to 400 nm	10^{-9} to 3×10^{4}	Same as Table 4
Light &	400 nm to 1400 nm	10^{-9} to 10^{-7}	$2 C_A \times 10^{-2}$ J • cm^{-2}
IR-A	" "	10^{-7} to 10	$1.1 C_A \sqrt{t}$ J • cm^{-2}
IR-A	" "	10 to 3×10^{4}	$0.2 C_A$ W • cm^{-2}
IR-B & C	1.4 μm to 1 mm	10^{-9} to 3×10^{4}	Same as Table 4

C_A = 1.0 for λ = 400-700 nm; see Figure 2 for λ = 700 to 1400 nm.

TABLE 7

Limiting Angle to Extended Source
Which May Be Used for Applying Extended Source TLVs

Exposure Duration(s)	Angle α (mrad)
10^{-9}	8.0
10^{-8}	5.4
10^{-7}	3.7
10^{-6}	2.5
10^{-5}	1.7
10^{-4}	2.2
10^{-3}	3.6
10^{-2}	5.7
10^{-1}	9.2
1.0	15
10	24
10^{2}	24
10^{3}	24
10^{4}	24

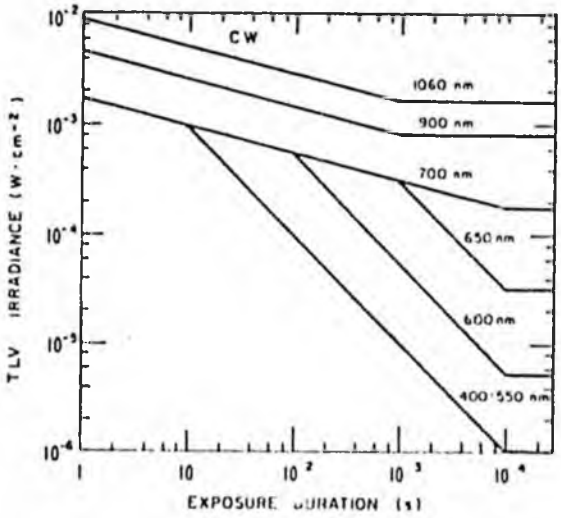


Figure 3a — TLV for infrabeam (direct) viewing of CW laser beam (400–1400 nm)

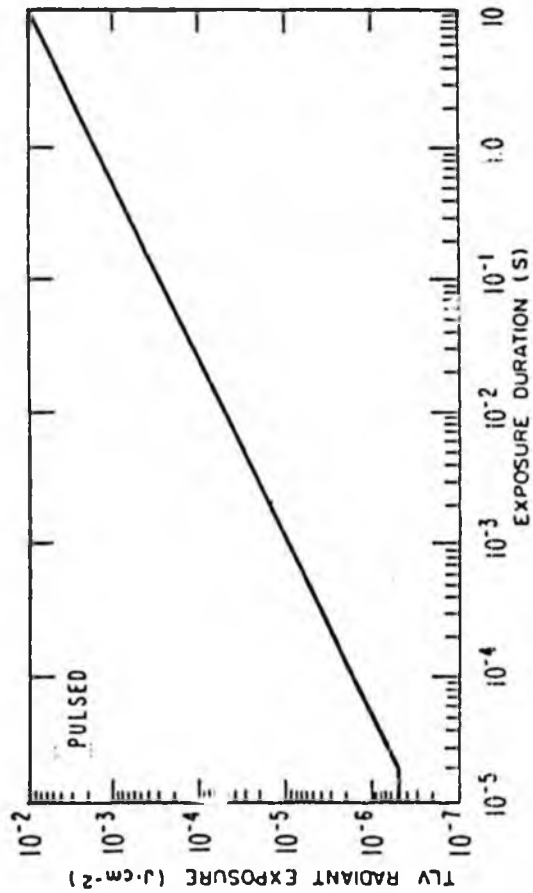


Figure 3b — TLV for infrabeam (direct) viewing of laser beam (400–700 nm).

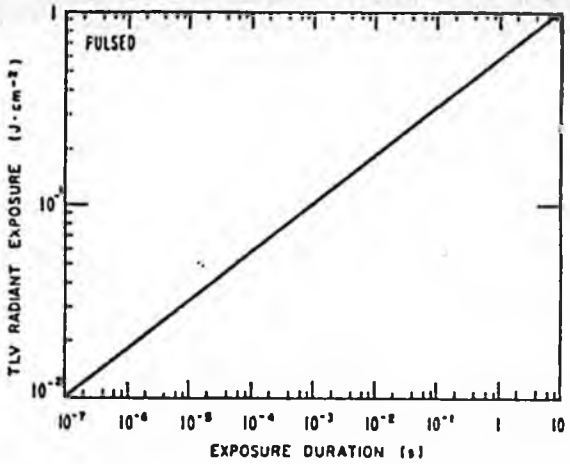


Figure 4a — TLV for laser exposure of skin and eyes for far-infrared radiation (wave-lengths greater than 1.4 μm).

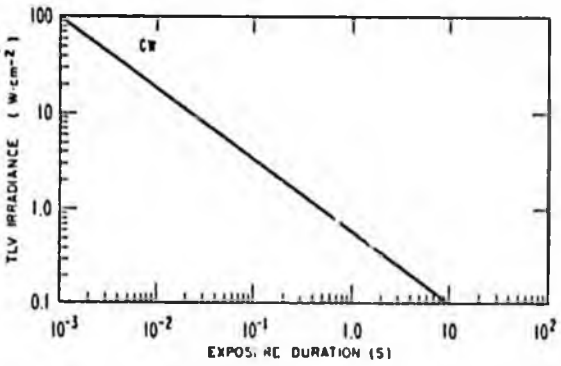


Figure 4b — TLV for CW laser exposure of skin and eyes for far-infrared radiation (wave-lengths greater than 1.4 μm).

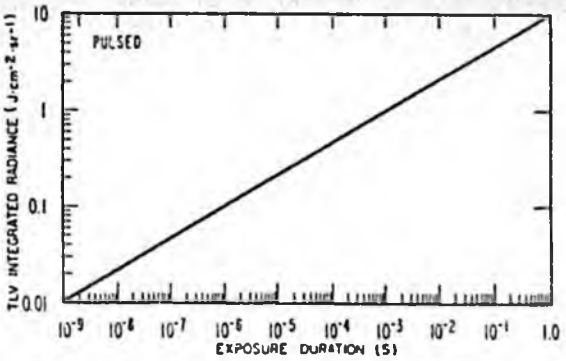


Figure 5a — TLV for extended sources or diffuse reflections of laser radiation (400–700 nm).

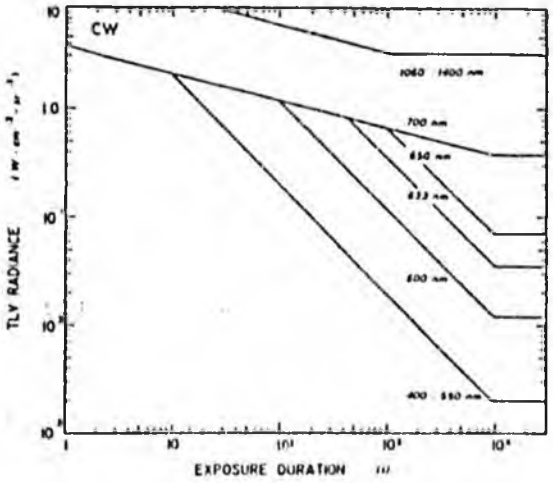


Figure 5b — TLV for extended sources or diffuse reflections of laser radiation (400–1400 nm).

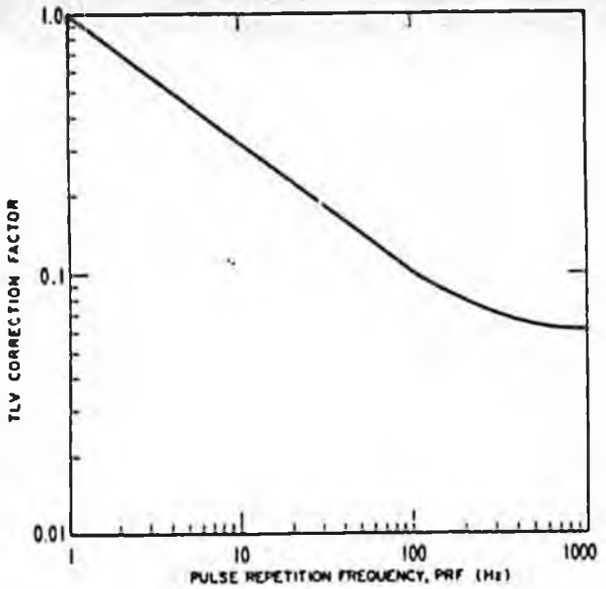


Figure 6 — Multiplicative correction factor for repetitively pulsed lasers having pulse durations less than 10^{-3} second. TLV for a single pulse of the pulse train is multiplied by the above correction factor. Correction factor for PRF greater than 1000 Hz is 0.06.

**MICROWAVES

These Threshold Limit Values refer to microwave energy in the frequency range of 300 MHz to 300 GHz and represent conditions under which it is believed that nearly all workers may be repeatedly exposed without adverse effect.

Under conditions of moderate to severe heat stress, the recommended values may need to be reduced.[1] Therefore, these values should be used as guides in the control of exposure to microwave energy and should not be regarded as a fine line between safe and dangerous levels.

Recommended Values:

The Threshold Limit Value for occupational exposure to microwave energy, where power density or field intensity is known and exposure time is controlled, is as follows:

1. For exposure to continuous wave (CW) sources, the power density level shall not exceed 10 milliwatts per square centimeter (mW/cm^2) for continuous exposure, and the total exposure time shall be limited to an 8-hour workday. This power density is approximately equivalent to a free-space electric field strength of 200 volts-per-meter rms (V/m) and a free-space magnetic field strength of 0.5 ampere-per-meter rms (A/m).
2. Exposures to CW power density levels greater than 10 mW/cm^2 are permissible up to a maximum of 25 mW/cm^2 based upon an average energy density of 1 milliwatt-hour per square centimeter (mWh/cm^2) averaged over any 0.1 hour period. For example, at 25 mW/cm^2, the permissible exposure duration is approximately 2.4 minutes in any 0.1 hour period.
3. For repetitively pulsed microwave sources, the average field strength or power density is calculated by multiplying the peak-pulse value by the duty cycle. The duty cycle is equal to the pulse duration in seconds times the pulse repetition rate in Hertz. Exposure during an 8-hour workday shall not exceed the following values which are averaged over any 0.1 hour period:

Power Density	10 mW/cm^2
Energy Density	1 mWh/cm^2
Mean Squared Electric Field Strength	40,000 V^2/m^2
Mean Squared Magnetic Field Strength	0.25 A^2/m^2

4. Exposure is not permissible in CW or repetitively pulsed fields with an average power density in excess of 25 mW/cm^2 or approximate equivalent free-space field strengths of 300 V/m or 0.75 A/m.

Reference:

1. Mumford, W. W.: Heat Stress Due to R. F. Radiation. *Proceedings of IEEE 57(2):* 171–178 (Feb. 1969).

NOISE

These threshold limit values refer to sound pressure levels and durations of exposure that represent conditions under which it is believed that nearly all workers may be repeatedly exposed without adverse effect on their ability to hear and understand normal speech. Prior to 1979, the medical profession had defined hearing impairment as an average hearing threshold level in excess of 25 decibels (ANSI-S3.6-

**See Notice of Intended Changes.

Table 8
Threshold Limit Values

Duration per Day Hours	Sound Level dBA†
16	80
8	85
4	90
2	95
1	100
1/2	105
1/4	110
1/8	115*

†Sound level in decibels are measured on a sound level meter, conforming as a minimum to the requirements of the American National Standard Specification for Sound Level Meters, S1.4 (1971) Type S2A, and set to use the A-weighted network with slow meter response.

*No exposure to continuous or intermittent in excess of 115 dBA

1969) at 500, 1000, and 2000 Hz, and the limits which are given have been established to prevent a hearing loss in excess of this level.[a] The values should be used as guides in the control of noise exposure and, due to individual susceptibility, should not be regarded as fine lines between safe and dangerous levels.

It should be recognized that the application of the TLV for noise will not protect all workers from the adverse effects of noise exposure. A hearing conservation program with audiometric testing is necessary when workers are exposed to noise at or above the TLV levels.

Continuous or Intermittent

The sound level shall be determined by a sound level meter, conforming as a minimum to the requirements of the American National Standard Specification for Sound Level Meters, S1.4 (1971) Type S2A, and set to use the A-weighted network with slow meter response. Duration of exposure shall not exceed that shown in Table 8.

These values apply to total duration of exposure per working day regardless of whether this is one continuous exposure or a number of short-term exposures and does include the impact and impulsive type of noise that contributes to the sound level meter reading at slow response.

When the daily noise exposure is composed of two or more periods of noise exposure of different levels, their combined effect should be considered, rather than the individual effect of each. If the sum of the following fractions:

$$\frac{C_1}{T_1} + \frac{C_2}{T_2} + \ldots \frac{C_n}{T_n}$$

exceeds unity, then, the mixed exposure should be considered to exceed the threshold limit value, C_1 indicates the total duration of exposure at a specific noise level, and T_1 indicates the total duration of exposure permitted at that level. All on-the-job noise exposures of 80 dBA or greater shall be used in the above calculations.

[a]In 1979, the American Academy of Ophthalmology and Otolargyngology (AAOO) included 3000 hz in their hearing impairment formula.

IMPULSIVE OR IMPACT NOISE

It is recommended that exposure to impulsive or impact noise shall not exceed the limits listed in Table 9 or taken from Figure 7. No exposures in ex-

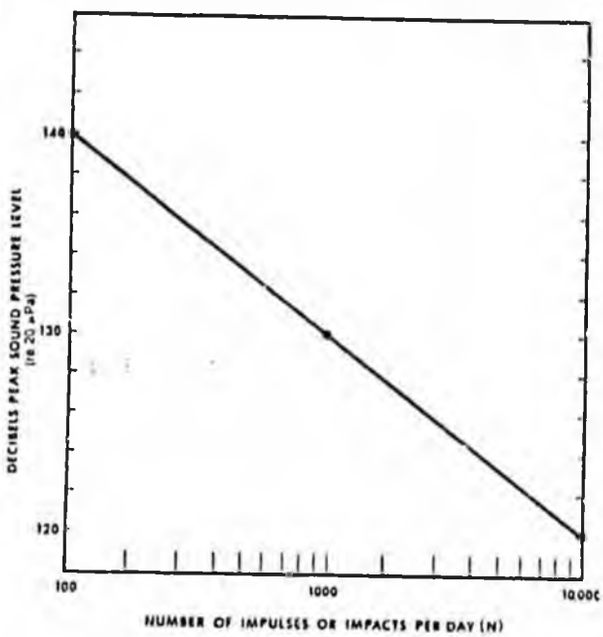


Figure 7 — Threshold Limit Values for Impulse/Impact Noise.

cess of 140 decibels peak sound pressure level are permitted. Impulsive or impact noise is considered to be those variations in noise levels that involve maxima at intervals of greater than one per second. Where the intervals are less than one second, it should be considered continuous.

Table 9
Threshold Limit Values Impulsive or Impact Noise

Sound Level dB**	Permitted Number of Impulses or Impacts per day
140	100
130	1000
120	10,000

**Decibels peak sound pressure level, re 20 μPa

ULTRAVIOLET RADIATION*

These threshold limit values refer to ultraviolet radiation in the spectral region between 200 and 400 nm and represent conditions under which it is believed that nearly all workers may be repeatedly exposed without adverse effect. These values for exposure of the eye or the skin apply to ultraviolet radiation from arcs, gas, and vapor discharges, fluorescent, and incandescent sources, and solar radiation, but do not apply to ultraviolet lasers.* These values do not apply to ultraviolet radiation exposure of photosensitive individuals or of individuals concomitantly exposed to photosensitizing agents.[11] These values should be used as guides in the control of exposure to continuous sources where the exposure duration shall not be less than 0.1 sec.

These values should be used as guides in the control of exposure to ultraviolet sources and should not be regarded as a fine line between safe and dangerous levels.

Recommended Values:

The threshold limit value for occupational exposure to ultraviolet radiation incident upon skin or eye where irradiance values are known and exposure time is controlled are as follows:

1. For the near ultraviolet spectral region (320 to 400 nm) total irradiance incident upon the unprotected skin or eye should not exceed 1 mW/cm² for periods greater than 10^3 seconds (approximately 16 minutes) and for exposure times less than 10^3 seconds should not exceed one J/cm².
2. For the actinic ultraviolet spectral region (200 — 315 nm), radiant exposure incident upon the unprotected skin or eye should not exceed the values given in Table 10 within an 8-hour period.
3. To determine the effective irradiance of a broadband source weighted against the peak of the spectral effectiveness curve (270 nm), the following weighting formula should be used:

$$E_{eff} = \sum E_\lambda S_\lambda \Delta\lambda$$

where:

E_{eff} = effective irradiance relative to a monochromatic source at 270 nm in W/cm² (J/s/cm²)

E_λ = spectral irradiance in W/cm²/nm

S_λ = relative spectral effectiveness (unitless)

$\Delta\lambda$ = band width in nanometers

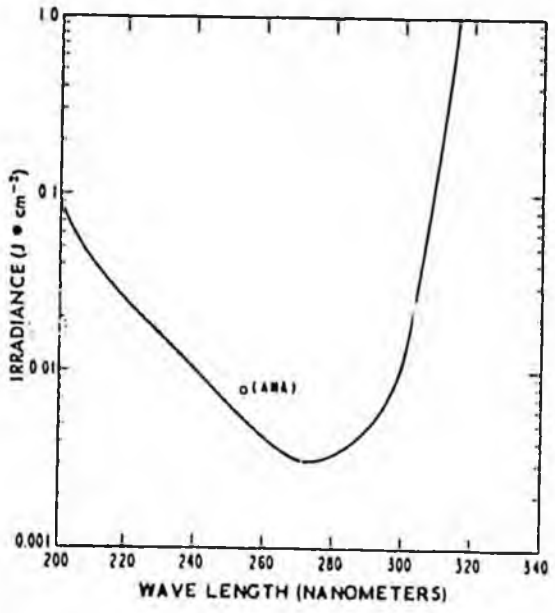


Figure 8 — Threshold Limit Values for Ultraviolet Radiation

*See Laser TLVs.

TABLE 10
Relative Spectral Effectiveness
by Wavelength*

Wavelength (nm)	TLV (mJ/cm²)	Relative Spectral Effectiveness S_λ
200	100	0.03
210	40	0.075
220	25	0.12
230	16	0.19
240	10	0.30
250	7.0	0.43
254	6.0	0.5
260	4.6	0.65
270	3.0	1.0
280	3.4	0.88
290	4.7	0.64
300	10	0.30
305	50	0.06
310	200	0.015
315	1000	0.003

*See Laser TLVs.

TABLE 11

Permissible Ultraviolet Exposures

Duration of Exposure Per Day	Effective Irradiance, E_{eff} (μW/cm²)
8 hrs.	0.1
4 hrs.	0.2
2 hrs.	0.4
1 hr.	0.8
30 min.	1.7
15 min.	3.3
10 min.	5
5 min.	10
1 min.	50
30 sec.	100
10 sec.	300
1 sec.	3,000
0.5 sec.	6,000
0.1 sec.	30,000

4. Permissible exposure time in seconds for exposure to actinic ultraviolet radiation incident upon the unprotected skin or eye may be computed by dividing 0.003 J/cm² by E_{eff} in W/cm². The exposure time may also be determined using Table 11 which provides exposure times corresponding to effective irradiances in μW/cm².
5. All the preceding TLVs for ultraviolet energy apply to sources which subtend an angle less than 80°. Sources which subtend a greater angle need to be measured only over an angle of 80°.

Conditioned (tanned) individuals can tolerate skin exposure in excess of the TLV without erythemal effects. However, such conditioning may not protect persons against skin cancer.

Reference:

1. *Sunlight and Man*, Fitzpatrick *et al*, Eds. Univ. of Tokyo Press, Tokyo, Japan (1974).

NOTICE OF INTENDED CHANGES (1982)

These physical agents, with their corresponding values, comprise those for which either a limit has been proposed for the first time, or for which a change in the "Adopted" listing has been proposed. In both cases, the proposed limits should be considered trial limits that will remain in the listing for a period of at least one year. If after one year no evidence comes to light that questions the appropriateness of the values herein the values will be reconsidered for the "Adopted" list.

NOTICE OF INTENT TO ESTABLISH THRESHOLD LIMIT VALUES

LASERS

It is proposed that the following footnote be added to Table 7 (Threshold Limit Value for Skin Exposure from a Laser Beam).

The IR-B and IR-C exposures to skin surface areas A(cm²) exceeding 1000 cm², the TLV is 100,000/A mW/cm²; for areas greater than 100,000/A, the TLV is 10 mW/cm².

LIGHT AND NEAR-INFRARED RADIATION

These Threshold Limit Values refer to visible and near-infrared radiation in the wavelength range of 400

nm to 1400 nm and represent conditions under which it is believed that nearly all workers may be exposed without adverse effect. These values should be used as guides in the control of exposure to light and should not be regarded as a fine line between safe and dangerous levels.

Recommended Values:

The Threshold Limit Value for occupational exposure to broad-band light and near-infrared radiation for the eye apply to exposure in any eight-hour workday and require knowledge of the spectral radiance (L_λ) and total irradiance (E) of the source as measured at the position(s) of the eye of the worker. Such detailed spectral data of a white light source is generally only required if the luminance of the source exceeds 1 cd cm^{-2}. At luminances less than this value the TLV would not be exceeded.

TABLE 12

Spectral Weighting Functions for Assessing Retinal Hazards from Broad-Band Optical Sources

Wavelength (nm)	Blue-Light Hazard Function B_λ	Burn Hazard Function R_λ
400	0.10	1.0
405	0.20	2.0
410	0.40	4.0
415	0.80	8.0
420	0.90	9.0
425	0.95	9.5
430	0.98	9.8
435	1.0	10
440	1.0	10
445	0.97	9.7
450	0.94	9.4
455	0.90	9.0
460	0.80	8.0
465	0.70	7.0
470	0.62	6.2
475	0.55	5.5
480	0.45	4.5
485	0.40	4.0
490	0.22	2.2
495	0.16	1.6
500–600	$10^{[(450-\lambda)/50]}$	1.0
600–700	0.001	1.0
700–1049	0.001	$10^{[(700-\lambda)/505]}$
1050–1400	0.001	0.2

The TLV's are:

1. To protect against retinal thermal injury, the spectral radiance of the lamp weighted against the function R (Table 12) should not exceed:

$$\sum_{400}^{1400} L_\lambda R_\lambda \Delta\lambda \leqq 1/\alpha\, t^{1/2} \qquad (1)^*$$

where L_λ is in W cm^{-2} sr^{-1} and t is the viewing duration (or pulse duration if the lamp is pulsed) limited to 1 μs to 10 s, and α is the angular subtense of the source in radians. If the lamp is oblong, α refers to the longest dimension that can be viewed. For instance, at a viewing distance r = 100 cm from a tubular lamp of length l = 50 cm, the viewing angle is:

$$\alpha = l/r = 50/100 = 0.5 \text{ rad} \qquad (2)$$

2. To protect against retinal photochemical injury from chronic blue-light exposure the integrated spectral radiance of light source weighted against the blue-light hazard function B_λ (Table 12) should not exceed:

$$\sum_{400}^{1400} L_\lambda\, t\, B_\lambda \Delta\lambda \leqq 100 \text{ J cm}^{-2} \text{ sr}^{-1} \quad (t \leqq 10^4 \text{s}) \qquad (3a)$$

$$\sum_{400}^{1400} L_\lambda B_\lambda \Delta\lambda \leqq 10^{-2} \text{ Wcm}^{-2} \text{ sr}^{-1} \quad (t > 10^4 \text{s}) \qquad (3b)$$

The weighted product of L_λ and B_λ is termed L(blue). For a source radiance L weighted against the blue-light hazard function [L(blue)] which exceeds 10 mW/cm^{-2} sr^{-1} in the blue spectral region, the permissible exposure duration t_{max} in seconds is simply:

$$t_{max} = 100 \text{ J cm}^{-2} \text{ sr}^{-1}/\text{L (blue)} \qquad (4)$$

The latter limits are greater than the maximum permissible exposure limits for 440 nm laser radiation (see Laser TLV) because a 2–3 mm pupil is assumed rather than a 7 mm pupil for the Laser TLV. For a light source subtending an angle α less than 11 mrd (0.011 radian) the above limits are relaxed such that the spectral irradiance weighted against the blue-light hazard function B_λ [E(blue)] should not exceed:

$$\sum_{400}^{1400} E_\lambda \bullet t \bullet B_\lambda \bullet \Delta\lambda \leqq 10\ mJ \bullet cm^{-2}\ (t \leqq 10^4\ s) \quad (5a)$$

$$\sum_{400}^{1400} E_\lambda \bullet B_\lambda \bullet \Delta\lambda \leqq 1\mu W \bullet cm^2\ (t \geqq 10^4\ s) \quad (5b)$$

For a source where the blue light weighted irradiance E (blue) exceeds 1 $\mu W \bullet cm^{-2}$ is the maximum permissible exposure duration t_{max} in seconds is:

$$t_{max} = 10mJ \bullet cm^{-2}\ E\ (blue) \quad (6)$$

3. *Infrared Radiation:* To avoid possible delayed effects upon the lens of the eye (cataractogenesis), the infrared radiation ($\lambda > 770$ nm) should oe limited to 10 $mWcm^{-2}$. For an infrared heat lamp or any near-infrared source where a strong visual stimulus is absent, the near infrared (770–1400 nm) radiance as viewed by the eye should be limited to:

$$\sum_{770}^{1400} L_\lambda\ \Delta\lambda = 0.6/\alpha \quad (7)^*$$

for extended duration viewing conditions. This limit is based upon a 7 mm pupil diameter.

AIRBORNE UPPER SONIC AND ULTRASONIC ACOUSTIC RADIATION

These threshold limit values refer to sound pressure levels that represent conditions under which it is believed that nearly all workers may be repeatedly exposed without adverse effect. The values listed in Table 13 should be used as guides in the control of noise exposure and, due to individual susceptibility, should not be regarded as fine lines between safe and dangerous levels. The levels for the third octave bands centered below 20 kHz are below those which cause subjective effects. Those levels for 1/3 octaves above 20 kHz are for prevention of possible hearing losses from subharmonics of these frequencies.

*Formulae (1) and (7) are empirical and are not, strictly speaking, dimensionally correct. To make the formulae dimensionally correct, one would have to insert a dimensional correction factor k in the right hand numerator in each formula. For formula (1) this would be $k_1 = 1\ W \bullet rad \bullet s^{1/2}/(cm^2 \bullet sr)$, and for formula (7) $k_2 = 1\ W \bullet rad/(cm^2 \bullet sr)$.

TABLE 13

Permissible Ultrasound Exposure Levels

Mid-Frequency of Third-Octave Band kHz	One-Third Octave — Band Level in dB re 20 μPa
10	80
12.5	80
16	80
20	105
25	110
31.5	115
40	115
50	115

RADIOFREQUENCY/MICROWAVE RADIATION

These Threshold Limit Values (TLVs) refer to radiofrequency (RF) and microwave radiation in the frequency range from 10 kHz to 300 GHz, and represent conditions under which it is believed workers may be repeatedly exposed without adverse health effects. The TLVs shown in Table 14 are selected to limit the average whole body specific absorption rate (SAR) to 0.4 W/kg in any six minutes (0.1 hr) period for 3 MHz to 300 GHz, see Figure 9. Between 10 kHz and 3 MHz the average whole body SAR is still limited to 0.4 W/kg, but the plateau at 100 mW/cm^2 was set to protect against shock and burn hazards.

Since it is usually impractical to measure the SAR, the TLVs are expressed in units that are measurable, viz, squares of the electric and magnetic field strengths, averaged over any 0.1 hour period. This can be expressed in units of equivalent plane wave power density for convenience. The electric field strength (E) squared, magnetic field strength (H) squared, and power density (PD) values are shown in Table 14. For near field exposures PD cannot be measured directly, but equivalent plane wave power density can be calculated from the field strength measurement data as follows:

$$PD\ in\ mW/cm^2 = \frac{E^2}{3770}$$

where:

E^2 is in volts squared (V^2) per meter squared (m^2).

$$PD \text{ in } mW/cm^2 = 37.7\ H^2$$

where:

H^2 is in amperes squared (A^2) per meter squared (m^2).

These values should be used as guides in the evaluation and control of exposure to radiofrequency/microwave radiation, and should not be regarded as a fine line between safe and dangerous levels.

Notes:

1. All Radiofrequency Radiation (RFR) exposures should be kept as low as reasonably possible given the current state of knowledge on human effects, particularly non-thermal effects.
2. For fields consisting of a number of frequencies, the fraction of the protection guide incurred within each frequency level should be determined and the sum of all fractions should not exceed unity.
3. For pulsed and continuous wave fields, the power density is averaged over the six minute period.
4. For partial body exposures at frequencies between 10 kHz and 1.0 GHz, the protection guides in Table 14 may be exceeded if the output power of a radiating device is 7 watts or less. For example, if a hand held transmitter operating at 27 MHz has a maximum output of 5 watts, it would be excluded from any further field measurements.
5. The TLVs in Table 14 may be exceeded if the exposure conditions can be demonstrated to produce a SAR of less than 0.4 W/kg as averaged over the whole body and spatial peak SAR values less than 8.0 W/kg as averaged over any 1.0 gram of tissue.

   For example, for frequencies from 3 to 30 MHz, the equivalent power density can be increased by a factor of 10 up to a limit of 100 mW/cm^2, if it can be assured that exposed individuals are not in contact with the ground plate.
6. At frequencies below 30 MHz, ungrounded objects such as vehicles, fences, etc., can strongly couple to RF fields. For field strengths near the TLV, shock and burn hazards can exist. Care should be taken to eliminate ungrounded objects, to ground such objects, or use insulated gloves when ungrounded objects must be handled.

TABLE 14

Radiofrequency/Microwave Threshold Limit Values

Frequency	Power Density (mW/cm^2)†	Electric Field Strength Squared (V^2/m^2)	Magnetic Field Strength Squared (A^2/m^2)
10 kHz to 3 MHz	100	377,000	2.65
3 MHz to 30 MHz	$900/f^{2*}$	$3770 \times 900/f^{2*}$	$900/37.7f^{2*}$
30 MHz to 100 MHz	1	3770	0.027
100 MHz to 1000 MHz	$f^*/100$	$3770 \times f^*/100$	$f^*/37.7 \times 100$
1 GHz to 300 GHz	10	37,700	0.265

†mW/cm^2 = milliwatts per centimeter squared
*f = frequency in MHz

PD in $mW/cm^2 = 37.7\ H^2$

where:

H^2 is in amperes squared (A^2) per meter squared (m^2).

These values should be used as guides in the evaluation and control of exposure to radiofrequency/microwave radiation, and should not be regarded as a fine line between safe and dangerous levels.

Notes:

1. All Radiofrequency Radiation (RFR) exposures should be kept as low as reasonably possible given the current state of knowledge on human effects, particularly non-thermal effects.
2. For fields consisting of a number of frequencies, the fraction of the protection guide incurred within each frequency level should be determined and the sum of all fractions should not exceed unity.
3. For pulsed and continuous wave fields, the power density is averaged over the six minute period.
4. For partial body exposures at frequencies between 10 kHz and 1.0 GHz, the protection guides in Table 14 may be exceeded if the output power of a radiating device is 7 watts or less. For example, if a hand held transmitter operating at 27 MHz has a maximum output of 5 watts, it would be excluded from any further field measurements.
5. The TLVs in Table 14 may be exceeded if the exposure conditions can be demonstrated to produce a SAR of less than 0.4 W/kg as averaged over the whole body and spatial peak SAR values less than 8.0 W/kg as averaged over any 1.0 gram of tissue.

   For example, for frequencies from 3 to 30 MHz, the equivalent power density can be increased by a factor of 10 up to a limit of 100 mW/cm^2, if it can be assured that exposed individuals are not in contact with the ground plate.
6. At frequencies below 30 MHz, ungrounded objects such as vehicles, fences, etc., can strongly couple to RF fields. For field strengths near the TLV, shock and burn hazards can exist. Care should be taken to eliminate ungrounded objects, to ground such objects, or use insulated gloves when ungrounded objects must be handled.

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3 MHz to 30 MHz	$900/f^{2*}$	$3770 \times 900/f^{2*}$	$900/37.7f^{2*}$
30 MHz to 100 MHz	1	3770	0.027
100 MHz to 1000 MHz	$f^*/100$	$3770 \times f^*/100$	$f^*/37.7 \times 100$
1 GHz to 300 GHz	10	37,700	0.265

†mW/cm^2 = milliwatts per centimeter squared
*f = frequency in MHz

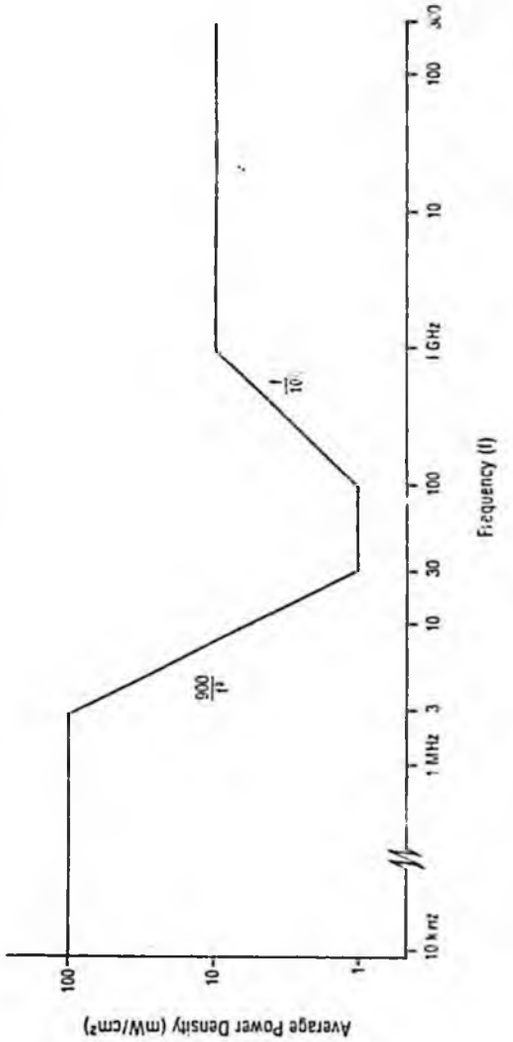


Figure 9 — Threshold Limit Values (TLV) for Radiofrequency/Microwave Radiation in Workplace (Whole-Body SAR Less than 0.4 W/kg).

7. No measurement should be made within 5 cm of any object.
8. All exposures should be limited to a maximum (peak) electric field intensity of 100 kV/m.

PHYSICAL AGENTS UNDER STUDY

The Physical Agents Committee of ACGIH has examined the current literature and has not found sufficient information to propose a TLV. However, these agents will remain under study during the coming year to examine new evidence indicating the need and feasibility for establishing a proposed TLV. Comments and suggestions, accompanied by substantive documentation are solicited and should be forwarded to the Executive Secretary, ACGIH. Documentation summarizing the current status of the biological effects literature is available on those agents preceded by an asterisk (*).

1. **Extremely Low Frequency (ELF) Radiation*. Specifically, that portion of the spectrum from 0 to 300 Hz.
2. *Magnetic Fields*. Both pulsed and *continuous.
3. *Laser Radiation*. Specifically laser exposures of less than one (1) nanosecond.
4. *Vibration*. Segmental and whole-body.
5. *Cold Stress*.
6. *Pressure Variations*.

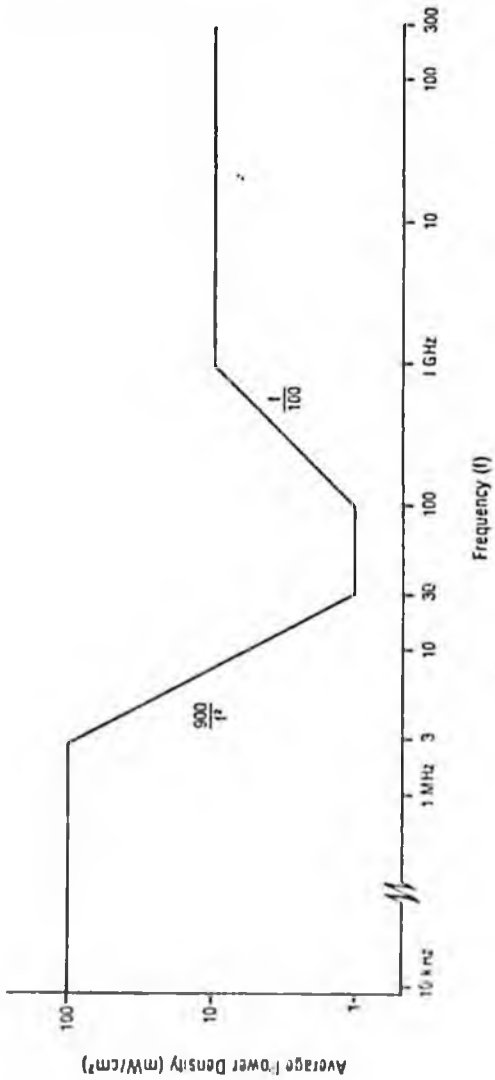


Figure 9 — Threshold Limit Values (TLV) for Radiofrequency/Microwave Radiation in Workplace (Whole Body SAR Less Than 0.4 W/kg).

7. No measurement should be made within 5 cm of any object.
8. All exposures should be limited to a maximum (peak) electric field intensity of 100 kV/m.

PHYSICAL AGENTS UNDER STUDY

The Physical Agents Committee of ACGIH has examined the current literature and has not found sufficient information to propose a TLV. However, these agents will remain under study during the coming year to examine new evidence indicating the need and feasibility for establishing a proposed TLV. Comments and suggestions, accompanied by substantive documentation are solicited and should be forwarded to the Executive Secretary, ACGIH, Documentation summarizing the current status of the biological effects literature is available on those agents preceded by an asterisk (*).

1. **Extremely Low Frequency (ELF) Radiation*. Specifically that portion of the spectrum from 0 to 300 Hz.
2. *Magnetic Fields*. Both pulsed and *continuous.
3. *Laser Radiation*. Specifically laser exposures of less than one (1) nanosecond.
4. *Vibration*. Segmental and whole-body.
5. *Cold Stress*.
6. *Pressure Variations*.

The American Conference of Governmental Industrial Hygienists was organized in 1938 by a group of governmental industrial hygienists who desired a medium for the free exchange of ideas, experiences and the promotion of standards and techniques in industrial health. The Conference is not an official Government Agency.

It is an organization devoted to the development of administrative and technical aspects of worker health protection. The association has contributed substantially to the development and improvement of official industrial health services to industry and labor. The committees on Industrial Ventilation and Threshold Limit Values are recognized throughout the world for their expertise and contributions to industrial hygiene.

Membership is limited to professional personnel in governmental agencies or educational institutions engaged in occupational safety and health programs. The more than 2500 members from across the United States and around the world give the organization an international scope.

NOTE REGARDING THE FOLLOWING FRAME(S) ON MICROFILM:
COMPLETE DOCUMENT IS AVAILABLE IN ORIGINAL FILES.
TITLE PAGE ONLY HAS BEEN FILMED.

Richard Gist

Friday
March 19, 1982

Federal Register

Part VII

Department of Labor

Occupational Safety and Health Administration

Hazard Communication; Proposed Rule and Public Hearing Announcement

Chemical Fact Sheet* December 1982

GASOLINE

The information in this sheet applies to workplace exposure resulting from processing, manufacturing, storing or handling and is not designed for the population at large. Any generalization beyond occupational exposures should not be made. The best industrial hygiene practice is to maintain concentrations of all chemicals at levels as low as is practical.

Chemical Names: Gasoline, CAS 8006-61

Trade Names: Gasoline, Petrol, Ethyl, Av-Gas and others.

Uses: Gasoline is primarily a fuel for internal combustion engines but is also used as a solvent for rubber adhesives and as a finishing agent for artificial leathers.

Ingredients: Gasoline is a complex mixture of short chain hydrocarbons, aromatic hydrocarbons, and additives such as tetraethyl lead.

PHYSICAL INFORMATION

Appearance: Liquid; gasoline with lead may contain colored dyes, usually red, blue, green, or purple.

Odor: Strong, fairly pleasant.

Behavior in Water: Does not mix with water and will float on surface.

Evaporation: Gasoline evaporates rapidly. The fumes are heavier than air and will sink.

HEALTH HAZARD INFORMATION

OSHA Standard: 120 ppm (Alkanes-component of gasoline).

NIOSH Recommended Limit: 120 ppm (Alkanes-component of gasoline).

ACGIH Recommended Limit: Average 8 hour exposure -- 300 ppm.

Short Term Exposure:

Inhalation: Nose and throat irritation have been reported after exposure to 900 ppm for 1 hour. Drowsiness, dizziness, nausea and numbness may occur at 1,000 ppm after 15 minutes exposure. In animal studies, death occurred after 30,000 ppm for 5 minutes.

Skin: May cause itching and burning of the skin and after a longer exposure, redness and blistering.

Eyes: Moderate irritation of the eye has been reported after one hour exposure to 500 ppm. Mild irritation has been reported after an 8 hour exposure to 140 ppm.

Ingestion: Gasoline causes a burning sensation in the mouth, throat and stomach. Vomiting, diarrhea, drowsiness and intoxication may follow. As little as 3 to 4 ounces may be fatal. Inhalation of liquid gasoline into the lungs following ingestion or vomiting may result in an accumulation of fluid in the lungs, rapid breathing or death.

*Prepared by the Bureau of Toxic Substance Assessment, New York State Department of Health. For an explanation of the terms and abbreviations used, see "Toxic Substances: How Toxic is Toxic" available from the New York State Department of Health.

Long Term Exposure:

Continuous 8 hour exposure to 200 ppm has resulted in eye irritation only. Long term exposure may produce fatigue, muscle weakness, nausea, vomiting and abdominal pain. Hexane, a component of gasoline, can produce nerve damage resulting in tremors, numbness of hands and feet and loss of muscle control. Benzene, also a gasoline component, has been linked to blood disorders in man, including leukemia. Lead additives can produce nausea, cramps, loss of appetite, sleep problems, headaches and agitation.

EMERGENCY AND FIRST AID INSTRUCTIONS

Inhalation: Move individual to fresh air. Give artificial respiration or oxygen if necessary. Seek medical attention.

Skin: Remove clothing contaminated with gasoline. Wash affected areas with soap and water.

Eyes: Wash eyes with large amounts of running water for 15 minutes. Seek medical attention.

Ingestion: Do not induce vomiting, get medical attention immediately.

FIRE AND EXPLOSION INFORMATION

General: Highly flammable, fumes may spread great distances to flame and flash back. Gasoline will ignite at -50°F (-45°C).

Explosive Limits: Upper - 7.6%, Lower - 1.4%.

Extinguisher: Foam, dry chemical or carbon dioxide.

REACTIVITY

Conditions to Avoid: Avoid contact of liquid or fumes with any source of heat or flame. Strong oxidizers such as chlorine, permanganates and dichromates may cause fire or explosion.

PROTECTIVE MEASURES

Storage and Handling: Keep containers tightly closed and out of direct sunlight. Outdoor or detached storage is preferred. Indoors use a standard cabinet for combustible liquids.

Engineering Controls: Provide adequate ventilation.

Protective Clothing (Should not be substituted for proper handling and engineering controls): Splash proof goggles, gloves, and coveralls are recommended if contact with gasoline is possible.

PROCEDURES FOR SPILLS AND LEAKS

Get all workers out of the spill area. Protect against accidental ignition of liquid or fumes. For final disposal, contact your regional office of the N.Y.S. Department of Environmental Conservation.

For more information:
Contact the Industrial Hygienist or Safety Officer at your worksite or the New York State Department of Health, Bureau of Toxic Substance Assessment, Empire State Plaza, Tower Building, Albany, New York 12237.

DEPARTMENT OF LABOR

Occupational Safety and Health Administration

29 CFR Part 1910

[Docket No. H-112E]

Access to Employee Exposure and Medical Records; Proposed Modification; Request for Comments and Notice of Public Hearing

AGENCY: Occupational Safety and Health Administration, Labor.

ACTION: Notice of proposed rulemaking, request for comments and notice of public hearing.

SUMMARY: OSHA is hereby proposing to modify the Access to Employee Exposure and Medical Records rule, 29 CFR 1910.20. Principally and as a result of receiving numerous requests, comments and suggestions for changes to the standard, OSHA is proposing to modify: (1) The definition of "employee"; (2) the definition of "exposure"; (3) the definition of "toxic substance"; (4) the preservation requirements for employee exposure and medical records; (5) the prohibition on the microfilm storage of X-rays; and (6) the trade secret protection provisions.

The new regulation would maintain the benefits to occupational health in the current regulation while providing greater flexibility for employers to comply with the standards. This notice solicits comments on the proposed modifications. This notice also announces that OSHA has scheduled an informal public hearing to allow interested parties to present information and data related to the issues raised by the proposed modification.

DATES: Comments and notices of intention to appear at the public hearing must be received on or before September 14, 1982. Statements and any documentary evidence to be presented at the hearing must be submitted by September 21, 1982.

The public hearing is scheduled to begin on October 5, 1982, in Washington, D.C., at 9:30 a.m.

ADDRESSES: Comments should be submitted in quadruplicate to the Docket Office, Docket H-112E, U.S. Department of Labor, Occupational Safety and Health Administration, 200 Constitution Avenue, NW., Room S6212, Washington, D.C. 20210; (202) 523-7894.

Notices of intention to appear at the hearings, statements and documentary evidence should be submitted in quadruplicate to Mr. Tom Hall, Division of Consumer Affairs, U.S. Department of Labor, 200 Constitution Avenue, NW., Room N-3635 Washington, D.C. 20210; (202) 523-8024.

The hearing will be held at the Auditorium, Frances Perkins Department of Labor Building, 200 Constitution Avenue, NW., Washington, D.C.

Written comments received and notices of intention to appear, as well as any other information gathered by the Agency during this rulemaking, will be available for inspection and copying in the Docket Office, Room S-6212 at the above address.

FOR FURTHER INFORMATION CONTACT:

Proposal: Mr. David Welsh, Office of Special Standards Programs, Occupational Safety and Health Administration, 200 Constitution Avenue, NW., Room N-3663, Washington, D.C. 20210; (202) 523-7166.

Hearings: Mr. Thomas Hall, Division of Consumer Affairs, Occupational Safety and Health Administration, 200 Constitution Avenue, NW., N-3635, Washington, D.C. 20210; (202) 523-8024.

SUPPLEMENTARY INFORMATION:

A. Background

On May 21, 1980, the Occupational Safety and Health Administration (OSHA) issued its rule entitled Access to Employee Exposure and Medical Records, 29 CFR 1910.20; 45 FR 35212 *et seq.* The rule imposes three major obligations on employers. First, employers are required to preserve and maintain exposure and medical records pertinent to an employee's occupational exposure to toxic substances or harmful physical agents. 29 CFR 1910.20(d). Generally, employee exposure records and analyses based on exposure or medical records must be retained for thirty years. 29 CFR 1910.20(d)(1)(ii) and (iii). Employee medical records must be retained for the duration of employment plus thirty years. 29 CFR 1910.20(d)(1)(i).

Second, throughout these time periods the employer must ensure access to pertinent exposure records by the exposed employee, fellow employees exposed or potentially exposed to similar job hazards, designated employee representatives, and OSHA. 29 CFR 1910.20(e). Access to medical records must also be ensured to the employee who is the subject of the records and to OSHA. Likewise, access to medical records must be ensured to an employee's designated representative, such as the employee's collective bargaining agent, but, because of the privacy interests involved, only if the employee has provided specific written consent for such access. 29 CFR 1910.20(e)(2)(ii)(B); *cf.* § 1910.20(c)(10). Employee and designated representative access must be provided at a reasonable time, place, and manner, but in no event later than fifteen (15) days after the request is made. 29 CFR 1910.20(e)(1). OSHA access must be provided immediately upon request, 29 CFR 1910.20(e)(3), but because of the personal privacy interests affected by access to medical records, OSHA's access to such records is further conditioned upon compliance with the procedures and protections which were simultaneously promulgated as 29 CFR Part 1913.

Third, upon entering into employment and annually thereafter, employees must be informed by their employers of their rights under the rule and of the requisite procedures for exercising those rights. 29 CFR 1910.20(g).

In issuing the regulation, the Secretary considered its potential impact on trade secrets. 29 CFR 1910.20(f). Although identities of toxic substances, levels of exposure, and health status data may not be withheld, the employer may delete any other trade secret data which discloses manufacturing processes or the percentage of a chemical substance in a mixture. In addition, the provisions of the final rule permit employers to condition access to trade secrets upon basic written agreements not to misuse this information.

On May 21, 1980, the Industrial Union Department, AFL-CIO, petitioned the United States Court of Appeals for the District of Columbia Circuit to review the rule pursuant to Section 6(f) of the OSH Act, 29 U.S.C. 655(f), the statute's provision for exclusive court of appeals' pre-enforcement review of occupational safety and health standards, *Industrial Union Dep't AFL-CIO* v. *Marshall*, No. 80-1555. The Chemical Manufacturers Association and the Chamber of Commerce of the United States later intervened in that lawsuit.

On July 18 and 21, 1980, a number of individuals and two trade associations, the Association of Diving Contractors and the Louisiana Chemical Association, petitioned the Fifth Circuit Court of Appeals under the same section 6(f) review provision. These cases were transferred to the D.C. Circuit under 28 U.S.C. 2112(a) and consolidated with the pending IUD case. Also in the D.C. Circuit, but in abeyance, is *National Constructions Ass'n* v. *OSHA*, No. 80-1820, a challenge to the standard's application to the construction industry. In addition, there is a challenge to the regulation pending in the United States District Court for the Western District of Louisiana, which the District Court originally dismissed for lack of subject matter jurisdiction, but which has since

been remanded to it by the Fifth Circuit Court of Appeals. *Louisiana Chemical Association* v. *Bingham*, 657 F. 2d. 777 (5th Cir. 1981).

The records access rule expressed OSHA's policy, which became formalized after a full rulemaking proceeding, that employees, their representatives, and OSHA need access to employer maintained exposure and medical information in order to protect employee health and safety, and that this need is a proper subject for OSHA regulation. However, since particular provisions of the rule raised complex policy and legal questions concerning issues which in some cases had been resolved based on a limited rulemaking record and which had not yet been fully reviewed in light of the current administration's policies, OSHA obtained from the D.C. Circuit a six month deferral of the briefing schedule, beginning August 7, 1981. This deferral was later extended to expire in February, 1983. However, the agency has been forced to defend the existing rule in the district court case and a decision is expected before the end of the year.

OSHA has reviewed all aspects of the regulation, including: (1) Current enforcement experience; (2) the issues raised by the litigation; (3) petitions for modification of the standard from trade associations representing the flavor, fragrance, food and feed processing industries; and (4) other comments on the regulation that have been received from numerous interested persons. As a result of this review, OSHA has decided to propose modification of specific provisions of the rule. A draft of this proposal has been reviewed by the Advisory Committee on Construction Safety and Health. The issues involved in the proposed modification are discussed in the "Statement of Significant Issues" section of this preamble.

Legal Authority

By this proposal, OSHA seeks to modify, after rulemaking, its final rule on Access to Employee Exposure and Medical Records, 29 CFR 1910.20 (the "records access rule"). That rule was issued under both section 6(b) "standard-setting" and section 8 "general rulemaking" authority (see 45 FR 35243–48).

The issue of whether the records access rule is properly characterized as an "occupational safety and health standard" within the meaning of section 3(8) and issued under section 6(b) or a "regulation" under section 8(g)(2) has been the subject of litigation. The rule was challenged by both industry and union parties in the courts of appeals under section 6(f), the Act's provision for pre-enforcement review of OSHA "standards." As noted above, these petitions have been consolidated in the Court of Appeals for the District of Columbia, where the briefing schedule has been suspended until February 10, 1983, to allow OSHA this opportunity for reconsideration.

The rule was independently challenged in the U.S. District Court for the Western District of Louisiana. The district court dismissed the challenge for want of subject-matter jurisdiction on the ground that OSHA properly characterized the rule as a standard, which is reviewable only in a court of appeals. The Fifth Circuit Court of Appeals reversed this decision, holding that the rule is a section 8 regulation and not a section 6 standard; therefore the case was remanded to the district court. *Louisiana Chemical Association, et al.* v. *Bingham, et al.*, 657 F. 2d 777 (5th Cir., 1981). The Court of Appeals' reasoning was that Congress apparently intended standards to aim toward correction of specific and already identified hazards, rather than mere inquiry into possible hazards, and that the records access rule, while falling under the more general class of enforcement and detection regulations contemplated by Congress in section 8, does not address a particular hazard. This conclusion was based on the fact that the rule does not require employers to create the records in the first place and that the rule pertains to thousands of substances not all of which are known to pose a significant risk. The agency is currently defending the existing regulation in the district court case and a decision is expected before the end of the year.

Recognizing that this proposed rule can no longer be characterized as an occupational safety and health standard in the Fifth Circuit as a result of this decision, OSHA reaffirms its reliance on its section 8 general rulemaking authority to support the issuance of this proposed amendment (see 45 FR 35245–47). In so doing, the Secretary finds the rule, as proposed to be modified, necessary to carry out his responsibilities under the Act. In particular, the rule directly and indirectly promotes the control and detection of occupational health hazards by requiring the preservation and availability of toxic exposure and employee medical records to employees, their representatives, and to OSHA. As such, it contributes significantly to the protection of employees from toxic substances and harmful physical agents. With it, OSHA acts to fulfill its mandate to "assure so far as possible every working man and woman * * * safe and health working conditions." Section 2(b) of the Act.

In addition, however, OSHA believes that this rule not only falls squarely within the ambit of section 8 but also meets the somewhat more stringent and distinct requirements of section 6(b), as limited by the section 3(8) definition of an "occupational safety and health standard." In OSHA's opinion, the preservation and access requirements clearly satisfy the statutory element of "practices, means, methods * * * reasonably necessary or appropriate to provide safe or healthful employment and places of employment." In this regard, it should be noted that the rule operates not simply by making the record available to OSHA for enforcement purposes but directly to the employees themselves to assist them in achieving more healthful employment and places of employment." Secondly, in our view the rule addresses a significant risk—the risk of acute and chronic adverse health effects from workplace exposure to toxic substances and harmful physical agents. Further, the rule will significantly reduce this risk by providing employees with information necessary to avoid the risks and to correct unsafe conditions to the extent possible.

To the extent that the Fifth Circuit in *Louisiana Chemical Ass'n* v. *Bingham, supra.*, took a narrower view of what constitutes "significant risk," we do not believe that such a result is dictated by the Supreme Court decision in *Industrial Union Department* v. *American Petroleum Institute*, 448 U.S. 607 (1980). That decision, which established a finding of "significant risk" as a threshold condition for all section 6(b) standards, itself observed that Congress had an "information-gathering function" in mind when it enacted section 6(b)(7), and that requirements of this nature may be imposed at lower exposure levels than those that would support the regulation of a specific toxic substance on the basis of a finding of significant risk. This is so because it is necessary to "keep a constant check on the validity of the assumption made in developing the permissible exposure limit, giving it a sound evidentiary basis for decreasing the limit if it was initially set too high," *id.* at 2022, or *a fortiori*, if no permissible exposure limit was set at all. Furthermore, whatever the problems of breadth posed by the original rule which detracted from its status as a standard, we note that the proposed modifications—particularly the toxicological criteria introduced into the

"toxic substance" definition and the elimination of the fourth category of "exposure record"—have sharpened the focus of the rule considerably. Thus the rule now covers only actual exposure records pertaining to substances which are known to pose serious toxic hazards and to employees in employments characterized by exposures to such hazards. OSHA therefore believes that, in addition to meeting the legal criteria for a section 8 regulation, the proposed rule is, for purposes of judicial review, a section 6 standard.

In addition, it is important that the records access rule be characterized as an occupational safety and health standard in order to avoid protracted multiple district court litigation, which would result in: (1) General confusion over the applicability of the rule, (2) delays in the resolution of the validity of the rule, and (3) enforcement and compliance problems that would ensue from conflicting or inconsistent judicial decisions. Therefore, to preserve our right to relitigate the jurisdictional issue of section 6(b) authority should be challenged outside the Fifth Circuit, OSHA continues to rely on section 6(b) independent authority for issuance of this rule.

Finally, this proposal provides for modification of the trade secret protections of the rule. These changes are intended to provide for the maximum degree of trade secret protection which the Agency considers to be consistent with its mandate to promote the health and safety of employees. As a matter of legal authority, OSHA has previously taken the position that its mandate requires it to balance and accommodate the interests in occupational safety and health with the protection of trade secrets, but that any unavoidable conflict should be decided in favor of the health interest. (See 45 FR 35248-51, Records Access Preamble.) This position has been based on (1) federal preemption doctrine, which says that state law (i.e., trade secret protection) may be preempted if it burdens or conflicts with federal law; (2) the OSHA statute, whose limited trade secret section (Section 15; 29 U.S.C. 664) itself takes a balanced approach and does not directly restrict OSHA's otherwise broad rulemaking authority in the area of providing access to toxic substance information; and (3) analogous judicial contexts, where the courts have adopted a balancing approach favorable to the health and safety interest. By contrast, industry has argued, based on the Supreme Court decision in *Chrysler* v. *Brown*, 441 U.S. 281 (1979), that OSHA lacks the authority to require the disclosure of any trade secret because the Act does not affirmatively and explicitly give it that authority, but rather is protective of trade secrets as evidenced by Section 15. The argument has also been made that a requirement to disclose trade secrets may result in an unconstitutional "taking" of private property without just compensation violative of the Fifth Amendment. However, in providing protection to trade secret interests, OSHA must be cognizant of the recent cotton dust decision, *American Textile Manufacturers Institute* v. *Donovan*, 101 S Ct. 2744 in which the Supreme Court declared that Congress in passing the OSH Act had made a legislative decision to strike the balance in favor of protecting the health of employees to the extent feasible. In our opinion, the proposed modifications, while providing significantly greater protection to trade secrets than does the current standard, satisfy this statutory mandate.

Statement of Significant Issues

A. *Scope and application.*—1. *General.* The rule currently applies to each general industry, maritime, and construction employer who makes, maintains, contracts for, or has access to employee exposure or medical records, or analyses thereof, pertaining to employees exposed to toxic substances or harmful physical agents. It applies whether or not the covered records are related to specific occupational safety and health standards. Also, the regulation applies to records created prior to the effective date of the regulation, August 21, 1980. The broad scope of the regulation has created certain problems, which we address as follows.

2. *Employees covered.* A literal construction of the rule would indicate that records of employees only marginally exposed to toxic substances and clearly not at health risk from such exposures are covered by the regulation. For example, records of office workers who make only infrequent or sporadic visits to production areas where toxic substances or harmful physical agents are present could be considered subject to the retention and access provisions of the regulation. However, OSHA's original intent was to provide access rights only to workers with significant toxic exposures.

For example, Dr. Leonard Guarrala of the Synthetic Organic Chemical Manufacturers Association (SOCMA) states "(W)e believe this rule covers almost every employer in the general industry, maritime and construction categories because the applicability of the standard pertains to employees exposed to 'toxic' substances or 'harmful' physical agents, but does not depend on any showing that the level of actual exposure is excessive or harmful" (Ex. 56, p.3).

Mr. J. Laurence McCarty (Prudential Insurance) also notes that the definition of "exposure" is "so overly inclusive that the company president on an annual tour walking past an area where a toxic substance is being stored would have to get a notice as an exposed employee since there is 'potential exposure' " (Ex. 31, p.2).

There is merit in this argument and therefore OSHA is proposing explicitly to limit the regulation's coverage to only those employees "whose work directly involve(s) the manufacturing, processing, installation, handling, packaging, transport, disposal, or use of toxic substances, or who (are) subject to harmful physical agents (e.g., noise, ionizing and non-ionizing radiation, hypo- or hyperbaric pressure) in any manner different from non-occupational situations; and includes, but is not limited to, coverage or production, maintenance, transport and construction workers" (paragraph (b)(1)). This modification targets the regulation at those specific employees whose job duties typically involve exposure to toxic substances or harmful physical agents. Production, maintenance, construction, and transport workers are covered if toxic substances or harmful physical agents are present in their workplaces, with no further inquiry necessary on whether each individual is working directly with a toxic substance or harmful physical agent. For instance, an electrician working near a welding operation on a construction site would be covered. At the suggestion of the Advisory Committee for Construction Safety and Health, "installation" was added to clarify the broad coverage of construction workers.

Coverage means that they have a right of access to their medical records and to relevant exposure records, and that these records must be retained in accordance with the rule. "White collar" employees and employees in other industries (e.g., service industries) where exposures to toxic substances or harmful physical agents do not typically occur would not in most cases be covered by the regulation.

However, the regulation would continue to provide for access to exposure and medical records of any general industry, construction or maritime employee not otherwise covered by the standard who is accidentally exposed to a toxic

substance or harmful physical agent to a degree sufficient to require medical treatment. Records documenting the extent and treatment of injuries due to accidental exposures have clear occupational health importance and therefore should be subject to the access provisions of this regulation. However, since medical records of accidentally exposed employees would not normally be segregated from medical records of non-exposed employees, medical records related to accidental exposures would not be subject to the retention requirements of the regulation. Otherwise, when an employer of employees not normally covered by the standard disposes of medical records, he would have to make a determination of whether or not each record to be disposed of was related to an accidental exposure, and therefore subject to mandatory retention.

Access to medical records concerning accidental exposures must be provided for as long as the employer does retain the record.

Exposure records relating to accidental exposures would, on the other hand, be subject to thirty year retention. Since exposure records would not normally be kept for employees in that work location, the determination of specific records subject to retention would not be difficult.

This proposed modification is consistent with the original intent of the standard, which was not generally meant to apply to office workers or workers exposed only to safety hazards causing cuts, falls, and traumatic injuries (45 FR 35258 and 35265).

3. *Records created under contract.* The status under the standard of records created under contract was a source of confusion to many affected parties (Ex. 62, pp. 37–40; Ex. 69, p. 3). Therefore, paragraph (b)(3) is being modified to clarify the obligations of employers who contract for exposure or medical services. The proposed modification requires that "each employer shall ensure that the requirements of this section are made known to physicians and others providing medical or industrial hygiene services under contract to the employer and shall make a good faith effort to ensure, by modification of the contract if necessary, that such persons comply with the preservation and access requirements of the section." This modification should alleviate employer concerns that they will be held strictly liable for noncompliance of contract physicians not fully under their control even when they have done everything reasonably possible to assure compliance.

Records of emergency medical treatments for traumatic injuries or illnesses would not be covered if no written contract for medical services was in effect at the time of the accident.

4. *Industries covered.* Several trade groups have argued that certain industries ought to be exempted from coverage. In particular, employer groups in the flavor and fragrance industries (Exs. 44, 45, 47, 48, 50, 52), the grocery manufacturing industry (Exs. 46, 49, 51, 53–56), the feed manufacturing industry (Ex. 26), the construction industry (Exs. 40–43), and the commercial diving industry (Ex.), have argued for limited or full exemption from the provisions of the standard. The flavor and fragrance industries are currently the subject of a partial administrative stay designed to protect its trade secrets (46 FR 40990–91). This stay has been extended to February 15, 1983.

The flavor, fragrance and grocery industries base their justifications for exemption primarily on the following assertions: (1) The broad definition of "toxic substance" includes many food and fragrance substances which, on the basis of objective data, are demonstrated to be safe; (2) the possibility for disclosure under the regulation of valuable trade secret formulas greatly outweighs the benefits of disclosure; and (3) the records access regulation overlaps regulation of these industries by the Food and Drug Administration (FDA) and the Department of Agriculture (USDA).

For example, the Flavor and Extract Manufacturers Association (FEMA) states that "(T)he standard's definition of toxic substances is so broad that many traditional innocuous food ingredients (i.e., sugar, vanilla, and lemon oil) would be considered 'toxic' within the meaning of the standard. The sheer number of substances considered 'toxic' under the standard will make compliance with requests for disclosure both extremely costly and very difficult" (Ex. 44, p. 1). FEMA also notes that "(T)rade secrets are the lifeblood of the flavor industry and are most carefully guarded by flavor manufacturers." The disclosure required by the standard would threaten the very existence of the flavor industry without any showing that flavors and flavor materials present significant risks to any worker or that those risks would be lessened or eliminated because of the standard" (Ex. 44, p. 2).

With regard to agency overlap, a statement submitted by the Grocery Manufacturers Association asserts that "(T)he primary intent of the FDA and USDA regulations is to reduce the possibility of microorganisms, chemicals, filth or other contaminants in food. However, one of the obvious effects of these regulations is the reduction of employee exposure to harmful food substances by regulating the proper use, storage, and handling of materials that may be 'toxic" (Ex. 46, p. 2).

OSHA review of the scientific evidence, however, indicates that many of the materials used in flavor, fragrance and grocery manufacturing could be toxic under workplace conditions. Although FDA regulations ensure that the concentrations of these toxic substances are too low in finished consumer goods to be of health significance, workplace exposures to bulk quantities may nonetheless be toxic to workers unless necessary precautions are taken. Furthermore, the jurisdictions of FDA and USDA do not extend to the protection of workers from exposures to harmful materials during manufacturing processes (Exs. 50, 51).

Therefore, rather than exempt these industries entirely, we have responded to their legitimate concerns through proposed modification of specific provisions of the regulation. In particular, we propose both narrowing the definition of "toxic substance" and medifying the trade secret provisions to substantially reduce the likelihood that the release of trade secrets will be required. In fact, the trade secret modifications basically parallel the current stay for the flavor and fragrance industries, which has evidently satisfied those industries' concerns in this interim period.

The feed manufacturing industry petition seeks a stay of the standard as it applies to employee exposure records (Ex. 20). The industry maintains that " 'Exposure records' have been so broadly defined so as to include nearly every piece of paper generated in many workplaces * * * (we) did not fully realize that the regulation likewise requires retention of literally thousands of routine documents." (Ex. 26, p. 2).

OSHA is responding to these bona fide concerns by narrowing the definition of "employee exposure record" to include only those records traditionally regarded as occupational exposure records.

The diving industry sought a stay of the records access standard as it applied to employees engaged in commercial diving on the grounds that: (1) The standard was improperly promulgated as it applied to them; (2) divers are not exposed to "toxic substances or harmful physical agents"; and (3) the standard jeopardized valuable trade secrets such as

proprietary decompression tables (Ex. 86). The Agency, while denying this stay request as lacking merit, issued an official interpretation of recordkeeping obligations in the diving industry which explained the interaction between the records access standard, 29 CFR 1910.20, and the commercial diving standard, 29 CFR 1910.401–441 (Ex. 87). Since employees in the commercial diving industry are subject to occupational illness associated with their workplace exposure (e.g. mixed gases, hyperbaric pressure), OSHA sees no basis for excluding the industry from the proposed records access rule. Certain proposed modifications to the rule—for instance, the proposed limitation on access to "similarly situated" exposure records which gave rise to the industry's concerns about access to proprietary decompression tables—should alleviate the industry's concerns about the rule's impact while assuring their employees the benefits of the standard.

Employers in the construction industry argue that the records access standard poses certain practical compliance difficulties. The industry maintains that: (1) Construction employees are exposed to toxic substances, if at all, for only brief periods since their work requires movement from place to place on the construction site; (2) due to the large number of temporary employees (the typical construction employee annual turnover rate is between 300 and 600 percent), the regulation would require long-term retention of huge numbers of individual records having a negligible degree of occupational health significance; (3) the principal types of employee records generated on a construction site are much different from those generated in general industry—most monitoring is done on an area basis, and records do not reveal the identities of employees who may have been working in those areas; and (4) medical records generated would be primarily those concerned with first-aid and emergency treatment (Docket H-112C; Ex. 2–42A, pp. 4–6).

Because of the construction industry records access issues, OSHA partially stayed the records access regulation with respect to the construction industry (46 FR 23740; April 28, 1980). In that notice, OSHA solicited comments from interested parties concerning the experience of the construction industry under the regulation, and specifically what aspects of the construction industry render the regulation inappropriate. A total of 47 comments were received. Also, the Advisory Committee for Construction Safety and Health (CAC) met June 10–12, 1981, in Washington, D.C. and considered the issue of records access (Exs. 62, 63). OSHA published a summary and analysis of the comments and the Advisory Committee recommendations in the Federal Register on September 15, 1981 (46 FR 45758).

Based on its analysis of the comments and CAC recommendations, OSHA lifted the stay. At the same time, the agency issued interpretations which incorporated most of the CAC recommendations and stated that the construction records access issues would continue to be reviewed as part of the general modification process.

In developing this proposal, three basic alternatives were considered for dealing with construction industry concerns: (1) Exempt the construction industry from the regulation; (2) modify the regulation in accordance with CAC recommendations and the concerns of other industries (recognizing that the records access concerns of construction employers and non-construction employers are often similar); or (3) specifically exempt the construction industry from certain provisions of the regulation.

The alternative of exempting the construction industry from the regulation was not chosen by OSHA since, as has been argued by construction labor unions, construction workers are often exposed to toxic substances and generally are less protected than industrial workers (Docket H–112C; Exs. 24, 31, 33, 41, and 45). We argue that their need for access to records that document toxic exposures or health status is at least as great as industrial workers. Most complaints from affected employers do not challenge, and in fact largely support, the basic premises of the regulation, but instead target certain specific provisions, such as the broad scope of the regulation, as being too burdensome.

OSHA has therefore decided to respond to the construction industry's specific concerns through a combination of both the second (modification of standard) and third (exemption from certain provisions of the standard) alternatives. Specifically, OSHA has decided to propose the following: (1) Exemption of construction industry from medical records retention requirements beyond the duration of employment; (2) modification of the definition of "toxic substance;" (3) removal of records of most first-aid and emergency treatment from the definition of "employee medical record;" (4) elimination of purchase order type records of chemical identity from the definition of "exposure record;" and (5) incorporation of various interpretations which were made in response to the June 11, 1981, CAC recommendations.

A draft of this current proposal was submitted to the Advisory Committee which met on March 3–5, 1982, for its further consideration. The CAC submitted seven additional recommendations, which were considered in developing this proposal (Ex. 77, 78, 82). These recommendations are discussed elsewhere in the preamble in conjunction with the issues to which they pertain.

B. *Definitions.*—1. *Analysis using exposure or medical records.* The paragraph (c)(2) definition of "Analysis using exposure or medical records" is being modified to exclude "research" and "other" studies, thereby including only data compilations or statistical studies based on information contained at least in part in employee exposure or medical records. This modification is meant to conform the language of the regulation closer to the original intent, which was to cover such records as "charts, graphs, tables, industrial hygiene surveys, evaluation of disease experience, and other summaries and evaluations" of exposure and/or medical data (45 FR 35260). For the most part, these records simply represent conclusions that could be drawn by any competent health professional with access to the underlying exposure or medical records. Industrial hygiene surveys are included within the definition because they can provide an overview of where the toxic exposure problems in a plant are, as well as a critical understanding of the methodologies and sampling techniques being used.

On the other hand, the definition is not meant to cover such records as engineering reports or the records of experimental toxicological research, which typically bear only a tenuous relationship to the actual workplace exposures or health of employees. In making this distinction, OSHA is particularly concerned that the standard not act as a disincentive to employers who are inclined to conduct research in the occupational health area beyond routine measuring or monitoring of toxic exposures.

2. *Employee.* Modification of the definition of "employee" (paragraph (c)(4)) is being proposed to be consistent with changes made in the "scope and application" section. "Employee" is now defined as any employee "whose work directly involves the manufacturing, processing, handling, installation,

packaging, transport, disposal, or use of toxic substances, or who is subject to harmful physical agents in any manner different from typical non-occupational situations, and includes, but is not limited to, coverage of production, maintenance, construction and transport workers."

"Employee" also includes any employee exposed to a toxic substance or harmful physical agent to a degree sufficient to require medical attention.

3. *Employee exposure record.* In the absence of more formal exposure records (air contaminant measurement, biological monitoring data, material safety data sheets), paragraph (c)(5) of the current regulation treats any other record which reveals the identity of a toxic substance (e.g. purchase records) as an "exposure record." The requirement to keep and make available this information, when coupled with the current broad definitions for "toxic substance" and "exposure," is the source for much of the concern regarding trade secret disclosure and the practical burdens of complying with the regulation.

Mr. David Bossman (American Feed Manufacturers Association) comments that "(T)he rule, as adopted . . . requires employees to retain for at least 30 years massive quantities of routine documents, including production records, shipping records, invoices, etc., which are not at all directly related to the purpose of the rule" (Ex. 26, p. 7).

OSHA is proposing narrowing the definition of "exposure record" to conform closer to the common meaning of that term. This modification will reduce both the possibility of trade secret disclosure and the employer burdens in complying with the regulation.

The proposal requires retention and access for only the following types of exposure records: (1) Environmental (workplace) monitoring results; (2) biological monitoring results defined as exposure records by OSHA standards (other biological monitoring results would now be treated as medical records, which are entitled to greater confidentiality protection); and (3) material safety data sheets. Other records which reveal the identity of a toxic substance or harmful physical agent are no longer treated as exposure records. However, the employer is still required to inform an employee upon request of the identity of a toxic substance to which the employee is exposed (paragraph (e)(2)(ii)). This requirement will ensure that workers will continue to be able to find out what toxic substances they are currently working with, while reducing the burden on employers of maintaining a voluminous historical record which would provide little information of value concerning past toxic exposures.

This proposed modification responds favorably to the major concerns of many employers, including the construction, flavor and fragrance, food processing and feed manufacturing industries. These industries maintain that this requirement relating to general "exposure" records is especially burdensome, and that access to records such as purchase orders could jeopardize many valuable trade secrets (Ex. 44).

The current paragraph (c)(5) definition of "employee exposure record" includes all records of biological monitoring results that measure employee exposure. The proposed modification excludes records of biological monitoring results not defined as exposure records by specific occupational safety and health standards. This modification is proposed in response to comments that there are some privacy concerns connected with biological monitoring results, which are often kept in medical files. OSHA agrees, and in those instances where non-mandatory biological monitoring is performed, these records should be considered medical records. In cases such as the lead standard, where OSHA decides to require biological monitoring of a toxic substance due to significant health risks associated with exposure, the information does not significantly infringe upon personal privacy interests and is considered of critical importance to similarly or potentially exposed workers. Therefore, it should be readily accessible to those workers, their unions, and OSHA.

4. *Employee medical record.* The definition of "employee medical record" (paragraph (c)(6)) is being narrowed. The current definition includes all employee X-rays, regardless of the purpose for which they were taken. However, X-rays taken to detect and treat broken bones due to falls or other traumatic occurrences do not serve to assist in the detection of occupational diseases. Therefore, the proposal considers only those X-rays taken for the purposes of establishing a baseline or determining specific occupational illness as part of the medical record. The storage of, and access to, X-rays of broken bones and other traumatic injuries would not be regulated by OSHA but rather would be subject to the policies of each individual employer or physician.

The proposal is adding paragraph (c)(6)(ii)(B) to clarify that OSHA does not consider certain first-aid records to be a part of the employee's medical record. Like X-rays of traumatic injuries, first-aid records are not typically used to detect occupational disease. However, if a first-aid record is made by a physician or becomes part of an individual worker's medical record, it is then considered part of the medical record and subject to the regulation's retention and access provisions.

Paragraph (c)(6)(ii)(D) is being added to exclude from the definition of "employee medical record," "records created solely in preparation for litigation which are privileged from discovery under the applicable rules of procedure or evidence." This modification simply incorporates an interpretation that has already been made with respect to the existing standard. The purpose of this exclusion is to make clear that the rule is not meant to provide a way around local rules of discovery or evidence when the claim to which the record in question relates is being litigated and the record itself is a product of the litigation. As we explained when the interpretation was first published:

> The question has been raised whether an employer must provide access to records which are created solely in anticipation of litigation and which are otherwise privileged from discovery under the prevailing rules of procedure or evidence. An example could be a medical opinion prepared for the employer for purposes of aiding the employer's case by a company physician after a workmen's compensation claim has been filed. It has been OSHA's interpretation that the standard does not contemplate coverage of such a record if the record would not otherwise be available to the employee or his attorney in the litigation. On the other hand, the mere fact that a medical record (see definition at 29 CFR 1910.20(c)(6)) not originally created in anticipation of specific litigation will ultimately be used as evidence in a private legal proceeding does not put it outside the scope of the standard. (46 FR 10490)

5. *Exposure.* The paragraph (c)(9) definition of exposure is being to be deleted due to the changes in the scope of the regulation. As discussed earlier in this section, the current regulation covers all "exposed" employees. The proposed scope specifies more particularly which employees are covered, thereby eliminating the necessity to separately define "exposed."

6. *Specific written consent.* The definition of "specific written consent" (proposed paragraph (c)(9)(ii); (c)(10)(ii) in the current regulation) would remain unchanged except for a clarifying modification of the language indicating that "specific written consent" does not authorize the release of medical information not in existence on the date

of the written authorization unless the release of particular future information is expressly authorized.

7. *Toxic substance.* The definition of "toxic substance" (proposed paragraph (c)(10); (c)(11) in the current regulation) is being narrowed to include only those chemicals on the National Institute for Occupational Safety and Health (NIOSH) Registry of Toxic Effects of Chemical Substances (RTECS) list which meet certain toxicological criteria. The regulation currently requires the retention and disclosure of exposure information regarding any "toxic substance or harmful physical agent." "Toxic substance" was defined broadly, most notably by including any substance listed in the NIOSH RTECS list—a compendium of over 39,000 chemicals including such common substances as sugar and salt. Many affected parties have criticized RTECS as overinclusive.

The current regulation also defines as toxic any substance which "is regulated by any Federal law or rule due to hazard to health." This provision was broadly interpreted by some to mean that all food ingredients are "toxic" since they are substances regulated by the Food and Drug Administration. Mr. Sherwin Gardner (GMA) noted that "this regulation does not discriminate between the few genuine hazards (e.g.: flour dust inhalation) and the vast majority of safe food substances to which workers are exposed" (Ex. 55, p. 1). This was not OSHA's original intent, which was to cover such regulated substances as air and water pollutants and other serious health hazards. The deletion of this provision should not affect occupational health benefits since OSHA believes that the proposed "toxic substance" definition adequately delineates the scope of the regulation and includes the regulated substances which pose a toxic risk to workers.

For instance, many food ingredients will continue to be covered by the regulation since they meet the proposed criteria for "toxic substance." The handling of bulk quantities of dyes, additives, and other food ingredients considered toxic under the proposed definition can represent a potential hazard in food processing operations. FDA regulations do not extend to occupational exposures, but instead require that the concentrations of hazardous ingredients in consumer goods be kept at safe levels.

The "toxic substance" definition also included any substance which "has yielded positive evidence of an acute or chronic health hazard in human, animal, or other biological testing conducted by, or known to, the employer," ((c)(11)(iii)) and any substance which "has a material safety data sheet available to the employer indicating that the material may pose a hazard to human health" ((c)(11)(iv)).

Therefore OSHA is proposing to modify current paragraph (c)(11)(ii) pertaining to the use of RTECS, and to delete the requirements of (c)(11)(i) with regard to substances regulated by other Federal agencies. The aspect of the definition pertaining to positive studies known to the employer is proposed to be modified to incorporate the same toxicity criteria which would now limit the use of RTECS. In other respects, that provision, as well as the one pertaining to material safety data sheets, remains unchanged.

The modification of (c)(11)(ii) (renumbered as (c)(10)(iii)) retains the use of RTECS as a basic source of information, but greatly limits its application by adding specific toxicity criteria which would indicte whether or not a substance is likely to pose an occupational health risk. To come under the definition of "toxic substance" a substance would not only have to be listed in RTECS but would have to fulfill one of the following conditions: (1) Be reported to cause human toxicity at any dose level; (2) be reported to cause cancer or reproductive effects in animals at any dose level; (3) have a reported oral rat LD50 (that does required to kill 50% of the treated animals) of less than 500 milligrams per kilogram of body weight; (4) have a reported rabit skin contact LD50 of less than 1000 milligrams per kilogram of body weight; or (5) have a reported rat inhalation LC50 (that atmospheric concentration required to kill 50% of the exposed animals) of less than 2000 parts per million of gas or vapor, or less than 20 milligrams per liter of mist, fume or dust. Conditions (2), (4) and (5) are adopted from the "toxic chemical" definition in the American National Standards Institute's document, "American National Standard for the Precautionary Labeling of Hazardous Industrial Chemicals" (ANSI Z129.1—1976). These toxicological measurements are commonly performed for chemicals used in industrial processes.

NIOSH has generated from RTECS a list containing 3,492 substances which meet these criteria (Ex. 88). This list represents a greater than 90 percent decrease in the number of chemicals specified under the "toxic substance" definition. OSHA intends to make such a list available to affected parties, and to periodically issue an updated list.

In considering the proposed definition of "toxic substance," it should be remembered that, while the definition does in some sense determine the scope of the rule, the rule does not directly regulate any of the substances which falls within the definition. Rather, what is being regulated is access to which records relating to those substances or to employees exposed to those substances and which the employer has chosen to create. Thus, while the definition of "toxic substance" may encompass several thousand chemicals, only a fraction of them is likely to be present in any one workplace. Moreover, while some medical records are likely to be kept on employees who work directly with the covered substances in the workplace, it is less likely that there will be exposure records on all of them. Rather, an employer is likely to have exposure records only for those workplace chemicals which are most common or most hazardous. The scope of the employer's obligation will, therefore, in most cases, be considerably narrower than the scope of the "toxic substance" definition would initially suggest.

Alternatives to this proposed modification will also be considered. An option to the proposed "toxic substance" definition is limiting the definition to only those substances which are regulated by OSHA, or to other lists of substances having recognized occupational health significance, such as the ACGIH TLV list (American Conference of Governmental Industrial Hygienists, "Threshold Limit Values for Chemical Substances and Physical Agents in the Workroom Environment"). The regulation could be further limited to records of employees actually subject to exposures greater than the levels prescribed by OSHA or the ACGIH. For instance, Mr. John Webster (Ohio Gas Association) writes that "[W]e would recommend that OSHA require records to be kept only when there has been exposure to identified harmful physical agents" (Ex. 30, p. 4).

These latter options were not chosen for proposal since the benefits of the regulation largely reside in its role in the detection of occupational diseases, especially those diseases associated with the currently unrecognized hazards of many non-regulated or under-regulated sustances. Limiting the regulation only to the recognized hazards contained in these lists would therefore eliminate the regulation's role in detecting unknown hazards. Also eliminated would be much of the other public health benefits associated with providing workers access to critical information about unregulated toxic exposures and effects.

C. *Retention periods.* The regulation currently requires exposure and analysis records to be kept for thirty years and medical records to be kept for the duration of employment plus thirty years. These periods reflect the latency periods associated with some occupational diseases, most notably cancer.

Affected parties, construction industry employers in particular, have expressed concern over the need and expense of retaining records of short-term employees for the full thirty year periods (See Ex. 36 (American Gas Association); Docket H-112C, Ex. 2-42A (NCA)). They argue that exposure and medical records of short-term employees would likely not be of occupational health benefit, since in twenty or thirty years it would be nearly impossible for a researcher to trace the cause of an occupational disease to short-term employment at a particular job-site when the employee had worked at dozens of essentially similar job sites. It would also be nearly impossible to locate the former employees should follow-up be necessary.

OSHA is therefore proposing exempting from the retention requirements any individually identified medical records of short-term (i.e., less than one year) employees. Although records of short-term employees may often be of future occupational health significance, the total burdens of maintaining these records do not appear to be justified. These employees would instead be given a copy of their records upon termination of employment. Having the record travel with the employee rather than being kept by each of several employers should be of greater overall health benefit to the employee.

Also, based on comments from construction industry employers that due to the nature of construction employment extensive recordkeeping would unduly burden employers (Docket H-112C; Exs. 2-4, 2-6A, 2-14), OSHA is proposing to modify the current standard's retention requirements for medical records generated and maintained by construction industry employers to the duration of an employee's employment provided that the record is turned over to the employee upon termination of employment. This modification would not apply, however, to any medical records retention requirements contained in substance-specific OSHA standards.

In addition, OSHA is proposing changing the retention period for medical records to length of employment plus 5 years, but in no event less than thirty years after the beginning of employment. At the expiration of the retention period the medical record may be discarded. This modification will considerably reduce the burden of the current rule by shortenting the outer limit of how long medical records of permanent employees will have to be kept. At the same time, the proposed retention period is still sufficiently lengthly to achieve the purposes of the rule, e.g., the preservation of worklife health records for research purposes. At the end of this period, an employee can in any event request a copy of the entire record to keep as part of his or her personal medical files. Thus, there should be no diminution of health benefits to the individual employee as a result of this proposed modification.

OSHA is also at this time soliciting information concerning the research benefit of retaining employee medical records beyond the duration of employment. OSHA is specifically interested in whether researchers engaged in current or completed research have made significant use of company-maintained medical records of former or deceased employees. OSHA is also interested in information concerning the number of occupational health investigations currently planned or forseeable which intend to make use of these records. OSHA hopes to determine whether the forseeable research needs for the medical records of former employees justify the expense to employers of maintaining these records.

In addition, OSHA solicits information and suggestions to make the retention requirement cost-effective. For example, epidemiological studies are generally performed in larger workplaces where a sufficient number of workers make up a study population. Therefore, it may be cost effective to require only these larger workplaces to preserve records beyond the duration of employment and to require the smaller firms to preserve records for the duration of employment.

D. *Access to Records.* The current regulation requires that requested records be made available within 15 days of the request. However, several commenters argue that situations may arise where it is not possible to comply with the fifteen day limit (Exs. 27, 28). Records may be stored at locations remote from where the request is made, or extraordinarily large numbers of records may be requested.

The proposed modification of paragraph (e)(1)(i) clarifies OSHA's intent in requiring records to be made available within fifteen working days. The modification allows employers to exceed the 15 day limit providing that: (1) It is not reasonably possible to fulfill the request within 15 days; and (2) within the 15 day period the employer apprises the requesting party of the reasons for the delay and an approximation of when the requested records will be available. The CAC recommended that OSHA explicitly require the 15 day limit with regard to the employer's obligation to notify the requesting party of any reasons for delay.

Paragraph (e)(1)(ii) is being added to indicate that an employer may require of the requesting party reasonable information to assist the employer in the location or identification of requested records. Typically, such information should be limited to only the dates and locations an employee worked during the time period in question. This information will assist employers in locating requested records and will preclude extensive searches of records by employers to determine which specific records are covered by a request. OSHA has also adopted a CAC recommendation that, in this case, only information related to locating the record may be requested by the employer.

The proposal would also add paragraph (e)(1)(iv) to indicate that "in the case of an original X-ray, the employer may restrict access to on-site examination or make other suitable arrangements for the temporary loan of the X-ray." This modification is intended to clarify an employer's responsibility in providing access to X-rays. Under paragraph (e)(1)(iii) of the proposed standard, the employer is required to provide an employee a copy of the record, or make copying facilities available to the requestor. However, in the case of X-rays a copy is not interchangeable with the original. Also, specialized equipment is required for copying X-rays, and this equipment is not normally available to employers. The proposed modification indicates that the copying provisions of the standard are intended to apply to the parts of the employee medical record which can be easily photocopied or reproduced, and not to X-rays.

A clarifying modification is proposed for paragraph (e)(2) concerning employee and designated representative access to records. The current regulation requires employers to provide an employee or designated representative access to exposure records of all employees having exposures similar to those of the subject employee. This provision is capable of overly broad interpretation, suggesting employee and

designated representative rights of access to potentially large numbers of duplicative records, specifically with regard to access to exposure records of other similarly exposed employees. This provision was intended only as an alternative when personally identified exposure records are inadequate to determine the amount and nature of toxic substances or harmful physical agents to which the employee is or has been subjected. The proposal therefore permits access to exposure records of other employees only in the absence of relevant personal exposure records, and only to the extent necessary to determine the subject employee's exposure.

As noted above in B.3., OSHA is proposing to narrow the definition of "employee exposure record" by excluding reference to "any other record which reveals the identity of a toxic substance or harmful physical agent." However, while these records no longer have to be retained or made available to employees, OSHA has decided to preserve the obligation for the employer to provide information on the identities of toxic chemicals currently in the workplace (paragraph (e)(2)(ii)). The requirement to provide such information would be subject to the trade secret provisions in paragraph (f). The paragraph (e)(2)(ii) obligation, combined with the limitation of "employee exposure record," will retain the occupational health benefits derived from informing workers of the identities of the substances to which they are exposed, while removing the burden on employers to retain these records for thirty years.

E. *OSHA Access.* The current regulation requires that each employer, upon request, provide "immediate" access to records for authorized OSHA employees. The proposal substitutes the word "prompt," which reflects OSHA's intent that the employer must not unduly delay providing the requested records to the requesting OSHA official, but, consistent with whatever legal protections are available to the employer, makes them available to OSHA as soon as possible. The phrase "without derogation of any constitutional and statutory rights that the employer chooses to exercise" is proposed to be added to make explicit OSHA's recognition that its access to records takes place against a background of Fourth Amendment law, particularly as explicated in *Marshall* v. *Barlow's Inc.*, 436 U.S. 307 (1978). Although issuance of this rule is designed to promote voluntary compliance with OSHA access requests, the Agency will seek a search warrant or subpoena, as appropriate, if an employer exercises his right to require that OSHA resort to legal process before obtaining such access.

F. *Union Access to Records.* The current rule grants recognized or certified collective bargaining agents automatic status as designated representatives, without requiring individual employee authorization, for purposes of access to exposure and analysis records. The purpose of this special status was to assure that unions would have ready access to exposure information so that they could better represent the interests of their members in the occupational safety and health area. Comparable special status was not granted with respect to medical records, however, because of the significantly greater privacy interests involved. Commenters have questioned whether, under the OSH Act, unions should be treated preferentially to other designated representatives who have to obtain written authorization to establish the agency relationship. Further, commenters have also complained that providing unions unconsented access to employee exposure records enables union officials to burden employers with large-scale records access requests and is best handled through traditional collective bargaining (Ex. 33, DuPont).

In three recent companion decisions concerning union access to exposure and analyses records, the National Labor Relations Board (NLRB) held that unions do have a right of access to these records since the information contained in the records is presumptively relative to the unions' role as collective bargaining agent for unit employees. *Minnesota Mining and Mfg. Co.* 261 NLRB No. 2 (April 9, 1982); *Colgate-Palmolive, Inc.* 261 NLRB No. 7 (April 9, 1982); *Borden Chemical, a Division of Borden, Inc.* 261 NLRB No. 6 (April 9, 1982).

In the *3M* case, for instance, the union requested: (1) Morbidity and mortality statistics on all past and present employees; (2) the generic names of all substances used and produced at the plant; (3) results of clinical and laboratory studies of any employee, including the results of experimental toxicological investigations regarding workplace substances; (4) certain health information derived from insurance and workmen's compensation records; (5) a listing of contaminants monitored by the company, including sampling protocols; (6) a description of the company's hearing conservation program, including noise level surveys; (7) radiation sources in the plant; and (8) an indication of plant work areas which exceed recognized heat standards.

In its final decision, the NLRB ordered the company to furnish to the union: (a) The information it requested concerning employee health and safety programs, monitoring and testing systems, devices and equipment, and statistical data related to working conditions to the extent that such information does not include individual medical records from which identifying data have not been removed; and (b) the generic names of all chemicals and substances used and produced in the company's plant and which do not constitute trade secrets. Further, the NLRB ordered the company to bargain collectively with the union regarding access to the generic names of trade secret chemicals and substances with the express hope that parties could agree on a method of providing the information with suitable protections for the trade secrets. *Accord: Colgate—Palmolive, supra; Borden Chemical, supra.*

The NLRB decisions apparently grant at least under most circumstances, unconsented rights of access for union representatives to exposure and analysis records that are equal to or greater than the rights provided by the current OSHA provision. If this is the case, the retention of such a provision in the agency's records access rule would appear to afford no additional assurance of ready access by unions to these types of records and data, and may therefore no longer be necessary. In addition, the deletion or revision of this provision by OSHA in light of the NLRB decisions may represent an appropriate accommodation of national safety and health policy and national labor relations policy. Under any modification of the rule, individual employees would still be free to specifically authorize a union to act as a designated representative for purposes of access to these records.

However, because of the importance of the issue to all parties, the need to be cautious and thorough in evaluating the impact of the NLRB decisions on the OSHA rule, and the possibility that, under limited circumstances, the retention of the special union access provision may not be duplicative of the rights now available in the collective bargaining context, OSHA has not altered the current union access provision in the proposed rule. Interested persons are encouraged to comment on whether modifications of the existing rule which would limit or delete the automatic status of unions as as designated representatives are appropriate in light of experience under

the current rule, the recent NLRB decisions, and considerations of safety and health. The agency will make its final determination concerning this issue once it has carefully evaluated the entire rulemaking record.

G. *Trade secret provisions.* The current regulation requires the disclosure of a toxic substance identity even if the employer considers the identity to be a trade secret. At the same time, the standard permits an employer to delete from requested records any trade secret information which discloses manufacturing processes, or discloses the percentage of a substance in a mixture. If the employer chooses to delete such information, he must notify the person requesting the records that such information was deleted on trade secret grounds. If the deletion of information adversely affects the ability to determine the nature of an employee's exposure, the employer must provide alternative information sufficient to allow adequate exposure evaluation.

The provision requiring toxic substance identity disclosure is troublesome to the flavor and fragrance industries and chemical industries, which maintain that the preservation of trade secrets is vital to corporate profitability, and that the standard's exclusive reliance on confidentiality agreements to protect trade secrets is inadequate (Ex. 44 (FEMA); Ex. 35 (CSMA)).

The purpose of the regulation is to provide employees with information on the chemical hazards to which they are potentially exposed. With this information they can better ensure that they are adequately protected against these hazards. Any barrier to disclosure between an employer and his employees can only serve to limit the effectiveness of the regulation. However, OSHA believes it necessary to modify the regulation so as to strike a better balance between providing employees with information unnecessary to maintain the benefits established by the standard and protecting legitimate trade secrets.

Unqualified trade secret protection can act as a significant barrier to the disclosure of exposure information. A trade secret can be anything which a business in fact keeps secret from its competitors and the public, provided it is minimally novel and commercially valuable. *Restatement of Torts*, s757 comment (b) (1939); Cavitch, *Business Organizations* s232.01 (1975). Absolute secrecy is not essential; information can be considered a trade secret even though it is divulged to employees or licensees with a "need to know," provided the holder of the secret had taken steps to restrict unnecessary access to, and the use of, this privileged knowledge. Cavitch, supra, s232.01(1). Trade secret protection entitles the holder of a trade secret to its commercial exploitation and to certain judicial remedies for a breach of confidence or dispossession of the trade secret through improper or unethical means (industrial theft, bribery, spying, ect.). The Supreme Court had identified the maintenance of standards of commercial ethics and the encouragement of invention as the broadly stated policies behind trade secret law. *Kewanee Oil Co.* v. *Bicron*, 416 U.S. 470 (1974). Unlike patents or copyrights, however, there is not comprehensive Federal law of trade secrets, as it is basically a state-created right.

The conflict between access to exposure and medical records and trade secret interests arises whenever an employer is asked to reveal information such as the identity of a chemical which the employer considers to be a trade secret. While most trade secrets relate to process information or formula or percentage mixture information, none of which is required to be disclosed by the regulation, the identity of a chemical or mixture ingredient may itself be considered a trade secret if its existence is unknown to a competitor (e.g. certain intermediates, catalysts) or cannot practically be "reverse engineered" by analytical techniques.

The same identity information, however, may be essential to the detection of occupational disease. Since exact chemical identity is the passkey to the scientific literature, this information must be available to an industrial hygienist or other health professional who is evaluating the hazards associated with a chemical. Likewise, it must be available to an epidemiologist who is attempting to link patterns of disease with exposure to a particular chemical and to a treating or consulting physician who suspects that a patient's health problems may be the result of chemical exposure. While not every employee needs the chemical identity, as distinct from hazardous effects and precautionary information, at all times, a primary goal of the regulation is to encourage employees to seek out advice and information about the chemicals in their workplaces. For this to happen effectively, they need to know the identities of the toxic substances they are exposed to.

In attempting to accommodate the competing interests between chemical identity disclosure and trade secret protection, OSHA has also taken into account the existence of several factors which contribute to the regulatory dilemma. First, a chemical is a trade secret in some contexts but not others, and it may be equally hazardous in either event. Second, whether or not a chemical's identity is a trade secret is basically a matter of an employer's self-definition; therefore, permitting non-disclosure of trade secret identity without any offsetting obligation could result in overclassification of chemicals as trade secrets.

Third, the value of a trade secret, once lost, cannot be fully recaptured, although private remedies for unathorized disclosures can result in the assessment of monetary damages and injunctive relief. And fourth, OSHA possesses neither the capacity nor expertise to act as a screen of all information which an employer is to disclose to employees and claims to be trade secret.

To accommodate these competing interests, OSHA initially proposed (August 7, 1981; 46 FR 40492) to strengthen the current trade secret protection provisions by permitting liquidated damages clauses in confidentiality agreements entered into by designated representatives. That proposal is now being merged into the current rulemaking, where it may receive broader consideration in the context of the interrelated issues raised by this general reconsideration.

OSHA is further proposing other modifications of the trade secret provisions to make them more protective of trade secrets. In general, these proposed provisions limit the requirements of disclosure to only certain categories of highly toxic chemicals (e.g., carcinogens) and make the confidentiality agreement authorization a more meaningful protection. More particularly, the proposal includes a provision which permits the employer to withhold precise chemical identity information of hazardous chemicals which constitute a trade secret, unless the chemical is a carcinogen, mutagen, teratogen, or a cause of significant irreversible damage to human organs or body systems and there is a need to know the precise chemical name. The "need to know" qualification is meant to limit access to employees or their representatives with a legitimate health purpose. A distinction is thus drawn between "high chronic hazard" chemicals, where identities must be disclosed, and all other hazardous chemicals, whose identities may be withheld (except from a treating or consulting physician) if they constitute a trade secret. With

respect to these latter chemicals, the employer is nevertheless required to:

(1) Be capable of substantiating that it is a trade secret;

(2) Identify the chemical by a generic chemical classification;

(3) Provide all other information on the properties and effects of the chemical; and

(4) In any event, release on a confidential basis the chemical identity to a treating or consulting physician who has stated in writing (except in an emergency) that a patient's health problems may be the result of occupational exposure. Since the employee's personal or treating physician may not be familiar with the toxic effects of workplace chemicals, the CAC recommended that trade secrets also be mandatorily disclosed to consulting physicians assisting in the treatment of disorders of suspect occupational causation. OSHA has adopted this recommendation.

With respect to the "high chronic hazards," the identities of which must be disclosed, and the other hazards which an employer may choose to disclose, the regulation permits the employer to condition access to such information by employees or their designated representatives upon the signing of a confidentiality agreement. The agreement may restrict use of the information to health purposes, prohibit redisclosure of the information to anyone not specified in the agreement other than a treating or consulting physician, and provide for compensation or other legally appropriate relief for competitive harm which may result from a breach of the agreement. The terms of such an agreement should be worked out between the employer and the requesting party and be governed by the applicable state law. Thus, for example, OSHA intends to be neutral on the kinds of damages provisions that may be included. OSHA believes that this provision, with its combination of requirements and authorizations, reflects the current practice of responsible employers and will serve to maximize the amount of necessary hazard-related information available to employees, protect the commercial value of trade secrets, and minimize the potential problem of employers overclassifying chemicals as trade secrets in order to avoid the need to disclose chemical identities to their employees.

This accommodation of trade secret interests has been arrived at after careful consideration of this issue. At this point in the rulemaking, OSHA believes that the proposed modifications provide an optimum solution to this difficult problem and are consistent with its mandate to protect the health of workers to the extent feasible. At the same time, OSHA is fully aware that opinions vary widely on this matter and that a number of other alternatives, ranging from total disclosure of chemical identity regardless of the trade secret interest to total protection of trade secrets regardless of the health consequences, are theoretically possible. OSHA invites comment on all such alternatives and the trade secret issue in general.

Other proposed changes to the regulation, such as the redefinitions of "exposure," "exposure record," and "toxic substance," will also greatly help alleviate the trade secrets problem by narrowing the regulation's scope. Because a significantly smaller set of records will be covered, many trade secret problems will be avoided at the threshold.

H. *X-ray microfilming.* Paragraph (d)(2) of the regulation states that "nothing in this section is intended to mandate the form, manner, or process by which an employer preserves a record so long as the information contained in the record is preserved and retrievable, except that X-ray films shall be preserved in their original state." The X-ray preservation requirement resulted from a finding by OSHA at that time that the diagnostic detail of certain X-rays could be lost when the original X-ray is microfilmed. X-rays related to a possible diagnosis of pneumoconiosis are particularly susceptible to this loss of detail. Pneumoconiosis is the accumulation of dust in the lungs and the tissue reaction to its presence. Inhalation of the dusts of coal, aluminum, beryllium, asbestos, aluminum oxide, silica, hematite (iron oxide), talc, kaolin, mica and cement are commonly associated with the development of pneumoconioses. The earliest diagnostic indications of pneumoconiosis are often barely perceptible changes in the chest X-ray.

Following promulgation of the standard, OSHA received comments from a number of interested parties concerning the requirement that X-rays be kept in their original state. (Exs. 3-5, 8, 10-15). They argued in general that modern microfilm processes can reduce X-rays for storage without an appreciable loss of diagnostic detail. Also, they maintain that microfilm storage is preferable for long-term X-ray preservation due to the fact that microfilm processes use archival materials (which are specially resistant to fading and decay). By contrast, original X-rays can fade and crack over time to the possible detriment of their diagnostic value.

After consideration of the available evidence, OSHA has decided to propose two modifications of the records access standard: (1) Exempt X-rays taken for the purpose of diagnosing broken bones from the definition of "employee medical record," and (2) allow the microfilm storage of remaining X-rays provided certain requirements are met.

As mentioned above in B.4., X-rays taken for the purpose of diagnosing bone fractures are not of value in the detection and prevention of occupational disease. The microfilm storage of the remaining X-rays will be allowed if performed under the supervision of a licensed radiologist who is a diplomate of the American Board of Radiology. In addition, for the microfilm storage of a chest X-ray where the subject worker has been exposed to a substance known to cause pneumoconiosis, the supervising radiologist shall consult with and obtain the written approval of the microfilm process from both: (a) A licensed physician who is a diplomate of the American Board of Internal Medicine certified in the subspecialty of pulmonary disease, and (b) a "B" reader certified by the National Institute for Occupational Safety and Health (NIOSH). Of course, approval by a single individual who meets both criteria is acceptable. OSHA believes that the microfilming of chest X-rays of workers exposed to toxic substances known to cause pneumoconiosis deserves separate consideration. In this case extremely fine shadings of image density are often required for proper analysis and diagnosis. Therefore there is an increased risk that diagnostic detail could be lost if current standard microfilm processes are used. The American College of Radiology's Task Force on Pneumoconioses concurs in this view (Ex. 66).

This proposal relies on the professional expertise of radiologists to ensure that X-rays are microfilmed with minimal loss of diagnostic detail. This requirement is performance oriented, since any microfilm process satisfactory to the supervising radiologist may be used.

Radiologists have the principal training and responsibility for the interpretation of X-rays, and it is therefore appropriate to have the microfilming performed under the direction of a licensed radiologist. The requirement that the radiologist be a diplomate of the American Board of Radiology adds further assurance that the microfilming will be of high quality.

This is of particular importance in that the future interpretation of X-rays or microfilm most likely would be performed by a physician not involved in the initial microfilming process.

The requirement for approval of a licensed physician who is a diplomate of ABIM and certified in the subspecialty of pulmonary disease is included since these physicians would be especially sensitive to the difficulties in the X-ray diagnosis of pneumoconiosis.

A NIOSH certified "B" reader has demonstrated proficiency in the use of the ILO–U/C classification for interpreting chest X-rays for pneumoconiosis and other chest diseases. (Ex. 2). The ILO–U/C system of chest X-ray standards is meant to improve the interpretation and reporting of X-ray abnormalities caused by pneumoconiosis-producing dusts.

The use of quantifiable standards (e.g. resolution, image density) to regulate the microfilming of X-rays was considered by OSHA. However, the lack of consensus by national microfilm industry associations in identifying meaningful standards, coupled with forseeable problems enforcing such standards, led OSHA not to include this approach in the proposal.

To further minimize the possibility that diagnostic information will be lost during the microfilm process, OSHA is considering the recommendation of the Advisory Committee for Construction Safety and Health requiring that existing interpretations of X-rays be microfilmed along with the original X-rays.

However, due to uncertainties with regard to the feasibility and medical acceptability of this procedure, OSHA has decided not to include this provision in the proposed Appendix. OSHA is interested in receiving comments from interested persons concerning the appropriateness of this recommendation.

1. *Duty to Inform Employees.* The current regulation in paragraph (g)(1) requires that "upon an employee's first entering into employment, and at least annually thereafter, each employer shall inform employees exposed to toxic substances or harmful physical agents of (the regulation)." "Employees" was defined under paragraph (c)(4) as including former employees. Therefore, the regulation was susceptible to the interpretation that employers were required to inform former employees of the provisions of the regulation. Locating and informing large numbers of former employees would require a massive expenditure of resources. This was not OSHA's original intent. To clarify OSHA's intent, the word "current" has been inserted into paragraphs (g)(1) and (g)(2) to indicate that the employer's notification responsibility extends only to employees currently employed.

Preliminary Regulatory Impact Assessment and Regulatory Flexibility Certification

A. Introduction

Executive Order 12291 (46 FR 13197, February 19, 1981) provides for a "regulatory analysis" when a rule has major economic consequences for the general economy, individual industries, geographical regions or levels of government. E.O. 12291 replaced Executive Order 12044, which also had provided for regulatory analyses of major regulations.

OSHA issued the access to exposure and medical records regulation on May 23, 1980 (45 FR 35212–35303). At that time, OSHA concluded that this regulation would impose compliance costs below the Executive Order 12044 threshold of $100 million in annual costs for the economy. This is largely because the final rule would not require new records or reports, nor would impose any additional environmental or employee monitoring or medical surveillance requirements. Finally, the rule was performance-oriented, in that the content of exposure and medical records was left to the employer. As a result, OSHA determined that a regulatory analysis under E.O. 12044 was unnecessary.

The proposed revisions to the access regulation will further lower compliance costs. Also, the access regulation would not appear to exercise a significant impact on competition, productivity, domestic investment, employment, innovation, or foreign competition, which are criteria to be considered under the current executive order. For these reasons, this proposed regulation is not considered major under the new E.O. 12291.

Likewise, the Regulatory Flexibility Act of 1980 (Pub. L. 96–353, 94 Sta. 1164 (5 U.S.C. 60 *et seq.*)) requires that OSHA give special consideration to the economic impact of the proposed regulation on small entities. Such consideration should include a description of regulatory alternatives and estimates of the impact of reporting, recordkeeping, and other compliance requirements in order to minimize any significant impact of the proposed rule on small entities. The following analysis meets the requirements of the Regulatory Flexibility Act and addresses the economic implications of the changes proposed to the existing regulation and the bases for these determinations, and concludes that the proposed rule will not have a disproportionate economic impact on small entities.

B. Proposed Revisions

Several proposed modifications to the current access regulation have economic implications. The proposed changes include the following:

(1) Redefinition of employees covered by the proposal,

(2) Redefinition of "toxic substance,"

(3) Retention of records, and,

(4) Trade secret issues.

1. *Employee Coverage.* Currently, the regulation covers all employees who are exposed to toxic substances and harmful physical agents in the workplace, including those who experience incidental exposures, such as white collar employees who may make infrequent visits to production areas where toxic substances are present. The new proposal would limit employee coverage to those, "whose work directly involves the manufacture, processing, installation, handling, packaging, repackaging, transport, disposal, or use of toxic substances, or is subject to harmful physical agents including but not limited to production, maintenance, construction, and transport workers." This change will limit the access regulation to those workers who are more than casually exposed to toxic substances. Office workers, in general, will not be covered by the new proposal. This change will substantially reduce the costs and will target the regulation at those workers with exposures to toxic substances in the workplace.

2. *Redefinition of Toxic Substances for Medical and Exposure Records.* Another change to the rule is the redefinition of toxic substances. Under the existing regulation, toxic substances are defined to include the approximately 39,000 substances listed in the latest printed edition of the National Institute of Occupational Safety and Health's *Registry of Toxic Effects of Chemical Substances* (RTECS), many of which impose low health risks. Under the proposed regulation, toxic substances are more specifically defined to include only those substances that:

(a) Cause human toxicity;

(b) Cause cancer or harmful reproductive effects in animals;

(c) Have a median lethal dose of less than 500 milligrams per kilogram of body weight when administered orally to albino rats;

(d) Have a median lethal dose of less than 1000 milligrams per kilogram of body weight when administered by

continuous contact to the bare skin of albino rabbits; or

(e) Have a median lethal concentration in air of less than 2000 parts per million by volume of gas or vapor, or less than 20 milligrams per liter of mist, fume or dust when administered to albino rats.

This change limits recordkeeping requirements to those substances considered to be the most hazardous and reduces the number of toxic substances by approximately 90 percent. The corresponding number of records covered by the standard is probably reduced to a somewhat lesser extent because many of the workers experience exposures to multiple substances.

This modification, however, may cause some reduction in the benefits of the proposal because some substances that do not currently meet the proposed criteria may be found to be hazardous long after exposure has already occurred and the results have been discarded. Asbestos, for example, was long believed to be biologically inert, but has been proven to be a potent carcinogen. Also, the carcinogenicity of vinyl chloride was discovered through careful analysis of the medical records of exposed workers.

3. *Retention of Records.* The new proposal reduces the kinds of medical and exposure records that must be kept and provides for greater flexibility in the keeping of records, particularly X-rays. For example, many employee health records generated in industrial health units involve minor treatments of broken bones, cuts, bruises, or occasional headaches. These records are of little long-term value and need not be retained by the employer. Under the proposal, employers may summarize the results of continuous readouts and laboratory reports, rather than keep the full reports. This should result in reductions in the number of records being stored without any loss in essential information. Under the proposal, required material safety data sheets need only be maintained until replaced by a more recent copy. Also, X-rays of broken bones need not be kept, while X-rays of occupational health significance may be microfilmed under proper supervision. Microfilming could mean a potential cost savings to employers, because they could recover the silver content of X-rays, and the retention of information would require much less storage space.

Under the new standard, employers need not maintain records of short-term employees (i.e., those who have worked less than 1 year). Employers have the alternative of maintaining these records or of providing them to employees upon termination of their employment. This modification should substantially reduce the costs of compliance, especially for industries with higher than average turnover. At the same time, the employee receives his medical record so that no health information is lost. In the construction industry, this option is being adopted for all employees, regardless of the length of employment.

In the absence of formal exposure records (air contaminant measurements, biological monitoring data, and material safety data sheets), the current regulation treats any other record that reveals the identity of a toxic substance (e.g., and inventory record or a purchase record) as an "exposure record." The requirement to retain this information and make it available has been the source of much employer concern regarding costs due to the very large number of records that are included under this provision.

Under the proposed regulation these "other records" are no longer treated as exposure records, and therefore are not subject to access and retention requirements. However, the employer is still required to inform an employee upon request of the identity of a toxic substance to which the employee is exposed. These changes will significantly reduce employer costs and, at the same time, will ensure that workers will continue to have access to information on the toxic substances they are or could be working with.

Finally, the proposed regulation modifies the requirement that employee medical records be retained for 30 years after termination of employment to one of 30 years, or the length of employment, whichever is longer. This modification will result in some cost savings from the shorter retention periods.

Long-term recordkeeping is valuable for diagnosis in the treatment of latent diseases, including cancer and epidemiological research linking occupational illness to hazardous exposures. It is possible that shortening the time period for maintaining medical records may reduce some of the benefits of the access regulation, because latency periods for cancer may be greater than 30 years. However, this effect should not be significant, because in most cases, the retention of records for 30 years should be adequate.

4. *Trade Secrets Issues.* The proposed revision to the trade secret provision recognizes both the employer's rights with respect to proprietary information and the employee's need for exposure information. If the employee requests information on exposures to highly toxic substances involving a trade secret, the employer can provide the employee or his designated representative with access to the information on the basis of a confidentiality agreement. The proposed modifications of the trade secret provisions are more protective of trade secrets than the current rule. The likelihood of competitive harm resulting from trade secret disclosure under the rule should therefore be greatly reduced.

C. Summary of Costs

OSHA's Office of Regulatory Analysis estimates that the current access rule affects over 27 million workers. Eliminating coverage of casually exposed workers and turning records over to short-term employees will reduce the number of workers fully covered by the new proposal by more than 10 million.

The number of workers presently exposed to toxic substances was determined by calculating a growth rate in the labor force from 1970 to 1980 based on data in the Bureau of Labor Statistics, *Employment and Earnings, March, 1981* (Ex. 80). In addition, the number of short-term employees was estimated using figures from BLS *Job Tenure Declines As Work Force Changes* (Ex. 79). The 10 million figure was arrived at by eliminating casually exposed and short-term workers. Although both figures are further based upon results of the 8-year-old data presented in the *National Occupational Hazard Survey* (NOHS) (Docket H–112, Ex. 171) and may be somewhat outdated, a substantial reduction in the number of workers covered represents a lessening of the compliance burden on employers.

The number of records that must be kept by employers, as well as the related costs, will also be reduced by changes in the definitions of toxic substances for medical and exposure records and by changes in the requirements for retaining these records.

When assessing the costs of the access regulation, it must be noted that several states already require employers to provide employees with access to their medical records. Many major corporations have kept extensive exposure and medical records on employees, often beyond the period of employment, prior to the implementation of the access regulation, and many have provided considerable access to their employees. The storage and access costs of these firms should be subtracted from the total compliance costs of the proposed regulation. At present, other OSHA regulations require recordkeeping for exposures to some toxic substances and harmful physical

agents, such as noise, vinyl chloride, lead, and asbestos. The recordkeeping costs for these and other harmful physical agents and toxic substances that have recordkeeping requirements under other OSHA regulations should also be subtracted from the compliance costs of the access regulation.

Moreover, employee preemployment health information may be the only health information recorded by some employers. Where preemployment information is the only information kept, the cost of storage and access will be minimal.

D. Summary of the Benefits

Employee medical and exposure records are potentially important to the detection, treatment, and prevention of occupational disease. If workers and their representatives are to play a meaningful role in their own health management they must have an opportunity to look at their medical and exposure records. Access will enable workers and their personal physicians to uncover patterns of health impairment and disease. Access to exposure and medical records and long-term preservation of these records will also facilitate formal occupational health research.

The new regulation will maintain the benefits to occupational health in the current regulation and will reduce compliance burdens on employers. The number of records kept and the time they need to be stored will be reduced, but exposure records of substances considered most hazardous will still be retained for at least 30 years. Employers have been given increased flexibility as to the format of recordkeeping. This should reduce compliance burdens while maintaining essential health information.

Employers still also recieve increased protection from trade secret disclosure. The trade secret provisions will protect employers, but will give employees access to necessary exposure information.

E. Regulatory Flexibility Analysis

The impact of the 1980 access rule on small businesses was determined to be insignificant. According to the NOH survey, only 1.4 percent of all small firms (8–250 employees) regularly monitor workplace environmental conditions, while only 2.3 percent of these firms have a formally established health unit. Approximately one-half of all small firms collect some preemployment health information on new employees, but less than 10 percent provide periodical medical exams to workers. The U.S. Department of Commerce *County Business Patterns 1977* (Ex. 61) estimates that more than 68 percent of all employees work in firms of less than 250 employees.

To summarize the results of the NOH survey as it pertains to small entities.

(1) Most small firms do not collect health information beyond that of new employees,

(2) Few small firms provide formal or periodic health care, and

(3) Few small firms monitor workplace environmental conditions.

The vast majority of small entities will not be affected by the proposed regulation because medical surveillance and environmental monitoring are not required. The regulation, however, does require that firms creating medical and exposure records must keep them and grant employee access to them. Since small entities overwhelmingly do not either create such records or have them in large numbers, the economic impact of the regulation on these firms is relatively small. The effect of the proposed changes will further reduce any impacts of the access regulation on small entities, because proposed revisions to the current rule will lessen compliance burdens on employers. They will be of particular benefit to those employers, including many small businesses, who have many short-term employees.

Public Participation

Interested persons are invited to submit written data, views, and arguments on this proposed standard. These comments must be received on or before September 14, 1982, and submitted in quadruplicate to the Docket Officer, Docket H–112E, U.S. Department of Labor, Occupational Safety and Health Administration, 200 Constitution Avenue, NW., Room S–6212, Washington, D.C., 20210; (202) 523–7894. Written submissions must clearly identify the provisions of the proposal which are addressed, and the position taken on each issue.

Under section 6(b)(3) of the Act, OSHA is scheduling a public hearing to permit interested persons an opportunity to submit oral testimony concerning the issues raised by the proposed standard. The hearing is scheduled to begin on October 5, 1982 in Washington, D.C., at 9:30 a.m.

Notices of Intention to Appear

All persons wishing to participate in the public hearing must file a notice of intention to appear, in quadruplicate, on or before September 21, 1982, addressed to OSHA Division of Consumer Affairs, Docket No. H–112E, Room N–3635, U.S. Department of Labor, 200 Constitution Avenue, NW., Washington, D.C. 20210; (202) 523–8024.

The notices of intention to appear must contain the following information:

(1) The name, address and telephone number of each person to appear;

(2) The capacity in which the person will appear;

(3) The approximate amount of time requested for the presentation;

(4) The specific issues that will be addressed;

(5) A detailed statement of the position that will be taken on each issue addressed; and

(6) Whether the party intends to submit documentary evidence and if so, a brief summary of that evidence.

Filing of Testimony and Evidence Before Hearing

Any party requesting more than 15 minutes for a presentation at the hearing, or submitting documentary evidence, must provide in advance the complete text of the testimony and documentary evidence to be presented. These texts shall be submitted in quadruplicate to the OSHA Division of Consumer Affairs, at the above address, and must be submitted by September 21, 1982.

These submissions will be available for inspection and copying at the OSHA Docket Office, Room S6212, at the above address.

Each submission received will be reviewed to ascertain if the amount of time requested in the notice of intention to appear is appropriate. In those instances where the information contained in the submission does not justify the amount of time requested, a more appropriate time allocation will be made and the participant will be notified of the change. Any party who has not substantially complied with this requirement may be limited to a 15 minute presentation, and may be requested to return for questioning at a later time.

Conduct of Hearing

The hearing will begin at 9:30 a.m. with resolution of any procedural matters relating to the proceeding. The hearing will be conducted in accordance with 29 CFR Part 1911, allowing full development of the record and permitting all parties to exercise their rights of participation.

The hearing will be presided over by an Administrative Law Judge who will have all the powers necessary or appropriate to conduct a full and fair informal hearing as provided in 29 CFR Part 1911. Following the close of the hearing or of any post hearing comment

period, the presiding Administrative Law Judge will certify the record to the Assistant Secretary of Labor for Occupational Safety and Health.

All written and oral submissions, as well as other information gathered by the Agency, will be considered in any action taken. The record of this rulemaking, including written comments and materials submitted in response to this notice and notices of intention to appear at the public hearing, will be available for inspection and copying in the Docket Office, Room S–6212, at the above address, between the hours of 8:15 a.m. and 4:45 p.m.

Authority and Signature

This document was prepared under the direction of Thorne G. Auchter, Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, 200 Constitution Avenue, N.W., Washington, D.C. 20210. Pursuant to Sections 6(b), 8(c) and 8(g) of the Act, it is hereby proposed to amend 29 CFR 1910.20 to read as set forth below.

List of Subjects in 29 CFR Part 1910

Occupational safety and health, Health, Health records.

(Secs. 6(b), 8(c) and 8(g). Pub. L. 91–596, 84 Stat. 1593, 1599,1600; 29 U.S.C. 655, 657; 29 CFR Part 1911; Secretary of Labor's Order No. 8–76 (41 FR 25059))

Signed at Washington, D.C. this 7th day of July, 1982.

Thorne G. Auchter,

Assistant Secretary for Occupational Safety and Health.

PART 1910—OCCUPATIONAL SAFETY AND HEALTH STANDARDS

It is proposed to revise § 1910.20 of title 29 CFR to read as follow:

§ 1910.20 Access to employee exposure and medical records.

(a) *Purpose.* The purpose of this section is to provide employees and their designated representatives a right of access to relevant exposure and medical records; and to provide representatives of the Assistant Secretary a right of access to these records in order to fulfill responsibilities under the Occupational Safety and Health Act. Access by employees, their representatives, and the Assistant Secretary is necessary to yield both direct and indirect improvements in the detection, treatment, and prevention of occupational disease. Each employer is responsible for assuring compliance with this section, but the activities involved in complying with the access to medical records provisions can be carried out, on behalf of the employer, by the physician or other health care personnel in charge of employee medical records. Except as expressly provided, nothing in this section is intended to affect existing legal and ethical obligations concerning the maintenance and confidentiality of employee medical information, the duty to disclose information to a patient/employee or any other aspect of the medical-care relationship, or affect existing legal obligations concerning the protection of trade secret information.

(b) *Scope and application.* (1) This section applies to each general industry, maritime, and construction employer who makes, maintains, contracts for, or has access to employee exposure or medical records, or analyses thereof, pertaining to:

(i) Employees whose work directly involves the manufacture, processing, installation, handling, packaging, repackaging, transport, disposal, or use of toxic substances, or who is subject to harmful physical agents (e.g. noise, heat, cold, vibration, repetitive motion ionizing and non-ionizing radiation, hypo or hyperbaric pressure) in any manner different from typical non-occupational situations, and includes, but is not limited to, coverage of production, maintenance, construction, and transport workers; and

(ii) Employees accidentally exposed to a toxic substance or harmful physical agent to a degree sufficient to require medical attention.

(2) This section applies to all employee exposure and medical records, and analyses thereof, of such employees, whether or not the records are mandated by specific occupational safety and health standards.

(3) This section applies to all employee exposure and medical records, and analyses thereof, made or maintained in any manner, including on an in-house or contractual (e.g., fee-for-service) basis. Each employer shall assure that the requirements of this section are made known to physicians and others providing medical or industrial hygiene services under contract to the employer, and shall make a good faith effort to assure, by modification of the contract if necessary, that such persons comply with the preservation and access requirements of the section.

(c) *Definitions.* (1) "Access" means the right and opportunity to examine and copy.

(2) "Analysis using exposure or medical records" means any compilation of data or any statistical study based at least in part on information collected from individual employees exposure or medical records or information collected from health insurance claims records, provided that either the analysis has been reported to the employer or no further work is currently being done by the person responsible for preparing the analysis.

(3) "Designated representative" means any individual or organization to whom an employee gives written authorization to exercise a right of access. For the purposes of access to employee exposure records and analyses using exposure or medical records, a recognized or certified collective bargaining agent shall be treated automatically as a designated representative without regard to written employee authorization.

(4) "Employee" means an employee whose work directly involves the manufacturing, processing, installation, packaging, repackaging, transport, disposal, or use of toxic substances, or who is subject to harmful physical agents in any manner different from typical non-occupational situations. "Employee" includes, but is not limited to, production, maintenance, construction, and transport workers. "Employee" includes current employees, former employees, and employees being assigned or transferred to such work. "Employee" also includes any employee accidentally exposed to a toxic substance or harmful physical agent to a degree sufficient to require medical attention. In the case of a deceased or legally incapacitated employee, the employee's legal representative may directly exercise all the employee's rights under this section.

(5) "Employee exposure record" means a record containing any of the following kinds of information:

(i) Environmental (workplace) monitoring or measuring of a toxic substance or harmful physical agent, including personal, area, grab, wipe, or other form of sampling, as well as related collection and analytical methodologies, calculations, and other background data relevant to interpretation of the results obtained;

(ii) Biological monitoring results which are designated as exposure records by specific occupational safety and health standards; and

(iii) Material safety data sheets.

(6) (i) "Employee medical record" means a record concerning the health status of an employee which is made or maintained by a physician, nurse, or other health care personnel or technician, including:

(A) Medical and employment questionnaires or histories (including job description and occupational exposures);

(B) The results of medical examinations (pre-employment, pre-assignment, periodic, or episodic) and laboratory tests (including chest and other X-ray examinations taken for the purposes of establishing a base-line or detecting occupational illness, and all non-mandated biological monitoring);

(C) Medical opinions, diagnoses, progress notes, and recommendations;

(D) Descriptions of treatments and prescriptions; and

(E) Employee medical complaints.

(ii) "Employee medical record" does not include medical information in the form of:

(A) Physical specimens (e.g., blood or urine samples) which are routinely discarded as a part of normal medical practice;

(B) First-aid records (not including medical histories) if made on-site by a non-physician and if maintained separately from the employer's medical program and its records;

(C) Records concerning health insurance claims if maintained separately from the employer's medical program and its records, and not accessible to the employer by employee name or other direct personal identifier (e.g., social security number, payroll number, etc.);

(D) Records created solely in preparation for litigation, which are privileged from discovery under the applicable rules of procedures or evidence; or

(E) Records concerning voluntary employee assistance programs (alcohol, drug abuse, or personal counseling programs) if maintained separately from the employer's medical program and its records.

(7) "Employer" means a current employer, a former employer, or a successor employer.

(8) "Record" means any item, collection, or grouping of information regardless of the form or process by which it is maintained (e.g., paper document, microfiche, microfilm, X-ray film, or automated data processing).

(9) "Specific written consent" (i) means a written authorization containing the following:

(A) The name and signature of the employee authorizing the release of medical information;

(B) The date of the written authorization;

(C) The name of the individual or organization that is authorized to release the medical information;

(D) The name of the designated representative (individual or organization) that is authorized to receive the released information;

(E) A general description of the medical information that is authorized to be released;

(F) A general description of the purpose for the release of the medical information; and

(G) A date or condition upon which the written authorization will expire (if less than one year).

(ii) A written authorization does not operate to authorize the release of medical information not in existence on the date of written authorization, unless the release of future information is expressly authorized, and does not operate for more than one year from the date of written authorization.

(iii) A written authorization may be revoked in writing prospectively at any time.

(10) "Toxic substance" means any chemical substance or biological agent (bacteria, virus, fungus, etc.) which:

(i) Has yielded positive evidence of an acute or chronic health hazard (consistent with (c)(10)(iii)(A)–(E) below) in testing conducted by, or known to, the employer;

(ii) Is the subject of a material safety data sheet kept by or known to the employer indicating that the material may pose a hazard to human health; or

(iii) Is listed in the latest printed edition of the National Institute for Occupational Safety and Health (NIOSH) Registry of Toxic Effects of Chemical Substances (RTECS), provided that the substance:

(A) Has been reported to cause human toxicity at any dose level;

(B) Has been reported to cause cancer or reproductive effects in animals at any dose level;

(C) Has a median lethal dose (LD50) of less than 500 milligrams per kilogram of body weight when administered orally to albino rats;

(D) Has a median lethal dose (LD50) of less than 1000 milligrams per kilogram of body weight when administered by continuous contact to the bare skin of albino rabbits; or

(E) Has a median lethal concentration (LC50) in air of less than 2000 parts per million by volume of gas or vapor, or less than 20 milligrams per liter of mist, fume or dust when administered to albino rats.

(d) *Preservation of records.* (1) Unless a specific occupational safety and health standard provides a different period of time, each employer shall assure the preservation and retention of records as follows:

(i) *Employee medical records.* The medical record for each employee shall be preserved and maintained for at least the duration of employment plus five (5) years, but in no event less than thirty (30) years, from the beginning of employment, except that:

(A) Health insurance claims records maintained separately from the employer's medical program and its records need not be retained for any specified period;

(B) The medical records of employees who have worked for less than one (1) year for the employer need not be retained beyond the term of employment if they are provided to the employee upon the termination of employment;

(C) The medical records of employees in the construction industry need not be retained beyond the term of employment if they are provided to the employee upon the termination of employment; and

(D) The medical records of employees covered solely due to accidental toxic substance or physical agent exposures do not have to be retained for any specific length of time.

(ii) *Employee exposure records.* (A) The following employee exposure records shall be preserved and maintained for thirty (30) years:

(*1*) Environmental (workplace) monitoring results;

(*2*) Summaries of continuous read-out data;

(*3*) Data relevant to the results obtained, including, but not limited to, name(s) of employee(s) monitored, date and location of the monitoring or measurement, and the collection and analytical methodologies used.

(B) Background data to environmental (workplace) monitoring or measuring, such as laboratory reports, calculations, worksheets, and continuous read-outs, shall be preserved and maintained for one (1) year.

(C) Material safety data sheets shall be preserved and maintained until replaced by a more recent copy.

(D) Biological monitoring results designated as exposure records by specific occupational safety and health standards shall be preserved and maintained as required by the corresponding standard.

(iii) *Analyses using exposure or medical records.* Each analysis using exposure or medical records shall be preserved and maintained for at least thirty (30) years.

(2) Nothing in this section is intended to mandate the form, manner, or process by which an employer preserves a record so long as the information contained in the record is preserved and retrievable. In the case of X-ray films, Appendix B shall apply.

(e) *Access to records.*—(1) *General.* Whenever an employee or designated representative requests access to a

record, the employer shall assure that access is provided in a reasonable time, place, and manner. If the employer cannot reasonably provide access to the record within fifteen (15) working days, the employer shall within the fifteen (15) working days apprise the employee or designated representative requesting the record of the reason for the delay and the earliest date when the record will be available.

(ii) The employer may require of the requester only such information as should be readily known to the requester and which may be necessary to locate or identify the records being requested (e.g. dates and locations where the employee worked during the time period in question).

(iii) Whenever an employee or designated representative requests a copy of a record, the employer shall assure that either:

(A) A copy of the record is provided without cost to the employee or representative,

(B) The necessary mechanical copying facilities (e.g., photocopying) are made available without cost to the employee or representative for copying the record, or

(C) The record is loaned to the employee or representative for a reasonable time to enable a copy to be made.

(iv) In the case of an original X-ray, the employer may restrict access to on-site examination or make other suitable arrangements for the temporary loan of the X-ray.

(v) Whenever a record has been previously provided without cost to an employee or designated representative, the employer may charge reasonable, non-discriminatory administrative costs (i.e., search and copying expenses but not including overhead expenses) for a request by the employee or designated representative for additional copies of the record, except that:

(A) An employer shall not charge for an initial request for a copy of new information that has been added to a record which was previously provided; and

(B) An employer shall not charge for an initial request by a recognized or certified collective bargaining agent for a copy of an employee exposure record or an analysis using exposure or medical records.

(vi) Nothing in this section is intended to preclude employees and collective bargaining agents from collectively bargaining to obtain access to information in addition to that available under this section.

(2) *Employee and designated representative access*—(i) *Employee exposure records.* Except as limited by paragraph (f) of this section, each employer shall, upon request, assure the access of each employee and designated representative to employee exposure records relevant to the employee. For the purpose of this section, an exposure record relevant to the employee consists of:

(A) A record which measures or monitors the amount of a toxic substance or harmful physical agent to which the employee is or has been subjected;

(B) In the absence of such directly relevant records, such records of other employees with past or present job duties or working conditions related to or similar to those of the employee as are necessary to reasonably indicate the amount and nature of the toxic substances or harmful physical agents to which the employee is or has been subjected; and

(C) Any exposure record pertaining to workplaces or working conditions to which the employee is being assigned or transferred.

(ii) *Current identity information.* Except as limited by paragraph (f) of this section, the employer shall, upon request, inform each employee and designated representative of the identities (chemical name, if known) of the toxic substances and harmful physical agents to which the employee is subjected.

(iii) *Employee medical records.* (A) Each employer shall, upon request, assure the access of each employee to employee medical records of which the employee is the subject, except as provided in paragraph (e)(2)(iii)(D) of this section.

(B) Each employer shall, upon request, assure the access of each designated representative to the employee medical records of any employee who has given the designated representative specific written consent. Appendix A to this section contains a sample form which may be used to establish specific written consent for access to employee medical records.

(C) Whenever access to employee medical records is requested, a physician representing the employer may recommend that the employee or designated representative:

(*1*) Consult with the physician for the purposes of reviewing and discussing the records requested;

(*2*) Accept a summary of material facts and opinions in lieu of the records requested; or

(*3*) Accept release of the requested records only to a physician or other designated representative.

(D) Whenever an employee requests access to his or her employee medical records, and a physician representing the employer believes that direct employee access to information contained in the records regarding a specific diagnosis of a terminal illness or a psychiatric condition could be detrimental to the employee's health, the employer may inform the employee that access will only be provided to a designated representative of the employee having specific written consent, and deny the employee's request for direct access to this information only. Where a designated representative with specific written consent requests access to information so withheld, the employer shall assure the access of the designated representative to this information, even when it is known that the designated representative will give the information to the employee.

(E) A physician, nurse, or other responsible health care personnel maintaining employee medical records may delete from requested medical records the identity of a family member, personal friend, or fellow employee who has provided confidential information concerning an employee's health status.

(iii) *Analyses using exposure or medical records.* (A) Each employer shall, upon request, assure the access of each employee and designated representative to each analysis using exposure or medical records concerning the employee's working conditions or workplace.

(B) Whenever access is requested to an analysis which reports the contents of employee medical records by either direct identifier (name, address, social security number, payroll number, etc.) or by information which could reasonably be used under the circumstances indirectly to identify specific employees (exact age, height, weight, race, sex, date of initial employment, job title, etc.), the employer shall assure that personal identifiers are removed before access is provided. If the employer can demonstrate that removal of personal identifiers from an analysis is not feasible, access to the personally identifiable portions of the analysis need not be provided.

(*3*) *OSHA access.* (i) Each employer shall, upon request, and without derogation of any constitutional and statutory rights that the employer chooses to exercise, assure the prompt access of representatives of the Assistant Secretary of Labor for Occupational Safety and Health to employee exposure and medical records and to analyses using exposure or

medical records. Rules of agency practice and procedure governing OSHA access to employee medical records are contained in 29 CFR 1913.10.

(ii) Whenever OSHA seeks access to personally identifiable employee medical information by presenting to the employer a written access order pursuant to 29 CFR 1913.10(d), the employer shall prominently post a copy of the written access order and its accompanying cover letter for at least fifteen (15) working days.

(f) *Trade secrets.* (1) An employer may delete from records requested by an employee or designated representative any trade secret which discloses manufacturing processes, or discloses the percentage of a chemical substance in a mixture, provided the employee or designated representative is notified that information has been deleted on trade secret grounds.

(2) An employer may withhold the precise chemical name of a chemical only if:

(i) The employer can substantiate that it is a trade secret;

(ii) The chemical is not a carcinogen, mutagen, teratogen, or a cause of significant irreversible damage to human organs or body systems for which there is a need to know the precise chemical name;

(iii) The chemical is identified by a generic chemical classification which would provide useful information to a health professional; and

(iv) All other information on the properties and effects of the chemical contained in the requested record is disclosed.

(3) The withheld information shall be provided on a confidential basis to a treating or consulting physician who states in writing (except in an emergency situation) that a patient's health problems may be the result of occupational exposure. The employer shall inform the requesting employee or designated representative at the time of the trade secret claim that the withheld information will be made available to the treating or consulting physician on this basis.

(4) To the extent that names of trade secret chemicals are disclosed, the employer may condition employee and designated representative access to such information upon acceptance of a reasonable confidentiality agreement. The agreement may restrict use of the information to health purposes, prohibit redisclosure of the information to anyone not specified in the agreement other than a treating or consulting physician, and provide for compensation or other legally appropriate relief for competitive harm which may result from a breach of the agreement.

(g) *Employee information.* (1) Upon an employee's first entering into employment, and at least annually thereafter, each employer shall inform current employees covered by this section of the following:

(i) The existence, location, and availability of any records covered by this section;

(ii) The person responsible for maintaining and providing access to records; and

(iii) Each employee's rights of access to these records.

(2) Each employer shall keep a copy of this standard and its appendices and make copies readily available, upon request, to employees. The employer shall also distribute to employees any informational materials concerning this standard which are made available to the employer by the Assistant Secretary of Labor for Occupational Safety and Health.

(h) *Transfer of records.* (1) Whenever an employer is ceasing to do business, the employer shall transfer all records subject to this section to the successor employer. The successor employer shall receive and maintain these records.

(2) Whenever an employer is ceasing to do business and there is no successor employer to receive and maintain the records subject to this standard, the employer shall notify affected current employees of their rights of access to records at least three (3) months prior to the cessation of the employer's business.

(3) Whenever an employer either is ceasing to do business and there is no successor employer to receive and maintain the records, or intends to dispose of any records required to be preserved for at least thirty (30) years, the employer shall:

(A) Transfer the records to the Director of the National Institute for Occupational Safety and Health (NIOSH) if so required by a specific occupational safety and health standard; or

(B) Notify the Director of NIOSH in writing of the impending disposal of records at least three (3) months prior to the disposal of the records.

(4) Where an employer regularly disposes of records required to be preserved for at least thirty (30) years, the employer may, with at least (3) months notice, notify the Director of NIOSH on an annual basis of the records intended to be disposed of in the coming year.

(i) *Appendices.* The information contained in the appendices to this section is not intended, by itself, to create any additional obligations not otherwise imposed by this section nor detract from any existing obligation.

Appendix A to § 1910.20

Sample Authorization Letter for the Release of Employee Medical Record Information To a Designated Representative

I (full name of worker/patient), hereby authorize (individual or organization holding the medical records) to release to (individual or organization authorized to receive the medical information), the following medical information from my personal medical records: (Describe generally the information desired to be released)

I give my permission for this medical information to be used for the following purpose:

but I do not give permission for any other use or re disclosure of this information.

(Note: Several extra lines are provided below so that you can place additional restrictions on this authorization letter if you want to. You may, however, leave these lines blank. On the other hand, you may want to (1) specify a particular expiration date for this letter (if less than one year), (2) describe medical information to be created in the future that you intend to be covered by this authorization letter, or (3) describe portions of the medical information in your records which you do not intend to be released as a result of this letter.)

Full name of Employee or Legal Representative

Signature of Employee or Legal Representative

Date of Signature

Appendix B to § 1910.20

Microfilm Storage of X Ray

X-rays taken for the purpose of establishing a base line or detecting occupational illness shall be kept in their original state or microfilmed, provided that:

A. The microfilm storage of X-rays shall be performed under the supervision of a licensed radiologist who is a diplomate of the American Board of Radiology; and

B. For the microfilm storage of chest X-rays of employees exposed to a toxic substance

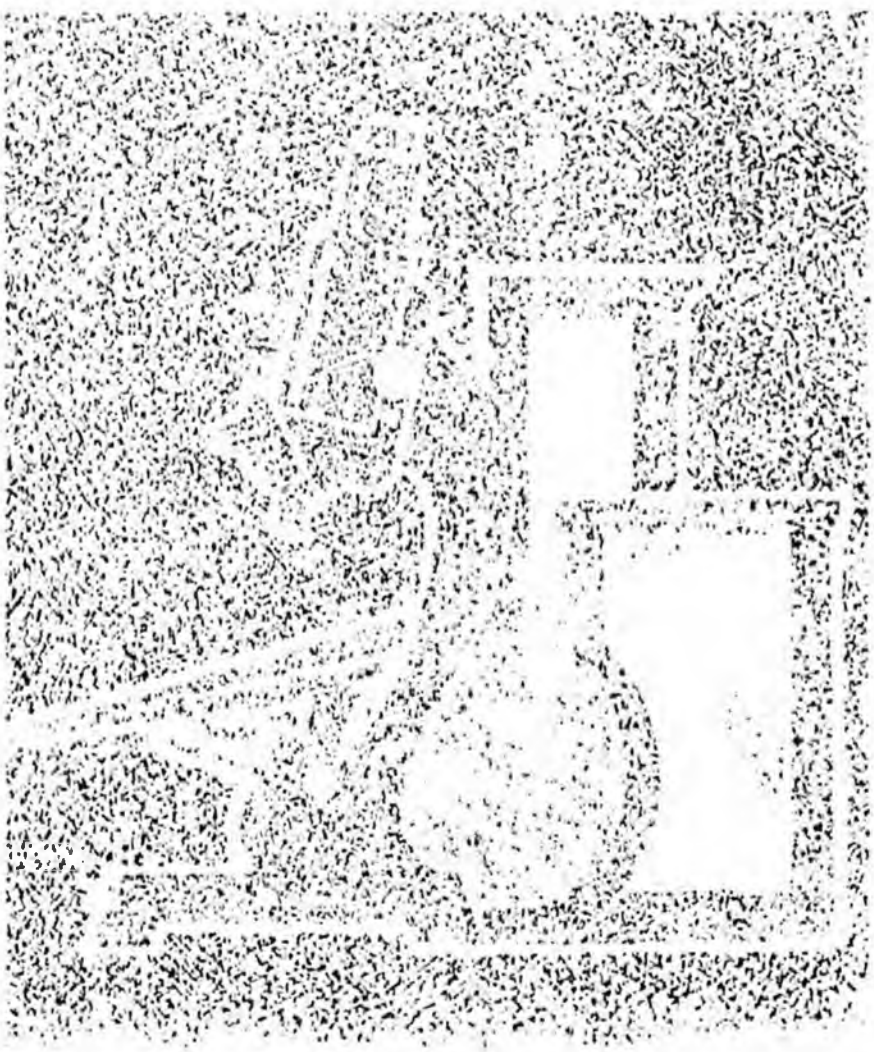
known to cause pneumoconiosis, the supervising radiologist shall consult with and obtain the approval of both a licensed physician who is a member of the American Board of Radiology certified in the subspecialty of chest disease, and a "B" reader certified by the National Institute for Occupational Safety and Health in accordance with § 1910.1045.51.

C. After the examination required by paragraph B, Appendix B, the supervising radiologist shall attach to the X-ray a summary of the interpretation of the X-ray. This summary shall be microfilmed along with the X-ray and made part of the employee's medical record.

[FR Doc. 82-18873 Filed 7-9-82, 8:45 am]
BILLING CODE 4510-26-M

NIOSH

1978 REGISTRY of TOXIC EFFECTS of CHEMICAL SUBSTANCES



U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service
Center for Disease Control
National Institute for Occupational Safety and Health

1080 see: AH9100000
A 21 see: DO1750000
A-36 see: TA2100000
A 42 see: XN4550000
A 71 see: SB4725000
A-129 see: DK3325000
A 145 see: SO7000000
238A see: KM5425000
A 343 see: BP0315000
A 348 see: RP5800000
A 350 see: DM3315000
A 361 see: XY5600000
A 363 see: FC0175000
A 688 see: DP3500000
688A see: DP3750000
A 884 see: SH5075000
A-980 see: ED7700000
A 1093 see: XY9100000
A 1100 see: TX2100000
A 1141 see: TZ1225000
A-1348 see: YU0875000
A-1981-12 see: UY5625000
A 2079 see: XY5250000
A 2297 see: RQ2100000
A 3322 see: UT1400000
A 4077 see: TL9800000
5082A see: TB0700000
A 10749 see: XZ5475000
A-11025 see: ZG0875000
A 13397 see: RC2975000
A 17767 see: MV7175000
A18285 see: YT2E00000
A 19120 see: DP6650000
A-19757 see: GZ0875000
A 19931 see: CV0700000
A 33588 see: VA2200000
A-91033 see: SO6825000
AA see: BA5075000
AA see: CI7650000
9AA see: AR7300000
AAB see: BY8225000
AAF see: AB9450000
2-AAF see: AB9450000
AAFC see: HA5400000
AAFERTIS see: NO8750000
AAN see: MC1400000
9AAP see: RY4400000
AARANE see: DJ2380000
AARARRE see: DJ2380000
AAT see: XU8800000
AAT see: TF4550000
o-AAT see: XU8800000
AATECK see: LQ2800000
AATERRA see: XI3875000
AATP see: TF4550000
AATREX see: XY5600000
2-AB see: LO3325000
AB-15 see: DM3230000
AB-42 see: AG4200000
AB 100 see: EY8800000
AB-180 see: EY8650000
AB-181 see: EY8270000
AB-182 see: EY9350000
AB-183 see: EY8280000
ABADOL see: XJ2100000
ABADOLE see: XJ2100000
ABAR see: TB1720000
ABASIN see: YR6475000
ABAT see: TF6890000
ABATE see: TFAB90000
ABATHION see: TFA890000
ABAVIT see: OW+700000
ABBOCILLIN see: XH9403000
ABBOCILLIN-DC see: XH9450000
ABBOLEXIN see: OP 1350000
ABBOMEEN E-2 see: KK3538000
ABBOMEEN E-25 see: KK3530000
ABBOMEEN E-2 AEROSOL see: KK3542000
ABBOMEEN E-25 AEROSOL see: KK3534000
ABBOTT see: XZ5425000
ABBOTT-22700 see: LW3150000
ABBOTT-25794 see: UA5810000
ABBOTT-28440 see: NR9900000
ABBOTT-30360 see: EU2690000
ABBOTT 30400 see: RY1105000
ABBOTT-35616 see: DE8750000
ABBOTT 36581 see: LI5940000
ABBNSANIL see: AE4200000
ABICOVIROMYCIN see: GY8430000

AA4350000 ABIES ALBA OIL

Dif the coloring to pale yellow oil from the steam distillation of the crushed cones of ABIES ALBA Mill (FCTXAV 12,807,74)

Syn: OIL of ABIES ALBA * TEMPLIN OIL

IRDS: skin-rbt 500 mg/24H MOD — FCTXAV 12,807,74

ABIETIC ACID see: TP8580000
ABIETIC ACID, METHYL ESTER see: TP8590000
ABIGUANIL see: WO8575000
ABIKOVIROMYCIN see: GY8430000
ABIOL see: DH2450000

AA4725000 ABOBIOSIDE

TXDS: ivn-cat LD50 699 mg/kg — JPETAB 111,365,54

AA4900000 ABOMONOSIDE

TXDS: ivn-cat LD50 679 ug/kg — JPETAB 111,365,54

ABRACOL S.L.G. see: RG1975000
ABRAMYCIN see: DI8750000
2-ACETO-4'-CHLORO-3,5-DIIODOBENZANILIDE see: CV7450000

AA5250000 ABRIN

Dif A fractionation obtained from the seeds of jequirity, Abrus precatorius L. (leguminosae) (12VXAS 8,1,68)

CAS: 1393-62-0

Syn: AGGLUTININ * CRAB'S EYES * INDIAN LICORICE SEED * JEQUIRITY BEAD * PRAYER BEAD * TOXALBUMIN

TXDS:		
	orl-hmn LDLo 7 ug/kg	12VXAS 8,1,68
	orl-rat LDLo 300 mg/kg	AMIHAB 12,468,55
	orl-mus LD50 6838 mg/kg	ARZNAD 21,888,71
	ipr-mus LD50 20 ug/kg	12VXAS 9,1,76
	ivn-mus LD50 10 mg/kg	BJCAAI 34,418,76
	orl-rbt LDLo 21 mg/kg	AMIHAB 12,468,55
	orl-gpg LD50 299 mg/kg	ARZNAD 21,888,71

REVIEW: TOXICOLOGY REVIEW — BIPAAB 74(1),85,76

ABRODEN see: PB2250000
ABRODIL see: PB2250000
ABS see: DB7700000
ABS see: DB7875000
ABSENTOL see: RQ2100000
ABSETIL see: RQ2100000
ABSOLUTE ETHANOL see: KQ6300000
ABSOLUTE FRENCH ROSE see: VL0434000
ABSOLUTE MIMOSA see: PY7954000
ABS SODIUM SALT see: DU4375000
ABSTENSIL see: JO1225000
ABSTINYL see: JO1225000
ab-ABT see: UL8225000
AC 528 see: ID7525000
AC 1198 see: RP9100000
AC 3092 see: MH4970000
AC 3422 see: TF4550000
AC 3422 see: TF4550000
AC 3810 see: XH4500000
AC-3810 see: XH4920000
AC 3911 see: ID7450000
AC 5223 see: MF1750000
AC 18133 see: TF5775000
AC-18682 see: TE1750000
AC 18682 see: ID8225000
AC-18,737 see: TF8225000
AC 20,691 see: TF7525000
AC 38023 see: TF7650000
AC 47031 see: NJ6475000
AC-47300 see: TG0350000
AC 47470 see: JP1050000
AC 52160 see: TF6890000
AC 84777 FINAVEN see: UQ9920000
AC 92100 see: ID7740000
AC 92553 see: BX5470000
ACABLE see: IN5850000
ACACETINE see: DJ3050000

AA7680000 ACACIA (extract)

Dif Extracted from the flowers of Acacia baileyana (AROPAW 78,384,67)

IRDS: eye-rbt 36 mg/5H SEV — AROPAW 78,384,67

ACACIA MOLEISSIMA TANNIN see: PY7955000
ACACIA VILLOSA see: ZC0100000
ACADYL see: GN7875000
ACALMID see: EK1050000
ACALO see: EK1050000
ACAMOL see: AE4200000
ACAMYLOPHENINE see: MB9625000
ACAPRIN see: VC4022500
ACARABEN see: DD2275000
ACARACIDE see: WE2975000
ACARALATE see: DD2450000
ACARICYDOL E 20 see: DB5250000
ACARIN see: DC8400000
ACAPITHION see: IO5750000
ACAROL see: DD2100000
ACC-18133 see: TF5775000
ACCEL see: UO7510000
ACCELERATE see: GN8225000
ACCELERATOR 552 see: TM5850000
ACCELERATOR L see: ZH0525000
ACCELERATOR THIURAM see: JO1400000
ACCENT see: MA1575000
ACCO FAST RIO RB BASE see: XU5075000
ACCOTHION see: TF0350000
ACCROIBILE see: GL6940000
ACD 7029 see: EC5425000
ACD-10614 see: SB2160000
4,10-ACE-1,2-BENZANTHRACENE see: CU0700000
8,9-ACE-1,2-BENZANTHRACENE see: CU0885000
ACECARBROMAL see: YR6475000
ACECLIDINE see: VD6195000
ACECOLINE see: IZ9800000
ACECOLINE see: IZ9700000
ACEDE CRISYLIQUE (French) see: GO5950000
ACEDICON see: OH0955000
ACEDIST see: DV5200000
ACEDOXIN see: HI2275000
ACEDRON see: SI3400000
ACEGLATON see: LZ3C90000
ACEGLATONE see: LZ3990000
ACEMETHADONE HYDROCHLORIDE see: MJ3675000
1,2-2',3'-ACENAPHTENOCARBAZOLE (French) see: AB1130000
1,2-2',3'-ACENAPHTENO-3,4-DIHYDRO-7,8-BENZOCARBAZOLE (French) see: AB1090000
1,2-2',3'-ACENAPHTENO-6-METHYLCARBAZOLE (French) see: AB1170000
ACENAPHTHANTHRACENE see: CU1575000

AB0700000 5-ACENAPHTHENAMINE

CAS: 4657-93-6 MW: 169.24 MOLEM: C12 H11 N

Syn: 5-ACENAPHTHENEAMINE * 5-ACENAPHTHYLENAMINE, 1,2-DIHYDRO- * 5-AMINOACENAPHTHENE * 1,2-DIHYDRO-5-ACENAPHTHYLENAMINE

TXDS: ivn-mus LD50 56 mg/kg — CSINX* BX-01911, IARC** 16,243,78

REVIEW: CARCINOGENIC DETERMINATION INDEFINITE

5-ACENAPHTHENEAMINE see: AB0900000

AB1060000 ACENAPHTHENE, 5-NITRO-

CAS: 602-87-9 MW: 199.22 MOLEM: C12 H9 N O2

Syn: ACENAPHTHYLENE, 1,2-DIHYDRO-5-NITRO- * 1,2-DIHYDRO-5-NITRO-ACENAPHTHYLENE * 5-NAN * NITRO-5 * 5-NITRO-ACENAPHTHENE * 5-NITROACENAPHTHYLENE, DIHYDRO

TXDS: orl-rat TDLo 120 gm/kg/12W C — IIX CAR, IJCAH8 89,475,74

orl-ham TDLo:504 g/kg/24W-C TFX NEO BJCAAI 30,481,74
REVIEW: CARCINOGENIC DETERMINATION ANIMAL POSITIVE IARC** 16,319,78
STATUS: NCI CARCINOGENESIS BIOASSAY COMPLETED AS OF SEPT 1978

AB1080000 7-ACENAPHTHIPYRIDONE
MW: 168.20 MOLFM: C12 H8 O
TXDS: ivn-mus LD50:100 mg/kg CSLNX* NX#01783

AB1090000 16H-ACENAPHTHO(4,5-a)BENZO(i)CARBAZOLE, 6,7-DIHYDRO-
CAS: 6400-85-5 MW: 305.36 MOLFM: C24 H19 N
SYN: 1,2,2',3'-ACENAPHTHENO-3,4-DIHYDRO-7,8-BENZOCARBAZOLE (French)
TXDS: scu-mus LDLo:40 mg/kg BAFEAG 42,3,55

AB1130000 12H-ACENAPHTHO(4,5-a)CARBAZOLE
CAS: 213-32-1 MW: 293.38 MOLFM: C22 H15 N
SYN: 1,2,2',3'-ACENAPHTHENOCARBAZOLE (French)
TXDS: scu-mus LDLo:40 mg/kg BAFEAG 42,3,55

AB1170000 12H-ACENAPHTHO(4,5-a)CARBAZOLE, 9-METHYL-
CAS: 64047-40-1 MW: 307.41 MOLFM: C23 H17 N
SYN: 1,2,2',3'-ACENAPHTHENO-6-METHYLCARBAZOLE (French)
TXDS: scu-mus LDLo:40 mg/kg BAFEAG 42,3,55

12H-ACENAPHTHO(1,8-abc)HEXANTHRENE see: HN0175000

AB1235000 ACENAPHTH(1,2-d)OXAZOLE, 6b,9a-DIHYDRO-8-AMINO-, HYDROCHLORIDE
MW: 246.71 MOLFM: C13 H10 N2 O Cl H
SYN: 8-AMINO-6b,9a-DIHYDROACENAPHTHO(1,2-d)OXAZOLE HYDROCHLORIDE
TXDS: ipr-mus LD50:68 mg/kg JMCMAR 13,729,70

AB1240000 ACENAPHTH(1,2-d)OXAZOLE, 6b,9a-DIHYDRO-8-(DIMETHYLAMINO)-, MALEATE
MW: 354.33 MOLFM: C15 H16 N2 O C4 H4 O4
SYN: 6b,9a-DIHYDRO-8-(DIMETHYLAMINO)ACENAPHTH(1,2-d)OXAZOLE MALEATE
TXDS: ipr-mus LD50:82 mg/kg JMCMAR 13,729,70

AB1245000 ACENAPHTH(1,2-d)OXAZOLE, 6b,9a-DIHYDRO-8-IMINO-9-METHYL-, HYDROCHLORIDE
MW: 260.74 MOLFM: C14 H12 N2 O Cl H
SYN: 6b,9a-DIHYDRO-8-IMINO-9-METHYLACENAPHTH(1,2-d)OXAZOLE HYDROCHLORIDE
TXDS: ipr-mus LD50:55 mg/kg JMCMAR 13,729,70

AB1250000 ACENAPHTH(1,2-d)OXAZOLE, 6b,9a-DIHYDRO-8-(METHYLAMINO)-, HYDROCHLORIDE
MW: 260.74 MOLFM: C14 H12 N2 O Cl H
SYN: 6b,9a-DIHYDRO-8-(METHYLAMINO)ACENAPHTH(1,2-d)OXAZOLE HYDROCHLORIDE
TXDS: ipr-mus LD50:56 mg/kg JMCMAR 13,729,70

5-ACENAPHTHYLENAMINE, 1,2-DIHYDRO- see: AB0900000
ACENAPHTHYLENE, 1,2-DIHYDRO-5-NITRO- see: AB1060000
ACENOCOUMARIN see: GN1900000
ACENOCOUMAROL see: GN1900000
ACEOTHION see: TG0350000
ACEPHAT (German) see: TB4760000
ACEPHATE see: TB4760000
ACEPHAT-MET see: TB4970000
ACEPHENE see: AG0350000
ACEPROMAZINA see: CH2275000
ACEPROMAZINE see: CH2275000
ACEPROMAZINE MALEATE see: CH2450000
ACEPROMIZINA see: CH2275000
ACETAAL (Dutch) see: AB2800000
ACETACID RID B see: CH1225000
ACETACID RID 28R see: QI6550000
ACETACID RID J see: QI6925000
ACETAGISIC see: AF4200000
ACETAL see: AB2800000
ACETAL (DOT) see: AB2800000
ACETALDEHYD (German) see: AB1925000

AB1925000 ACETALDEHYDE
CAS: 75-07-0 MW: 44.05 MOLFM: C2 H4 O
SYN: ACETALDEHYD (German) * ACETALDEHYDE (DOT) * ACETIC ALDEHYDE * ALDEHYDE ACETIQUE (French) * ALDEHYDE ACETIQUE (Italian) * ETHANAL * ETHYL ALDEHYDE * OCTOWAY ALDEHYD (Polish)
IRDS: eye-hmn 50 ppm/15M JIHTAB 28,262,46
skn-rbt 500 mg open MLD UCDS** 12/13/63
eye-rbt 40 mg SEV UCDS** 12/13/63
IXDS: inl-hmn TCLo:134 ppm/30M TFX,IRR JAMAAP 165,1908,57
orl-rat LD50:1930 mg/kg AMIHBC 4,119,51
ihl-rat LCLo:4000 ppm/4H AMIHBC 10,61,54
ipr-rat LDLo:500 mg/kg JRCHAT 152,61,44
scu-rat LD50:660 mg/kg APTOA6 6,299,50
scu-mus LD50:660 mg/kg APTOA6 6,299,50
REVIEW: THRESHOLD LIMIT VALUE-air:100 ppm DHEW*: -,9,76
REVIEW: TOXICOLOGY REVIEW EVHPAZ 11,161,75
REGS: OSHA STANDARD-air TWA 200 ppm (SCP-V) FEREAC 39,23540,74
DOT FLAMMABLE LIQUID, LABEL FLAMMABLE LIQUID FEREAC 41,57018,76

ACETALDEHYDE (OXIME) see: AB1925000

AB1950000 ACETALDEHYDE, AMINE SALT
CAS: 75-39-8 MW: 61.10 MOLFM: C2 H4 O N3 H
SYN: ACETALDEHYDE AMMONIA (DOT)
REGS: DOT-ORM-A, LABEL NONE FEREAC 41,57018,76

ACETALDEHYDE AMMONIA (DOT) see: AB1950000

AB2100000 ACETALDEHYDE, BIS(2-METHOXYETHYL) ACETAL
CAS: 10141-67-8 MW: 178.24 MOLFM: C8 H18 O4
SYN: 1,1-DI(2-METHOXYETHOXY)ETHANE * 2,5,7,10-TETRAOXAUNDECANE, 6-METHYL-
IRDS: eye-rbt 500 mg AMIHBC 10,61,54
TXDS: orl-rat LD50:3260 mg/kg AMIHBC 10,61,54

AB2200000 ACETALDEHYDE, 2-BROMO-, 2,4-DINITROPHENYLHYDRAZONE
CAS: 5321-28-8 MW: 301.10 MOLFM: C8 H7 Br N4 O4
SYN: BROMOACETALDEHYDE 2,4-DINITROPHENYLHYDRAZONE
TXDS: ivn-mus LD50:18 mg/kg CSLNX* NX#01015

AB2450000 ACETALDEHYDE, CHLORO-
CAS: 107-20-0 MW: 78.50 MOLFM: C2 H3 Cl O
SYN: CHLOROACETALDEHYDE * 2-CHLORO-1-ETHANAL
TXDS: orl-rat LD50:21 mg/kg JPMSAE 61,19,72
ipr-rat LD50:2 mg/kg JPMSAE 61,19,72
orl-mus LD50:21 mg/kg JPMSAE 61,19,72
ipr-mus LD50:2 mg/kg JPMSAE 61,19,72
skn-rbt LD50:6* mg/kg JPMSAE 61,19,72
ipr-rbt LD50:1390 ug/kg JPMSAE 61,19,72
ipr-gpg LD50:636 ug/kg JPMSAE 61,19,72
REVIEW: THRESHOLD LIMIT VALUE-air:1 ppm DHEW*: 3,48,71
REGS: OSHA STANDARD-air:C 1 ppm (SCP-B) FEREAC 39,23540,74

AB2625000 ACETALDEHYDE, CHLORO-, (2,4-DINITROPHENYL)HYDRAZONE
CAS: 5135-80-8 MW: 259.61 MOLFM: C8 H5 Cl N4 O4
SYN: CHLOROACETALDEHYDE (2,4-DINITROPHENYL)HYDRAZONE * MONOCHLOROACETALDEHYDE 2,4-DINITROPHENYLHYDRAZONE * NSC 1763 * OM1783
TXDS: orl-rbt LD50:1460 mg/kg TXAPA9 8,472,66

AB2700000 ACETALDEHYDE, DIBUTYL ACETAL
CAS: 871-22-7 MW: 174.32 MOLFM: C10 H22 O2
SYN: 1,1-DIBUTOXYETHANE * DIBUTYL ACETAL * ETHANE, 1,1-DIBUTOXY-
IRDS: skn-rbt 10 mg/24H SEV AMIHBC 10,61,54
eye-rbt 500 mg AMIHBC 10,61,54
IXDS: orl-rat LD50:8790 mg/kg AMIHBC 10,61,54

AB2750000 ACETALDEHYDE, 2,2-DICHLORO-, 2,4-DINITROPHENYLHYDRAZONE
CAS: 19032-83-6 MW: 293.08 MOLFM: C8 H6 Cl2 N4 O4
SYN: DICHLOROACETALDEHYDE 2,4-DINITROPHENYLHYDRAZONE
TXDS: ivn-mus LD50:32 mg/kg CSLNX* NX#01014

AB2775000 ACETALDEHYDE, DICHLORO-, (1,3,7-TRIMETHYL-8-XANTHINYL)HYDRAZONE
MW: 319.18 MOLFM: C10 H12 Cl2 N6 O2
SYN: CAFFEINE 8-(2,2-DICHLOROETHYLIDENEHYDRAZINO) * DICHLOROACETALDEHYDE 8-CAFFEINE HYDRAZONE * 2,2-DICHLOROACETALDEHYDE (1,3,7-TRIMETHYL-8-XANTHINYL)HYDRAZONE * 8-(2,2-DICHLOROETHYLIDENE)HYDRAZINOCAFFEINE
TXDS: ivn-mus LD50:10 mg/kg CSLNX* NX#04396

AB2800000 ACETALDEHYDE, DIETHYL ACETAL
CAS: 105-57-7 MW: 118.20 MOLFM: C6 H14 O2
SYN: ACETAAL (Dutch) * ACETAL * ACETAL DIETHYLIQUE (French) * ACETAL (DOT) * ACETALE (Italian) * ACETOL * 1,1-DIAETHOXY-AETHAN (German) * 1,1-DIETHOXYETHAAN (Dutch) * 1,1-DIETHOXYETHANE * DIETHYL ACETAL * 1,1-DIETOSSIETANO (Italian) * ETHANE, 1,1-DIETHOXY- * ETHYLIDENE DIETHYL ETHER
IRDS: skn-rbt 10 mg/24H MLD JIHTAB 31,60,49
eye-rbt 500 mg JIHTAB 31,60,49
TXDS: orl-hmn LDLo:500 mg/kg 272TAP 3,7,69
orl-rat LD50:4600 mg/kg MDZEAK 8,244,67
ihl-rat LCLo:4000 ppm/4H JIHTAB 31,343,49
orl-rbt LC50:2582 mg/kg PSEBAA 29,730,32
REGS: DOT-FLAMMABLE LIQUID, LABEL FLAMMABLE LIQUID FEREAC 41,57018,76

AB2825000 ACETALDEHYDE, DIMETHYL ACETAL
CAS: 534-15-6 MW: 90.14 MOLFM: C4 H10 O2
SYN: 1,1-DIMETHOXYETHANE * DIMETHYLACETAL * DIMETHYL ALDEHYDE * ETHANE, 1,1-DIMETHOXY- * ETHYLIDENE DIMETHYL ETHER * METHYL FORMYL
IRDS: skn-rbt 10 mg/24H MLD JIHTAB 31,60,49
eye-rbt 20 mg JIHTAB 31,60,49
TXDS: ihl-rat LC50:3000 ppm/4H AMIHAB 12,623,55
orl-rbt LD50:4507 mg/kg PSEBAA 29,730,32
AQTX: AQUATIC TOXICITY RATING: TLm96:over 1000 ppm WQCHM* 3,-,74

AB2827500 ACETALDEHYDE, DIPHENYL-
CAS: 947-91-1 MW: 196.26 MOLFM: C14 H12 O
SYN: DIPHENYLACETALDEHYDE
TXDS: ivn-mus LD50:56 mg/kg CSLNX* NX#02088

ACETALDEHYDE, 2-(2-ETHOXYETHOXY)ETHYL-3,4-(METHYLENEDIOXY)PHENYL ACETAL see: DF4910000

ACETALDEHYDE, ETHYLMETHYL- see: ES3400000

AB2900000 ACETALDEHYDE, FLUORO-
CAS: 1544-68-3 MW: 62.05 MOLFM: C2 H3 F O
SYN: FLUOROACETALDEHYDE
TXDS: ipr-mus LD50:6 mg/kg JACSAT 78,4996,56
scu-mus LD50:4800 ug/kg JCSOA9 -,773,49
REVIEW: TOXICOLOGY REVIEW CHEIAY 48,225,51

AB2920000 ACETALDEHYDE, N-FORMYL-N-METHYLHYDRAZONE
DEA Toxic compound found in tobacco smoke. Cytotoxic activity (TCTXAV 15,575,77)
MW: 100.16 MOLFM: C4 H8 N2 O
TXDS: orl-rat LD50:320 mg/kg TCTXAV 15,575,77
orl-rbt LD50:70 mg/kg TCTXAV 15,575,77

AB2940000 ACETALDEHYDE, 2-METHOXY-
CAS: 10312-83-1 MW: 74.09 MOLFM: C3 H6 O2
SYN: METHOXYACETALDEHYDE * METHOXYETHANAL
TXDS: orl-rat LD50:2330 mg/kg 347IAG -,382,69
skn-rbt LD50:1170 mg/kg 347IAG -,382,69

AB2946500 ACETALDEHYDE, N-METHYLHYDRAZONE
MOLFM: C3 H8 N2
TXDS: orl-mus LD50:390 mg/kg TXAPA9 45(2),429,78

AB2955000 ACETALDEHYDE, METHYLTHIO-, O-(CARBAMOYL)OXIME
MW: 148.20 MOLFM: C4 H8 N2 O2 S
SYN: D 1843 * DU 27 611
TXDS: orl-rat LD50:60 mg/kg 28ZEAL 5,104,76
skn-rbt LD50:3400 mg/kg 28ZEAL 5,104,76

AB2962500 ACETALDEHYDE, 1-NITRO-, (p-CHLOROPHENYL)HYDRAZONE
CAS: 23787-35-2 MW: 213.66 MOLFM: C8 H8 Cl N3 O2
SYN: 1-NITRO-1-p-CHLOROPHENYLHYDRAZONOETHANE
TXDS: ivn-mus LD50:56 mg/kg CSLNX* NX#01702

AB2975000 ACETALDEHYDE OXIME
CAS: 107-29-9 MW: 59.08 MOLFM: C2 H5 N O
SYN: ACETALDOXIME * ALDOXIME * ETHYLIDENEHYDROXYLAMINE
TXDS: ipr-mus LD50:100 mg/kg NIIS** AD277,689

AB2990000 ACETALDEHYDE, PHENOXY-
MOLFM: C8 H8 O2
SYN: CORTEX ALDEHYDE * PHENOXYACETALDEHYDE
IRDS: skn-rbt 500 mg/24H MOD TCTXAV 14,659,76

AB3040000 ACETALDEHYDE, PHENYL-, DIMETHYL ACETAL
CAS: 101-48-4 MW: 166.24 MOLFM: C10 H14 O2
SYN: ETHANE, 1,1-DIMETHOXY-2-PHENYL- * PHENYLACETALDEHYDE DIMETHYL ACETAL * alpha-TOLYL ALDEHYDE DIMETHYL ACETAL * VIRIDINE
TXDS: orl-rat LD50:3500 mg/kg TCTXAV 13,681,75

AB3045000 ACETALDEHYDE SODIUM SULFITE
SYN: ACETALDEHYDBISULFITNATRIUM (German)
TXDS: orl-rbt LDLo:3220 mg/kg[SO2] AHYGAI 57,87,06

ACETALDEHYDE, TETRAMER see: XF9900000

AB3150000 ACETALDEHYDE, THIOSEMICARBAZONE
CAS: 3103-93-6 MW: 117.19 MOLFM: C3 H7 N3 S
SYN: CITA
TXDS: orl-rat LDLo:25 mg/kg NCNSA6 5,45,51

AB3325000 ACETALDEHYDE, TRIBROMO-, HYDRATE
CAS: 507-42-6 MW: 298.78 MOLFM: C2 H3 Br3 O2
SYN: BROMAL HYDRATE * 1,1,1-TRIBROMO-2,2-ETHANEDIOL * TRIBROMOACETALDEHYDE HYDRATE
TXDS: orl-rat LDLo:40 mg/kg JPETAB 63,453,38
ipr-rat LDLo:40 mg/kg JPETAB 63,453,38
ivn-rbt LDLo:30 mg/kg JPETAB 63,453,38

AB3340000 ACETALDEHYDE, 2,2,2-TRICHLORO-, 2,4-DINITROPHENYLHYDRAZONE
MW: 337.52 MOLFM: C8 H5 Cl3 N4 O4
SYN: TRICHLOROACETALDEHYDE 2,4-DINITROPHENYLHYDRAZONE
TXDS: ivn-mus LD50:5500 ug/kg CSLNX* NX#01013

AB3400000 ACETALDEHYDE, TRIFLUORO-, HYDRATE
CAS: 421-53-4 MW: 116.05 MOLFM: C2 H3 F3 O2
SYN: FLUORAL HYDRATE * FRAM * TRIFLUOROACETALDEHYDE HYDRATE
TXDS: ipr-mus LD50:650 mg/kg APTOA6 28,299,70

ACETALDEHYDE, TRIMER see: YK0525000
ACETAL DIETHYLIQUE (French) see: AB2800000
ACETALDOL see: ES3150000
ACETALDOXIME see: AB2975000
ACETALE (Italian) see: AB2800000
ACETALGIN see: AF4200000

REGISTRY of TOXIC EFFECTS of CHEMICAL SUBSTANCES

1978 EDITION

Richard J. Lewis, Sr.
Editor

Rodger L. Tatken
Assistant Editor

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service
Center for Disease Control
National Institute for Occupational Safety and Health
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Registry of Toxic Effects of Chemical Substances
1978 Edition

INTRODUCTION

...absence of evidence is not evidence of absence....*

The 1978 edition of the Registry of Toxic Effects of Chemical Substances, formerly known as the Toxic Substances List, is the seventh revision prepared in compliance with the requirements of Section 20(a)(6) of the Occupational Safety and Health Act of 1970 (Public Law 91-596). The original list was completed on June 28, 1971, and has been updated annually in book format. Beginning in October 1977, quarterly revisions have been provided in microfiche (see Appendix VIII). This Registry contains 124,247 listings of chemical substances: 33,929 are names of different chemicals with their associated toxicity data and 90,318 are synonyms. This edition includes approximately 7,500 new chemical compounds that did not appear in the 1977 Registry.

Statistics about selected data fields in the 1978 Registry are as follows:

Data Type	Number of Compounds	Number of Citations
Tumorigenesis	2,330	6,823
Mutagenesis	73	649
Teratogenesis	550	3,415
Primary Irritation		2,674
Human Toxic Effects		2,065
Chemical Abstract Service Registry Numbers	21,715	
Federal Standards		1,518
Recommended Standards from NIOSH Criteria Documents		942

(Note that as of January 1979, NIOSH has published 96 criteria documents, but some of these documents cover classes of compounds such as inorganic lead, many members of which are found in the Registry.)

The current estimate of the number of unique substances for which toxicity data may be available remains at approximately 100,000. The number of substances and types of toxicity information will be increased in subsequent revisions of the Registry.

The Registry's purposes are many, and it serves a variety of users. It is a single source document for basic toxicity information and for other data, such as chemical identifiers and information necessary for the preparation of safety directives and hazard evaluations for chemical substances. The various types of toxic effects linked to literature citations provide researchers and occupational health scientists with an introduction to the toxicological literature, making their own review of the toxic hazards of a given substance easier. By presenting data on the lowest reported doses that produce effects by several routes of entry in various species, the Registry furnishes valuable information to those responsible for preparing safety data sheets for chemical substances in the workplace. Chemical and production engineers can use the Registry to identify the hazards which may be associated with chemical intermediates in the development of final products, and thus can more readily select substitutes or alternate processes which may be less hazardous. Some organizations, including health agencies and chemical companies, have included the NIOSH Registry accession numbers with the listing of chemicals in their files to reference toxicity information associated with those chemicals. By including foreign language chemical names, a start has been made toward providing rapid identification of substances produced in other countries.

In this edition of the Registry, the editors intend to identify "all known toxic substances" which may exist in the environment and to provide pertinent data on the toxic effects from known doses entering an organism by any route described. Data may be used for the evaluation of chemical hazards in the environment, whether they be in the workplace, recreation area, or living quarters. The data has been assembled in accordance with the definitions and criteria presented below.

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*From The Dragons of Eden: Speculations on the Evolution of Human Intelligence by Carl Sagan. Reproduced by permission of Random House, Inc. Copyright © 1977 by Carl Sagan. All rights reserved.

In offering this edition, the editors recognize its limitations in achieving the goal that they have set for it. It does not now include all chemicals for which toxic effects have been reported, and will not for some time. This cannot be achieved without the full cooperation of the scientific community. Cooperation in the form of personal contributions will become increasingly imperative as the Registry becomes more nearly complete.

The absence of a substance from the Registry does not imply that the substance is non-toxic, and thus non-hazardous, any more than the presence of a substance in the Registry indicates that the substance is hazardous in common use. A substance may not appear for a variety of reasons, e.g., (1) the test results could not be cited because the protocol of the study did not meet the RTECS selection criteria, (2) the substance has not yet been tested, or (3) the substance has been tested but the RTECS literature search has not yet uncovered the data.

The Registry includes substances which have been selected primarily for the toxic effect produced by single doses, some lethal and some non-lethal. However, the principal toxic effect of some substances results from exposure over a longer period of time, i.e., from the accumulation of a substance or its metabolites, or from the summation of continuing nonlethal, noxious insults which may eventually disable basic bodily functions. Although these substances are of concern, they may not be found in this edition due to our present selection criteria. However, when the toxic effect has been described by the author as carcinogenic, neoplastigenic, mutagenic, or teratogenic, even though the effect was produced by repeated exposure, the toxic dose data are reported.

It must be reemphasized that the entry of a substance in the Registry does not automatically mean that it must be avoided. A listing does mean, however, that the substance has the documented potential of being harmful if misused, and care must be exercised to prevent tragic consequences. Thus, the Registry lists many substances that are common in everyday life and are in nearly every household in the United States. One can name a variety of such dangerous substances: prescription and non-prescription drugs; food additives; pesticide concentrates, sprays, and dusts; fungicides; herbicides; paints; glazes; dyes; bleaches and other household cleaning agents; alkalies; and various solvents and diluents. The potential list is virtually unending because chemicals have become an integral part of our existence.

Drugs, or therapeutic chemicals, have been deliberately included in the Registry if they have been reported to produce a noxious effect. It is reasonable to expect to find such substances listed because they have been developed for their biologic effects. Some drugs achieve the desired effect when administered in a therapeutic quantity by supporting human physiologic activity; others may be beneficial to humans because they are toxic to human parasites. In any case, a quantity greater than the prescribed therapeutic dose may cause undesired toxic effects in humans. For some individuals, the normal therapeutic dose of a drug may produce toxic as well as therapeutic effects. Because drugs may be dangerous, our society has licensed certain practitioners, including physicians, dentists, and pharmacists, to handle the more potent substances intended for human therapeutic use. Similarly, other people are licensed, based on special training, for the handling of pesticides in a safe manner. It is wise to accept the direction of these experts in order to avoid undesirable consequences from misusing chemicals.

Other toxic substances in the environment have appeared there as a result of natural environmental reactions of waste products from modern technology, as distinct from the waste products themselves, or from naturally occurring substances. The products of these reactions may be found in the air we breathe and the water we drink. Even though these substances may be present in the environment in concentrations that are non-hazardous by themselves, their toxic potential must not be ignored, especially when additional exposure in the occupational or home environment may occur.

In general, toxic substances that appear in the home and community have been collected, processed, synthesized, packaged, and distributed by someone within the workplace. Some substances may be unwelcome cohabitants of the work environment. The safety and health of individuals in the workplace are the principal concerns of the Occupational Safety and Health Act of 1970. The Act addresses the problem of worker exposure to all toxic substances present in the workplace--not only those in the finished commercial product or in the intermediates used in its production, but also those which occur as waste products resulting from industrial processing.

Toxicity data in the literature are transformed into Registry format using the criteria presented in this Introduction and the Detailed File Description. In most cases no attempt is made to resolve any questions about published data. We rely on editing provided by the scientific community prior to publication in the scientific literature. One of the responsibilities of the RTECS Editorial Review Board, however, is to review a limited number of citations to resolve any ambiguities. Citations may be suggested for Board consideration by the data abstractors, the editors, or the Registry readership. The Board will review citations for resolution of ambiguities, but will not judge the relative merits of several publications which present contradictory data on the same substance. The Registry strives to accurately reflect the literature as it exists, leaving to others the problem of grappling with contradictory data.

It is not the purpose of the Registry to quantitate a hazard through the use of the toxic concentration or dose data that are presented with each substance. UNDER NO CIRCUMSTANCE CAN THE TOXIC DOSE VALUES PRESENTED WITH THESE CHEMICAL SUBSTANCES BE CONSIDERED DEFINITIVE VALUES FOR DESCRIBING SAFE VERSUS TOXIC DOSES FOR HUMAN EXPOSURE. Concentrations of chemical substances in the work environment which may be safely tolerated can be determined only by a critical evaluation of all available pertinent data by experienced investigators, data that include but are not limited to that listed in this Registry.

It is important to note the significant difference between classifying toxicity reports and evaluating the potential of a chemical to produce tumorigenic, mutagenic, or teratogenic effects in humans. In classifying reports, the editors of RTECS apply the technical criteria specified in the Detailed File Description to each report to allow extraction of data on a consistent basis. The evaluation of a substance's toxic potential is much more difficult and requires the collection, review, and analysis of all germane studies. The evidence must be correlated and judged by such parameters as appropriateness of the study to the decision process, relationship of the study design (e.g., animal model, route, and dose levels) to prediction of human response, the balance of positive and negative studies, purity of the substance tested, etc. The Registry makes no attempt to perform such a comprehensive analysis.

A critical evaluation of the hazard of a chemical in the workplace or environment involves much more than a determination of its toxic potency, no matter how complex that determination may be. A hazard evaluation must include such a determination, of course, but toxic potency and degree of hazard are not synonymous. Identifying and defining the hazard of a chemical must also include, among other factors, the evaluation of the amount and duration of exposure, the physical characteristics of the substance, the physical conditions under which exposure occurs, and the evaluation of interactions with other substances that may be present. All of these factors may significantly alter the toxic potency of a substance which, in turn, may alter the health of the person exposed.

The National Institute for Occupational Safety and Health, under its criteria development program, conducts critical reviews of occupational hazards. The resulting criteria document for a particular hazard provides a detailed rationale for the standard recommended by NIOSH to be used by the Department of Labor, Occupational Safety and Health Administration (OSHA) as a basis for a standard. A description of the criteria document program and related NIOSH activities appears in Appendix I.

The permissible exposure levels of hazardous substances which have been adopted by OSHA to provide a safe, healthful work environment for all persons are cited in this Registry under the appropriate compound. These standards may be formulated by the Department of Labor on its own initiative, in response to recommendations of the NIOSH criteria documentation program, or as a result of the Standards Completion Program. Approximately 500 such standards have been promulgated in Part 1910, as amended, of Title 29 of the Code of Federal Regulations (29 CFR 1910). They may also be found in the Federal Register, Volume 39, Number 125, June 27, 1974.

Section 20(a)(6) of the Occupational Safety and Health Act of 1970 directs that the Secretary of Health, Education, and Welfare "...shall determine following a written request by any employer or authorized representative of employees...whether any substance normally found in the place of employment has potentially toxic effects in such concentrations as used or found...." NIOSH responds to this legislative mandate by means of a Health Hazard Evaluation, as specified in 42 CFR 85, first published in the Federal Register, Volume 37, Number 215, pages 23639 through 23642, November 7, 1972. A Health Hazard Evaluation request will secure the assistance of NIOSH in determining the safety of a substance used in a specific occupational environment. Both the Federal Register reference and the forms to be used appear in Appendix IV.

To assist both employers and workers in attaining safe occupational environments, NIOSH has prepared a series of Health and Safety Guides and Employee Good Practices Manuals. A listing of the titles in each series and a brief description of their contents appear in Appendix III.

The editors request and will appreciate assistance from representatives of the industrial, academic, and governmental communities in supplying data for this Registry. Such assistance may be offered in the form of reprints of scientific publications, technical data sheets, sales or promotional material, other publicly available reference material, and data presented on unpublished studies. All material received will be considered in the public domain and as such may be made available to any persons or organizations. Data published in the Registry will be selected according to the criteria presented herein. Identification of errors in the file is also solicited, as are any general comments or recommendations. Those who have contributed to this year's publication are listed in the Acknowledgments. All correspondence should be addressed to:

The Editor
Registry of Toxic Effects of Chemical Substances
National Institute for Occupational Safety and Health
4676 Columbia Parkway
Cincinnati, Ohio 45226
Telephone: (513) 684-8317

DETAILED FILE DESCRIPTION

SELECTION

1. Substances Included--For the purpose of this publication, the phrase "all known toxic substances" is interpreted by the editors to mean all mined, manufactured, processed, synthesized, and naturally occurring inorganic and organic compounds. The list of substances includes drugs, food additives, preservatives, ores, pesticides, dyes, detergents, lubricants, soaps, plastics, extracts from plant and animal sources, plants and animals which are toxic by contact or consumption, and industrial intermediates and waste products from production processes. Some of the information in the file thus refers to materials whose composition is not perfectly known. The chemical substances included in this list are assumed to exhibit the reported toxic effect in their pure state unless otherwise noted. However, even in the case of a supposedly "pure" substance, there is usually some degree of uncertainty as to its exact composition and the impurities which may be present. This possibility must be considered in attempting to interpret the data presented since the toxic effects observed could in some cases be caused by a contaminant.

2. Substances Excluded--Excluded from the Registry are trade name products representing compounded or formulated proprietary mixtures available as commercial products. These exclusions are necessary because of difficulties in assessing the contribution of each component of a mixture to that substance's toxicity and because a product's formulation is often changed by varying the components, their concentration, or the purity of the ingredients. Commercial product trade names are included, however, when they represent a single active chemical entity or a well-defined mixture of relatively constant composition. Radioactive substances are included but the effect reported is the chemically produced effect rather than the radiation effect.

FORMAT

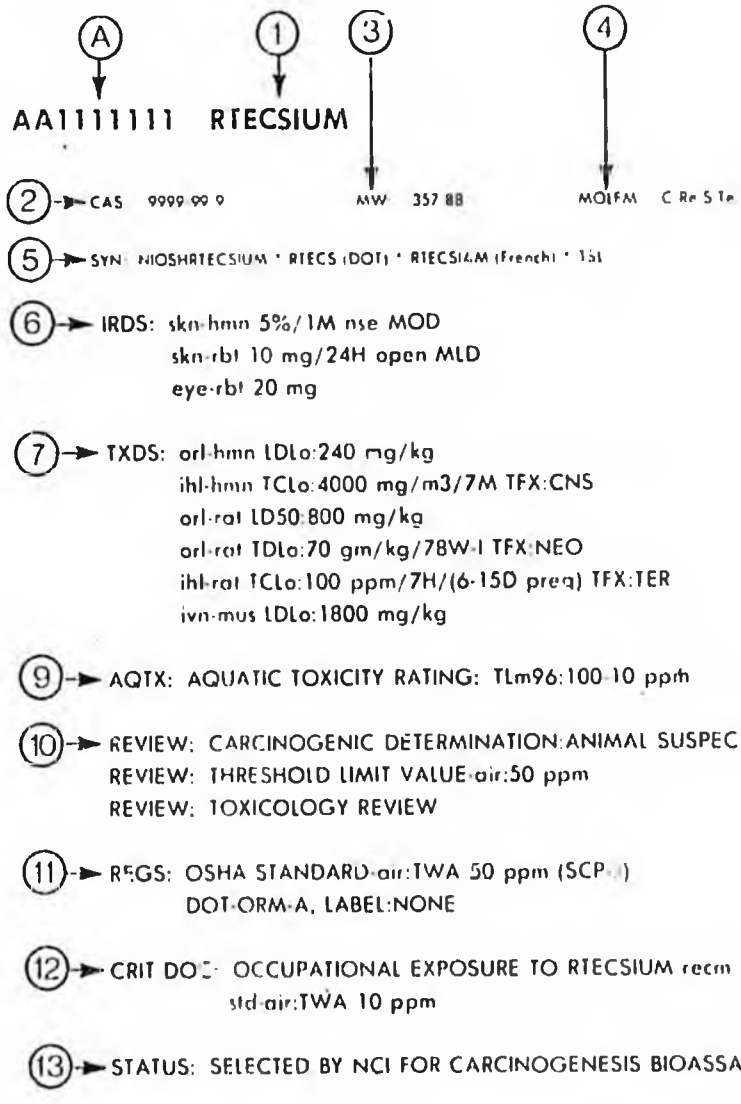
This edition of the Registry lists all substance prime names and synonyms in the file in alphabetical order, ignoring special characters such as numerals, Greek letters, and prefixes indicating substituent locations, and stereochemical or other structural features. These components are taken into account for secondary ordering in ascending alphabetical and numerical order.

Each substance prime name is identified by a unique nine-position RTECS accession number (two letters and seven numerals) which varies directly with the alphabetic sequence of the prime name, so that toluene, for example, has a higher number than benzene. Each synonym is cross-referenced to its appropriate prime name accession number. The accession number is simply an identifier assigned alphabetically to each substance in the Registry. It is not intentionally related to the compound's toxicity or structure, although compounds with alphabetically similar names and, in some cases therefore, similar structures are grouped together. For each prime name accession number the following data are provided when available: the substance prime name; a description of the substance (where necessary); synonymous names; CAS number; molecular formula; molecular weight; primary irritation and toxic dose data with references; and citations to aquatic toxicity ratings, to IARC reviews, to ACGIH Threshold Limit Values, to toxicological reviews, to existing federal standards, to the NIOSH criteria document program for recommended standards, and to the National Cancer Institute's Carcinogenesis Testing Program. Reference CODEN abbreviations and their respective titles are listed under Bibliographic References. A summary of standard abbreviations is located on the inside back cover. Sample data records are shown in Figures 1, 2, and 3.

1. Substance Prime Name. The prime name of each substance in the Registry is derived from the nomenclature used by the American Chemical Society's Chemical Abstracts Service (CAS) in the 8th Collective Index of Chemical Abstracts, which is in the inverted form. The names are modified by NIOSH for certain substances to provide convenience to the user in grouping substances of similar occupational pertinence, such as metallic salts. With each substance prime name, the reader will find the complete listing of the associated data.

Some entries, however, appear under the chemical or descriptive names used in the source material from which the toxic data were obtained. This is particularly true for those substances for which some aspects of their composition are in question, such as plant or animal extracts. These prime names are accompanied by a brief description or definition ("DEF") listing the source of the substance, a general statement of constituents, or other pertinent information, and the CODEN citation of the reference that contained the definition.

2. The Chemical Abstracts Service Registry Number ("CAS") is a numeric designation assigned by the American Chemical Society's Chemical Abstracts Service and uniquely identifies a specific chemical compound. This entry allows one to conclusively identify a substance regardless of the name or naming system used.



A. RTECS Accession Number, a sequence number assigned to each substance. See Format.
1. Substance Prime Name. See 1 in text.
2. Chemical Abstract Service Registry Number. See 2 in text.
3. Molecular Weight of this substance. See 3 in text.
4. Molecular or Elemental Formula of this substance. See 4 in text.
5. Synonyms, common names, trade names, and other chemical names. See 5 in text.
6. Skin and Eye Irritation Data. See 6 in text; also see Figure 2.
7. Toxicity Data. See 7 in text; also see Figure 3.
8. CODEN, an acronym for the reference from which the data were abstracted. See 8 in text; also see Figures 2 and 3.
9. Aquatic Toxicity Rating. See 9 in text.
10. Review of this substance. See 10 in text.
11. Standards and Regulations for this substance promulgated by a Federal agency. See 11 in text.
12. A Criteria Document supporting a recommended standard has been published by NIOSH. See 12 in text.
13. Current status of NCI Carcinogenesis Bioassay Program for this substance. See 13 in text.

FIGURE 1. AN EXAMPLE OF A TYPICAL SUBSTANCE ENTRY IN THE REGISTRY OF TOXIC EFFECTS OF CHEMICAL SUBSTANCES



6. An acronym which stands for "Irritation Dose."
6a. This is an abbreviation for the tissue upon which the irritation test was conducted, either skin (skn) or eyes (eye).
6b. This is an abbreviation for the test species. See Table II for other species listed in the Registry.
6c. This is the amount of substance used in the test for which results are reported, and may contain information about duration of exposure if different from the standard time of 72 hours.
6d. This is a descriptor to indicate differences in the test conditions from the standard protocol. Thus, "open" is used with skin irritation data to indicate an open Draize test. Other descriptors are "imm," "nse," and "rns."
6e. This is an abbreviation to indicate the severity of the irritation response as reported in the reference: mild (MLD), moderate (MOD), or severe (SEV).
8. This is the CODEN denoting the reference from which the irritation data were derived. The complete citation for this CODEN is listed under Bibliographic References.
8a. The volume number of the reference.
8b. The page number on which the reference starts.
8c. The last two digits of the year of publication, e.g., 54 = 1954.

FIGURE 2. A TYPICAL PRIMARY IRRITATION LINE FROM THE REGISTRY OF TOXIC EFFECTS OF CHEMICAL SUBSTANCES

(THIS FIGURE IS A FURTHER EXPLANATION OF ITEM 6 IN FIGURE 1)



7. An acronym which stands for "Toxic Dose."
7a. This is an abbreviation for the route of administration or entry. See Table I for other routes listed in the Registry.
7b. This is an abbreviation for the test species. See Table II for other species listed in the Registry.
7c. This is the type of dose reported. See 7c in text.
7d. This is the dose that caused the toxic effect. See 7c, 7e, and 7f in text.
7e. The first part of this notation, "TFX," is an acronym which stands for "Toxic Effects." The last part of this notation refers to the type of effect caused by the administered dose. See 7g in text.
8. This is the CODEN denoting the reference from which the toxic data were derived. The complete citation for this CODEN is listed under Bibliographic References.
8a. The report number of the reference.

FIGURE 3. A TYPICAL TOXIC DOSE LINE FROM THE REGISTRY OF TOXIC EFFECTS OF CHEMICAL SUBSTANCES

(THIS FIGURE IS A FURTHER EXPLANATION OF ITEM 7 IN FIGURE 1)

3. Molecular Weight ("MW") is calculated from the molecular formula.

4. Molecular Formula ("MOLFM") designates the elemental composition of the substance and is structured according to the Hill System (see Journal of the American Chemical Society, 22(8): 478–494, 1900) in which carbon and hydrogen (if present) are listed first, followed by the other elemental symbols in alphabetical order. The formula for compounds that do not contain carbon are ordered strictly alphabetically by element symbol. The formula is obtained from one of the cited references or a chemical reference text, or derived from the name of the substance.

5. Synonyms ("SYN") for the substance prime name are listed alphabetically according to the rule described under "FORMAT." Synonyms include other chemical names, trade names, common or generic names, foreign names (language), or codes, and are separated by asterisks. Some synonyms consist in whole or in part of registered trademarks. These trademarks are not identified as such in the RTECS file because of limitations in the computer and photocomposition character sets used to produce the Registry. The editors are aware of the problem of trademarks becoming generic trade names through common usage. While the Registry does not presently have a mechanism for noting trademarks, the lack of the appropriate registered trademark symbol does not imply that the trademarks contained herein are considered generic synonyms by NIOSH.

6. Skin and Eye Irritation Data (see Figure 2). All primary irritation data follow the header "IRDS." Each data line includes, in sequence, the tissue tested (skin or eye); the species of animal tested; the total dose and where applicable, the duration of exposure; for skin tests only, whether open or occlusive; an interpretation of the irritation response severity when noted by the author; and the reference from which the data were extracted. Only positive irritation test results are included in the Registry.

Substances that are applied topically to the skin or to the mucous membranes can elicit either (a) systemic effects of an acute or chronic nature or (b) local effects, more properly termed "primary irritation." A primary irritant is a substance that, if present in sufficient quantity for a sufficient period of time, will produce a non-allergic, inflammatory reaction of the skin or of the mucous membrane at the site of contact. Primary irritants are further limited by the editors to those substances that are not corrosive. Hence, concentrated sulfuric acid is not classified as a primary irritant.

a. Primary Skin Irritation. In experimental animals, a primary skin irritant is defined as a chemical substance that produces an irritant response on first exposure in a majority of the test subjects. However, in some instances compounds act more subtly and require either repeated contact or special environmental conditions (humidity, temperature, occlusion, etc.) to produce a response.

The most standard animal irritation test is the Draize procedure (Journal of Pharmacology and Experimental Therapeutics, 82: 377–419, 1944). This procedure has been modified and adopted as a regulatory test by the Consumer Product Safety Commission (CPSC) in 16 CFR 1500.41 (formerly 21 CFR 191.11). In this test a known amount (0.5 ml of a liquid or 0.5 gm of a solid or semisolid) of the test substance is introduced under a one square inch gauze patch. The patch is applied to the skin (clipped free of hair) of twelve albino rabbits. Six rabbits are tested with intact skin and six with abraded skin. The abrasions are minor incisions made through the stratum corneum, but are not sufficiently deep to disturb the dermis or to produce bleeding. The patch is secured in place with adhesive tape, and the entire trunk of the animal is wrapped with an impervious material, such as rubberized cloth, for a 24-hour period. The animal is immobilized during exposure. After 24 hours the patches are removed and the resulting reaction evaluated for erythema, eschar, and edema formation. The reaction is again scored at the end of 72 hours (48 hours after the initial reading), and the two readings are averaged. A substance producing any degree of positive reaction is cited in the Registry as an irritant.

As the modified Draize procedure described above has become the standard test specified by the U.S. government, nearly all of the primary skin irritation data either strictly adheres to the test protocol or involves only simple modifications to it. When test procedures other than those described above are reported in the literature, appropriate codes are included in the data line to indicate those deviations.

The most common modification is the lack of occlusion of the test patch, so that the treated area is left open to the atmosphere. In such cases the notation "open" appears in the irritation data line. Another frequent modification involves whole arm or whole body immersion in the test substance or, more commonly, in a dilute aqueous solution of the test substance. This type of test is often conducted on soap and detergent solutions. Immersion data are identified by the abbreviation "imm" in the data line.

The dose reported is based first on the lowest dose producing an irritant effect and second on the latest study published. The dose is expressed as follows:

(1) Single application by the modified Draize procedure is indicated by only a dose amount. If no exposure time is given, then the data are for the standard 72-hour test. For test times other than 72 hours, the dose data is given in mg (or an appropriate unit)/duration of exposure, e.g., 10 mg/24H.

(2) Multiple applications involve administration of the dose in divided portions applied periodically. The total dose of test substance is expressed in mg (or an appropriate unit)/duration of exposure, with the symbol "I" indicating intermittent exposure, e.g., 5 mg/6D-I.

The method of testing substances for primary skin irritation given in the Code of Federal Regulations does not include an interpretation of the response. However, some authors do include a subjective rating of the irritation observed. If such a severity rating is given, it is included in the data line as mild ("MLD"), moderate ("MOD"), or severe ("SEV"). The Draize procedure employs a rating scheme which is included here for informational purposes only, since other researchers may not categorize irritation response in this manner.

Category	Code	Skin Reaction
Mild	MLD	Well defined erythema and slight edema (edges of area well defined by definite raising)
Moderate	MOD	Moderate to severe erythema and moderate edema (area raised approximately 1 mm)
Severe	SEV	Severe erythema (beet redness) to slight eschar formation (injuries in depth) and severe edema (raised more than 1 mm and extending beyond area of exposure)

b. Primary Eye Irritation. In experimental animals, a primary eye irritant is defined as a chemical substance that produces an irritant response in the test subject on first exposure. Eye irritation study procedures developed by Draize have been modified and adopted as a regulatory test by CPSC in 16 CFR 1500.42. In this procedure, a known amount of the test material (0.1 ml of a liquid or 100 mg of a solid or paste) is placed in one eye of each of six albino rabbits; the other eye remains untreated, serving as a control. The eyes are not washed after instillation and are examined at 24, 48, and 72 hours for ocular reaction. After the recording of ocular reaction at 24 hours, any or all eyes may be further examined following the application of fluorescein. Any or all eyes may also be washed with a sodium chloride solution (U.S.P. or equivalent) after the 24-hour reaction has been recorded.

A test is scored positive if any of the following effects are observed: (1) ulceration (besides fine stippling); (2) opacity of the cornea (other than slight dulling of normal luster); (3) inflammation of the iris (other than a slight deepening of the rugae or circumcorneal injection of the blood vessel); (4) swelling of the conjunctiva (excluding the cornea and iris) with eversion of the eyelid; or (5) a diffuse crimson-red color with individual vessels not clearly identifiable. A substance is an eye irritant if four of six rabbits score positive. It is considered a nonirritant if none or only one of six animals exhibits irritation. If intermediate results are obtained, the test is performed again. For the purpose of RTECS, substances producing any degree of irritation in the eye are identified in the Registry as irritants. When an author has designated a substance as either a mild, moderate, or severe eye irritant, this designation is also reported.

The dose reported is based first on the lowest dose producing an irritant effect and second on the latest study published. Single and multiple applications are indicated as described above under "Primary Skin Irritation." Test times other than 72 hours are noted in the dose. All eye irritant test exposures are assumed to be continuous, unless the reference states that the eyes were washed after instillation. In this case, the notation "rns" (rinsed) is included in the data line.

c. Species Exposed. Since Draize procedures for determining both skin and eye irritation specify rabbits as the test species, most of the animal irritation data in the Registry are for rabbits, although any of the species listed in Table II may be used. The editors endeavor to include as much human data as possible, since this information is directly applicable to occupational exposure. Much of this data comes from studies conducted on volunteers (such as for cosmetic or soap ingredients) or from persons accidentally exposed. When an accidental exposure, such as a spill, is cited, the data line includes the abbreviation "nse" (non-standard exposure). In these cases it is often very difficult to determine the precise amount of the substance to which the individual was exposed. Therefore, for accidental exposures we have generally provided an estimate of the concentration or strength of the substance, rather than a total dose amount.

7. Toxicity Data (see Figure 3). All toxic dose data follow the header "TXDS." Each data line includes, in sequence, the route of exposure; the species of animal studied; the type of dose; the amount of substance per body weight or concentration per unit of air volume and, where applicable, the duration of exposure; a descriptive notation of the type of effect reported; and the reference source from which the information was extracted. Only positive toxicity test results are cited in this section. Each element of this toxic dose data line is discussed below.

All toxic dose data appearing in the Registry are derived from reports of the toxic effects produced by individual substances. A toxic effect is defined as any reversible or irreversible noxious effect on the body; any benign or malignant tumor; any in vivo mutagenic or teratogenic effect which includes fetal resorption or other disturbances to a normal gestation; or any death which has been reported to have resulted from

exposure to a substance via any route. For humans, a toxic effect is any effect that was reported in the source reference. There is no qualifying limitation on the duration of exposure or for the quantity or concentration of the substance, nor is there a qualifying limitation on the circumstances that resulted in the exposure. Regardless of the absurdity of the circumstances that were involved in a toxic exposure, it is assumed that the same circumstances could recur. The production of tumors (neoplastigenesis), benign or malignant (carcinogenesis), the production of changes in the offspring induced by germ cell mutation or acting on the fetus directly (teratogenesis), and death are the criteria that are used as the toxic effects for animal data. There is no limitation on the duration of exposure nor on the quantity or concentration of the dose of the substance reported to have caused these effects.

The report of the lowest total dose administered over the shortest time to produce the toxic effect was given preference, although some editorial license was taken so that additional references might be cited. No restrictions were placed on the amount of a substance producing death in an experimental animal nor on the time period over which the dose was given. By law, however, a toxic effect must be produced for the dose published. Therefore, terms suggesting that a toxic or lethal effect may exist at doses greater than those tried cannot be used.

a. Route of Exposure or Administration. Although many exposures to substances in the industrial community occur via the respiratory tract or skin, most studies in the published literature report exposures of experimental animals in which the test substances were introduced primarily through the mouth by pills, in food, in drinking water, or by intubation directly into the stomach.The abbreviations and definitions of the various routes of exposure reported in the Registry are found in Table I.

b. Species Exposed. Since the effects of exposure of humans are of primary concern, we have indicated, when available, whether the results were observed in man, woman, child, or infant. If no such distinction was made in the reference, the term "hmn" (human) is used. However, the results of studies on rats or mice are the most frequently reported and hence provide the most useful data for comparative purposes. The species and abbreviations used are listed alphabetically in Table II.

c. Description of Exposure. In order to better describe the administered dose reported in the literature, six abbreviations are used. These terms indicate whether the dose caused death (LD) or other toxic effects (TD) and whether it was administered as a lethal concentration (LC) or toxic concentration (TC) in the inhaled air. In general, the term "Lo" is used where the number of subjects studied was not a significant number from the population or the calculated percentage of subjects showing an effect was listed as 100. The definition of terms is as follows:

TDLo—Toxic Dose Low--the lowest dose of a substance introduced by any route, other than inhalation, over any given period of time and reported to produce any toxic effect in humans or to produce carcinogenic, neoplastigenic, teratogenic, or mutagenic effects in humans or animals.

TCLo--Toxic Concentration Low--the lowest concentration of a substance in air to which humans or animals have been exposed for any given period of time that has produced any toxic effect in humans or produced a carcinogenic, neoplastigenic, teratogenic, or mutagenic toxic effect in animals or humans.

LDLo—Lethal Dose Low--the lowest dose (other than LD50) of a substance introduced by any route, other than inhalation, over any given period of time in one or more divided portions and reported to have caused death in humans or animals.

LD50—Lethal Dose Fifty—a calculated dose of a substance which is expected to cause the death of 50% of an entire defined experimental animal population. It is determined from the exposure to the substance by any route other than inhalation of a significant number from that population. Other lethal dose percentages, such as LD1, LD10, LD30, and LD99, may be published in the scientific literature for the specific purposes of the author. Such data would be published in the Registry if these figures, in the absence of a calculated lethal dose (LD50), were the lowest found in the literature.

LCLo--Lethal Concentration Low--the lowest concentration of a substance in air, other than LC50, which has been reported to have caused death in humans or animals. The reported concentrations may be entered for periods of exposure which are less than 24 hours (acute) or greater than 24 hours (subacute and chronic).

LC50—Lethal Concentration Fifty—a calculated concentration of a substance in air, exposure to which for a specified length of time is expected to cause the death of 50% of an entire defined experimental animal population. It is determined from the exposure to the substance of a significant number from that population.

The following table summarizes the above information:

Category	Exposure Time	Route of Exposure	TOXIC EFFECTS Human	TOXIC EFFECTS Animal
TDLo	Acute or Chronic	All except Inhalation	Any Non-Lethal	CAR, NEO TER, MUT
TCLo	Acute or Chronic	Inhalation	Any Non Lethal	CAR, NEO TER, MUT
LDLo	Acute or Chronic	All except Inhalation	Death	Death
LD50	Acute	All except Inhalation	Not Applicable	Death (Statistically Determined)
LCLo	Acute or Chronic	Inhalation	Death	Death
LC50	Acute	Inhalation	Not Applicable	Death (Statistically Determined)

d. Units of Dose Measurement. As in almost all experimental toxicology, the doses given are expressed in terms of the quantity administered per unit body weight, or quantity per skin surface area, or quantity per unit volume of the respired air. In addition, the duration of time over which the dose was administered is also listed, as needed.

Milligrams (one thousandth of a gram) per kilogram (mg/kg) are preferred, but in some cases, because of dose size and its practical presentation in the file, grams per kilogram (gm/kg), micrograms (one millionth of a gram) per kilogram (ug/kg), or nanograms (one billionth of a gram) per kilogram (ng/kg) are used. Volume measurements of dose were converted to weight units by appropriate calculations. Densities were obtained from standard reference texts. Where densities were not readily available, all liquids were assumed to have a density of one gram per milliliter. Twenty drops of liquid are assumed to be equal in volume to one milliliter.

All body weights have been converted to kilograms (kg) for uniformity. For those references in which the dose was reported to have been administered to an animal of unspecified weight or a given number of animals in a group (e.g., feeding studies) without weight data, the weights of the respective animal species were assumed to be those listed in Table II and the dose is listed on a per kilogram body weight basis. Assumptions for daily food and water intake are found in Table II to allow approximating doses for humans and species of experimental animals where the dose was originally reported as a concentration in food or water. The values presented are selections which are reasonable for the species and convenient for dose calculations.

All concentrations of a gaseous substance in air are listed preferably as parts of vapor or gas per million parts of air by volume (ppm). However, parts per hundred (pph or per cent), parts per billion (ppb), or parts per trillion (ppt) may be used for convenience of presentation. If the substance is a solid or a liquid, the concentrations are listed preferably as milligrams per cubic meter (mg/m3) but may, as applicable, be listed as micrograms per cubic meter (ug/m3), nanograms per cubic meter (ng/m3), or picograms (one trillionth of a gram) per cubic meter (pg/m3) of air. For those cases in which other measurements of contaminants are used, such as fibers or particles, the measurement is spelled out.

Where the duration of exposure is available, time is presented as minutes (M), hours (H), days (D), weeks (W), or years (Y). Additionally, continuous (C) indicates that the exposure was continuous over the time administered, such as ad libitum feeding studies or 24-hour, 7-day per week inhalation exposures. Intermittent (I) indicates that the dose was administered during discrete periods, such as daily, twice weekly, etc. In all cases, the total duration of exposure appears first after the kilogram body weight and slash, followed by descriptive data; e.g., 10 mg/kg/3W-I means ten milligrams per kilogram body weight administered over a period of three weeks, intermittently in a number of separate, discrete doses. This description is intended to provide the reader with enough information for an approximation of the experimental conditions, which can be further clarified by studying the article cited.

e. Frequency of Exposure. Frequency of exposure to the test substance varies depending on the nature of the experiment. For the purpose of the Registry, frequency of exposure is given only in the case of an inhalation experiment.

f. Duration of Exposure. For assessment of tumorigenic effect, the testing period should be the life span of the animal, or until statistically valid calculations can be obtained regarding tumor incidence. In the toxic dose line, the total dose causing the tumorigenic effect is given. The duration of exposure is included to give an indication of the testing period during which the animal was exposed to this total dose. For teratogenic, in vivo mutagenic, and multigenerational studies, the time during gestation when the substance was administered to the mother is also provided.

g. Notations Descriptive of the Toxicology. The toxic dose line thus far has indicated the route of entry, the species involved, the description of the dose, and the amount of the dose. The next entry found on this line when a toxic exposure (TD or TC) has been listed is "TFX" (Toxic Effect). Following "TFX" will be one of the notations found in Table III. These notations indicate the organ system affected or, in the case of animal experiments, special effects that the substance produced, e.g., TER = teratogenic effect. No attempt was made to be definitive in reporting these effects because such definition requires much detailed qualification and is beyond the scope of the publication at this time. The selection of the dose was based first on the lowest dose producing an effect and second on the latest study published.

The importance attached to reports of the carcinogenic activity of substances necessitates a more detailed discussion of the criteria used to include this type of data in the Registry. Tumorigenic citations are classified according to the reported results of the study only to aid the reader in selecting appropriate references for in-depth review and evaluation. In past editions of the Registry, the two classifications used were CAR, indicating a positive carcinogenic finding, and NEO, indicating a study producing benign tumors or one lacking complete documentation. With this edition a third classification, ETA (equivocal tumorigenic agent), has been added to denote those studies reporting uncertain, but seemingly positive, results.

The following 9 technical criteria are used by RTECS to abstract the toxicological literature and classify studies that report positive tumorigenic responses. No attempts are made either to evaluate the various test procedures or correlate results from different experiments.

(1) A citation is coded "TFX:CAR" (carcinogenic) when review of an article reveals that all of the following criteria are satisfied:

(a) A statistically significant increase in the incidence of tumors in the test animals. The statistical test is that used by the author. If no statistic is reported, a Fisher's Exact Test is applied with significance at the 0.05 level, unless the author makes a strong case for significance at some other level.

(b) A control group of animals is used and the treated and control animals are maintained under identical conditions.

(c) The sole experimental variable between the groups is the administration or non-administration of the test substance (see (9) below).

(d) The tumors consist of autonomous populations of cells of abnormal cytology capable of invading and destroying normal tissues, or the tumors metastasize as confirmed by histopathology.

(2) A citation is coded "TFX:NEO" (neoplastic) when review of an article reveals that all of the following criteria are satisfied:

(a) A statistically significant increase in the incidence of tumors in the test animals. The statistical test is that used by the author. If no statistic is reported, a Fisher's Exact Test is applied with significance at the 0.05 level, unless the author makes a strong case for significance at some other level.

(b) A control group of animals is used, and the treated and control animals are maintained under identical conditions.

(c) The sole experimental variable between the groups is the administration or non-administration of the test substance (see (9) below).

(d) The tumors consist of cells that closely resemble the tissue of origin, that are not grossly abnormal cytologically, that may compress surrounding tissues, but that neither invade tissues nor metastasize; or

(e) The tumors produced cannot definitely be classified as either benign or malignant.

(3) A citation is coded "TFX:ETA" (equivocal tumorigenic agent) when some evidence of tumorigenic activity is presented, but one or more of the criteria listed in (1) or (2) above is lacking. Thus, a report with positive pathological findings, but with no mention of control animals, is coded "TFX:ETA." Reports in which the results are not interpretable are not cited in the Registry.

(4) Since an author may make statements or conclusions based on a larger context than that of the particular data reported, papers in which the author's conclusions differ substantially from the evidence presented in the paper are subject to review by the RTECS Editorial Review Board.

(5) All doses except those for transplacental carcinogenesis are reported in RTECS in one of the following formats.

(a) For all routes of administration other than inhalation:

cumulative dose in mg (or appropriate unit)/kg/duration of administration.

Whenever the dose reported in the reference is not in the above units, conversion to this format is made based on the information given in paragraph 7d above. The total cumulative dose is derived from the lowest dose level that produces tumors in the test group.

(b) For inhalation experiments:

concentration in ppm (or mg/m3)/total duration of exposure.

The concentration refers to the lowest concentration that produces tumors.

(6) Transplacental carcinogenic doses are reported in RTECS in one of the following formats.

(a) For all routes of administration other than inhalation:

cumulative dose in mg/kg/(time of administration during pregnancy).

The cumulative dose is derived from the lowest single dose that produces tumors in the offspring. The test chemical is administered to the mother.

(b) For inhalation experiments:

concentration in ppm (or mg/m3)/(time of exposure during pregnancy).

The concentration refers to the lowest concentration that produces tumors in the offspring. The mother is exposed to the test chemical.

(7) For the purposes of RTECS, all test chemicals are reported as pure, unless otherwise stated by the author. This does not rule out the possibility that unknown impurities may have been present.

(8) A mixture of compounds whose test results satisfy the criteria in (1), (2), or (3) above is included if the composition of the mixture can be clearly defined.

(9) For tests involving promoters or initiators, a study is included if the following conditions are satisfied (in addition to the criteria in (1), (2), or (3) above):

(a) The test chemical is applied first, followed by an application of a standard promoter. A positive control group in which the test animals are subjected to the same standard promoter under identical conditions is maintained throughout the duration of the experiment. The data are not used if no mention of positive and negative control groups is made in the reference.

A known carcinogen is first applied as an initiator, followed by application of the test chemical as a promoter. A positive control group

in which the test animals are subjected to the same initiator under identical conditions is maintained throughout the duration of the experiment. The data are not used if no mention of positive and negative control groups is made in the reference.

Substances with TFX:CAR, NEO, or ETA citations are included as part of the Tumorigenic Citations Index, along with those compounds having IARC reviews and/or NCI status lines.

Criteria similar to these were used in past editions of the Registry, but not published in such detail. These criteria have evolved over the years since the inception of the Registry. Therefore, it is possible that some of the CAR and NEO citations, especially those added to the file during its early years, may not conform exactly to the above rules. The reader is therefore urged to review for himself the specific tumorigenic references cited in the RTECS. Any incorrect citations should be brought to the attention of the editors at the address given in the Introduction.

8. Cited Reference. The final entry of both the irritation and toxicity data lines is the reference from which the information was extracted. All references cited are publicly available. No governmental classified documents have been used for source information. All references have been given a unique six-letter CODEN character code (derived from CODEN for Periodical Titles, Chemical Abstracts Service, Columbus, Ohio 43210) which identifies periodicals, serial publications, and individual published works. For those references for which no CODEN was found, the corresponding six-letter code includes asterisks (*) in the last one or two positions following the first four or five letters of an acronym for the publication title. Following the CODEN designation (for most entries) is the number of the volume, followed by a comma; the page number of the first page of the article, followed by a comma; and two numbers, indicating the year of publication. When the cited reference is a report, the report number is listed. Where contributors have provided information on their unpublished studies, the CODEN consists of the first three letters of the last name, the initials of the first and middle names, and a number sign (#). The date of the letter supplying the information is listed. All CODEN acronyms are listed in alphabetical order and defined in the Bibliographic References section.

9. Aquatic Toxicity Ratings ("AQTX") were extracted from Water Quality Characteristics of Hazardous Materials by Dr. Roy Hahn, Jr. and Paul Jensen, Texas A&M University, College Station, Texas 77843, 1974. This publication grew out of an extensive literature survey on aquatic pollution. The format of this line is shown in Figure 1. "TLm96" is defined as the concentration that will kill 50% of the exposed organisms within 96 hours. The bioassay may be conducted under static or continuous flow conditions. Because of the lack of test standardization and the wide variety of species investigated, ratings (ranges of toxicities), rather than a single toxic dose, are used to give an indication of the toxicity of substances to aquatic life.

10. Reviews. This section supplies additional information to enable the reader to make knowledgeable evaluations of potential chemical hazards. There are three types of reviews listed: (a) International Agency for Research on Cancer (IARC) monograph reviews, which are published by the United Nations World Health Organization (WHO); (b) Threshold Limit Values, which are recommended limits proposed by the American Conference of Governmental Industrial Hygienists (ACGIH); and (c) general toxicology review articles.

a. Cancer Reviews. In the U.N. International Agency for Research on Cancer (IARC) monographs, suspected environmental carcinogens are examined, and summaries of available data with appropriate references are presented. Included in these reviews are synonyms, physical and chemical properties, uses and occurrence, and biological data relevant to the evaluation of carcinogenic risk to humans. The 17 monographs in the series contain an evaluation of approximately 450 substances. Single copies of the individual monographs (specify volume number) can be ordered from WHO Publications Centre USA, 49 Sheridan Avenue, Albany, New York 12210, telephone (518) 436-9686.

The format of the IARC data line is shown in Figure 1. The entry "CARCINOGENIC DETERMINATION" indicates that some carcinogenicity data pertaining to a compound has been reviewed by the IARC committee. The Registry summarizes the committee's conclusion in two words. The first indicates whether the data pertains to humans or to animals. The second word indicates the results of the determination as positive, suspected, indefinite, or negative.

This cancer review reflects only the conclusion of the IARC committee based on the data available for the committee's evaluation. Hence, for some substances there may be disagreement between the IARC determination and the carcinogenicity information in the toxicity data lines.

b. Threshold Limit Value (TLV). The TLV is an ACGIH-recommended upper limit (ceiling) or time-weighted average concentration of a substance to which most workers can be exposed without adverse effect. This concentration may be designated as a ceiling ("CL") or time-weighted average concentration ("TWA"), or as a notation ("SKN"), indicating that even though the air concentration may be below the limit value, significant additional exposure to the skin may be

dangerous. The TLV's are taken from Documentation of the Threshold Limit Values for Substances in Workroom Air (third edition), Cincinnati: ACGIH, 1976, or its supplement, or from documentation appearing in ACGIH annual reports.

c. Toxicology Reviews. The entry "TOXICOLOGY REVIEW" indicates that the cited review article has been located in the literature. Each review is identified by its CODEN. These articles discuss the toxicology of the substance or the general class to which the substance belongs. Many of these references, however, do not contain specific toxic dose values that can be cited in the Registry as toxicity data (see paragraph 7) because of the RTECS selection criteria. Nevertheless, the reviews do provide valuable information about the toxicity of the substance or group of related substances.

11. Standards and Regulations. This section contains notations indicating that the substance is regulated by an agency of the United States Government. The heading of these lines is "REGS," followed either by "OSHA," "EPA," or "DOT." "OSHA" refers to standards promulgated under Section 6 of the Occupational Safety and Health Act of 1970. "EPA" refers to Worker Protection Standards for Agricultural Pesticides promulgated under the Federal Insecticide, Fungicide, and Rodenticide Act. "DOT" refers to substances regulated for shipment by the Department of Transportation. Because of frequent changes to and litigation of Federal regulations, it is recommended that the reader contact the applicable agency for information about the current standards for a particular substance. Omission of a substance or regulatory notation from the Registry does not imply any relief from regulatory responsibility.

OSHA air contaminant standards are noted with the entry "air" following "OSHA." "TWA" or "CL" refers to either time-weighted average or ceiling value, respectively. For some substances, TWA, CL, and Pk (peak) values are given in the standard. In those cases, all three are listed. Finally, some entries may be followed by the designation "(skin)." This designation indicates that the compound may be absorbed by the skin and, even though the air concentration may be below the standard, significant additional exposure through the skin may be possible.

Standards Completion Program--The entry "(SCP)" indicates that a draft technical standard has been developed for the substance under the joint NIOSH/OSHA Standards Completion Program. Upon promulgation by OSHA, this draft technical standard fulfills the requirements for a complete standard for the substance as required by Sections 6 and 8 of the Occupational Safety and Health Act (29 CFR 1910.1000). A draft technical standard includes requirements for apprising employees of all hazards to which they are exposed, acceptable personal protective equipment, engineering control procedures, air sampling and analytical procedures, medical surveillance, and recordkeeping. The letter entry following SCP, for example "(SCP-A)," refers to a specific set of draft standards for a group of compounds that were prepared concurrently. Acceptable methods for sampling and analysis have been developed by NIOSH for many of the substances covered by a draft technical standard. A list of those substances and instructions for obtaining the analytical methods appear in Appendix II.

The information following the DOT notation for a substance has been obtained from the Department of Transportation. This notation indicates (a) the hazard class, (b) the label(s) required, and (c) the proper shipping name(s), as specified for transportation. Except for certain export and import shipments, no person may offer or accept a hazardous material, as defined by the Code of Federal Regulations, Title 49, for transportation in commerce within the United States unless that material is properly classed, described, packaged, marked, labeled, and in the condition for shipment as specified by 49 CFR, Parts 100 to 189. For transportation purposes, a hazardous material means a substance or material which has been determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce and which has been so designated.

Specific definitions are given for each hazard class addressed in 49 CFR; however, DOT reserves the right to regulate or deregulate materials whether or not they meet these definitions. The basic hazard classes include compressed gases, flammables, oxidizers, corrosives, explosives, radioactive materials, and poisons. Although a material may be designated by only one hazard class, additional hazards may be indicated by adding labels or by using other means directed by DOT.

It is essential, therefore, to know the hazard class of a substance and to use the proper label. Generally, a material meeting the DOT definition of a poison must always be labeled as a poison, regardless of the other labeling requirements to ensure adherence to the prohibition against shipping poisons with foodstuffs.

Specific shipping names are designated for hazardous materials listed in 49 CFR. Because of the presence of many nontechnical names or the use of archaic names for some materials, it is necessary to identify the DOT shipping names. The approved DOT shipping names are included as synonyms of the prime names and are identified by the addition of "(DOT)" to the name.

Substances not specifically identified in 49 CFR and not appearing in the Registry are not necessarily exempt from DOT regulations. The Registry contains only those substances specifically identified in 49 CFR. Generic names or general descriptive names such as "insecticide, liquid" are not included in the Registry.

Determination of the correct classification for transportation of materials not specifically identified in 49 CFR is the responsibility of the shipper.

12. Criteria Documents ("CRIT DOC"). This entry indicates that a NIOSH criteria document recommending a certain environmental (occupational) exposure has been published for this compound or for a class of compounds to which this substance belongs. Included are the title of the document and the recommended standard. The CODEN citation ("NTIS**") refers to the National Technical Information Service, U.S. Department of Commerce. Instructions for obtaining these documents appear in Appendix I.

13. Status. This entry indicates that the substance has been or is being tested by the National Cancer Institute (NCI) under its Carcinogenesis Testing Program. The following five different citations are used to reflect the current test status of the compound: selected for test, undergoing test, test results incomplete, test completed, or report available. These citations are updated as each bioassay progresses. Note that a compound originally scheduled for bioassay may be withdrawn from the NCI program before testing actually begins. This initial selection is cited in the Registry but is deleted when the compound is removed from the test. It is therefore important that the reader monitor the NCI status lines for changes. When the final report is released, the report number and test results are listed, and, where applicable, specific toxic dose lines (see paragraph 7) are generated. To obtain additional information about the NCI Bioassay Program or the status of a particular substance under test or to obtain copies of the final bioassay reports, contact the Technical Information Resourses Branch, Carcinogenesis Testing Program, National Cancer Institute, Landow Building, Room A306, National Institutes of Health, Bethesda, Maryland 20014, telephone (301) 496-1152.

(5) Other factors.

Other factors which may significantly affect the degree of probability of an illness (optional):

If there are mitigating circumstances, such as good training, warning signs and labels, or special procedures, a low point total would be assigned (0 to 2 points).

Similarly a high point count (7 to 8 points) should be assigned if there are additional contributing circumstances (see paragraph C.3.c.(3)(c) in Chapter XI of the FOM).

(6) To determine overall probability, the above factors must be averaged. Total the number of points for each factor and divide by the number of factors used. Fractions shall be rounded off to the next lowest number. This is the probability quotient. This calculation should be entered on the back of the OSHA-1B(IH) or OSHA-1B.

(b) *Severity Quotient — (for a serious violation only).*

(1) The severity quotient may be determined by the following ratings:

Temporary, reversible illness requiring minor supportive treatment	1 to 2 points
Temporary, reversible illness with a variable but limited period of disability	3 to 6 points
Permanent, irreversible illness or death	7 to 8 points

(2) This determination should be entered on the back of the OSHA-1B or OSHA-1B(IH).

(c) *Probability Rating and Determination of Penalty.*

(1) The probability rating is calculated by averaging the two previous quotients.

$$\frac{\text{probability quotient} + \text{severity quotient}}{2} = \text{probability rating}$$

(2) To determine the penalty, apply the probability rating to the applicable table in Chapter X of the FOM. This calculation is entered on item 19b of the OSHA-1B (IH) or OSHA-1B.

OSHA SUBSTANCE TOXICITY TABLE

In categorizing violations as either serious or other-than-serious, primary consideration is given to the toxicologic properties of the chemical substance. The health codes are listed below. When a listing for a substance contains multiple health codes, only the three most serious appear. (See paragraph D, Chapter II of the Industrial Hygiene Field Operations Manual for further explanation).

HEALTH CODE NUMBER	HEALTH EFFECT
1	Cancer---Currently regulated by OSHA as carcinogens; chiefly work practice standards.
2	Chronic (Cumulative) Toxicity---Suspect carcinogen or mutagen
3	Chronic (Cumulative) Toxicity---Long-term organ toxicity other than nervous, respiratory, hematologic or reproductive
4	Acute Toxicity---Short-term high hazard effects
5	Reproductive Hazards---Fertility impairment or teratogenesis
6	Nervous System Disturbances---Cholinesterase inhibition
7	Nervous System Disturbances---Nervous system effects other than narcosis
8	Nervous System Disturbances---Narcosis
9	Respiratory Effects Other Than Irritation---Respiratory sensitization (asthma)
10	Respiratory Effects Other Than Irritation---Cumulative lung damage
11	Respiratory Effects---Acute lung damage/edema
12	Hematologic (Blood) Disturbances---Anemias
13	Hematologic (Blood) Disturbances---Methemoglobinemia
14	Irritation-Eye, Nose, Throat, Skin---Marked
15	Irritation-Eye, Nose, Throat, Skin---Moderate
16	Irritation-Eye, Nose, Throat, Skin---Mild
17	Asphyxiants, Anoxiants
18	Explosive, Flammable, Safety (No Adverse Effects Encountered When Good Housekeeping Practices are Followed)
19	Generally Low Risk Health Effects---Nuisance particulates, vapors or gases
20	Generally Low Risk Health Effects---Odor

EXPLANATION OF TABLE HEADINGS

SUBSTANCE	HEALTH CODE NO.	CODE NO.	PHYSICAL STATE	PEL ppm	PEL mg/m^3	ADD. DATA	HEALTH EFFECTS	CLASSIFICATION OF VIOLATION	WIPE SAMPLING	WORK CATEGORY
1	2	3	4	5		6	7	8	9	10

1. SUBSTANCE - The chemical name of the substance as cited by OSHA (e.g., 29 CFR 1910.1000, Tables Z-1, Z-2, or Z-3) or by the American Conference of Governmental Industrial Hygienists (ACGIH) (1977 Threshold Limit Values (TLVs®) list). A "skin" designation refer to the potential contribution to the overall exposure by the cutaneous route including mucous membranes and eye, either by airborne, or more particularly, by direct contact with the substance.

2. HEALTH CODE NUMBER - The number assigned reflects the most significant health hazard(s) posed by each substance (see page 2 for a complete description of each health code).

3. CODE NUMBER - The number currently assigned by OSHA to each compound for reporting specific violations in the field. Where substances do not have a code number, it means that they are new additions to the ACGIH TLV list or recommendations from NIOSH. A "C" preceding the code number indicates that the compound is regulated by OSHA as an occupational carcinogen.

4. PHYSICAL STATE OF SUBSTANCE AT STANDARD TEMPERATURE AND PRESSURE - S-solid; L-liquid; G-gas; FUM-fume; MIX-mixture; VAP-vapor; VAR-varies with individual compounds.

5. PEL - Permissible exposure limit as adopted by OSHA. A "C" in this column indicates a ceiling limit. An "NDS" in this column indicates that a citation under the OSHA nuisance dust standard (i.e., 29 CFR 1910.1000, Table Z-3) should be considered.

6. ADDITIONAL DATA - This column provides additional data to be considered in determining the classification of violation. "TLV" indicates that there is no OSHA PEL but that the ACGIH has recommended a Threshold Limit Value (TLV). "TLV-CHG" indicates that there is an OSHA PEL, but that the current TLV has been changed since the OSHA PELs were adopted from the 1968 ACGIH TLV values. "CD" indicates that a NIOSH Criteria Document has been prepared on this substance. "CIB" indicates that a National Institute for Occupational Safety and Health (NIOSH) Current Intelligence Bulletin has been issued for this substance. For certain substances additional data is provided in parenthesis to assist in locating the appropriate reference.

7. HEALTH EFFECTS - Principal effect(s) of exposure to each substance.

8. CLASSIFICATION OF VIOLATION - Ratings of violations as serious (S) or other-than-serious (O) are based upon data in the Documentation of Threshold Limit Values, ACGIH, Fourth Edition, 1977 (including supplements), a particular NIOSH Criteria Document or Current Intelligence Bulletin, the NIOSH Registry of Toxic Effects of Chemical Substances and other selected references.

9. WIPE SAMPLING - Substances which present a potential ingestion (I) hazard (H1), H-(G)(2) and G(H) and/or skin(S) absorption hazard (Abs.H) are identified in this column. For these substances wipe sampling should be considered when assessing employee exposure. Blanks indicate present infeasibility of wipe sampling due to physical state of substance; lack of potential for significant physical harm; and/or technological limitations. References: 1. Documentation of Threshold Limit Values, ACGIH, Fourth Edition, 1977 (including supplements); 2. Handbook of Toxicology, Vol 1, Acute Toxicities, W.S. Spector, editor, Philadelphia, 1956, W.B. Saunders Co. For additional information refer to Chapter VI in this manual.

10. PROLONGED WORK SCHEDULE CATEGORIES - This column indicates the code designation for prolonged work schedules which may require an adjustment to the PEL. (See Chapter XIII)

Category	Classification	Adjustment Criteria
A	Ceiling Standard	none
B	Irritants	none
C	Technologic Limitations	none
2	Acute Toxicants	Exposed > 8 hrs/day
3	Cumulative Toxicants	Exposed > 40 hrs/week
4	Both Acute & Cumulative	Exposed > 8 hrs/day and or Exposed > 40 hrs/week

Note: The health effects and classification of violation sections of this chapter have been reviewed by a panel of toxicologists and industrial hygienists from NIOSH using policy guidelines established by OSHA.

SUBSTANCE	HEALTH CODE NO.	CODE NO.	PHYSICAL STATE	PEL ppm	PEL mg/m³	ADD. DATA	HEALTH EFFECTS	CLASSIFICATION OF VIOLATION	WIPE SAMPLING	WORK CATEGORY
Abate	6	0005	S	-----	-----	TLV	Cholinesterase Inhibition	S-Above 30 mg/m³	----	3
Acetaldehyde	14	0010	L	200	360	TLV-CHG	Marked Irritation Eye, Nose, Throat, Skin	S	-----	1 B
Acetic Acid	14	0020	L	10	25	-----	Marked Irritation Eye, Nose, Throat, Skin	0-Up to 30 ppm S-Above 30 ppm	-----	1 B
Acetic Anhydride	14	0030	L	5	20	TLV-CHG	Marked Irritation Eye, Nose, Throat, Skin	S	-----	1 B
Acetone	16,8	0040	L	1000	2400	-----	Mild Irritation-Eye, Nose, Throat/Narcosis	0-Up to 2000 ppm S-Above 2000 ppm	----- -----	1 B
Acetonitrile	16,4	0060	L	40	70	CD	Mild Irritation-Eye, Nose, Throat/ Acute Toxicity (Cyanosis)	0-Up to 50 ppm S-Above 50 ppm	-----	4
2-Acetylamino-fluorene	1	C 0065	S	STD 1910.1014		-----	Cancer	S	----	1 C
Acetylene	18,17	0070	G	----	----	TLV,CD	Explosive/ Simple Asphyxiation	S-Above 2500 ppm	-----	1 C
Acetylene Dichloride				(See 1,2 Dichloroethylene)						
Acetylene Tetrabromide	3,10	0080	L	1	14	-----	Cumulative Liver and Lung Damage	S	-----	4
Acrolein	14	0110	L	0.1	0.25	-----	Marked Irritation Eye, Nose, Throat, Lungs, Skin	S	-----	1 B
Acrylamide - Skin	7,3	0115	S	----	0.3	CD	Polyneuropathy, Dermatitis/Skin Eye Irritation	S	S,I	4
Acrylonitrile - Skin	2,5	C 0120	L	STD 1910.1045		CD,CIB	Suspect Carcinogen	S		
Aldrin - Skin	2,3	0125	S	----	0.25	-----	Suspect Carcinogen/ Cumulative Liver Damage	S	S,I	4
Allyl Alcohol - Skin	4,14	0130	L	2	5	-----	Eye Damage/Marked Irritation-Eye, Nose, Throat, Bronichi, Skin,	S	S	1 B
Allyl Chloride	3,14	0140	L	1	3	CD	Liver Damage/ Marked Irritation Eye, Nose, Throat	0-Up to 2 ppm S-Above 2 ppm	S	4
Allyl Glycidyl Ether (AGE) - Skin	14	0145	L	C 10	45	TLV-CHG, CD	Contact Skin Allergy/Marked Irritation-Eye, Nose, Throat, Bronichi, Skin	S	S	1 B
Allyl Propyl Disulfide	14	0150	L	2	12	-----	Marked Irritation Eye, Nose, Throat	S	-----	1 B

SUBSTANCE	HEALTH CODE NO.	CODE NO.	PHYSICAL STATE	PEL ppm	PEL mg/m³	ADD. DATA	HEALTH EFFECTS	CLASSIFICATION OF VIOLATION	WIPE SAMPLING	WORK CATEGORY
Aluminum Oxide	18,19	0160	S	——	NDS	TLV	Nuisance Particulate	O	——	1 C
4-Aminodiphenyl-Skin	1	C 0162	S	STD 1910.1011		——	Cancer	S	S	1 C
2-Aminoethanol				(See Ethanolamine)						
2-Aminopyridine	4,7	0165	S	0.5	2	——	CNS Stimulation/ Headache/Increased Blood Pressure	S	——	4
Ammonia	11,14	0170	G	50	35	TLV-CHG, CD	Marked Irritation Eye, Nose, Throat, Bronchi, Lungs	S	——	1 B
Ammonium Chloride (Fume)	16	0175	FUM	——	NDS	TLV	Mild Irritation Eye, Nose, Throat	O	——	1 B
Ammonium Sulfamate (Ammate)	16	0185	S	——	15	TLV-CHG	Mild Irritation Eye,	O	——	1 B
n-Amyl Acetate	15	0190	L	100	525	——	Moderate Irritation-Eye, Nose, Throat	O-Up to 200 ppm S-Above 200 ppm	——	1 B
sec-Amyl Acetate	15	0191	L	125	650	——	Moderate Irritatioin-Eye, Nose, Throat	O-Up to 250 ppm S-Above 250 ppm	——	1 B
Aniline - Skin	13,4	0220	L	5	19	——	Methemoglobinemia Acute Toxic Effects	S	S,I	4
Anisidine (o,p-isomers) - Skin	13,3	0225	L	——	0.5	TLV-CHG	Methemoglobinemia/ Cumulative Toxicity	S	S	4
Antimony & Compounds (as Sb)	3,2	0230	S	——	0.5	CD	Cumulative Heart Damage/Suspect Carcinogen	S	——	4
ANTU (alpha Naphthyl Thiourea)	3	0235	S	——	0.3	——	Cumulative Endocrine (Thyroid and Adrenal) Damage	S	S	4
Argon	17	0240	G	——	——	TLV	Simple Asphyxiation	S-If Oxygen Less Than 18% by Volume	——	1 A
Arsenic & Compounds (as As)	2,3	C 0260	S	STD 1910.1018		CD,CIB No. 14	Suspect Carcinogen/ Cumulative Systemic Poison	S	I	4
Arsine	4	0270	G	C 05	0.2	——	Acute Systemic Toxicity	S	——	4
Asbestos (all forms)	1,10	C 9020	S	STD 1910.1001		CD,CIB No. 5	Cancer/Asbestosis	S	——	3
Asphalt Fumes (Petroleum)	2	0290	FUM	——	——	LV,CD	Suspect Carcinogen/ Skin Irritant	S	——	4
Azinphos-Methyl-Skin	6	0300	S	——	0.2	——	Cholinesterase Inhibition	O-Up to 0.4 mg/m³ S-Above 0.4 mg/m³	S,I	3
Barium (Soluble Compounds)	3,10	0310	S	——	0.5	——	Cumulative Heart, Lung, and Brain Damage	S	——	3

SUBSTANCE	HEALTH CODE NO.	CODE NO.	PHYSICAL STATE	PEL ppm	PEL mg/m³	ADD. DATA	HEALTH EFFECTS	CLASSIFICATION OF VIOLATION	WIPE SAMPLING	WORK CATEGORY
Baygon (Propoxur)	6	0318	S	----	----	TLV	Cholinesterase Inhibition	S-Above 1.5 mg/m³	I	3
Benzene - Skin	2,12	C 0320	L	STD 1910.1028		CD	Suspect Leukemogen/ Cumulative Bone Marrow Damage	S	S	1 C
Benzidine - Skin	1	C 0330	S	STD 1910.1010		----	Cancer of Bladder	S	S,I	1 C
Benzidine Derived Dyes				See NIOSH CIB No. 24						
p-Benzoquinone				(See Quinone)						
Benzoyl Peroxide	15	0335	S	----	5	CD	Moderate Irritation-Eye, Nose, Throat, Skin	S	----	1 B
Benzyl Chloride	2,4,11	0340	L	1	5	----	Suspect Carcinogen/ Marked Irritation-Eye, Nose, Throat, Skin/Lung Edema	S	----	4
Beryllium & Compounds	2,10	0360	S	STD 1910.1000, Z-2		CD	Suspect Carcinogen/ Cumulative Lung Damage (Berylliosis)	S	I	4
Biphenyl (Diphenyl)	15	1011	S	0.2	1	----	Moderate Irritation-Eye, Nose, Throat, Bronchi, Lungs	O-Up to 3 mg/m³ S-Above 3 mg/m³	----	1 B
Bismuth Telluride	10	0370	S	----	NDS	TLV	Accumulation in Lungs	O	----	1 C
Bismuth Telluride (Se-Doped)	10	0371	S	----	----	TLV	Cumulative Lung Damage	S-Above 10 mg/m³	----	3
Borates, Tetra, Sodium Salt, Anhydrous	15	0374	S	----	----	TLV	Moderate Irritation- Eye, Nose, Throat, Skin	S	----	1 B
Borates, Tetra, Sodium Salt, Decahydrate	15	0375	S	----	----	TLV	Moderate Irritation-Eye, Nose, Throat, Skin	S	----	1 B
Borates, Tetra, Sodium Salt, Pentahydrate	15	0376	S	----	----	TLV	Moderate Irritation Nose, Throat, Skin	S	----	1 B
Boron Oxide	16	0380	S	----	15	TLV-CHG	Mild Irritation Eye, Nose, Throat, Skin	S	----	1 B
Boron Tribromide	14	0381	L	----	----	TLV	Marked Irritation Eye, Nose, Throat, Lungs	S	----	1 B
Boron Trifluoride	11,14	0382	G	C 1	3	CD	Acute and Chronic Lung Irritation (Pneumonia)	S	----	1 A
Bromine	14,11	0390	L	0.1	0.7	----	Marked Irritation-Eye, Nose, Throat, Bronchi, Lungs	S	----	1 B
Bromine Pentaflouride	14,11	0391	L	----	----	TLV	Marked Irritation Eye, Nose, Throat, Bronchi, Lungs	S	----	1 B

SUBSTANCE	HEALTH CODE NO.	CODE NO.	PHYSICAL STATE	PEL ppm	PEL mg/m³	ADD. DATA	HEALTH EFFECTS	CLASSIFICATION OF VIOLATION	WIPE SAMPLING	WORK CATEGORY
Bromoform - Skin	14,3	0400	L	0.5	5	——	Marked Irritation Eye, Nose, Throat/ Cumulative Liver Damage	S	S	4
Butadiene (1,3-Butadiene)	16	0410	G	1000	2200	——	Mild Irritation Eye, Nose, Throat	O-Up to 3000 ppm S-Above 3000 ppm	——	1 B
Butane	17,8	0420	G	——	——	TLV	Asphyxiant/Narcosis	S-Above 1800 ppm	——	1 C
Butanethiol				(See Butyl Mercaptan)						
2-Butanone (MEK)	15,8	0430	L	200	590	CD	Moderate Irritation-Eye, Nose, Throat/Narcosis	S	——	1 B
2-Butoxyethanol - Skin (Butyl Cellosolve)	12,16	0435	L	50	240	——	Anemia/Mild Irritation-Eye, Nose, Throat	O-Up to 100 ppm S-Above 100 ppm	S	4
n-Butyl Acetate	15	0440	L	150	710	——	Moderate Irritation-Eye, Nose, Throat	S	——	1 B
sec-Butyl Acetate	15	0441	L	200	950	——	Moderate Irritation-Eye, Nose, Throat	O-Up to 300 ppm S-Above 300 ppm	——	1 B
tert-Butyl Acetate	15	0442	L	200	950	——	Moderate Irritation-Eye, Nose, Throat	O-Up to 300 ppm S-Above 300 ppm	——	1 B
Butyl Alcohol - Skin	15,7	0460	L	100	300	TLV-CHG	Moderate Irritation-Eye, Nose, Throat/Hearing Loss	S	S	2
sec-Butyl Alcohol	16	0461	L	150	450	——	Mild Irritation-Eye, Nose, Throat	O-Up to 300 ppm S-Above 300 ppm	——	2
tert-Butyl Alcohol	15,8	0462	L	100	300	——	Moderate Irritation-Eye, Nose, Throat/ Narcosis	O-Up to 200 ppm S-Above 200 ppm	——	2
Butylamine - Skin	2,14	0470	L	C 5	15	——	Suspect Carcinogen/Marked Irritation-Eye, Nose Throat, Lungs, Skin	S	S	4
tert-Butyl Chromate (As CrO_3) - Skin	2,14	0473	S	——	C 0.1	——	Suspect Carcinogen/ Marked Irritation-Eye, Nose, Throat, Skin	S	S,I	1 A
n-Butyl Glycidyl Ether (BGE)	2,16	0477	L	50	270	CD	Suspect Mutagen/ Mild Irritation-Eye, Nose, Throat, Skin	S	-------	4
n-Butyl Lactate	15	0478	L	——	——	TLV	Moderate Irritation-Eye, Nose, Throat, Bronchi, Lungs	S	-------	1 B

SUBSTANCE	HEALTH CODE NO.	CODE NO.	PHYSICAL STATE	TLV ppm	TLV mg/m³	ADD. DATA	HEALTH EFFECTS	CLASSIFICATION OF VIOLATION	WIPE SAMPLING	WORK CATEGORY
Butyl Mercaptan	15,20	0480	L	10	35	TLV-CHG, CD	Moderate Irritation-Eye, Nose, Throat/ Odor	S	-------	1 B
p-tert-Butyltoluene	7,3	0485	L	10	60	-----	CNS Damage/ Cumulative Liver, Kidney Damage	S	------	3
Cadmium Dust (as Cd)	3,2	0490	S	STD 1910.1000, Z-2		TLV-CHG, CD	Suspect Carcinogen/ Cumulative Kidney and Lung Damage	S	I	4
Cadmium Fume (as Cd)	3,2	0491	FUM	STD 1910.1000, Z-2		TLV-CHG, CD	Cumulative Kidney and Lung Damage/ Suspect Carcinogen	S	I	4
Calcium Arsenate (as As)	2,3	0500	S	----	1	CD(As)	Suspect Carcinogen/ Cumulative Systemic Poisoning	S	I	4
Calcium Carbonate	19	0505	S	----	NDS	TLV*	Nuisance Particulate	0	------	1 C
Calcium Cyanamide	15,2	0510	S	----	----	TLV	Moderate Irritation-Eye, Nose, Throat, Skin/Suspect Carcinogen	S	------	4
Calcium Hydroxide	14	0515	S	----	----	TLV	Marked Irritation-Eye, Nose, Throat, Skin	S	------	1 B
Calcium Oxide	14	0520	S	----	5	TLV	Marked Irritation-Eye, Nose, Throat/ Skin	S	------	1 B
Camphor (synthetic)	15,4	0522	S			-----	Moderate Irritation-Eye, Nose, Throat/ Acute Toxicity	S	------	1 B
Caprolactam Dust	15	0523	S	----	----	TLV	Moderate Irritation-Eye, Nose, Throat, Skin	S-Above 2mg/m³	------	1 B
Caprolactam Vapor	16	0524	VAP		----	TLV	Mild Irritation-Eye, Nose, Throat, Skin	S-Above 10 ppm	------	1 B
Captafol (Difolatan®) - Skin	3,9,5	0528	S	----	----	TLV	Dermatitis/ Respiratory Sensitization (Asrhm)/Teratogen	S	S,I	4
Captan	2,5	0529	S	----	----	TLV	Suspect Carcinogen, Mutagen, and Teratogen	S	------	4
Carbaryl (Sevin®)	6,5	0525	S	----	5	CD	Cholinesterase Inhibition/Teratogen	S	I	3
Cartofuran (Furadan®)	6	0526	S	----	----	TLV	Cholinesterase Inhibition	S	------	3
Carbon Black	2,3	0527	S	----	3.5	CD	Suspect Carcinogen/ Cumulative Heart	S	------	4

SUBSTANCE	HEALTH CODE NO.	CODE NO.	PHYSICAL STATE	PEL ppm	PEL mg/m3	ADD. DATA	HEALTH EFFECTS	CLASSIFICATION OF VIOLATION	WIPE SAMPLING	WORK CATEGORY
Carbon Dioxide	17	0530	G	5000	9000	CD	Simple Asphyxiation	0-Up to 10,000 ppm S-Above 10,000 ppm	-----	1 C
Carbon Disulfide-Skin	7,5	0540	L	STD 1910.1000, Z-2		CD	Cumulative CNS Damage/Reproductive Impairment	S	S	3
Carbon Monoxide	17	0560	G	50	55	CD	Chemical Anoxia, Asphyxiation	0-Up to 75 ppm S-Above 75 ppm	-----	2
Carbon Tetrabromide	3,14	0565	S	----	----	TLV	Liver Damage/ Potent Lachrymator	S	------	4
Carbon Tetrachloride - Skin	3,2,5	0570	L	STD 1910.1000, Z-2		CD	Cumulative Liver Damage/Suspect Carcinogen/Teratogen	S	S	4
Catechol Pyrocatechol)	14,3	0571	S	----	----	TLV	Eye and Skin Irritation/Kidney Damage	S	------	4
Cellulose (paper fiber)	19	0575	S	----	NDS	TLV	Nuisance Particulate	0	------	1 C
Cesium Hydroxide	15	0576	S	----	----	TLV	Moderate Irritation Eye, Nose, Throat, Skin	S-Above 4 mg/m3	------	1 B
1-chloro,2,3, epoxy - propane				(See Epichlorohydrin)						
Chlordane - Skin	3,2	0611	L	----	0.5	------	Cumulative Liver Damage/Suspect Carcinogen	S	S	4
Chlorinated Camphene (Toxaphene)- Skin	3	0612	S	----	0.5	----	Cumulative Liver Damage	S	S	3
Chlorinated Diphenyl Oxide	3	0613	S	----	0.5	----	Cumulative Liver Damage/Dermatitis	S	------	3

SUBSTANCE	HEALTH CODE NO.	CODE NO.	PHYSICAL STATE	PEL ppm	PEL mg/m3	ADD. DATA	HEALTH EFFECTS	CLASSIFICATION OF VIOLATION	WIPE SAMPLING	WORK CATEGORY
Chlorine	11,14	0640	G	C 1	3	CD	Lung Injury/Marked Irritation-Eye, Nose, Throat, Bronchi	S	------	3
Chlorine Dioxide	11,14	0614	G	0.1	0.3	-----	Lung Injury/Marked Irritation-Eye, Nose, Throat, Bronchi	S	------	1 B
Chlorine Trifluoride	11,14	0615	G/L	C 0.1	0.4	-----	Marked Irritation Eye, Nose, Throat, Bronchi, Lungs	S	------	1 A
Chloroacetaldenyde	14	0617	L	C 1	3	-----	Marked Irritation Eye, Nose, Throat, Lungs, Skin	S	------	1 A
alpha-Chloroaceto-phenone (Phenacyl chloride)	14	0618	L/S	0.05	0.3	-----	Marked Irritation Eye, Nose, Throat, Bronchi, Lungs, Skin	S	------	1 B
Chlorobenzene (Monochlorobenze)	3,8	0620	L	75	350	-----	Cumulative Systemic Toxicity/Narcosis	S	------	4
o-Chlorobenzylidene Malonitrile-Skin	14	0623	S	0.05	0.4	-----	Marked Irritation-Eye, Nose, Throat, Skin	S	S	1 B
2-Chloro-1,3-butadiene				(See Chloroprene)						
Chlorobromomethane	3,8	0627	L	200	1050	-----	Cumulative Liver Damage/Narcosis	O-Up to ___ ppm S-Above 3[illegible] ppm	------	3
Chlorodi-fluoromethane (F-22)	18	0628	G	----	---	TLV	Good Housekeeping Practice	S-Above 5000 ppm	------	1 C
Chlorodiphenyl (42% Cl) - Skin	2,3	0630	L/S	----	1	CD(PCB) CIB No 7	Suspect Carcinogen/ Chloracne/ Cumulative Liver Damage	S	S,I	4
Chlorodiphenyl (54% Cl) - Skin	2,3	0631	L/S	----	1	CD(PCB) CIB No.7	Suspect Carcinogen/ Chloracne/Cumulative Liver Damage	S	S,I	4
1,Chloro 2,3-epoxypropane				(See Epichlorohydrin)						
2-Chloroethanol				(See Ethylene Chlorohydrin)						
Chloroethylene				(See Vinyl Chloride)						
Chloroform (Trichloromethane)	2,3,8	0670	L	C 50	240	TLV-CIG, CD, CIB No. 9	Suspect Carcinogen/ Cumulativ Liver and Kidney Damage.Narcosis	S	------	4
bis-Chloromethyl Ether	1	C 2630	L	STD 1910.1008		----	Cancer (Lung)	S	I	1 C
1-Chloro-1-Nitropropane	15	0660	L	20	100	-----	Moderate Irritation-Eye, Nose, Throat, Skin	O-Up to 60 ppm S-Above 60 ppm		1 B
Chloropicrin	14,11	0675	L	0.1	0.7	-----	Marked Irritation-Eye, Nose, Throat, Bronchi, Lungs, Skin	S	------	1 B

SUBSTANCE	HEALTH CODE NO.	CODE NO.	PHYSICAL STATE	PEL ppm	PEL mg/m³	ADD. DATA	HEALTH EFFECTS	CLASSIFICATION OF VIOLATION	WIPE SAMPLING	WORK CATEGORY
Chloroprene - (2-chloro-1, 3 butadiene) Skin	5,3,2	0680	L	25	90	CD, CIB No. 1	Reproductive Hazard/Systemic Toxicity/Suspect Mutagen	S	S	4
Chloropyrifos (Dursban R) - Skin	6	0681	S	----	----	TLV	Cholinesterase Inhibition	S-Above 2 mg/m³	------	4
o-Chlorostyrene	3	0682	L	----	----	TLV	Cumulative Live, Kidney Damage	S	------	3
o-Chlorotoluene - Skin	2,15	0683	L	----	----	TLV	Mild Irritant-Eye, Skin	S-Above 150 ppm	------	1 B
2-Chloro-6-Trichloromethyl Pyridine (N-Serve R)	18	0684	S	----	----	TLV	Good Housekeeping Practice	S-Above 15 mg/m³	------	1 C
Chromates, metal and insoluble salts (as CR)	2,10,3	0685	S	----	1	TLV-CHG, CD,CIB No. 4	Suspect Carcinogen/ Cumulative Lung Damage/Dermatitis	S	S,I	4
Chromic Acid & Chromates (as Cr)	2,10,3	0686	L	----	0.1	TLV-CHG, CD, CIB	Suspect Carcinogen/ Cumulative Lung Damage/Nasal Preforation, Ulcerattion	S	S,I	4
Chromium, Soluble Chromic, Chromous Salts (as Cr)	10,3	0690	S	----	0.5	CD	Cumulative Lung Damage/Dermatitis	S	S,I	3
Clopidol (Coyden R)	18	0693	S	----	NDS	TLV	Good Housekeeping Practice	O	------	1 C
Coal Dust	10	0695	S	STD 1910.1000 z-3		----	Pneumoconiosis	S	------	3
Coal Tar Pitch Volatiles	2,10	0700	MIX	----	0.2	CD	Suspect Carcinogen/ Cumulative Lung Changes	S	------	4
Cobalt, Metal, Fume & Dust (as Co)	9,10,3	0720	S/FUM	----	0.1	------	Asthma/Cumulative Lung Changes/ Dermatitis	S	------	3
Coke Oven Emissions	1,3	0725	----	STD 1910.1029		CD	Cancer-Lungs, Bladder, Kidney/ Skin Sensitization	S		1 C
Copper Dusts & Mists (as Cu)	16	0730	S	----	1	------	Mild Irritation Eye, Nose, Throat, Skin	O-Up to 2 mg/m³ S-Above 2 mg/m³	------	4
Copper Fume (as Cu)	15,11	0731	FUM	----	0.1	TLV-CHG	Moderate Irritation-Eye, Nose, Throat, Lung	O-Up to 0.8 mg/m³ S-Above 0.8 mg/m³	------	4
Corundum (Al_2O_3)	19	1013	S	----	NDS	TLV	Nuisance Particulate	O	------	1 C
Cotton Dust (Raw)	9,10	0735	S	STD 1910.1043		TLV CD	Asthma/Cumulative Lung Damage (Bysinosis)	S	------	1C
Crag R herbicide	3	0737	S	----	15	TLV-CHG	Cumulative Liver Damage	S	------	3

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Cresol (All Isomers) - Skin	14,4,3	0760	S/L	5	22	CD	Marked Irritation Eye, Skin/Acute Toxicity (CNS) Liver and Kidney Damage	S	——	1 B
Cristobalite	10	9015	S	STD 1910.100		Z-3	Pneumoconiosis	S	——	3
Crotonalydehyde	14	0770	L	2	6	——	Marked Irritation-Eye, Nose, Throat, Lungs	S	——	1 B
Crufomate^R	6	0776	S	——		TLV	Cholinesterase Inhibition	S-Above 15 mg/m^3	——	3
Cumene - Skin	8,15	0780	L	50	245	——	Narcosis/Moderate Irritation-Eye, Skin	O-Up to 100 ppm	——	3
Cyanamide	14,4	0782	S	——	——	TLV	Marked Irritation-Eye, Nose, Throat, Skin/Acute Toxicity	S	——	2
Cyanides (as CN) - Skin	15	0790	S	——	5	CD	Marked Irritation-Skin, Eye, Nose, Throat	S	——	1 B
Cyanogen	15,4	0800	G	10	——	TLV	Moderate Irritation-Eye, Nose, Throat/ Acute Toxicity (Cyanosis)	S	——	2
Cyclohexane	15	0810	L	300	1050	——	Moderate Irritation-Eye, Nose, Throat	S	——	1 B
Cyclohexanol	16,3	0820	S	50	200	——	Mild Irritation-Nose, Throat/ Cumulative Liver and Kidney Damage	O-Up to 100 ppm S-Above 100 ppm	——	1 B
Cyclohexanone	15,3	0830	L	50	200	——	Moderate Irritation Eye, Nose, Throat/ Cumulative Liver and Kidney Damage	S	——	4

SUBSTANCE	HEALTH CODE NO.	CODE NO.	PHYSICAL STATE	PEL ppm	PEL mg/m³	ADD. DATA	HEALTH EFFECTS	CLASSIFICATION OF VIOLATION	WIPE SAMPLING	WORK CATEGORY
Cyclohexene	15,3	0840	L	300	1050	----	Moderate Irritation Eye, Nose, Throat/ Cumulative Systemic Toxicity	S	----	4
Cyclohexylamine - Skin	14,2	0842	L	----	----	TLV	Marked Irritation Eye, Nose, Throat, Skin/Suspect Mutagen	S	I,S	4
Cyclopentadiene	15	0845	L	75	200	----	Moderate Irritation Eye, Nose, Throat	O-Up to 150 ppm S-Above 150 ppm	----	1 B
DBCP				(See 1,2, Dibromo-3-chloropropane)						
2,4-D (2,4 Dichloro-phenoxyacetic acid)	5	0846	S	----	10	----	Suspect Teratogen	S	----	3
DDT - Skin	7,2,3	0847	S	----	1	----	Cumulative Toxicity CNS Suspect Carcinogen and Mutagen	S	S,I	4
DDVP - Skin	6	0850	L	----	1	----	Cholinesterase Inhibition	S	S	3
Decaborane - Skin	4,7	0853	S	0.05	0.3	----	Acute and Chronic CNS Toxicity	S	S	4
Demeton® (Systox) - Skin	6,5	0857	L	----	0.1	----	Cholinesterase Inhibition/Suspect Teratogen	S	S	3
Diacetone Alchol (4-hydroxy-4 methyl-2 pentanone)	15,3	0860	L	50	240	----	Moderate Irritation Eye, Nose, Throat/ Cumulative Kidney Damage	O-Up to 100 ppm S-Above 100 ppm	----	1 B
1,2 Diaminoethane				(See Ethylenediamine)						
2,4-Diaminoanisole				See NIOSH CIB No. 19						
4,4 Diaminodiphenyl-methane (DDM)				See NIOSH CIB No. 8						
Diazinon - Skin	6,5	2720	L	----	----	TLV	Cholinesterase Inhibition Suspect Teratogen	S	S,I	3
Diazomethane	2,11,14	0861	G	0.2	0.4	----	Suspect Carcinogen/ Acute Lung Damage/ Marked Irritation-Eye, Nose, Throat	S	----	4
Diborane	11,7,14	0862	G	0.1	0.1	----	Acute Respiratory Damage, Irritation/ Nervous System Damage	S	----	4
Dibrom®	6	0932	S	----	3	----	Cholinesterase Inhibition	S	----	3
1,2-Dibromo-3-Chloropropane (DBCP)	5,2	0935	S	STD 1910.1044		----	Male Sterility/ Suspect Carcinogen	S	S,I	1 C
1,2-Dibromoethane (Ethylene Dibromide) - Skin	2,3,5	1140	L	STD 1910.1000, Z-2		CD,CIB No. 3 & 23	Suspect Carcinogne, Mutagen, Teratogen/ Cumulative Kidney Damage/Reproductive Hazard	S	S,I	4

SUBSTANCE	HEALTH CODE NO.	CODE NO.	PHYSICAL STATE	PEL ppm	PEL mg/m³	ADD. DATA	HEALTH EFFECTS	CLASSIFICATION OF VIOLATION	WIPE SAMPLING	WORK CATEGORY
2-n-Dibutylamino-ethanol - Skin	15,3	0866	L	——	——	TLV	Moderate Irritation Eye, Nose, Throat, Lungs, Skin, Cumulative Liver	S-Above 6 ppm	S	4
Dibutyl Phosphate	16	0863	L	1	5	——	Mild Irritation-Eye, Nose, throat, Lungs	O-Up to 2 ppm S-Above 2 ppm	——	1 B
Dibutylphthalate	19,5	0864	L	——	5	——	Apparent Low Toxicity, Suspect Teratogen	O-Up to 10 mg/m³ S-Above 10 mg/m³	——	1 C
Dichloroacetylene	4,11,7	0865	L	——	——	TLV	Acute Toxicity - Nausea, Headache, Lung Edema/Cumulative CNS Effects	S	——	4
o-Dichlorobenzene	14,4	0867	L	C 50	300	——	Marked Irritation Eye, Nose, Throat/ Liver Damage	S	——	1 A
p-Dichlorobenzene	3,7	0868	S	75	450	——	Cumulative Systemic Toxicity/Cataracts	S	——	3
3,3'-Dichloro-benzidine-Skin	1	C 0869	S	STD 1910.1007		——	Cancer - Bladder	S	S,I	1 C
Dichlorodifluoro-methane (F-12)	18	0871	G	1000	4950	——	Good Housekeeping Practice	O	——	1 C
1,3-Dichloro-5, 5-Dimethylhydantion	14	0872	S	---	0.2	——	Mild Irritation Eye, Nose, Throat, Lungs	S	——	1 B
1,1-Dichloroethane	3	1160	L	100	400	TLV-CHG	Cumulative Liver Damage	S	S	3
1,2-Dichloroethane	3,7,2	0874	L	50	200	CD,CIB No. 25 & 27	Cumulative Liver, Kidney Damage/CNS Effects/Suspect Carcinogen	S	S	4
1,2-Dichloroethylene	8,7	0870	L	200	790	-----	Narcosis/CNS Effects	O-Up to 600 ppm S-Above 600 ppm	-----	2
Dichloromethyl Ether - Skin	14,2,11	0880	L	C 15	90	TLV-CHG	Marked Irritation Eye, Nose, Throat, Lungs/Suspect Carcinogen/Lung Edema	S	S	1 A
Dichloromethane				(See Methylene Chloride)						
Dichloromonofluoro-methane (F-21)	3	0887	G	1000	4200	-----	Cumulatfve Liver Damage	S	-----	1 C
1,1-Dichloro-1-nitroethane	4,11	0890	L	C 10	60	TLV-CHG	Acute Systemic Toxicity-Lungs, Heart, Liver, Kidneys	S	-----	1 A
1,2 Dichloropropane				(See Propylene Dichloride)						
Dichlorotetra-fluoroethane	18	0900	G	1000	7000	----	Good Housekeeping Practice	O	-----	1 C

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Dicrotophos (Bidrin®)	6	0902	L	----	----	TLV	Cholinesterase Inhibition	S	S	3
Dicyclopentadiene	3,16	0903	L	5	----	TLV	Cumulative Kidney Liver Damage/Mild Irritation-Eye, Nose, Throat	S	-----	3
Dicyclopentadienyl Iron	18	0904	S	----	NDS	TLV	Good Housekeeping Practice	O	-----	1 C
Dieldrin - Skin	2,3	0905	S	----	0.25	-----	Suspect Carcinogen/ Cumulative Liver Damage	S	S,I	4
Diethylamine	14,3	0910	L	25	75	-----	Marked Irritation Eye, Nose, Throat, Lungs, Skin/ Myocardial Degeneration	S	-----	1 B
Diethylaminoethanol Skin	14	0920	L	10	50	-----	Marked Irritation Eye, Nose, Throat	S	S	1 B
Diethylcarbamoyl Chloride (DECC)				See NIOSH CIB No. 12						
Diethylene Triamine	14,9	0921	L	----	----	TLV	Marked Irritation Eye, Nose, Throat, Lung, Skin	S	S	1 B
Diethyl Ether				(See Ethyl Ether)						
Diethyl Phthalate	16	0933	L	----	NDS	TLV	Mild Irritation Nose, Throat	S-Above 15 mg/m³	-----	1 B
Difluorodibromo-methane (F-12B2)	16,3	0922	L	100	860	-----	Respiratory Irritation/ Cumulative Liver and CNS Damage	O-Up to 200 ppm S-Above 200 ppm	-----	1 B
Diglycidyl Ether (DGE)	14,3,2	0923	L	C 0.5	2.8	-----	Marked Irritation Eye, Nose, Throat, Lungs, Skin/Cumulative Systemic Toxicity/ Suspect Mutagen	S	-----	1 A

SUBSTANCE	HEALTH CODE NO.	CODE NO.	PHYSICAL STATE	PEL ppm	PEL mg/m3	ADD. DATA	HEALTH EFFECTS	CLASSIFICATION OF VIOLATION	WIPE SAMPLING	WORK CATEGORY
Dihydroxybenzene				(See Hydroquinone)						
Diisobutyl Ketone	16,8	0924	L	50	290	TLV-CHG	Mild Irritation Eye, Nose, Throat/ Narcosis	O-Up to 100 ppm S-Above 100 ppm	——	1 B
Diisopropylamine - Skin	7,15	0925	L	5	20	——	CNS Effects/ Moderate Irritation Eye, Nose, Throat, Lungs	O-Up to 10 ppm S-Above 10 ppm	S	1 B
Dimethoxymethane				(See Methylal)						
Dimethyl Acetamide-Skin	3,5	0927	L	10	35	——	Cumulative Liver Damage/Suspect Teratogen	S	S,I	3
Dimethylamine	14,3	0928	G	10	18	——	Marked Irritation Eye, Nose, Throat, Bronchi, Lung, Skin/ Cumulative Liver, Testicular Damage	S	——	4
Dimethylaminobenzene				(See Xylidene)						
4-Dimethylaminoazo-benzene	1	C 0929	S	STD 1910.015		——	Cancer-Liver	S	S,I	
Dimethylaminopro-pionitril				See ESN						
Dimethylaniline - Skin	13,7	0931	G	5	25	——	Methemoglobinemia CNS Effects	S	S	4
Dimethylbenzene				(See Xylene)						
Dimethyl Carbamoyl Chloride (DMCC)				See NIOSH CIB No. 11						
Dimethylformamide -	3,7	0930	L	10	30	——	Cumulative Liver Damage/CNS Effects	S	S	3
2,6 Dimethylheptanone				(See Diisobutyl Ketone)						
1,1-Dimethylhydrazine - Skin	2,7,12	0940	L	0.5	1	TVL	Suspect Carcinogen/ CNS Effects/ Anemia	S	S,I	4
Dimethylphthalate	5,16	0950	L	——	5	——	Suspect Teratogen/ Mild Irritation-Nose, Throat	S	——	4
Dimethyl Sulfate - Skin	2,4	0960	L	1	5	TLV-CHG	Suspect Carcinogen/ Acute Eye and Lung Effects	S	S,I	4
Dinitrobenzene (all isomers) - Skin	13,12,3	0970	S	——	1	TVL	Blood Disturbances/ Liver, Kidney Damage	S	S	4
Dinitro-o-Cresol - Skin	3	0975	S	——	0.2	CD, TVL	Cumulative Systemic (Metabolic) Toxin	S	S,I	3
3,5-Dinitro-o-Toluamide (Zoalene®)	3	0985	S	——	——	TLV	Cumulative Liver Damage	S	——	3
Dinitrotoluene - Skin	13,12,3	0990	S	——	1,5	TVL	Methemoglobinemia/ Anemia/Liver Damage	S	S	4

SUBSTANCE	HEALTH CODE NO.	CODE NO.	PHYSICAL STATE	PEL ppm	PEL mg/m³	ADD. DATA	HEALTH EFFECTS	CLASSIFICATION OF VIOLATION	WIPE SAMPLING	WORK CATEGORY
Dioxane (Diethylene Dioxide) technical grade - Skin	2,3	1010	L	100	360	TLV-CHG, CD	Suspect Carcinogen/ Cumulative Liver, Kidney Damage	S	S,I	4
Dioxathion (Delnav®)	6	2740	L	----	----	TLV	Cholinesterase Inhibition	S	I,S	3
Diphenyl				(See Biphenyl)						
Diphenylamine	3,5	0926	S	----	----	TLV	Cumulative Liver, Kidney Bladder Damage/Suspect Teratogen	S	----	3
Diphenylmethane diisocyanate				(See Methylene Biphenyl Isocyanate)						
Dipropylene Glycol Methyl Ether - Skin	15,3	1014	L	100	600	-----	Moderate Irritation Eye,	S		4
Diquat	3,5	2681	S	----	----	TLV	Cumulative Effects (Cataracts)/Suspect Teratogen	S	I	4
Di-sec, Octyl Phthalate (Di- 2 ethylhexylphthalate)	16	1015	L	----	5	-----	Mild Irritation Eye, Nose, Throat	O-Up to 10 mg/m³ S-Above 10 mg/m³		1 C
Direct Black 38, Direct Blue 6, and Direct Brown 95 (Benzidine Derived Dyes) - See NIOSH CIB No. 24										
Disulfiram (Tetraethylthiuram Disulfide)	4,2	2682	S	----	----	TLV, CIB No	Acute Toxicity- Antabuse Effects with Alcohol/Suspect Carcinogen	S	-----	4
Disyston - Skin	6	2680	S	----	----	TLV	Cholinesterase Inhibition	S	S,I	3
2,6-Di-Tert-Butyl-p-Cresol	18	2683	S	----	NDS	TLV	Good Housekeeping Practice	O	-----	1 C
Diuron	19	2684	S	----	NDS	TLV	Apparent Low Toxicity	O	-----	1 C
Dyfonate	6	2685	S	----	----	TLV	Cholinesterase Inhibiton	S	I	3
Emery	19	1016	S	----	NDS	TLV	Nuisance Particulate	O	-----	1 C
Endosulfan (Thiodan®) - Skin	4,3,2	2425	S	----	----	TLV	Acute CNS Toxin/ Cumulative Kidney Damage/Suspect Carcinogen	S	S,I	4
Endrin - Skin	4	1017	S	----	0.1	-----	Acute Toxicity	S	I	4
Epichlorohydrin (1-Chloro,2,3-epoxypropane)-Skin	14,2,3	0645	L	5	19	CD,CIB No. 30	Marked Skin Irritation, Sensitization/ Suspect Carcinogen and Mutagen/ Kidney and Liver Damage	S	S	4
EPN - Skin	6	1019	L/S	----	0.5	-----	Cholinesterase Inhibition	S	S	3
1,2 - Epoxypropane				(See Propylene Oxide)						

SUBSTANCE	HEALTH CODE NO.	CODE NO.	PHYSICAL STATE	PEL ppm	PEL mg/m³	ADD. DATA	HEALTH EFFECTS	CLASSIFICATION OF VIOLATION	WIPE SAMPLING	WORK CATEGORY
2,3 - Expoxy-1-propanol				(See Glycidol)						
ESW[R]				(See NIOSH CIB No. 26)						
Ethane	18,17	1025	G	----	----	TLV	Explosive/Simple Asphyxiation	S-If Oxygen Level is Less than 18% by Volume	------	1 C
Ethanethiol				(See Ethyl Mercaptan)						
Ethanolamine	14,3	1030	L	3	6	-----	Marked Irritation Skin/Cumulative Liver, Lung and Kidney Damage	O-Up to 6 ppm S-Above 6 ppm	------	3
Ethion (Nialate[R]) - Skin	6	2750	L	----	----	TLV	Cholinesterase Inhibition	S	S	3
2-Ethoxyethanol (Cellosolve) - Skin	15,12	1033	L	200	740	TLV-CHG CIB NO. 29	Moderate Irritation Eye, Nose/Cumulative Blood Disturbances	S	S	3
2-Ethoxyethyl Acetate (Cellosolve Acetate) - Skin	3,16	1037	L	100	540	----	Cumulative Liver, Kidney Damage/Mild Irritant-Eye, Nose, Throat	S	S	3
Ethyl Acetate	16,20	1040	L	400	1400	-----	Mild Irritation Eye, Nose, Throat, Lungs/Odor	O-Up to 800 ppm S-Above 800 ppm	------	1 B
Ethyl Acrylate - Skin	14,11	1050	L	25	100	----	Marked Irritation Eye, Nose, Throat, Lungs/Lung Edema	S	S	1 B
Ethyl Alcohol (Ethanol)	14,8	1060	L	1000	1900	----	Mild Irritation-Eye,Nose, Throat/ Narcosis	O-Up to 3000 ppm S-Above 3000 ppm	------	1 B
Ethylamine	14,3	1070	L	10	18	-----	Marked Irritation Eye, Nose, Throat, Lungs/Corneal Injury	S	------	4
Ethyl sec-Amyl Ketone (4-Methyl-3 heptanone)	15	1075	L	25	130	----	Moderate Irritation Eye, Nose, Throat	O-Up to 75 ppm S-Above 75 ppm	----	1 B
Ethyl Benzene	15	1080	L	100	435	----	Moderate Irritation Eye, Nose, Throat	O-Up to 200 ppm S-Above 200 ppm	----	1 B
Ethyl Bromide	8,3	1090	L	200	890	----	Narcosis/Cumulative Liver, Kidney and Heart Damage	S	----	4
Ethyl Butyl Ketone (3-Heptanone)	16,8	1100	L	50	230	----	Mild Irritation Eye, Nose, Throat/ Narcosis	O-Up to 150 ppm S-Above 150 ppm	----	
Ethyl Chloride	8	1110	G	1000	2600	CIB No. 27	Narcosis	O-Up to 5000 ppm S-Above 5000 ppm	----	2
Ethyl Ether	8,16	1200	L	400	1200	-----	Narcosis/Mild Irritation Eye, Nose, Throat	O-Up to 800 ppm S-Above 800 ppm	----	1 B

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Ethyl Formate	16,8	155	L	100	300	----	Mild Irritation Eye, Nose, Throat/ Narcosis	O-Up to 200 ppm S-Above 200 ppm	----	1 B
Ethyl Mercaptan	20,4	1220	L	C 10	25	TLV-CHG CD	Odor/Acute Systemic Toxicity	S	----	1 A
Ethyl Silicate	3,16	1230	L	100	850	----	Cumulative Kidney Damage Mild Irritation-Eye, Nose, Throat	S	----	4
Ethylene	17,18	1115	G	----	---	TLV	Explosive/Simple Asphyxiation	S-If Oxygen Less Than 18% By Volume	----	1 C
Ethylene Chlorohydrin-Skin	4	1120	L	5	16	TLV-CHG	Acute Toxicity (Local and Systemic)	S	S,I	4
Ethylenediamine	15,3,9	1130	L	10	25	----	Moderate Irritation Eye, Nose, Throat, Skin/Contact Dermatitis Asthma	S	----	2
Ethylene Dibromide				(See 1,2,-Dibromoethane)						
Ethylene Dichloride				(See 1,2,-Dichloroethane)						
Ethylene Glycol Dinitrate - Skin	3	1910	L	C 0.2	1.2	CD	Cumulative Blood Pressure Lowering/ Headache	S	S	1 A
Ethylene Glycol, particulate	15	1911	L	----	---	TLV	Moderate Irritation Eye, Nose, Throat	S	----	1 B
Ethylene Glycol, vapor	15	1913	VAP	----	---	TLV	Moderate Irritation Eye, Nose, Throat	S	----	1 B
Ethylene Glycol Monomethyl Ether Acetate				(See Methyl Cellosolve Acetate)						
Ethyleneimine - Skin	1	C 1175	L	STD 1910.1012		-----	Cancer	S	S,I	1 C
Ethylene Oxide	15,3,2	1190	G	50	90	----	Moderate Irritation Eye, Nose, Throat/ Cumulative Lung, Liver and Kidney Damage/ Suspect Mutagen	S	----	4
Ethylene Thiourea				See NIOSH CIB No. 22						
Ethylidene Chloride				(See 1,1-Dichloroethane)						
Ethylidene Norbornene	15,3,5	1161	S	----	---	TLV	Moderate Irritation Eye, Nose, Throat/ Cumulative Liver and Testicular Damage	S	----	3
N-Ethyl - morpholine - Skin	4,15	1225	L	20	94	-----	Acute CNS Effects/ Moderate Irritation-Eye, Nose, Throat	S	S	1 B
Fensulfothion (Dasanit®)	6	1251	S	----	---	TLV	Cholinesterase Inhibition	S	S,I	3
Ferbam	16,2	1263	S	----	15	TLV-CHG	Mild Irritation Eye, Nose, Upper Respiratory Tract/ Suspect Carcinogen	S	----	4

SUBSTANCE	HEALTH CODE NO.	CODE NO.	PHYSICAL STATE	PEL ppm	PEL mg/m³	ADD. DATA	HEALTH EFFECTS	CLASSIFICATION OF VIOLATION	WIPE SAMPLING	WORK CATEGORY
Ferrovanadium Dust	16	1267	S	——	1	CD	Mild Irritation Upper Respiratory Tract	O	——	1 B
Fluoride (as F)	14,3	1280	S	——	2.5	CD	Marked Irritation Eye, Nose, Throat/ Cumulative Bone Damage	S	——	4
Fluorine	11,13	1270	G	0.1	0.2	TLV-CHG	Lung Edema/Kidney Damage	O-Up to 1 ppm S-Above 1 ppm	——	1 B
Fluoro-trichloromethane (F-11)	7	1285	L	1000	5600	———	Acute CNS Effects	S	——	2
Formaldehyde	14,2	1290	L	STD 1910.1000,Z-2		TLV-CHG, CD	Marked Irritation Eye, Lungs, Skin/ Suspect Carcinogen	S	I	4
Formamide	3	1292	L	——	——	TLV	Cumulative Systemic Toxicity	S	——	3
Formic Acid	14	1310	L	5	9	———	Marked Irritation- Eye, Nose, Throat, Lungs	S	——	1 B
Furfural - Skin	15	1325	L	5	20	———	Moderate Irritation Eye, Nose, Throat	S	S	1 B
Furfuryl Alcohol-Skin	15,8	1330	L	50	200	TLV-CHG	Moderate Irritation Eye, Lungs/Narcosis	S	I	2
Gasoline	16,7,18	1340	L	——	——	TLV	Mild Irritation Eye, Nose, Throat/ CNS Effects/Flammable	S-Above 500 ppm	——	4
Germanium Tetrahydride	4	1360	G	——	——	TLV	Acute Systemic Toxicity	S	——	2
Glass, Fibrous or Dust	15	1300	S	——	——	TLV,CD	Moderate Irritation Nose, Throat, Skin	S	——	1 B
Glycerin Mist	19	1363	L	——	NDS	TLV	Nuisance Particulate	O	——	1 C
Glycidol (2,3-Epoxy-1-propanol)	15,7	1365	L	50	150	———	Moderate Irritation Eye, Nose, Throat, Skin, CNS Effects	O-Up to 100 ppm S-Above 100 ppm	——	2
Glycol Monoethyl Ether				(See 2-Ethoxyethanol)						
Guthion				(See Azinphos Methyl)						
Glycidyl Ethers				See NIOSH CIB No. 29						
Graphite (natural)	10	9090	S	——	15 MPPCF	———	Cumulative Lung Damage (Pneumoconiosis)	S	——	3
Graphite (synthetic)	19	1366	S	——	NDS	TLV	Nuisance Particulate (Accumulation in Lungs)	O	——	1 C
Gypsum	19	1367	S	——	NDS	TLV	Nuisance Particulate (Accumulation in Lungs	O	——	1 C

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Hafnium	3	1368	S	---	0.5	-----	Cumulative Liver Damage	S	I	3
Helium	17	1369	G	---	---	TLV	Simple Asphyxiation	S-If Oxygen Less	-----	1 C
Heptachlor - Skin	2,3	1369	S	---	0.5	-----	Suspect Carcinogen/	S	S	4
Heptane	15,7,8	1371	L	500	2000	TLV,CD (Alkanes, C5-C8)	Moderate Irritation Eye, Nose, Lungs/ CNS Effects/Narcosis	S	-----	4
Hexachlorocyclo-pentadiene	14,11,3	1374	L	---	---	TLV	Marked Irritation Eye, Throat, Lungs/ Lung Edema/Cumulative Organ Damage	S	-----	4
Hexachloroethane - Skin	3,7	1372	S	1	10	CIB No. 27	Cumulative Organ Damage/CNS Effects	S	S	3
Hexachloro-naphthalene - Skin	3	1373	S	---	0.2	-----	Cumulative Liver Damage/Chloracne	S	S	3
Hexafluoroacetone	3,5	1375	L	---	---	TLV	Multiple Cumulative Organ Damage	S	-----	3
Hexamethylphosphoric triamide (HMPA)				See NIOSH CIB NO.6						
n-Hexane	7,8	1380	L	500	1800	TLV,CD (Alkanes C5-C8)	Polyneuropathy/ Narcosis	S	-----	4
2-Hexanone (MBK) - Skin	7,15	1696	L	100	410	TLV,CD	Polyneuropathy/ Moderate Irritation-Eye, Nose, Throat	S	S	4
Hexone (MIK) - Skin	15	1385	L	100	410	-----	Moderate Irritation Eye, Nose, Throat	O-Up to 200 ppm S-Above 200 ppm	S	1 B
sec-Hexyl Acetate	16	1387	L	50	300	-----	Mild Irriation-Eye, Nose, Throat	O-Up to 100 ppm S-Above 100 ppm	-----	1 B
Hexylene Glycol	16	1389	L	---	---	TLV	Mild Irritation Eye, Nose, Throat, Skin/Narcosis	O-Up to 50 ppm S-Above 50 ppm	-----	1 B
Hydrazine - Skin	14,3,2	1390	L	1	1.3	TLV-CHG, CD	Marked Irritation Respiratory Tract/ Cumulative Organ Damage/ Suspect Carcinogen	S	S,I	4
Hydrogen	17,18	1410	G	---	---	TLV	Explosive/Simple Asphyxiation	S-If Oxygen Less Than 18% By Volume	-----	1 C
Hydrogenated Terphenyls	3,10	1415	S	----	---	TLV	Cumulative Liver, Kidney, Lung Damage	S	-----	3

SUBSTANCE	HEALTH CODE NO.	CODE NO.	PHYSICAL STATE	PEL ppm	PEL mg/m3	ADD. DATA	HEALTH EFFECTS	CLASSIFICATION OF VIOLATION	WIPE SAMPLING	WORK CATEGORY
Hydrogen Bromide	14,11	1420	G	3	10	----	Marked Irritation Nose, Throat/Acute Lung Damage	S	------	1 B
Hydrogen Chloride	14,11	1430	G	C 5	7	------	Marked Irritation Eye, Nose, Throat/ Lung Edema	S	------	1 A
Hydrogen Cyanide-Skin	4,3	1440	G	10	11	CD	Acute and Cumulative Systemic Toxicity (Cyanosis)	S	S	4
Hydrogen Fluoride	14,11,3	1460	G	3	2	CD	Marked Irritation Eye, Nose, Throat/ Acute Lung Damage/ Cumulative Bone Damage	S	------	4
Hydrogen Peroxide, (90%)	14,11,18	1470	L	1	1.4	----	Marked Irritation Eye, Nose, Throat, Skin/Acute Lung Damage/Explosive	S	------	1 B
Hydrogen Selenide	11,7,3	1475	G	0.05	0.2	----	Acute Lung Damage/ CNS Effects/Liver Damage	S	------	4
Hydrogen Sulfide	4,15,7	1480	G	STD 1910.1000,z-2		TLV-CHG, CD	Acute Systemic Toxicity/Moderate Irritation-Eye, (Conjunctivitis), Lungs/ CNS Effects	S	------	2
Hydroquinone	3,7	1490	S	------	2	CD	Cumulative Corneal Damage/CNS Effects	S	------	3
Indene	15,3	1500	L	------	------	TLV	Moderate Irritation Eye, Nose, Throat/ Cumulative Liver and Kidney Damage	S	------	4
Indium & Compounds (as In)	10,3,5	1510	S	------	------	TLV	Cumulative Lung, Other Organ Damage/ Suspect Teratogen ($InNO_3$)	S	------	3
Iodine	14,11	1515	S	C 0.1	1	-------	Marked Irritation Eye, Nose, Throat/ Lung Edema	S	------	1 A
Iodoform	15,4	1517	S	------	------	TLV	Moderate Irritation Eye, Nose, Throat, Lungs/Acute CNS Effects	S	------	2
Iron Oxide Fume	10	1520	FUM	------	10	TLV-CHG	Lung Changes (Siderosis)	O	------	3
Iron Pentacarbonyl	4,11	1521	L	------	------	TLV	Acute Toxicity CNS and Lungs)	S	------	2
Iron Salts, Soluble (as Fe)	15	1522	S	------	------	TLV	Moderate Irritation Upper Respiratory Tract, Skin	S-Above 2 mg/m^3	------	1 B
Isoamyl Acetate	15	1530	L	100	525	-------	Moderate Irritation Upper Respiratory Tract	O-Up to 200 ppm S-Above 200 ppm	------	1 B

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Isoamyl Alcohol	16,8,2	1532	L	100	360	———	Mild Irritation Eye, Nose, Throat/ Narcosis/Suspect Carcinogen	O-Up to 200 ppm S-Above 200 ppm	S	4
Isobutyl Acetate	15	1534	L	150	700	———	Moderate Irritation Eye, Nose, Throat	O-Up to 300 ppm S-Above 300 ppm	———	1 B
Isobutyl Alcohol	15,2	1536	L	100	300	TLV-CHG	Moderate Irritation Eye, Nose, Throat/ Suspect Carcinogen	S	———	4
Isophorone	14,7	1538	L	25	140	TLV-CHG	Marked Irritation Eye, Nose, Throat/ Chronic CNS Effects	S	———	4
Isophorone Diisocyanate- Skin	9,14	1539	L	———	———	TLV	Respiratory Sensitization/Marked Irritation-Eye, Nose, Throat, Lungs, Skin	S	S	4
Isopropyl Acetate	16	1540	L	250	950	———	Mild Irritation- Eye, Nose, Throat	O-Up to 500 ppm S-Above 500 ppm	———	1 B
Isopropyl Alcohol - Skin	16,8	1560	L	400	980	CD	Mild Irritation Eye, Nose, Throat/ Narcosis	O-Up to 800 ppm S-Above 800 ppm	S	4
Isopropylamine	14	1562	L	5	12	———	Marked Irritation- Eye, Nose, Throat, Lung	O-Up to 10 ppm S-Above 10 ppm	S	1 B
Isopropyl Ether	16	1565	L	500	2100	TLV-CHG	Mild Irritation Eye, Nose, Throat	S	———	1 B
Isopropyl Glydidyl Ether (IGE)	15,3	1567	L	50	240	CD	Moderate Irritation Eye, Nose, Throat, Skin, Skin Sensitization	O-Up to 100 ppm S-Above 100 ppm	———	4
Kaolin	19	1568	S	———	NDS	TLV	Nuisance Particulate Accumulation in Lungs	O	———	1 C
Ketene	11	1574	G	0.5	0.9	———	Marked Irritation, Edema-Lungs	S	———	2
Lead Arsenate (as Pb)	3,2	1590	S	———	0.15	CD (As, Pb)	Cumulative Organ Toxicity/Suspect Carcinogen	S	I	4
Lead, Inorganic Fumes & Dusts (as Pb)	12,7,5	1591	S	STD 1910.1025		TLV-CHG, CD	Cumulative Blood and Neurologic Effects/Reproductive Hazard	S	I	2
Limestone	19	1593	S	———	NDS	TLV	Nuisance Particulate Accumulation in Lungs	O	———	1 C
Lindane - Skin	7,3,2	1595	S	———	0.5	———	Cumulative CNS and Liver Damage/ Suspect Carcinogen	S	S,I	4

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Lithium Hydride	14,11,7	1503	S	—	0.025	—	Marked Irritation Eye, Nose, Throat, Skin/Lung Damage/CNS Effects	S	—	1 B
LPG (Liquified Petroleum Gas)	18,17,8	1803	G	1000	1800	—	Explosive/ Asphyxiant/Narcosis	O-Up to 2000 ppm S-Above 2000 ppm	—	2
Magnesite	19	1615	S	—	NDS	TLV	Nuisance Particulate/ Accumulation in Lungs	O	—	1 C
Magnesium Oxide Fume	11	1610	S	—	15	TLV-CHG	Lung Effects (Fume Fever)	S	—	2
Malathion - Skin	6	1616	L	—	15	TLV-CHG, CD	Cholinesterase Inhibition	O-Up to 30 mg/m³ S-Above 30 mg/m³	S	3
Maleic Anhydride	14,9,2	1618	S	0.25	1	—	Marked Irritation Eye, Nose, Throat, Lungs (Edema), Skin/ Asthma	S	I	2
Manganese & Compounds (as Mn)	7,10	1620	S	—	C 5	—	Cumulative CNS Damage/Lung Damage	S	—	1 A
Manganese Cyclopentadienyl Tricarbonyl (as Mn) Skin	4,7,3	1622	S	—	—	TLV	Acute CNS and Blood Effects/Cumulative Kidney Damage	S	S,I	4
Marble	19	1626	S	—	—	TLV	Nuisance Particulate Accumulation in Lungs	O	—	1 C
Mercury, (Organo) Alkyl Compounds, (as Hg) - Skin	7,3,14	1630	VAR	—	0.1	TLV-CHG	Acute and Cumulative CNS Damage/Marked Skin Irritation	S	S,I	4
Mercury, Inorganic (as Hg) - Skin	7,3,2	1631	VAR	—	0.1	TLV-CHG, CD	Acute and Cumulative CNS Damage/Gastro-intestinal Effects/Gingivitis/ Suspect Carcinogen	S	S,I	4
Mesityl Oxide	16	1635	L	25	100	—	Mild Irritation- Eye, Nose, Throat	O-Up to 50 ppm S-Above 50 ppm	—	1 B
Methane	18,17	1640	G	—	—	TLV	Explosive/Simple	S-If Oxygen	—	1 C
Methanethiol				(See Methyl Mercaptan)						
Methomyl (Lannate®) - Skin	L	1644	S	—	—	TLV	Cholinesterase Inhibition	S-Above 5 mg/m³	S	3
Methoxychlor	3	1646	S	—	15	TLV-CHG	Cumulative Kidney Damage	S	—	3
2 Methoxyethanol				(See Methyl Cellusolve)						
4-Methoxy-m-Phenylenediamine				(See 2,4-Diaminoanisole)						

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Methyl Acetate	16,8,7	1650	L	200	610	----	Mild Irritation-Eye Nose, Throat, Lungs/ Narcosis/CNS Effects	S	----	4
Methyl Acetylene (Propyne)	18,6	1651	G	1000	1650	----	Explosive/Narcosis	O-Up to 2000 ppm S-Above 2000 ppm	----	1 C
Methyl Acetylene - Propadiene Mix (MAPP)	18	1652	G/L	1000	1800	----	Flammable	O-Up to 2000 ppm S-Above 2000 ppm	----	1 C
Methyl Acrylate - Skin	14,4,3	1653	L	10	35	----	Marked Irritation-Eye, Nose, Throat, Skin/Acute Lung Damage/Cumulative Lung, Liver and Kidney Damage	O-Up to 30 ppm S-Above 30 ppm	S	1 B
Methyl Acrylonitrile - Skin	7,16	1654	L	----	----	TLV	Cumulative CNS Effects/Mild Irritation-Eye, Skin	S-Above 2 ppm	----	3
Methylal (Dimethoxymethane)	3	1655	L	1000	3100	----	Cumulative Systemic Toxicity	S	----	3
Methyl Alcohol - Skin	7,8,16	1660	L	200	260	CD	Narcosis/Cumulative CNS Effects/Mild Irritation-Eye, Nose, Throat,	O-Up to 400 ppm S-Above 400 ppm	S	4
Methylamine	14	1665	G	10	12	----	Marked Irritation-Eye, Nose, Throat, Skin	S	----	1 E
Methyl Amyl Alcohol				(See Methyl Isobutly Carbinol)						
Methyl n-Amyl Ketone (2-Heptanone)	15,8	1675	L	100	465	CD	Moderate Irritation-Eye, Nose, Throat/ Narcosis	O-Up to 300 ppm S-Above 300 ppm	----	1 B
Methyl Bromide - Skin	4,11,13	1680	G	C 20	80	TLV-CHG	Acute Lung Damage/ Cumulative CNS and Organ Damage	S	S	1 A
Methyl Butyl Ketone				(See 2-Hexanone)						
Methyl Cellosolve (2-methoxyethanol) - Skin	12,7	0590	L	25	80	----	Blood Disorders/ CNS Effects	S	S	3
Methyl Cellosolve Acetate (Ethylene Glycol Monomethyl Ether Acetate) - Skin	12,7,3	1170	L	25	120	----	Blood Disorders/ CNS Effects/Kidney Damage	S	S	3

SUBSTANCE	HEALTH CODE NO.	CODE NO.	PHYSICAL STATE	PEL ppm	PEL mg/m³	ADD. DATA	HEALTH EFFECTS	CLASSIFICATION OF VIOLATION	WIPE SAMPLING	WORK CATEGORY
Methyl Chloride	4,7,3	1710	G	STD 1910.1000, Z-2		——	Acute and Chronic CNS Effects/Liver and Kidney Damage	S	——	4
Methyl Chloroform	16,8	1720	L	350	1900	CB, CIB No. 27	Mild Irritation Eye, Nose, Throat/Narcosis	S	——	1 B
Methyl Chloromethyl Ether	1	C 2640	L	STD 1910.1006		——	Cancer-Lung	S	——	1 C
Methyl 2-Cyanoacrylate	15	1735	L	——	——	TLV	Moderate Irritation Eye, Nose, Throat	S-Above 4 ppm	——	1 B
Methylcyclohexane	8	1740	L	500	2000	TLV-CHG	Narcosis	O-Up to 1000 ppm S-Above 1000 ppm	——	4
Methylcyclohexanol	16,8,3	1760	L	100	470	TLV-CHG	Mild Irritation-Eye, Respiratory Tract/Narcosis/ Cumulative Liver and Kidney Damage	S	——	4
o-Methylcyclohexanone-Skin	16,8	1765	L	100	460	TLV-CHG	Mild Irritation Eye, Nose, Throat/ Narcosis	S	S	2
Methylcyclopentadienyl Manganese Tricarbonyl (as Mn) - Skin	4,3,15	1767	S	——	——	TLV	Acute CNS Effects/ Cumulative Liver, Kidney Damage/ Moderate Eye Irritation	S	S	4
Methyl Demeton - Skin	6	1768	S	——	——	TLV	Cholinesterase Inhibition	S	S,I	3
4,4'-Methylene bis (2-Chloroaniline) (MOCA) - Skin	1	C 2650	S	STD 1910.1005		——	Cancer	S	S,I	1 C
Methylene Bis (4-Cyclohexylisocyanate)	14,3,9	2651	S	——	——	TLV	Marked Irritation Skin/Skin Sensitization/ Asthma	S	I	4
Methylene Bisphenyl Isocyanate (MDI)	9,14	1073	S	C 0.02	0.2	CD	Asthma/Marked Irritation-Eye, Nose,Throat, Skin	S	I	1 A
Methylene Chloride (Dichloromethane)	17,3,8	1730	L	STD 1910.1000, Z-2		TLV-CHG	Chemical Anoxia (Metabolic Conversion to CO)/ Chronic Liver Damage/ CNS Effects/Narcosis	S	——	4
Methyl Ethyl Ketone (MEK)				(See 2-Butanone)						
Methyl Ethyl Ketone Peroxide	14,3,2	1750	L	——	——	TLV	Marked Irritation Eye, Nose, Throat, Lungs/Cumulative Liver and Kidney Damage/ Suspect Carcinogen	S	I	4
Methyl Formate	8,15	1770	L	100	250	——	Narcosis/Moderate Irritation-Eye, Nose, Throat, Lungs	O-Up to 200 ppm S-Above 200 ppm	——	1 B

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SUBSTANCE	HEALTH CODE NO.	CODE NO.	PHYSICAL STATE	PEL ppm	PEL mg/m3	ADD. DATA	HEALTH EFFECTS	CLASSIFICATION OF VIOLATION	WIPE SAMPLING	WORK CATEGORY
Methyl Iodide - Skin	4,3,2	1772	L	5	28	-----	Acute and Cumulative CNS Effects/Suspect Carcinogen	S	S,I	4
Methyl Isoamyl Ketone	15,8	1776	L	----	----	TLV,CD	Moderate Irritation-Eye,	S-Above 200 ppm	-----	1 B
Methyl Isobutyl Carbinol - Skin	15,8	1670	L	25	100	CD	Moderate Irritation Eye, Nose, Throat/ Narcosis	O-Up to 50 ppm S-Above 50 ppm	-----	1 B
Methyl Isoamyl Ketone				(See Hexone)						
Methyl Isocyanate - Skin	9,14,11	1773	L	0.02	0.05	-----	Asthma/Marked Irritation-Eye, Nose, Throat, Skin/ Lung Edema	S	S,I	1 B
Methyl Mercaptan	20,15	1643	L	C 10	20	TLV-CHG,	Odor/Moderate Irritation-Eye, Nose, Throat	S	-----	1 A
Methyl Methacrylate	16,2	1774	L	100	410	-----	Mild Irritation-Eye, Nose, Throat/Suspect Carcinogen	S	-----	4
Methyl Propyl Ketone				(See 2-Pentanone)						
alpha Methyl Styrene	15,7,8	1782	L	C 100	480	-----	Moderate Irritation Eye, Nose, Throat/ CNS Effects/Narcosis	S	-----	2
Methyl Parathion - Skin	6,5	1775	S	----	----	TLV-CD	Cholinesterase Inhibition/Suspect Teratogen	S-Above 0.5 mg/m3	S,I	3
Methyl Silicate	4,14,3	1777	S	----	----	TLV	Severe Eye, Damage/ Marked Irritation-Eye, Nose, Throat, Lungs/Kidney Damage	S	I	4
Mica (less than 1% Quartz)	10	9075	S	20 MPPCF		-----	Accumulation in Lungs (Pneumoconiosis)	S	-----	3
Mineral Wool Fiber	15	1781	S	----	----	TLV	Moderate Irritation Nose, Throat, Skin	S	-----	1 B
Molybdenum (as Mo) (Insolubles)	3,16	1790	S	----	15	TLV-CHG	Cumulative Liver and Kidney Damage/ Blood Disorders/Mild Irritation-Eye, Nose, Throat, Lung	S	-----	3
Molybdenum (as Mo) (Solubles)	3,16	1791	S	----	5	-----	Cumulative Liver and Kidney Damage/ Blood Disorders/Mild Irritation-Eye, Nose, Throat, Lung	S	-----	3
Monocrotophos (Azodrin®)	6	2690	S	----	----	TLV	Cholinesterase Inhibition	S	-----	3
Monomethyl Aniline - Skin	13,12	1972	L	2	9	-----	Methemoglobinemia/ Anemia	S	S	3

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Monomethyl Hydrazine - Skin	4,2,5	1794	L	C 0.2	0.35	CD	Acute Lung/CNS and Blood Damage/ Suspect Carcinogen and Teratogen	S	S,I	1 A
Morpholine - Skin	15,3	1797	L	20	70	——	Moderate Irritation Eye, Nose, Throat/ Cumulative Liver and Kidney Damage	O-Up to 40 ppm S-Above 40 ppm	S	1 B
Naphtha (Coal Tar)	15,8	0710	L	100	400	CD	Moderate Irritation Eye, Throat/Narcosis	O-Up to 200 ppm S-Above 200 ppm	——	2
Naphthalene	14,3,2	1810	S	10	50	——	Marked Irritation-Eye, Nose, Throat/ Ocular Damage/Anemia/ CNS/Damage/Suspect Carcinogen	S	I	4
alpha-Napthylamine	1	C 1815	S	STD 1910.1004		——	Cancer-Bladder (Suspect)	S	I	1 C
beta-Napthylamine	1	C 1820	S	STD 1910.1009		CIB No. 16	Cancer-Bladder	S	I	1 C
Neon	17	1850	G	——	——	TLV	Simple Asphyxiation	S-If Oxygen Less Than 18% By Volume	——	1 C
Nickel (Soluble Compounds)	2,10,3	1840	S	——	1	TLV-CHG, CD	Suspect Carcinogen/ Cumulative Lung Damage/Dermatitis	S	I	4
Nickel Carbonyl	2,4	1841	L	0.001	0.007	TLV-CHG	Suspect Carcinogen/ Acute	S	I	4
Nickel, Metal & Insoluble Compounds	2,10,3	1842	S	——	1	CD	Suspect Carcinogen Cumulative Lung Damage/Dermatitis	S	I	4
Nicotine - Skin	4,7,5	1855	L	——	0.5	——	Acute Systemic Toxicity/CNS Damage Suspect Teratogen	S	S,I	3
Nitric Acid	4,14	1860	L	2	5	CD	Acute Lung Damage/ Marked Irritation Eye, Nose, Throat, Skin	O-Up to 4 ppm S-Above 4 ppm	——	2

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Nitric Oxide	13,7	1890	G	25	30	CD (Oxides of Nitrogen)	Methemoglobinemia/ CNS Effects	O-Up to 50 ppm S-Above 50 ppm	----	4
p-Nitroaniline - Skin	13,3	1865	S	1	6	----	Methemoglobinemia/ Cumulative Liver Damage	S	S	3
Nitrobenzene - Skin	13,12,7	1870	L	1	5	----	Methemoglobinemia/ Anemia/CNS Effects	O-Up to 3 ppm S-Above 3 ppm	S	3
4-Nitrobiphenyl	1	C 1875	S	STD 1910.1003		----	Cancer-Bladder	S	I	1 C
p-Nitrochlorobenzene Skin	13,12	1872	S	—	1	----	Methemoglobiemia/ Anemia	O-Up to 2 mg/m³ S-Above 2 mg/m³	S	3
Nitroethane	15,8	1880	L	100	310	----	Moderate Irritation Respiratory Tract/ Narcosis	O-Up to 300 ppm S-Above 300 ppm	----	2
Nitrogen	17	1900	G	—	—	TLV	Simple Asphyxiation	S-If Oxygen less than 18% By Volume	----	1 C
Nitrogen Dioxide	10,11	1903	G	C 5	9	TLV-CHG CD (Oxides of Nitorgen)	Cumulative Lung Damage (Bronchitis, Emphysema)/Lung Edema	S	----	3
Nitrogen Trifluoride	13,3	1907	G	10	29	----	Methemoglobinemia Cumulative Liver and Kidney Damage	S	----	3
Nitroglycerin - Skin	3	1912	L	C 0.2	2	CD	Cumulative Effect on Blood Pressure (Lowering) Headache	S	S	1 A
Nitromethane	16,8	1920	L	100	250	----	Mild Irritation-Eye, Nose, Throat/ Narcosis2-Nitropropane	O-Up to 300 ppm S-Above 300 ppm	----	2
1-Nitropropane	15,3	1940	L	25	90	----	Moderate Irritation-Eye, Nose, Throat/ Cumulative Liver Damage	O-Up to 75 ppm S-Above 75 ppm	----	4
2-Nitropropane	3,2,15	1941	L	25	90	CIB	Cumulative Liver Damage/Suspect Carcinogen/Moderate Irritation-Eye, Nose, Throat	S	----	4
n-Nitrosodimethylamine - Skin	1	C 1942	L	STD 1010.1016		----	Cancer	S	S,I	1 C
Nitrotrichloromethane				(See Chloropicrin)						
Nitrotoluene - Skin	13	1945	L	5	30	----	Methemoglobinemia	S	S	3
Nitrous Oxide	5,7	1953	G	—	—	TLV,CD	Reproductive Hazard (Male and Female)/ CNS Effect	S-Above 100 ppm	----	3
Nonane	16,8	----	L	—	—	TLV	Mild Irritation-Eye, Nose, Throat/ Narcosis	S-Above 500 ppm	----	1 B

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Octachloronaphthalene - Skin	3	1955	S	——	0.1	——	Cumulative Liver Damage/Chlorance	S	S	3
Octane	16,8	1957	L	500	2350	TLV-CHG CD (Alkanes C5-C8)	Mild Irritation/	O-Up to 500 ppm S-Above 500 ppm	——	1 B
Oil Mist (Mineral)	18,10	5010	L	——	5	——	Good Housekeeping Practice/ Accumulation in Lungs (Pneumonitis)	O	——	1 C
Osmium Tetroxide (as Os)	14,11	1960	S	——	0.002	——	Marked Irritation-Eye, Nose, Throat, Brofchi, Lungs/Lung Edema	S	——	1 B
Oxalic Acid	14	1970	S	——	1	——	Marked Irritation-Eye, Nose, Throat, Skin	S	——	1 B
Oxygen Difluoride	14,11,3	1975	G	0.05	0.1	——	Marked Irritation-Respiratory Tract/ Marked Edema-Lungs/ Cumulative Kidney Damage	S	——	4
Ozone	14,11	1980	G	0.1	0.2	——	Marked Irritation-Respiratory Tract/ Lung Edema	S	——	4
Paraffin Wax Fume	16	2000	S	——	NDS	TLV	Mild Irritation-Eye, Nose, Throat	O	——	1 B
Paraquat - Skin	3,16,5	1982	S	——	0.5	——	Cumulative Systemic Lung Damage/Mild Irritation-Eye, Nose, Throat/Suspect Teratogen	S	I	3
Parathion - Skin	6,5	1984	L	——	0.1	CD	Cholinesterase Inhibition/Suspect Teratogen	S	S,I	3
Pentaborane	4,7	1986	L	0.005	0.01	——	Acute and Cumulative CNS Damage	S	——	4
Pentachloronaphthalene - Skin	3,14,2	1988	S	——	0.5	——	Acute Systemic Toxicity - Vascular and CNS Injury/ Marked Irritation-Eye and Nose/Suspect Carcinogen	S	S,I	4
Pentachlorophenol - Skin	4,3,7	1989	S	——	0.5	——	Acute Sytemic Toxicity/Vascular and Nervous System Injury/Chloracne	S	S,I	4
Pentaerythritol	19	1987	S	——	NDS	TLV	Nuisance Particulate	O	——	1 C
Pentane	18,8	1990	L	1000	2950	TLV-CHG, CD (Alkanes C5-C8)	Flammable/Narcosis	O-Up to 3000 ppm S-Above 3000 ppm	——	1 B

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2-Pentanone	15,8	2010	L	200	700	——	Moderate Irritation-Eye, Nose, Throat/ Narcosis	C-Up to 400 ppm S-Above 400 ppm	——	2
Perchloroethylene (Tetrachloroethylene) - Skin	3,8,2	2020	L	STD 1910.1000, Z-2		CD, CIB No. 20	Cumulative Liver and CNS Damage/ Narcosis/Suspect Carcinogen	S	S	4
Perchloromethyl Mercaptan	14,2	2030	L	0.1	0.8	-----	Marked Irritation-Eye, Nose, Throat/ Suspect Carcinogen	S	——	4
Perchloryl Flouride	13,12, 15	2033	G	3	13.5	——	Methemoglobinemia/ Anemia/Moderate Irritation-Eye, Nose, Throat	S	——	4
Perlite (less than 1% Quartz)	19%	2035	S	——	NDS	TLV	Nuisance Particulate - Accumulation in Lungs	O	——	1 C
Petroleum Distillates (Naphtha)	15,8	2037	L	500	2000	TLV-CHG, CD (Refined Petroleum Solvents)	Moderate Irritation Narcosis	S	——	1 B
Phenacylchloride				(See alpha-chloroacetophenone)						
Phenol - Skin	14,4,2	2040	S/L	5	19	CS	Marked Irritation-Eye, Nose, Throat, Lungs/Acute and Chronic Systemic Toxicity/Suspect Carcinogen	S	S,I	4
Phenothiazine - Skin	15,3	2041	S	——	——	TLV	Moderate Irritation-Skin/ Photosensitization-Skin	S-Above 10 mg/m3	S	2
Phenyl Ether (vapor)	7,16,3	2047	L	1	7	——	Nausea/Mild Irritation-Eye, Skin/Cumulative Liver and Kidney Damage	S	——	4
Phenyl Ether-Biphenyl Mix (vapor)	7,16,3	2053	L	1	7	——	Nausea/Mild Irritation-Eye, Skin/Cumulative Liver and Kidney Damage	S	——	4
p-Phenylene Diamine - Skin	9,3	2042	S	——	0.1	——	Respiratory Sensitization (Asthma)/Contract Skin Irritant Sensitizer	S	S	2
Phenylglycidyl Ether (PGE)	15,3,8	2057	L	10	60	CD	Moderate Irritation Eye, Nose, Throat, Skin/Skin Sensitization/Narcosis	S	——	2
Phenylhydrazine - Skin	12,3	2060	L	5	22	CD	Hemolytic Anemia/ Skin Irritation and Sensitization	S	S	4

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Phenylphosphine	12,7,5	2062	L	----	----	TLV	Hemolytic Anemia/ CNS Effects/ Testicular Damage	S	----	3
Phorate (Thimet®) - Skin	6	2064	L	----	----	TLV	Cholinesterase Inhibition	S	S,I	3
Phosdrin (Mevinphos®)	6	2065	L	----	0.1	----	Cholinesterase Inhibition	S	S,I	3
Phosgene (Carbonyl Chloride)	11,10	2070	G	0.1	0.4	TLV,CD	Marked Edema-Lungs Chronic Lung Disease	S	----	4
Phosphine	4,7,11	2080	G	0.3	0.4	----	Acute and Chronic Systemic Toxicity (CNS Effects, Lung Edema, Anemia)	S	----	4
Phosphoric Acid	14	2085	L	----	1	----	Marked Irritation- Eye, Nose, Throat	O-Up to 2 mg/m3 S-Above 2 mg/m3	----	1 B
Phosphorus (yellow)	3	2090	S	----	0.1	----	Cumulative Bone and Liver Damage	S	I	3
Phosphorus Penta-chloride	14,10,11	2091	S	----	1	----	Marked Irritation- Eye, Nose, Throat, Bronchitis/Lung Edema	S	----	2
Phosphorus Pentasulfide	14,4	2092	S	----	1	----	Marked Irritation- Respiratory Tract/ H_2S Hazard	S	----	1 B
Phosphorus Trichloride	14,10,11	2093	L	0.5	3	----	Marked Irritation- Eye, Nose, Throat, Bronchi, Lungs/ Bronchial Pneumonia	S	----	1 B
Phthalic Anhydride	14,9,3	2110	S	2	12	TLV-CHG	Marked Irritation- Eye, Nose, Throat, Lungs/Asthma/Contact Skin Irritant and Sensitizer	S	----	2
m-Phthalodinitrile	19	2015	S	----	NDS	TLV	Particulate (Apparent Low Toxicity)	S-Above 15 mg/m3	----	1 C
Picloram (Tordon®)	19	2017	S	----	NDS	TLV	Particulate (Apparent Low Toxicity)	O	----	1 C
Picric Acid - Skin	3	2120	S	----	0.1	----	Skin Irritant and Sensitizer Cumulative Liver, Kidney and Red Blood Cell Damage	S	S	3
Pival® (2 Pivalyl-1 3-indandione)	3	2125	S		0.1	----	Cumulative Anticoagulant Effect (Warfarin Analogy)	S	----	3
Plaster of Paris	19	2127	S	----	NDS	TLV	Nuisance Particulate	S	----	1 C
Platinum (soluble salts as Pt.)	9,3	2130	S	----	0.002	----	Respiratory Sensitization (Asthma/Dermatitis	S	----	1 B

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Polychlorinated Biphenyls (PCB)				(See Chlorodiephenyl)						
Polytetra-fluoroethylene Decomposition Products	4	2135	VAR	---	---	TLV,CD (Decomp. Prod. of Flourocarbon Polymers)	Acute Toxic Effects (Polymer Fume Fever)	S	---	2
Portland Cement (Less than 1% Quartz)	19,16	0577	S	---	50 MPPCF	TLV-CHG	Nuisance Particulate/Mild Irritation-Eye and Nose	O—If quartz content <1% S—Otherwise	---	2
Potassium Hydroxide	14	2140	S	---	---	TLV	Marked Irritation-Eye, Nose, Throat, Lungs Skin	S	---	1 B
Propane	18,7	2150	G	1000	1800	---	Explosive/CNS Effects	S	---	1 C
Propargyl Alcohol - Skin	14	C 2167	L	---	---	TLV	Marked Irritation-Eye Nose, Throat, Skin	S	S	1 B
Beta-Propiolactone	1	C 2163	L	STD 1910.1013	---	TLV	Marked Irritation-Eye, Nose, Throat, Skin	S	S	1 B
n-Propyl Acetate	16,8	2180	L	200	840	---	Mild Irritation-Eye, Nose Throat/Narcosis	O-Up to 600 ppm S-Above 600 ppm	---	1 B
Propyl Alcohol -Skin	16,8,2	2170	L	200	500	---	Mild Irritation-Eye, Nose, Throat/Narcosis/ Suspect Carcinogen	S	S	1 B
n-Propyl Nitrate	3,13	2185	L	25	110	---	Cumulative Systemic Effects (Methemoglobinemia.	S	S	3
Propylene Dichloride	3	2190	L	75	350	---	Cumulative Liver Damage	S	S	3
Propylene Glycol Monomethyl Ether	15,8	2210	L	---	---	TLV	Moderate Irritation Eye, Nose, Throat/ Narcosis	S-Above 200 ppm	---	2
Propylene Imine - Skin	15,4,	2213	L	2	5	---	Moderate Irritation Eye, Nose, Throat/ Acute Kidney and Lung Damage/Suspect Carcinogen	S	S,I	4
Propylene Oxide	15,3,2	2215	L	100	240	---	Moderate Irritation Eye, Nose, Throat, Lungs, Skin/ Cumulative CNS, Kidney and Liver Damage/Suspect Carciongen	S	I	4
Propyne				(See Acetylene)						
Pyrethrum	3,16	2216	S	---	5	---	Contact and Allergic Dermatitis Mild Irritation-Lungs	O-Up to 10 mg/m³ S-above 10 mg/m³	S	3
Pyridine	3,7	2220	L	5	15	---	Cumulative Liver, Kidney and Bone Marrow/Damage CNS Effects	S	S	3

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Quinone (p-Benzoquinone)	4,3,2	2222	S	0.1	0.4	-----	Acute and Cumulative-Eye (Corneal) Damage/ Suspect Carcinogen	S	I	4
Radon Daughters				See NIOSH CIB No. 10						
RDX (cyclotrimethylene Trinitramine) - Skin	7	2224	S	---	---	TLV	Chronic CNS Effects (Nausea, Convulsions)	S	S	3
Resorcinol	15,3	2221	S	---	---	TLV	Moderate Irritation-Eye, Nose, Throat, Skin/Cumulative Systemic Toxicity	S-Above 15 ppm	-----	4
[illegible], Metal Fume	9	2223	S	---	0.1	-----	Respiratory Sensitization	S	-----	1 B
Rhodium, Soluble Salts (Rh)	9,2	2225	S	---	0.001	-----	Respiratory Sensitization (Asthma) Suspect Carcinogen	S	-----	4
Ronnel	6	2226	S	---	10	TLV-CHG	Cholinesterase Inhibition	O-Up to 20 mg/m³ S-Above 20 mg/m³	-----	3
Rosin Core Solder . Pyrolysis Products (as Formaldehyde)	14	2227	VAR	---	---	TLV	Marked Irritation-Eye, Nose, Throat	S	-----	1 B
Rotenone (Commercial)	3,16,2	2228	S	---	5	-----	Cumulative Systemic Toxicity Mild Irritation-Nose, Throat Suspect Carcinogen	S	I	4
Rouge	19	2229	S	---	NDS	TLV	Nuisance Particulate-Accumulation in Lungs	O	-----	1 C
Rubber Solvent	7,8	2232	L	---	---	TLV,CD (Refined Petroleum Solvents)	Cumulative Central and Peripheral Nervous System Damage/Narcosis	S	-----	3
Selenium Compounds (as Se)	15,3,2	2230	S	---	0.2	-----	Moderate Irritation-Eye	S	I	4
Selenium Hexaflouride (as Se)	11	2231	G	0.05	0.4	-----	Lung Edema	S	-----	4
Silica (Amorphous)	19,10	9050	S	---	20 MPPCF	-----	Good Housekeeping Practice/Possible Pneumoconiosis	S	-----	3
Silica (Fused)	10	9013	S	Use Quartz Formula		-----	Pneumoconiosis	S	-----	3

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Silica (Quartz), Respirable	10	9010	S	$\frac{10mg/m3}{\%SiO_2+2}$		CD	Pneumoconiosis (Silicosis)	S	----	3
Silicon	19	2235	S	----	NDS	TLV	Nuisance Particulate-Accumulation in Lungs	O	----	1 C
Silicon Carbide	19	2235	S	----	NDS	TLV	Nuisance Particulate (Accumulation in Lungs)	O	----	1 C
Silicon Tetrahydride (Silane)	4	2237	G	----	----	TLV	Acute Systemic Toxicity by (Analogy with other Metal Hydrides)	S	----	2
Silver, Metal & Soluble Compound (as Ag)	3	2240	S	----	----	0.01	Cumulative Skin Pigmentation and Organ Accumulation	S	I	3
Soapstone	10	9085	S	----	20 MPPCF	----	Pneumoconiosis-	S	----	3
Sodium Azide	4,15	2243	S	----	----	TLV,CIB No. 13	Acute CNS and Blood Pressure Effects/ Mild Irritant-Eye	S	----	2
Sodium Fluoroacetate (1080) - Skin	4	2250	S	----	0.05	----	Acute Systemic Toxicity (Metabolic Poison)	S	I	2
Sodium Hydroxide	14	2260	S	----	2	TLV-CHG,	Marked Irritation-Eye, Nose, Throat, Lungs, Skin	S	----	1 B
Starch	19	2263	S	----	NDS	TLV	Nuisance Particulate	O	----	1 C
Stibine	4	2267	G	0.1	0.5	----	Acute Systemic Toxicity	S	----	4
Stoddard Solvent	16,8	2270	L	500	2900	TLV-CHG, CD - (Refined Petroleum Solvents	Mild Irritation-Eye Nose Throat/Narcosis	S	----	4
Strychnine	4	2275	S	----	0.15	----	Acute Systemic Toxicity, CNS (Convulsions and Paralysis)	S	S	4
Styrene monomer (Phenyethylene)	15,7,8	2280	S	STD 1900.1000,Z-2		TLV-CHG	Moderate Irritation Eye, Nose, Throat/CNS Effects/Narcosis	S	----	2
Subtilisins (Proteolytic Enzymes)	9,10,16	9220	S	----	----	TLV	Respiratory Allergy (Asthma and Lung Damage/) Mild Skin Irritant	S	----	2
Sucrose	19	2285	S	----	NDS	TLV	Nuisance Particulate	O	----	1 C
Sulfur Dioxide	14,4	2290	G	5	13	CD	Marked Irritation Eye Nose, Throat, Lungs/Broncho-constriction	S	----	1 B
Sulfur Hexafluoride	19	2300	G	1000	6000	----	Apparent Low Toxicity	O	----	1 C

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Sulfuric Acid	14,10,3	2310	L	——	1	CD	Marked Irritation Eye, Nose, Throat, Skin, Bronchi/Dental Erosion	S	——	1 B
Sulfur Monochloride	14	2320	L	1	6	——	Marked Irritation Eye, Nose, Throat, Lung	S	——	1 B
Sulfur Pentafluoride	11	2321	G	0.025	0.25	——	Marked Irritation Lung (Edema)	S	——	2
Sulfur Tetrafluoride	11	2322	G	——	——	TLV	Marked Irritation Lung (Edema)	S	——	2
Sulfuryl Fluoride	3,10,4	2323	G	5	20	——	Cumulative Kidney And Lung Damage/ Acute CNS Effects	S	——	3
Systox				(See Demeton)						
2,4,5-T (2,4,5-Trichlorophenoxyacetic Acid)	5,2	2324	S	——	10	——	Suspect Teratogen and Carcinogen	S	——	4
Talc (Total)	10	9030	S	20 mppcf		——	Pneumoconiosis (Talcosis)	0	——	3
Talc, fibrous Tremolite	1	9031	S	STD 1910.1001		——	Cancer (Lung)	S	4	3
Talc, fibrous non-Tremolite	1	9032	S	——	——	TLV-CIC	Cancer (Lung)	S	4	3
Tantalum	19	2325	S	——	5	——	Apparent Low Toxicity	0	——	1 C
TEDP - Skin	6	2327	S	——	0.2	——	Cholinesterase Inhibition	S	S,I	3
Teflon® Decomposition Products	4	2329	VAR	——	——	TLV,CD	Acute Systemic Toxicity (Polymer Fume Fever)	S	——	2
Tellurium	4,3	2330	S	——	0.1	——	Acute CNS Effects/ Cumulative Organ Damage	S	——	4
Tellurium Hexafluoride (as Te)	11	2332	G	0.02	0.2	——	Lung Edema	S	——	4
TEPP - Skin	6	2334	L	——	0.05	——	Cholinesterase Inhibition	S	S,I	3
Terphenyls	15	2335	S	C 1	9	——	Moderate Irritation Eye, Nose, Throat, Lungs	S	——	1 A
1,1,1,2-Tetrachloro-2,2-Difluoroethane	11,4	2337	L	500	4170	——	Lung Edema/ Respiratory Failure	S	——	4
1,1,2,2-Tetrachloro-1,2-Difluoroethane	3,12,11	2339	L	500	4170	——	Cumulative Liver Damage/Decreased White Blood Cell Count/Lung Edema	S	——	3
1,1,2,2-Tetrachloroethane - Skin	3	2340	L	5	35	CD,CIB No. 27	Cumulative Liver and Other Organ Damage	S	S	3
Tetrachloroethylene				(See Perchloroethylene)						

SUBSTANCE	HEALTH CODE NO.	CODE NO.	PHYSICAL STATE	PEL ppm	PEL mg/m3	ADD. DATA	HEALTH EFFECTS	CLASSIFICATION OF VIOLATION	WIPE SAMPLING	WORK CATEGORY
Tetrachloromethane				(See Carbon Tetrachloride)						
Tetrachloro-napnthalene - Skin	3	2350	S	----	2	-----	Cumulative Liver Damage/Chloracne	S	S	3
Tetraethyl Lead (as Pb) - Skin	3,7,4	2360	L	----	0.075	TLV	Cumulative Liver, CNS and Kidney Damage/Acute CNS Effects	S	S,I	3
Tetrahydrofuran	15,8	2390	L	200	590	-----	Moderate Irritation Eye, Nose, Throat/ Narcosis	S	-----	2
Tetraethyl Lead (as Pb) - Skin	3,7,4	2370	L	----	0.07	TLV-CHC	Cumulative Liver, CNS and Kidney Damage/Acute CNS Effects	S	S	3
Tetramethyl Succinonitrile - Skin	4	2380	S	0.5	3	-----	Acute Systemic Toxicity (CNS)- Headache, Nausea, Convulsions	S	S	4
Tetranitromethane	14,4,3	2395	L	1	8	-----	Marked Irritation- Eye, Nose, Throat/ Acute CNS and Lung Effects (Edema)/ Cumulative Systemic Damage	S	-----	4
Tetryl (2,4,6-Trinitrophenyl methylnitramine) - Skin	3	2410	S	----	1.5	-----	Contact Dermatitis, Skin Sensitization/ Cumulative Systemic Toxicity	S	S	3
Thallium (Soluble Compounds) - Skin (as Tl)	3	2420	S	----	0.1		...ve Systemic Toxicity	S	S	3
4,4'-Thiobis (6-tert-butyl-m-cresol)	19	2422	S	----	NDS	TLV	Apparent Low Toxicity	0	------	1 C
Thiram[2]	4,5	2427	S	----	5	-----	Acute Systemic Toxicity (Antabuse-like Effects)/ Suspect Teratogen	S	------	4
Tin (Inorganic compounds, except Oxide) (as Sn)	4,3	2430	S	----	2	-----	Acute and Chronic Systemic Toxicity	S	-----	4
Tin (Organic Compounds) (as Sn)	4,3	2431	VAR	----	0.1	CD Organotin compounds)	Marked Irritation Skin/Cumulative Systemic Toxicity	S	S,I	3
Tin Oxide	10	2432		----	----	TLV	Pneumoconiosis (Stannosis)	S	------	3
Titanium Dioxide	19	2440	S	----	15	TLV-CHG	Nuisance Particulate - Accumulation in Lungs	0	-----	1 C
Toluene - Skin	15,8	2460	L	STD 1910.1000,Z-2		TLV-CHG, CD	Moderate Irritation Eye, Nose, Throat/ Narcosis	S	S	2

SUBSTANCE	HEALTH CODE NO.	CODE NO.	PHYSICAL STATE	PEL ppm	PEL mg/m³	ADD. DATA	HEALTH EFFECTS	CLASSIFICATION OF VIOLATION	WIPE SAMPLING	WORK CATEGORY
Toluene-2,4-Diisocyanate (TDI)	9,14,3	2470	L	C 0.02	0.14	CD	Asthma/Marked Irritation-Eye, Nose, Throat, Bronchi, Lungs/Dermatitis	S	———	1 A
o-Toluidine - Skin	13,4,2	2475	L	5	22	———	Methemoglobinemia/ Acute Systemic Effects/ Suspect Carcinogen	S	S	4
Toxaphene				(See Chlorinated Camphene)						
Tributyl Phosphate	15,7	2477	L	----	5	———	Moderate Irritation Nose, Throat, Lungs/ Headache	S	———	4
1,1,1-Trichloroethane				(See Methyl Chloroform)						
1,1,2-Trichloroethane - Skin	3,8	2495	L	10	45	CIB No. 27	Cumulative Liver Damage/Narcosis	S	S	4
Trichloroethylene	8,3,2	2490	L	STD 1910.1000,Z-2		CD,CIB No. 2	Narcosis/Cumulative Systemic Toxic Effects/Suspect Carcinogen	S	———	4
Trichloromethane				(See Chloroform)						
Trichloronaphthalene - Skin	3	2483	S	----	5	-----	Cumulative Liver Damage/Chloracne	S	S	3
1,2,3-Trichloropropane	15,3	2510	L	50	300	———	Moderate Irritation Eye, Nose, Throat/ Cumulative Liver Damage	S	———	4
1,1,2-Trichloro-1,2,2 trifluoroethane (F-113)	19	2485	0	1000	7600	———	Apparent Low Toxicity	0-Up to 2000 ppm S-Above 2000 ppm	———	1 C
Tricyclohexyltin Hydroxide (Plictran®)	19	2520	S	——-	NDS	TLV	Apparent Low Toxicity	S-Above 15 mg/m³	------	1 C
Triethylamine	14,11,3	2480	L	25	100	----	Marked Irritation Eye, Nose, Throat, Lungs/Lung Edema/ Corneal Damage	S	------	4
Trifluoromono-bromomethane	19	2500	G	1000	6100	-----	Apparent Low Toxicity	0	------	1 C
2,4,6-Trinitrophenol				(See Picric Acid)						
2,4,6-Trinitrophenylmethylnitramine				(See Tetryl)						
Trimellitic Anhydride (TMA)		2502		See NIOSH CIB No. 21						
Trimethylbenzene	14,7	2505	L	----	----	TLV	Marked Irritation Lungs, Skin/ Cumulative CNS Effects	S	-----	4
Trinitrotoluene - Skin (TNT)	13,12,3	2530	S	----	1.5	———	Methemoglobinemia/ Aplastic Anemia/ Cumulative Eye (Cataracts) and Liver Damage	S	S	3

SUBSTANCE	HEALTH CODE NO.	CODE NO.	PHYSICAL STATE	PEL ppm	PEL mg/m³	ADD. DATA	HEALTH EFFECTS	CLASSIFICATION OF VIOLATION	WIPE SAMPLING	WORK CATEGORY
Trior thocresyl Phosphate	7	2532	L	——	0.1	———	Polyneuropathy	S	———	3
Triphenyl Phosphate	6	2535	S	——	3	———	Cholinesterase Inhibition	O-Up to 5 mg/m³ S-Above 5 mg/m³	———	3
Tungsten & Compounds (Insoluble) (as W)	19	2536	S	——	NDS	TLV,CD	Lung Accumulation/ Apparent Low Toxicity	S-Above 15 mg/m³	———	1 C
Tungsten Compounds (Soluble) (as W)	4	2537	S	——	——	TLV,CD	Acute CNS Effects (Metabolic) Poison)	S	———	2
Turpentine	15,3	2540	L	100	560	———	Moderate Irritation, Eye, Nose, Throat, Bronchi, Lungs, Skin/Cumulative Kidney Damage	S	———	1 B
Uranium (Insoluble Compounds)	3	2560	S	——	0.25	TLV	Cumulative Kidney Damage/Lung Accumulation	S	I	3
Uranium (Soluble Compounds)	3	2561	S	——	0.05	———	Cumulative Kidney Damage	S	I	3
Vanadium (V_2O_5) Dust (as V)	14,11,10	2570	S	——	C 0.5	CD	Marked Irritation Eye, Nose, Throat, Bronchi, Lungs, Skin/ Acute and Chronic Bronchial and Lung Damage	S	———	1 A
Vanadium (V_2O_5) Fume (as V)	14,11,10	2571	S	——	C 0.1	TLV-CHG, CD	Marked Irritation Eye, Nose, Throat, Bronchi, Lungs, Skin/ Acute and Chronic Bronchial Damage	S	——	1 A
Vinyl Acetate	16	2572	L	——	——	TLV,CD	Mild Irritation-Eye, Nose, Throat	S-Above 20 ppm	——	1 B
Vinyl Benzene				(See Styrene)						
Vinyl Bromide	3,2	2577	G	——	——	TLV,CIB No. 28, CD	Cumulative Bromide Intoxication (CNS Effects)/ Suspect Carcinogen	S	——	4
Vinyl Chloride	1	C 2580	G	STD 1910.1017		CIB, CD No. 28	Cancer-Liver	S	——	1 C
Vinyl Cyanide				(See Acrylonitrile)						
Vinyl Cyclohexene Dioxide	14,2	2581	L	——	——	TLV	Marked Irritation Skin/Suspect Carcinogen	S	S	4
Vinylidene Chloride	3,2	2583	L	——	——	TLV,CIB No. 28	Cumulative Liver and Kidney Damage/ Suspect Carcinogen	S	——	4
Vinyl Toluene	15	2582	L	100	480	——	Moderate Irritation Eye, Nose, Throat	O-Up to 200 ppm S-Above 200 ppm	——	1 B

SUBSTANCE	HEALTH CODE NO.	CODE NO.	PHYSICAL STATE	PEL ppm	PEL mg/m3	ADD. DATA	HEALTH EFFECTS	CLASSIFICATION OF VIOLATION	WIPE SAMPLING	WORK CATEGORY
VM & P Naphtha	16,8,3	2584	L	---	---	TLV,CD	Mild Irritation-Eye, Nose,	O-Above 700 ppm	------	1 B
Warfarin	3	2586	S	---	0.1	-----	Cumulative Anticoagulant Effect	S	I	3
Welding fumes (total particulate)	15,11,3	2587	FUM	---	---	TLV	Moderate Irritation Nose, Throat, Bronchi, Lungs/Acute and Chronic Toxicity From Metal Oxides	S	-----	4
Wood Dust, hardwood (nonallergenic)	10,3,2	9210	S	---	---	TLV	Lung Damage/ Dermatitis/Suspect Carcinogen	S	-----	4
Wood Dust, softwood	19	9211	S	---	NDS	TLV	Nuisance Particulate (Accumulation in Lungs)	O	-----	1 C
Xylene (o-,m-, and p-isomers) - Skin	15,8	2590	L	100	435	CD	Moderate Irritation Eye, Nose, Throat/Narcosis	O-Up to 200 ppm S-Above 200 ppm	S	2
m-Xylene, Alpha, Alpha'- Diamine	3,15	2592	L	---	---	TLV	Contact Skin Sensitizer/Moderate Irritation-Skin	S	------	2
Xylidene - Skin	13,4	2600	L	5	25	-----	Methemoglobinema/ Acute Systemic Toxicity	S	S	4
Yttrium	10	2602	S	---	1	-----	Pneumoconiosis (Diffuse Fibrosis)	S	------	3
Zinc Chloride Fume	14,11,2	2611	S	---	1	---	Marked Irritation-Eye, Nose, Throat, Lungs/Acute Lung Damage/ Suspect Carcinogen	S	------	4
Zinc Chromate (as Cr)	2	2612	S	---	---	TLV,CD (Chromium VI)	Suspect Carcinogen	S	I	4
Zinc Oxide Fume	4	2610	S	---	5	CD	Acute Systemic Toxicity (Metal Fume Fever)	S	-----	2
Zinc Stearate	19	2616	S	---	NDS	TLV	Nuisance Particulate - Accumulation in Lungs	O	------	4 C
Zirconium Compounds (as Zr)	10,3	2620	S	---	5	---	Pneumoconiosis/ Lung and Skin Granulomas	S	------	3

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[HM Chapter II]

SUBSTANCE	HEALTH CODE NO.	CODE NO.	PHYSICAL STATE	PEL ppm	PEL mg/m³	ADD. DATA	HEALTH EFFECTS	CLASSIFICATION OF VIOLATION	WIPE SAMPLING	WORK CATEGORY
Benzo Alpha Pyrene (BAP)		0726								
N-Butyraldehyde Oxime or N-Butyraldoxime		0487								
2,4-Dichlorophenol (DCP)		0895								
N,N-Diethylaminopropyl-amine		0859								
Dust (Nuisance)		9130								
Dust (Total)		9135								
Dimethylethylamine (DEMA)		0915								
Glutaraldehyde		1361								
Glutaraldehyde (Alkaline Activated)		1362								
Lead Chromate		0687								
a-Methyl Silicate		1778								
N-Nitrosodiethanol-amine (DENA)		0907								
N-Nitrosomorpholine		1943								
Pentec, Bis (Pentachloro-2, 4-cyclopentadien-1-yl)		1985								
Phenyl Isocynate		2132								
1,2-Propylene Glycol Dinitrate - Skin		2200								
Tetrachlorophenol		2355								
Tributylamine		2478								
1,2,4-Trichlorobenzene		2481								
Tridymite		1017								
Triphenylamine		2534								
Vydate (also Oxamyl)		2585								

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News Miner 2/28/93

Do hazardous substances lurk in your workplace?

By MARGARET NELSON
Staff Writer

Why should you care if you're exposed to chemicals at work?

The U.S. Department of Labor estimates that nearly 60 percent of the total number of recorded occupational illnesses are related to chemical exposure.

Workers have a "right to know" what hazardous substances they are exposed to so they can take preventative health measures, says Steve Kadish of the Alaska Health Project.

Kadish is a prime force of right-to-know legislation pending in the state Legislature. The legislation requires that the use and ingredients of certain hazardous and toxic materials found in the work place are made known to workers.

The Alaska Health Project is a non-profit, research, education, information and referral organization that focuses on the health and safety of workers. Based in Anchorage, the organization also conducts research, policy and chemical analysis on hazardous materials.

Kadish was in Fairbanks Friday conducting a workshop on health and job safety, for shop stewards, business agents and others.

About 3,000 new chemicals are introduced into the work place each year, Kadish said.

"That's not to say chemicals are bad," Kadish said. "If they are in the workplace, employees need to be aware of them."

There are more than 150 industrial facilities in Alaska that generate more than 2,200 pounds of hazardous waste per month, he said. Alaska needs legislation because few companies presently inform workers about the identity of the chemicals they are exposed to, or about the possible hazards from these chemicals, Kadish said. The result is that workers are unknowingly exposed to substances that are hazardous to their health.



STEVE KADISH
Concerned about exposure to toxic substances

(Staff photo by Joe Correia)

With a "right-to-know" law, employees and employers could begin to take the necessary preventative measures to eliminate or reduce exposures to toxic and hazardous materials, Kadish said. In communities, residents and health officials could have access to information that would help them deal more effectively will illnesses and accidents resulting from hazardous substances.

Two right-to-know bills are pending in the Alaska Legislature. A senate bill was introduced by senators Bettye Fahrenkamp, Joe Josephson, Vic Fischer and Arliss Sturgulewski. The House Labor and Commerce Committee recently introduced a bill in the House.

People interested the legislation may comment at a public hearing in Fairbanks March 11. The hearing is from 4:30-6:30 p.m. at the borough assembly chambers.

Both bills require employers to supply employees with a "Material Safety Data Sheet." The data sheet lists the chemical and trade name of the substance, permissible exposure levels, chronic and short term health effects, safe use conditions, proper cleanup procedures and emergency medical treatment.

The bills also would require an employee training program provided by the employer on safe use of the substance.

For example, said Kadish, suppose a company works with an industrial solvent used to clean floors. The bills, if passed, would require a label on the cannister of the solvent detailing the ingredients of the substance and symptoms workers may have if they are poisoned. The employer would be required to give a data sheet to the employee and a brief training session would be required on the substance.

Kadish said the legislation is a result of labor, environmental, health and community groups action. The right to know issue dealing with toxic and hazardous substances is the biggest public health issue facing Americans today, he said. To date, nine states have passed right to know legislation.

For more information on right-to-know legislation or the Alaska Health Project, contact Kadish at P.O. Box 1037, Anchorage 99510 or call 272-8734.

House building

Pat - Here's something I thought might interest you — David Argyle

Work-related hazards still problem, official says

by Cary Virtue
Times Writer

A set of safety standards ought to be adopted nationwide to help reduce health hazards associated with the work place, a former chief of the U.S. Occupational Safety and Health Administration said Friday.

"I think it is absolutely essential that we begin to develop a guide to redress occupational hazards or we're going to enter the 21st century with the same problems," Eula Bingham told an all-day safety in the work place conference at Alaska Pacific University.

Bingham also urged the legislature to adopt pending "right-to-know" legislation which would require employers to provide information about hazardous chemicals they may use.

"We ought to be saying, 'Look fellow, we still have a big problem about occupational disease in this country,' " said Bingham. "Not only do you have deaths, but you have (non-fatal) diseases which are manyfold greater."

Nationally, she said about 100,0000 people die every year from occupational diseases. That figure includes 12,000 lung cancer deaths and 5,000 deaths from respiratory diseases.

There are also some 16,000 heart attacks annually associated with occupational disease, and 300,000 to 1 million people suffer diseases such as ulcers, neurological disaeses, back injuries and diseases of the hands and fingers.

"But if you look at the past two years it is apparent we are turning our backs on those injured in the work place," Bingham said. "We are turning our backs on the sick."

Bingham was referring to the Reagan administration's relaxation of existing controls by cutting funding for federal programs that monitor health standards. For example, she said health inspections have dropped from 15,000 to 12,000 annually since the Reagan administration commenced.

"In the last two years we haven't seen any standards," she said. "We've seen the dropping of standards."

Instead of ignoring health safety, Bingham said the nation should be working to improve it. She urged a strong federal role for enacting such legislation, but said local legislatures have a major part to play as well.



EULA BINGHAM
Wants 'safety net'

Currently, most health hazard legislation is adopted on a "case-by-case" basis. But Bingham would like to see generic standards tha would "cut across" brand names and apply to a wide range of chemicals or issues.

Such standards could be developed for handling hazardous materials, identifing toxic materials and medicines and enacting protective legislation for removing workers overexposed to hazardous chemicals. Also, health and safety standards could be drafted to guide the construction of new buildings.

Right-to-know legislation is another way to protect workers, Bingham said. There are two bills in the legislature which would require employers to issue a fact sheet on any toxic chemicals they use. The sheet would list information about chronic and short-term health efftects, risks involved in handling the substance, symptons of overexposure, proper handling techniques, emergency procedures for spills and disposal techniques.

"In the long run money would be saved by committing additional money to health and safety (programs)," Bingham said. "Let's stop cutting the heart out of these programs."

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Bill asks employer's danger advice

By ROBERTA GRAHAM
Daily News business reporter

Gov. Bill Sheffield has said he strongly favors a bill that would require employers to advise workers of the presence of cancer-causing chemicals in the workplace and to label hazardous substance containers, according to Department of Labor Commissioner Jim Robinson.

Robinson, attending a forum Friday on safety and health in the workplace, announced Sheffield's endorsement of the Senate amended version the bill nicknamed the right-to-know legislation.

Robinson said the governor asked the labor department to take the lead in ensuring the bill is passed.

"He's asked us to lobby Anchorage and Kenai and Fairbanks legislators. He's asked us to push for the bill," Robinson said.

The legislation is currently being opposed by business, which prefers more lenient, proposed federal standards, and supported by labor and consumer groups.

It calls for a manufacturer or a wholesaler, when selling a hazardous or toxic substance, to provide the purchaser a list of those chemicals.

Under the bill, that information must then be posted in the workplace, such as the lunchroom or on an employee billboard. Additionally, it would require the employer, within 30 days, to provide the information to any worker.

Federal agenices have identified some 65,000 cancer-causing agents. But the bill would require the state labor department to draw up a list of only those chemicals used in Alaska. It specifically exempts foods, cosmetics, drugs, tobacco or substances used for personal consumption because most of these items already are regulated by federal statutes.

The employer would be required to train all employees as to the hazards of the chemicals, the potential long-term affects and how to properly handle them.

And, it would give an employee, who believes he has been exposed to toxic chemicals, access to corporate records.

The Senate Resources Committee has held several hearings on S.79 and recently has drafted a substitute bill — the version which the governor likes.

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Speaker calls for healthy workplace

By ROBERTA GRAHAM
Daily News business reporter

Local and state governments need to become more active in promoting health and safety in the workplace and not rely on the federal government to do the work, said Lula Bingham, keynote speaker at a safety forum sponsored Friday by the Alaska Health Project.

Bingham, administrator of the Occupational Safety and Health Administration under former President Jimmy Carter and now professor of environmental health, University of Cincinnati, said she was pessimistic about future involvement of federal agencies in promoting healthy workers and a safe working environment.

But she stressed that consumer and activist groups can push for a stronger federal involvement by pressing political candidates for their views before election day.

"We're just not getting the strong federal support we need," she said.

Citing drastic budget cuts of federal enforcement agencies and cutbacks of public health officials, Bingham said workplace accidents are occurring at increasing levels.

"It has been estimated that there are approximately 12,000 deaths associated with occupational exposure. There have been 5,000 respiratory cancer deaths — including leukemia, colon and bladder cancer, and 16,000 heart attacks all associated with occupational exposure," she said.

"And these numbers don't include early retirements, belated cancer deaths, skeletal diseases or reproductive failures," she said.

"The government is acting as if there are no diseases and if we look at what's happened over the past two years, it's apparent we're turning our backs on workers — on diseased workers. And we may be ignoring future generations," she said.

Specifically, Bingham criticized the Reagan Administration for its lax attitude toward implementing standards that would govern a worker's right to know what cancer-causing substances are present in the workplace — standards which she worked for two years to develop.

"Delay is the name of the game," she said.

Bingham proposed that state or local governments adopt generic standards to protect workers including:

• A regular medical inspection of the workplace;

• Medical removal protection standards allowing a worker overexposed to chemicals to take another job in the same business;

• Building codes that require health and safety plans, and

• A generic monitoring standard for chemicals in the workplace.

The seminar, sponsored by the Alaska Health Project and the Alaska Humanities Forum, drew more than 100 representatives of business, labor and consumer organizations.

"Environmental questions of the workplace has become as important as those environmental issues involving land and water resources," said Steven Deutsch, University of Oregon professor and specialist in the field of worker health and safety.

"We're at a point now in our society where most people suffer anxiety over whether they're going to keep their jobs," he said. "And problems with stress in the workplace is heightened when a community goes through rapid growth as Anchorage is doing now."

Competition for jobs will increase at the same time technology is replacing 2 percent of all office workers per year, he said.

"You think that you can get a jump on solving these problems by looking at what other communities have done. But to date, Alaska has done nothing and the time is upon you," he said.

Gov. Sheffield favors an Alaska bill that would require employers to advise workers of cancer-causing agents they may be handling. See Bill, Page B-6



Unemployment drops in Alaska

opinion

A good bill surfaces

Right-to-know legislation to ensure that workers are made aware of hazardous and toxic substances they handle comes before an Alaska Senate committee today in hearings on what has been described as one of the major emerging public health issues of the 1980s.

Bills introduced in both houses of the Alaska Legislature would require companies to inform workers of hazardous substances used in the workplace — thus providing both employees and employers with the necessary information to prevent serious health risks. Information about hazards, health risks, permissible exposure levels, preventive measures, proper cleanup procedures and emergency medical treatment is generally readily available from manufacturers; all employers would have to do is to take an inventory of relevant substances, request that information, and supply it to workers.

Similar legislation has been adopted in 10 states and is under consideration in 13 more. The state's administrative cost is estimated in the neighborhood of $100,000 — almost a negligible figure against the clear and present health risk caused by substances whose hazards can, and should, be known to all concerned.

'Right to know' laws on hazardous substances necessary

By STEVEN KADISH

The recent PCB spill in the port area of Anchorage was a dramatic reminder of the community's exposure to hazardous and toxic materials. PCB or polychlorinated biphenyls is a known cancer-causing substance. Since the late 1970s, the use of PCBs has been banned for most purposes in the United States.

Hundreds of hazardous and toxic substances are used in Anchorage every day. Although most are not as dangerous as PCBs, these substances can seriously affect the health of those exposed to them.

Workers are in the front line of potential exposure to these hazardous substances. For example, carpenters, roofers, cement finishers, carpet layers and others use various kinds of possibly toxic adhesives and glues. Many businesses including printing, metal manufacturing, laundries and others use potentially hazardous solvents for cleaning purposes. Mechanics can be exposed to hydraulic and other lubricating fluids that are harmful. The grisly story of those exposed to asbestos is well-known.

The disturbing fact is that many workers in many occupations are unknowingly exposed to substances that are hazardous to their health. Few companies presently inform workers or community residents about the identity of the chemicals they are exposed to, or about the possible hazards from those chemicals.

Some statistics help describe the magnitude of the problem. Nationally, there are 300,000 to 400,000 new cases of occupationally-related diseases each year. The U.S. Department of Labor has estimated that "nearly 60 percent of the total number of recorded occupational illnesses are related to chemical exposures." Annually 100,000



die of job-related disease. To put these figures in perspective the National Safety Council estimates approximately 52,000 motor vehicles deaths in 1979, a typical year. 59,000 Americans died in the Vietnam War.

In addition to the human suffering, unnecessary and dangerous exposures to hazardous substances mean production losses, lost wages, health care payments, and higher workers compensation costs.

The "right to know" about hazardous substances that workers and communities are exposed to is developing into one of the biggest public health issues of the 1980s. Nine states and several major cities have already passed "right to know" laws. At least 12 more states will have legislation introduced this year.

"Right to know" legislation is designed to help reduce the incidence of job-related disease and to guard communities against health hazards from nearby companies that use dangerous substances. Last year a "right to know" bill was introduced in the Alaska State House.

"Occupational cancer can be prevented," said Philip Landrigan, MD of the National Institute of Occupational Safety and Health in "Cincinnati Enquirer" article. "Unlike multiple sclerosis or many cases of diabetes, the causes of a number of occupational cancers are known. Prevention can therefore be achieved by reducing the exposure of workers to the substances which are known to cause those cancers," he added.

With "right to know" employees and employers could begin to take the necessary preventive measures to eliminate or reduce exposures to toxic and hazardous materials. In communities, residents and health officials could have access to information that would help them deal more effectively with illnesses and accidents resulting from hazardous substances.

The U.S. Occupational Safety and Health Administration (OSHA) has just recently concluded public hearings on its version of "right to know," known as the Hazard Communication Standard. While a step in the right direction, there are some major problems with the proposed regulations. The 60 million workers in transportation, agriculture, construction and other sectors are not covered.

Also, the proposed regulation may not be any help for many years to come. Labor, management, government officials and the health and science communities have not been able to agree on a federal standard. "As a result of all this dissatisfaction, OSHA's standard will undoubtedly be hamstrung by court battles for years before it can be implemented," notes "Chemical Week."

State and local "right to know" legislation provides an option for action now. "There will be a real need, practically speaking, to protect people during the next five years," says Peg Seminario an industrial hygienist with the AFL-CIO.

Our newly elected governor and legislature should take note. They have an opportunity to prevent unnecessary illness, production losses, health and insurance payments and human suffering.

Steven Kadish is executive director of the Alaska Health Project.

Steven Kadish
Alaska Health Project
P.O. Box 1037 D.T.
Anchorage, Alaska 99510
272-8734

Some questions and answers about SB 79 as amended.

1. Where does an employer find Material Safety Data Sheet (MSDS) information?

All the toxic and hazardous substances to be regulated by this legislation are required by federal laws to have MSDS prepared by the manufacturer. Nothing in this act is construed to require an employer to conduct studies to develop new information.

To obtain MSDS information, the employer simply has to request this information from the manufacturer. Employers could also request assistance from the state Department of Labor (DOL) to prepare MSDS information. The Poison Control Center at Providence Hospital in Anchorage has over 200,000 listings of chemical substances and product brand names complete with much of the information required for the MSDS. The Public Health Service Hospital in Bethel and the Fairbanks Memorial Hospital have similiar services. Employers and interested others could contact these agencies for needed information.

2. How does an employer know if the substances in his or her workplace are regulated?

There are many Alaskan workplaces (retail stores, restaurants, etc.) that will not be affected by this legislation and many other workplaces that use only a handful of products containing toxic and hazardous substances. In fact, very few workplaces will have 15 or more regulated substances. While thousands of toxic and hazardous substances may be regulated, employers should only be concerned with those in use in their shop to assure compliance.

Goods, drugs, cosmetics or tobacco products intended for personal consumption are exempt. Substances that because of their physical state, volume, or concentration do not pose a health risk upon exposure are also excepted.

Employers will be able to contact the state with specific questions about the products in use in their workplace. Employers should also contact the manufacturer of a product or one of the agencies mentioned above if more information is desired or requested. A letter with the name of the product and a simple description of the information needed is usually all that is needed to receive a MSDS from the manufacturer.

3. Why is labelling important?

Labelling refers to information about the health hazards and risks, appropriate procedures to follow in the case of overexposure, and the use of personal protective equipment to be affixed in a prominent place on containers and piping systems.

Labelling is particularly important in case of emergencies, including spills, fires, equipment failure, and rupture of containers so that appropriate measures can be taken immediately from readily available information. Some products already have adequate labelling to exempt them from additional labelling under this legislation. The Commissioner of DOL shall adopt regulations exempting from the labelling provision certain substances that already have equivalent label information in

accordance with federal regulations. Those products labelled pursuant to the Federal Insecticide, Fungicide, and Rodenticide Act are an example of adequately labelled products.

4. What if an employer is unable to make available a copy of MSDS information withing 5 working days of a request?

In other states, this provision has been interpreted to be based on the "good faith effort" of the employer. Presumably contacting the state, the manufacturer, the federal agency regulating the substance, and local health agencies to obtain the MSDS information would be a "good faith effort".

5. Are new chemical substances regulated in this legislation?

Only substances listed in the US Department of Transportation hazardous materials table, adopted under the OSHA (29, CFR, Part 1910, subpart Z), listed in the most recent edition of the National Institute for Occupational Safety and Health Registry of Toxic Effects of Chemical Substances, or adopted by DOL regulation shall be regulated. Most of the over 3,000 new chemicals used in the workplace every year will not be affected by this legislation.

6. What are the employee education provisions of this legislation and where can an employer receive consultative assistance for employee education programs?

An employee safety education program shall include instruction about the location, properties, known or suspected acute and chronic health effects, the nature of the operations that could result in exposure, the proper use of personal protective equipment, appropriate medical treatment in case of overexposure, and the procedure for clean-up of spills and leaks of the toxic or hazardous substances. This information is to be provided for each toxic and hazardous substance to which an employee may be exposed in the course of employment. Presumably similiar information about different substances could be grouped, rather than repeated. The information presented in this training session is almost equivalent to MSDS information.

The DOL would be available on request to assist in preparing employee training information. NIOSH and other federal, state and local agencies would also be able to provide assistance.

7. Are trade secrets protected?

The provision for trade secrets under existing Alaska statutes are not effected.

8. Do proposed Federal regulations make state legislation redundant?

Proposed federal regulations only address manufacturers. The DOL estimates that about 5% of Alaska's employers are manufacturers. Thus, 95% of Alaska employers would not be covered if federal regulations were adopted. At this time it not clear when and if federal regulations would take affect.

APPENDIX B

LABELING SERIOUS CHRONIC HAZARDS

[This appendix did not appear in the 1976 ANSI Z129.1 Standard.]

(This appendix is not a part of the American National Standard for the Precautionary Labeling of Hazardous Industrial Chemicals, Z129.1-1981, but is included for information purposes only.)

B.1 General

Until consensus definitions and test protocols for chronic effects are established, precautionary label texts for serious chronic effects should be used only when there is generally accepted, well-established evidence that such serious chronic effects exist or when required by law.

A chronic effect is an effect from exposure to a hazardous chemical resulting in either of the following:

(1) a persistent illness or injury that develops over time from a single exposure, or

(2) a persistent illness or injury that develops from prolonged or repeated exposure under conditions that do not produce the effect from a single exposure.

B.2 Labeling Carcinogens

Chemicals known to cause cancer in humans should be labeled with one of the following statements of hazard or equivalent:

CANCER HAZARD
OVEREXPOSURE MAY CREATE CANCER RISK
CANCER SUSPECT AGENT (as required by Government Regulation)

Chemicals known to cause cancer in animals and not known to cause cancer in humans, but where the animal data suggest that the chemicals would probably cause cancer in humans should be labeled with the following statements of hazard or equivalent:

CANCER HAZARD BASED ON TESTS WITH LABORATORY ANIMALS
OVEREXPOSURE MAY CREATE CANCER RISK

Chemicals known to cause cancer in animals, but not known to cause cancer in humans, should be labeled with one of the following statements of hazard or equivalent:

POSSIBLE CANCER HAZARD BASED ON TESTS WITH LABORATORY ANIMALS
OVEREXPOSURE MAY CREATE CANCER RISK

B.3 Labeling Reproductive Toxins

Chemicals known to be reproductive toxins should be labeled with the following statement of hazard or equivalent:

POSSIBLE REPRODUCTIVE HAZARD
OVEREXPOSURE MAY CAUSE (FEMALE, MALE)
REPRODUCTIVE DISORDER(S)[1]

B.4 Labeling Other Serious Chronic Effects

When there is generally accepted, well-established evidence that a chemical causes a serious chronic effect other than carcinogenicity or reproductive toxicity the

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[1]Add the phrase "BASED ON TEST WITH LABORATORY ANIMALS" if only animal data are available to substantiate the chronic effect.

chemical should be labeled with one of the following statements of hazard or equivalent:

OVEREXPOSURE MAY CAUSE (Specify the organ[s]) DAMAGE[2]

OVEREXPOSURE MAY CAUSE (Specify the disease[s])[3]

B.5 Labeling Mixtures

If a mixture contains more than one chemical capable of causing a serious chronic effect, the potential effects of each should be combined in one statement of hazard.

B.6 Signal Words Applicable to Serious Chronic Effects

When a combination of acute and serious chronic effects exists for a chemical, the signal word required for the acute hazards should be used. Where a chemical presents only serious chronic effects, no signal word need be used.

B.7 Precautionary Measures Applicable to Serious Chronic Effects

Statements of hazard for serious chronic effects necessarily require appropriate precautionary measures

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[2]Ibid.
[3]Ibid.

for avoidance of exposure. The precautionary measures shown in Table 1 for the most severe hazards of contact, inhalation and skin absorption should be used for protection against serious chronic effects. Additional useful precautionary measures may be found in 4.8.

B.8 Placement of Statements of Hazard for Serious Chronic Effects

Statements of hazard for serious chronic effects should be placed after (below) any statements of hazard for which the signal word DANGER is required by Section 4.1 and before (above) any statement of hazard for which the signal words WARNING or CAUTION is required by Section 4.1.

Statements of hazard for carcinogenicity or reproductive toxicity should be placed before (above) any statements of hazard pertaining to other serious chronic effects. If the chemical is both a carcinogen and an embryotoxin, the statement of hazard pertaining to carcinogenicity should take precedence.

APPENDIX B

HAZARDS: Known to Cause Cancer in Humans Irritant, Eye and Skin
CANCER HAZARD OVEREXPOSURE MAY CREATE CANCER RISK WARNING: CAUSES IRRITATION Do not get in eyes, on skin, on clothing. Do not breathe (dust, vapor, mist, gas.)* Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. FIRST AID: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician. Flush skin with water. (Wash clothing before reuse.)**

*Select applicable word or words.
**Use phrase when appropriate.

APPENDIX B

HAZARDS:

Corrosive, Eye and Skin
Known to Cause Cancer in Laboratory Animals but not Known to Cause Cancer in Humans

DANGER! CAUSES BURNS
POSSIBLE CANCER HAZARD BASED ON TESTS WITH LABORATORY ANIMALS
OVEREXPOSURE MAY CREATE CANCER RISK

Do not get in eyes, on skin, on clothing.
Do not breathe (dust, vapor, mist, gas.)*
Keep container closed.
Use with adequate ventilation.
Wash thoroughly after handling.

FIRST AID: In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician. Wash clothing before reuse. (Destroy contaminated shoes.)** (Thoroughly clean shoes before reuse.)**

*Select applicable word or words.
**Use phrase when appropriate.

APPENDIX B

HAZARD: Known to Cause Cancer in Humans
CANCER HAZARD OVEREXPOSURE MAY CREATE CANCER RISK Do not get in eyes, on skin, on clothing. Do not breathe (dust, vapor, mist, gas.)* Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.

*Select applicable word or words.

HAZARD: Known to Cause Male Sterility in Humans
REPRODUCTIVE HAZARD OVEREXPOSURE MAY CAUSE MALE REPRODUCTIVE DISORDER Do not get in eyes, on skin, on clothing. Do not breathe (dust, vapor, mist, gas.)* Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.

*Select applicable word or words.

Return to: Rita Comotto
Chemical Manufacturers Assn
2501 M Street NW
Washington, DC 20037

Subject: Revision of ANSI Z129.1

Due Date: 2/15/82

Date: 12/1/81

LETTER BALLOT ON
APPROVAL OF THE REVISION OF THE STANDARD
FOR THE PRECAUTIONARY LABELING OF
HAZARDOUS INDUSTRIAL CHEMICALS
AS AN AMERICAN NATIONAL STANDARD

TOPIC: Proposed Revision of American National Standard for the Precautionary Labeling of Hazardous Industrial Chemicals Z-129.1

DISTRIBUTED BY: The Chemical Manufacturers Association

STATEMENT: The ANSI Labeling Standard was approved in 1976. Since then OSHA has been quite active in developing workplace labeling rule which emphasizes chronic health hazards. Therefore, the proposed revision includes suggested wording for preparing labels for chemicals which could potentially cause chronic health effects.

QUESTION: Do you Concur_____

Object_____

Abstain_____

to the approval of the Revised Standard for the Precautionary Labeling of Hazardous of Industrial Chemicals as an American National Standard?

NOTE: If you find you cannot vote in the affirmative, please so state and explain the reason(s) for your position. Comments may be entered on the reverse side.

Signature_____

Organization Represented_____

Date_____

Att.

Federal Hazardous Materials Act
Dept. of Transportation Regs

Foreword

(This Foreword is not a part of American National Standard for the Precautionary Labeling of Hazardous Industrial Chemicals, Z129.1-1976.)

This American National Standard for the Precautionary Labeling of Hazardous Industrial Chemicals, Z129.1-1976, has been developed by a committee, national in scope, functioning under the procedures of the American National Standards Institute.

The Labels and Precautionary Information (LAPI) Committee of the Manufacturing Chemists Association (MCA) was established in 1944. This committee produced the first published guide to precautionary labeling for hazardous chemicals (Manual L-1) in 1946, and there have been six revisions. This manual has served as a voluntary standard.

The need for an official standard for the precautionary labeling of hazardous chemicals used in industrial occupations has been recognized and is filled by American National Standard Z129.1-1976.

Suggestions for improvement of this standard will be welcome. They should be sent to the American National Standards Institute, 1430 Broadway, New York, N.Y. 10018.

The following organizations recognized as having an interest in the standardization of precautionary labeling of hazardous industrial chemicals were contacted prior to the approval of this standard. Inclusion in this list does not necessarily imply that the organization concurred with the submittal of the proposed standard to ANSI.

American Chemical Society
American Conference of Governmental Industrial Hygienists
American Federation of Labor & Congress of Industrial Organizations
American Industrial Hygiene Association
American Institute of Chemical Engineers
American Insurance Association
American Iron and Steel Institute
American Mutual Insurance Alliance
American Occupational Medical Association
American Petroleum Institute
American Society for Testing and Materials
American Society of Agricultural Engineers
American Society of Safety Engineers
Associated General Contractors of America
Can Manufacturers Institute
Chemical Specialties Manufacturers Association
Compressed Gas Association
Electric Light and Power Group
Factory Insurance Association
Factory Mutual System
Food and Drug Administration
General Services Administration
International Association of Governmental Labor Officials
International Chemical Workers Union
National Fire Protection Association
National Institute for Occupational Safety and Health
National Paint and Coatings Association
National Safety Council
Oil, Chemical, and Atomic Workers International Union
Society of Toxicology
Synthetic Organic Chemical Manufacturers Association
Tag and Label Manufacturers Institute
Underwriters Laboratories
U.S. Coast Guard
U.S. Consumer Product Safety Commission
U.S. Department of Commerce
U.S. Department of Defense
U.S. Department of Labor
U.S. Department of Transportation
U.S. Public Health Service

American National Standard

An American National Standard implies a consensus of those substantially concerned with its scope and provisions. An American National Standard is intended as a guide to aid the manufacturer, the consumer, and the general public. The existence of an American National Standard does not in any respect preclude anyone, whether he has approved the standard or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the standard. American National Standards are subject to periodic review and users are cautioned to obtain the latest editions.

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QJM376/6

American National Standard for the Precautionary Labeling of Hazardous Industrial Chemicals

Introduction

The development of new chemicals and the introduction of chemical processes into ever widening fields have accentuated a need to furnish information for the guidance of every person who, in his occupation, uses, handles, or stores hazardous industrial chemicals.

The dissemination of this information shall include appropriate precautionary statements expressed as simply and briefly as possible on labels affixed to containers of hazardous chemicals. The wording on precautionary labels cannot be expected to cover the complete information on the properties of a material or the complete details of its proper handling under all conditions. Such information may be found in the producers' technical bulletins or in other literature.

Precautionary labeling shall be used only when and to the extent necessary. The language shall be practical – not based alone upon the inherent properties of a product, but directed toward the avoidance of hazards resulting from such occupational use, handling, and storage as may be reasonably foreseeable. Many products present no hazard in normal handling and storage. For these products, no precautionary statements are required on the label.

1. Scope

This standard applies to the precautionary labeling of hazardous chemicals, as defined herein, used under industrial occupational conditions. It does not apply to compressed gases.

2. Glossary of Terms

The following terms are used throughout this standard. The definitions given apply specifically to the use of these terms in arriving at appropriate precautionary statements for the labels of the immediate containers of hazardous industrial chemicals. In this respect, these terms serve only as a guide for the application of the principles of labeling set forth in this standard.

adequate ventilation. A condition falling within either of the following categories:

(1) Ventilation to reduce levels of air contaminant below that which causes personal injury or illness.

(2) Ventilation sufficient to prevent accumulation of significant quantities of vapor-air mixtures in concentration over one-fourth of the lower flammable limit.

antidote. Specific therapeutic measures that may or may not require the services of a physician.

combustible liquid. Any liquid having a flash point at or above 100°F (37.8°C) but less than 200°F (93.3°C), except any liquid mixture having one or more components with a flash point at or above the upper limit which make up 99% or more of the total volume of the mixture. (For test method, see *flash point.*)

compressed gas. Any gas or mixture of gases having, in a container, an absolute pressure exceeding 40 psi at 70°F (21.1°C) or, regardless of the pressure at 70°F (21.1°C), having an absolute pressure exceeding 104 psi at 130°F (54.4°C); or any flammable liquid having a vapor pressure exceeding 40 psi at 100°F (37.8°C) as determined by American National Standard Method of Test for Vapor Pressure of Petroleum Products (Reid Method), Z11.24-1973 (ASTM D 323-72).

corrosive chemical. A chemical that in contact with living tissue causes destruction of the tissue by chemical action. This term shall not refer to action on inanimate surfaces.

dangerously reactive chemical. A chemical that is able to undergo a violent self-accelerating exothermic chemical reaction with common materials, or by itself.

dust. Solid particles generated by handling, crushing, grinding, rapid impact, detonation, or decrepitation of organic or inorganic materials such as rock, ore, metal, coal, wood, grain, etc. Dusts can be dispersed in air but settle under the influence of gravity.

extremely flammable liquid. See *flammable chemical.*

first aid. General measures that can be taken by the victim or other persons, using materials generally avail-

able. First aid is aimed principally at terminating the exposure.

flammable chemical. A substance falling within any of the following categories:

flammable liquid. Any liquid having a flash point below 100°F (37.8°C), except any liquid mixture having one or more components with a flash point at or above the upper limit which make up 99% or more of the total volume of the mixture. (For test method, see *flash point.*)

extremely flammable liquid[1]

flammable gas. A gas with either of the following properties: (1) at atmospheric temperature and pressure forms a flammable mixture with air when present at a concentration of 13% or less (by volume), or that forms a range of flammable mixtures with air wider than 12% regardless of the lower limit; or (2) projects a flame more than 18 inches beyond the ignition source with valve opened fully, or the flame flashes back and burns at the valve with any degree of valve opening, when tested in the Association of American Railroads' Bureau of Explosives' flame projection apparatus.

flammable solid. A solid, other than an explosive, that is liable to cause fire through friction, absorption of moisture, spontaneous chemical change, or retained heat from manufacturing or processing, or that can be ignited readily and when ignited burns so vigorously and persistently as to create a serious hazard.

flash point. The minimum temperature at which a liquid gives off a vapor in sufficient concentration to ignite when tested as follows:

(1) Tagliabue Closed Tester (see American National Standard Method of Test for Flash Point by Tag Closed Tester, Z11.24-1971 (ASTM D 56-70 (1975))) – for liquids with a viscosity of less than 45 Saybolt Seconds Universal (SSU) at 100°F (37.8°C), or that do not contain suspended solids, or that do not have a tendency to form a surface film under test.

(2) Pensky-Martens Closed Tester (see American National Standard Method of Test for Flash Point by Pensky-Martens Closed Tester, Z11.7-1974 (ASTM D 93-73, IP 34/71)) – for liquids with a viscosity of 45 SSU or over at 100°F (37.8°C), or that contain suspended solids, or that have a tendency to form a surface film under test.

(3) For mixtures, if the result of the test by either method is above 100°F (37.8°C), evaporate a fresh sample to 90% of the original volume and retest. The lower of the two values shall be taken as the flash point.

fume. Solid particles generated by condensation from the gaseous state, generally after volatilization from molten metals, etc, and often accompanied by a chemical reaction such as oxidation. Fumes flocculate and sometimes coalesce.

gas. A normally formless fluid that occupies the space of enclosure and which can be changed to the liquid or solid state by the effect of increased pressure or decreased temperature, or both. A gas diffuses.

hazardous chemical. A chemical or mixture of chemicals that is toxic, highly toxic, irritant, corrosive, a strong oxidizer, a strong sensitizer, combustible, flammable, extremely flammable, dangerously reactive, or pressure-generating, or which otherwise may cause substantial personal injury or substantial illness during or as a direct result of any customary or reasonable foreseeable handling or use.

highly toxic chemical (poison). A substance falling within any of the following categories:

(1) A chemical that has a median lethal dose (LD_{50}) of 50 milligrams or less per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.

(2) A chemical that has a median lethal dose (LD_{50}) of 200 milligrams or less per kilogram of body weight when administered by continuous contact for 24 hours or less with the bare skin of albino rabbits weighing between 2 and 3 kilograms each.

(3) A chemical that has a median lethal concentration (LC_{50}) in air of 200 parts per million by volume or less of gas or vapor, or 2 milligrams per liter or less of mist, fume, or dust, when administered by continuous inhalation for 1 hour or less to albino rats weighing between 200 and 300 grams each, *provided* such concentration is likely to be encountered by man when the chemical is used in any reasonably foreseeable manner.

(4) If available data on human experience indicate results different from those obtained on animals, the human data shall take precedence.

irritant. A chemical, not a corrosive, which on immediate, prolonged, or repeated contact with normal living tissue will induce a local inflammatory reaction.

median lethal dose or concentration. The dose (LD_{50}) or concentration (LC_{50}) for a given period of time of a substance that is most likely to kill one-half of a group of animals within 14 days.

[1] Some states and other regulatory agencies require that products with flash points below 20°F (6.7°C) be labeled as "EXTREMELY FLAMMABLE."

mist. Suspended liquid droplets generated by condensation from the gaseous to the liquid state or by breaking up a liquid into a dispersed state such as by splashing, foaming, or atomizing.

mixture. A physical commingling of two or more chemicals not involving a chemical reaction.

poison. See *highly toxic chemical.*

pressure-generating chemical. A chemical falling within any of the following categories:

(1) A chemical that must be protected from spontaneous polymerization by the addition of an inhibitor, or by refrigeration or other thermal control.

(2) A chemical that may decompose to release gas in its container.

(3) A chemical that comprises the contents of a self-pressurized container.

pyroforic chemical. A chemical that will ignite spontaneously in dry or moist air at a temperature of 130°F (54.4°C) or below.

strong oxidizer. A chemical that promotes oxidation readily and on contact with combustible material may cause fire.

strong sensitizer. A chemical that available data on human experience show to be capable of inducing an allergic reaction in a substantial number of persons who come into contact with it.

toxic chemical. A chemical falling within any of the following categories:

(1) A chemical that has a median lethal dose (LD_{50}) of more than 50 milligrams per kilogram but not more than 500 milligrams per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.

(2) A chemical that has a median lethal dose (LD_{50}) of more than 200 milligrams per kilogram but not more than 1000 milligrams per kilogram of body weight when administered by continuous contact for 24 hours or less with the bare skin of albino rabbits weighing between 2 and 3 kilograms each.

(3) A chemical that has a median lethal concentration (LC_{50}) in air of more than 200 parts per million but not more than 2000 parts per million by volume of gas or vapor, or more than 2 milligrams per liter but not more than 20 milligrams per liter of mist, fume, or dust, when administered by continuous inhalation for 1 hour or less to albino rats weighing between 200 and 300 grams each, *provided* such concentration is likely to be encountered by man when the chemical is used in any reasonably foreseeable manner.

(4) If available data on human experience indicate results different from those obtained on animals, the human data shall take precedence.

vapor. The gaseous form of a chemical that is normally in the solid or liquid state. A vapor diffuses.

3. General Requirements

3.1 The precautionary label for any hazardous chemical or mixture of chemicals shall be based upon the hazards it possesses (including those contributed by impurities), and not upon the hazards of the substances from which it is formed, nor upon hazards derived from analogies based upon chemical structure.

3.2 The following subject matter shall be considered for inclusion on precautionary labels: Identity of product or hazardous component(s), Signal Word, Statement of Hazards, Precautionary Measures, Instructions in Case of Contact or Exposure, Antidotes, Notes to Physicians, Instructions in Case of Fire and Spill or Leak, and Instructions for Container Handling and Storage.

3.3 Identification of the product or its hazardous component(s) shall be adequate to permit selection of proper action in case of exposure. Identification shall not be limited to a nondescriptive code designation or trade name. If the product is a mixture, those compounds which contribute substantially to the hazard(s) shall be identified.

3.4 The Signal Word shall indicate the relative degree of severity of a hazard in the diminishing order of DANGER!, WARNING!, and CAUTION! When a product has more than one hazard, only the Signal Word corresponding to the class of greatest hazard shall be used.

3.5 Inclusion of the word POISON and the skull and crossbones shall be limited to highly toxic chemicals. When used, this legend shall not replace the Signal Word.

3.6 The Statement of Hazards shall give notice of the hazard or hazards (such as EXTREMELY FLAMMABLE and HARMFUL IF ABSORBED THROUGH SKIN) that are present in connection with the customary or reasonably foreseeable handling or use of the product. With products possessing more than one such hazard, an appropriate statement for each significant hazard shall be included. In general, the most serious hazard shall be placed first.

3.7 The Precautionary Measures (such as "Keep away from heat, sparks, and open flame" and "Avoid breath-

STATE JURISDICTION AND STATE PLANS

SEC. 18. (a) Nothing in this Act shall prevent any State agency or court from asserting jurisdiction under State law over any occupational safety or health issue with respect to which no standard is in effect under section 6.

(b) Any State which, at any time, desires to assume responsibility for development and enforcement therein of occupational safety and health standards relating to any occupational safety or health issue with respect to which a Federal standard has been promulgated under section 6 shall submit a State plan for the development of such standards and their enforcement.

(c) The Secretary shall approve the plan submitted by a State under subsection (b), or any modification thereof, if such plan in his judgment—

(1) designates a State agency or agencies as the agency or agencies responsible for administering the plan throughout the State,

(2) provides for the development and enforcement of safety and health standards relating to one or more safety or health issues, which standards (and the enforcement of which standards) are or will be at least as effective in providing safe and healthful employment and places of employment as the standards promulgated under section 6 which relate to the same issues, and which standards, when applicable to products which are distributed or used in interstate commerce, are required by compelling local conditions and do not unduly burden interstate commerce,

(3) provides for a right of entry and inspection of all workplaces subject to the Act which is at least as effective as that provided in section 8, and includes a prohibition on advance notice of inspections,

(4) contains satisfactory assurances that such agency or agencies have or will have the legal authority and qualified personnel necessary for the enforcement of such standards,

(5) gives satisfactory assurances that such State will devote adequate funds to the administration and enforcement of such standards,

(6) contains satisfactory assurances that such State will, to the extent permitted by its law, establish and maintain an effective and comprehensive occupational safety and health program applicable to all employees of public agencies of the State and its political subdivisions, which program is as effective as the standards contained in an approved plan,

(7) requires employers in the State to make reports to the Secretary in the same manner and to the same extent as if the plan were not in effect, and

(8) provides that the State agency will make such reports to the Secretary in such form and containing such information, as the Secretary shall from time to time require.

(d) If the Secretary rejects a plan submitted under subsection (b), he shall afford the State submitting the plan due notice and opportunity for a hearing before so doing. Notice of hearing.

(e) After the Secretary approves a State plan submitted under subsection (b), he may, but shall not be required to, exercise his authority under sections 8, 9, 10, 13, and 17 with respect to comparable standards promulgated under section 6, for the period specified in the next sentence. The Secretary may exercise the authority referred to above until he determines, on the basis of actual operations under the

State plan, that the criteria set forth in subsection (c) are being applied, but he shall not make such determination for at least three years after the plan's approval under subsection (c). Upon making the determination referred to in the preceding sentence, the provisions of sections 5(a)(2), 8 (except for the purpose of carrying out subsection (f) of this section), 9, 10, 13, and 17, and standards promulgated under section 6 of this Act, shall not apply with respect to any occupational safety or health issues covered under the plan, but the Secretary may retain jurisdiction under the above provisions in any proceeding commenced under section 9 or 10 before the date of determination.

Continuing evaluation.

(f) The Secretary shall, on the basis of reports submitted by the State agency and his own inspections make a continuing evaluation of the manner in which each State having a plan approved under this section is carrying out such plan. Whenever the Secretary finds, after affording due notice and opportunity for a hearing, that in the administration of the State plan there is a failure to comply substantially with any provision of the State plan (or any assurance contained therein), he shall notify the State agency of his withdrawal of approval of such plan and upon receipt of such notice such plan shall cease to be in effect, but the State may retain jurisdiction in any case commenced before the withdrawal of the plan in order to enforce standards under the plan whenever the issues involved do not relate to the reasons for the withdrawal of the plan.

Plan rejection, review.

(g) The State may obtain a review of a decision of the Secretary withdrawing approval of or rejecting its plan by the United States court of appeals for the circuit in which the State is located by filing in such court within thirty days following receipt of notice of such decision a petition to modify or set aside in whole or in part the action of the Secretary. A copy of such petition shall forthwith be served upon the Secretary, and thereupon the Secretary shall certify and file in the court the record upon which the decision complained of was issued as provided in section 2112 of title 28, United States Code. Unless the court finds that the Secretary's decision in rejecting a proposed State plan or withdrawing his approval of such a plan is not supported by substantial evidence the court shall affirm the Secretary's decision. The judgment of the court shall be subject to review by the Supreme Court of the United States upon certiorari or certification as provided in section 1254 of title 28, United States Code.

72 Stat. 941; 80 Stat. 1323.

62 Stat. 928.

(h) The Secretary may enter into an agreement with a State under which the State will be permitted to continue to enforce one or more occupational health and safety standards in effect in such State until final action is taken by the Secretary with respect to a plan submitted by a State under subsection (b) of this section, or two years from the date of enactment of this Act, whichever is earlier.

FEDERAL AGENCY SAFETY PROGRAMS AND RESPONSIBILITIES

SEC. 19. (a) It shall be the responsibility of the head of each Federal agency to establish and maintain an effective and comprehensive occupational safety and health program which is consistent with the standards promulgated under section 6. The head of each agency shall (after consultation with representatives of the employees thereof)—

(1) provide safe and healthful places and conditions of employment, consistent with the standards set under section 6;

(2) acquire, maintain, and require the use of safety equipment, personal protective equipment, and devices reasonably necessary to protect employees;

ARCO Chemical Company
Division of AtlanticRichfieldCompany

Material Safety Data Sheet
MSDS

ARCO Chemical Company requests Customer to study this Data Sheet and become aware of Product hazards. To promote safe handling Customer should (1) notify its employees, agents and contractors of the information on this Data Sheet, and any Product hazards and safety information, (2) furnish a copy of this Data Sheet to each of its customers for the Product and (3) request such customers to notify their employees and customers for the Product of the information on this Data Sheet and any Product hazards and safety information.

Section I - General

Manufacturer's name
ARCO Chemical Company
Division of AtlanticRichfieldCompany

Manufacturer's address
1500 Market Street, Philadelphia, PA 19101

Material name
Propylene

Emergency telephone (24 hour)
(215) 353-8300

Name (brand-trade) and synonyms
Propene; Methylethylene; LP-Gas; Liquefied Petroleum Gas

Chemical family
Alkene or Olefin Hydrocarbon (C_3H_6)

Section II - Summary of hazardous information

Summary
DANGER-EXTREMELY FLAMMABLE. Keep away from heat, sparks and open flame.
OSHA regulations for "Liquefied Petroleum Gasses" = 29 CFR 1910.110.
DOT regulations for "Flammable Compressed Gas" = 49 CFR 173.300-173.316.
The unique properties of low boiling and flash points (sub-ambient) intensify pressure and rapid diffusion hazards.
SKIN and EYE HAZARD due to liquid or cryogenic gas vapor contact.
INHALATION HAZARD due to asphyxiation by exclusion of oxygen.

Section III - Physical and reactivity data

Boiling point (°F)
−54

Evaporation rate (ratio of time)
(Ether = 1) immediate

Other
National Electrical Code Classification: Class 1, Group D

Vapor pressure (mm Hg at 70 °F)
P.S.I.A 152

Incompatibility (materials to avoid)
strong acids, alkalies, and oxidizers such as liquid chlorine and oxygen

Vapor density (air = 1 at 60-99° F)
1.5

Stability
(X) Stable ( ) Unstable

Conditions to avoid
Heat, sparks and open flame.

Specific gravity (H_2O = 1 at 39.2° F)
0.52

Hazardous polymerization may
( ) Occur (X) Not occur

Appearance and odor
Colorless liquefied gas; weak hydrocarbon odor. It can be odorized with ethyl mercaptan, if required.

Volatile characteristics
Complete

Solubility in water
Slight

Hazardous decomposition products
Incomplete combustion may produce carbon monoxide.

Section IV - Fire and explosion data

Flash point (°F) -150
(method used) ( )

Flammable limits at normal atmos. temp. and pressure (% by volume in air)

Lower flammable limit	Upper flammable limit
2.0	11.1

Autoignition temp. (° F)
927

Extinguishing media
Dry chemical, carbon dioxide, or halogenated extinguishing agent

Special fire fighting procedures
As a general rule, gas fires should not be extinguished unless the gas flow can be stopped immediately. Shut off the source of gas. When possible, allow the fire to burn itself out. If the source of gas cannot be shut off immediately, apply sufficient water to metal surfaces in the immediate area to prevent failure of the container(s) by overheating. Control the burning of escaping gas until the supply can be shut off. Firemen fighting propylene fires should use necessary protective equipment and air-supplied breathing apparatus where there may be danger of breathing hazardous products of combustion.

Unusual fire and explosion hazards
EXTREMELY FLAMMABLE. The sub-ambient boiling and flash points of propylene intensify the rapid formation of an explosive mixture (with air) in confined spaces. Propylene is easily ignited and its flame propagates at a rapid rate. There is a potential explosion hazard from reignition, if the fire is extinguished without shutting off the source.

Section V - First aid and emergency procedures

Note to physician
N/A

Eye contact
Immediately flush the eye(s) gently with plenty of water for at least 15 minutes. Seek medical attention if pain or redness persist after irrigation.

Skin contact
Frozen tissues should be flooded or soaked with tepid water (105-115 F). DO NOT USE HOT WATER. Cryogenic burns which result in blistering or deeper tissue freezing should be seen promptly by a physician.

Inhalation
Remove from exposure immediately. If needed, give oxygen. If breathing has stopped, begin mouth to mouth respiration and continue until oxygen resuscitator or medical care is obtained. Patients should remain quiet, preferably lying down, and kept warm and comfortable. Give no medication but oxygen unless ordered by a physician.

Ingestion
This material is not expected to present an ingestion hazard.

Material name

Propylene

Section VI — Health hazard data

Primary hazard
Propylene is classified as a simple asphyxiant, but it is extremely flammable. The primary hazard is ignition of vapor clouds that form from liquid or vapor leaks.

Route of exposure	Affected	Signs and symptoms
Eye contact	X	Liquid or pressurized propylene contact may produce eye injury due to frostbite caused by rapid evaporation.
Skin irritation	X	Contact of skin with liquid propylene or its cold gas vapors can cause cryogenic burns and freeze tissues.
Inhalation	X	Propylene gas produces little or no irritation to the mucous membranes of the eyes, nose, or respiratory tract. Anesthetic symtoms of anoxia occur only above 4,000 ppm and usually not until the gas concentrations are within the flammable range and the mixture has not ignited.
Ingestion		
Skin absorption		

Effects of overexposure Because diffusion through leaking gaskets may cause rapid contamination of the ambient room air without adequate visual or olfactory warning, the possibility of overexposure is significant. Inhalation of high propylene gas concentrations by humans produce symptoms of mild intoxication, drowsiness, or incoordination due to anesthetic action. Inhalation of 24% propylene mixed with 33% oxygen produces intoxication followed by loss of consciousness after 3 minutes. Exposure to air mixtures in which propylene has replaced oxygen below the amount necessary to sustain life produce asphyxiation.

Section VII — Spill or leak procedure

Precautions if material is spilled or released Eliminate all potential sources of ignition. Avoid contact of skin with liquid of cold gas. Liquid spills will vaporize forming cold dense vapor clouds that do not readily disperse. Avoid entering a vapor cloud even with proper respiratory equipment. Ventilate enclosed areas to prevent formation of flammable or oxygen deficient atmospheres. See "VENTILATION" below. Leaks from closed systems are readily detectable because they form white frost at the point of the leak. Promptly move a leaking compressed gas cylinder out of doors if the leak is small.

Waste disposal methods All Federal, State, and local regulations regarding health and pollution must be observed. Waste mixtures containing propylene should not be allowed to enter drains or sewers where there is danger of the vapors becoming ignited. When it becomes necessary to dispose of propylene it is preferable to do so as a vapor, venting to a safe location. Ensure complete dissipation of the gas below its lower explosive limit to prevent a possible vapor cloud formation that could drift to some remote location and create a hazard. The preferable method of propylene disposal is to burn the vapor off in a properly designed flare.

Section VIII — Special protection information

Ventilation
Good ventilation is essential in rooms and areas where propylene is handled to prevent the unsafe accumulation of explosive mixtures. If mechanical ventilation is used, the electrical equipment should meet National Electrical Code requirements.

Eye protection
Safety glasses and/or face mask are recommended when handling compressed gas cylinders and piping systems. Use safety glasses or goggles and face mask when handling the liquid.

Skin protection Prevent contact of liquid or cold gas with exposed skin. Impermeable plastic or neoprene-coated canvas gloves should be worn to protect the hands from liquid propylene. If conditions or frequency of use present danger of exposure, protective clothing such as apron, boots, and facial protection should be worn.

Respiratory protection

Oxygen-deficient atmosphere are in the flammable range. DO NOT ENTER.

Other protection and information
Consult SD-39, "Properties and Essential Information for Safe Handling and Use of Propylene," published by the Manufacturing Chemists Association in 1974. Also, see the Compressed Gas Association Pamphlet P-1 and the National Fire Protection Association Standard for the Storage and Handling of Liquefield Petroleum Gases (NFPA No. 58) for additional recommendations.

Section IX — Handling and storage

Refer to Section X — Supplement

General comments

Refer to Section X — Supplement

Date issued
April, 1979

Disclaimer of Liability
As the conditions or methods of use are beyond our control, we do not assume any responsibility and expressly disclaim any liability for any use of the material. Information contained herein is believed to be true and accurate but all statements or suggestions are made without any warranty, express or implied, regarding accuracy of the information, the hazards connected with the use of the material or the results to be obtained from the use thereof.

ARCO Chemical Company requests Customer to study this Data Sheet and become aware of Product hazards. To promote safe handling Customer should (1) notify its employees, agents and contractors of the information on this Data Sheet, and any Product hazards and safety information, (2) furnish a copy of this Data Sheet to each of its customers for the Product and (3) request such customers to notify their employees and customers for the Product of the information on this Data Sheet and any Product hazards and safety information.

Section XI - Supplemental Data | **Propylene**

Handling and Storage Consult the DOT regulations for details concerning the shipment of propylene. DOT requires use of the red "Flammable Gas" label. If upon initial receipt inspection a cylinder is found to be in poor condition, contact the supplier. The most common hazard associated with compressed gas cylinders is leakage due to faulty pressure control regulators. Additionally, large pressure build-up can result in explosive decompression at the cylinder head, causing the cylinder to rocket like a missle. Use a pressure-reducing regulator when connecting to lower pressure piping systems. Prevent entrapment of liquid in closed systems. Use a check valve to prevent back-flow into the storage container. Chain cylinders when in use. Ground all lines and equipment used with propylene.

General Comments Store and use propylene containers only in well-ventilated areas. The storage area temperature should be regulated so as not to exceed 100 F., and must be protected from dampness, salt, and other corrosive chemicals. Cylinder storage should be segregated from oxidizers such as oxygen, chlorine, etc. and away from heavy traffic areas to prevent accidental knocking over or damage from passing or falling objects. Avoid dragging, rolling, or sliding cylinders, even for a short distance. Use a suitable hand truck. Valve caps should remain on cylinders not connected for use. Segregate full and empty cylinders.

Date issued

Disclaimer of Liability
As the conditions or methods of use are beyond our control, we do not assume any responsibility and expressly disclaim any liability for any use of the material. Information contained herein is believed to be true and accurate but all statements or suggestions are made without any warranty, express or implied, regarding accuracy of the information, the hazards connected with the use of the material or the results to be obtained from the use thereof.

MATERIAL SAFETY DATA SHEET*

SECTION I

Product Name: Size:

Chemical Name:

Formula:

Manufacturer:

Address:

For Information on Health Hazards Call:

For Other Information Call: Signature and Date:

SECTION II HAZARDOUS INGREDIENTS OF MIXTURES

Principal Hazardous Component (s)	%	TLV (Units)

SECTION III PHYSICAL DATA

Boiling Point (°F.)		Specific Gravity (H_2O=1)	
Vapor Pressure (mm Hg.)		Percent Volatile By Volume (%)	
Vapor Density (Air=1)		Evaporation Rate (=1)	
Solubility in Water			
Appearance and Odor			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used)	Flammable Limits in Air % by Vol.	Lower	Upper
Extinguisher Media	Autoignition Temperature		

Special Fire Fighting Procedures

Unusual Fire and Explosion Hazards

* A standard form (Form OSHA-20) used by many manufacturers to describe the health and safety hazards of their products.

SECTION V HEALTH HAZARD DATA

Threshold Limit Value

Effects of Over exposure
Acute Overexposure:
Chronic Overexposure:

Emergency and First Aid Procedures
Inhalation:
Eyes:
Skin:
Ingestion:

SECTION VI REACTIVITY DATA

Stability	unstable	Conditions to Avoid
	stable	

Incompatibility (Materials to Avoid)

Hazardous Decomposition Products

Hazardous Polymerization		Conditions to Avoid
May Occur	Will not Occur	

SECTION VII SPILL OR LEAK PROCEDURES

Steps to Be Taken In Case Material is Released Or Spilled

Waste Disposal Method

SECTION VIII SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type)

Ventilation	Local Exhaust	Special
	Mechanical (general)	Other

Protective Gloves	Eye Protection

Other Protective Clothing or Equipment

SECTION IX SPECIAL PRECAUTIONS

Precautions To Be Taken In Handling And Storing

Other Precautions

seller or the buyer intervenes in ordinary course to make or collect payment due or claimed under the contract for sale, as by purchasing or paying the seller's draft or making advances against it or by merely taking it for collection whether or not documents of title accompany the draft. "Financing agency" includes also a bank or other person who similarly intervenes between persons who are in the position of seller and buyer in respect to the goods (AS 45.02.707).

(c) "Between merchants" means in any transaction with respect to which both parties are chargeable with the knowledge or skill of merchants. (§ 2.104 ch 114 SLA 1962)

A manufacturer of mobile homes qualifies as a "merchant" within the meaning of this section. Morrow v. New Moon Homes, Sup. Ct. Op No. 1253 (File No. 2206), 548 P.2d 279 (1976).

Applied in Prince v. LeVan, Sup. Ct. Op. No. 708 (File No. 1184), 486 P.2d 959 (1971); A & G Constr. Co. v. Reid Bros. Logging Co., Sup. Ct. Op. No. 1244 (File Nos. 2360, 2388), 547 P.2d 1207 (1976).

Quoted in Sinka v. Northern Commercial Co., Sup. Ct. Op No. 747 (File Nos. 1360, 1361), 491 P.2d 116 (1971).

ALR references. — Farmers as "merchants" within provisions of UCC Art. 2 [AS 45.02], dealing with sales, 95 ALR3d 484.

Sec. 45.02.105. Definitions: transferability; "goods"; "future" goods; "lot"; "commercial unit." (a) "Goods" means all things (including specially manufactured goods) which are movable at the time of identification to the contract for sale other than the money in which the price is to be paid, investment securities (AS 45.08.101 — 45.08.406) and things in action. "Goods" also includes the unborn young of animals and growing crops and other identified things attached to realty as described in the section on goods to be severed from realty (AS 45.02.107).

(b) Goods must be both existing and identified before an interest in them can pass. Goods which are not both existing and identified are "future" goods. A purported present sale of future goods or of an interest in future goods operates as a contract to sell.

(c) There may be a sale of a part interest in existing identified goods.

(d) An undivided share in an identified bulk of fungible goods is sufficiently identified to be sold although the quantity of the bulk is not determined. Any agreed proportion of the bulk or a quantity of the bulk agreed upon by number, weight, or other measure may, to the extent of the seller's interest in the bulk, be sold to the buyer, who then becomes an owner in common.

(e) "Lot" means a parcel or a single article which is the subject matter of a separate sale or delivery, whether or not it is sufficient to perform the contract.

(f) "Commercial unit" means such a unit of goods as by commercial usage is a single whole for purposes of sale and division of which materially impairs its character or value on the market or in use. A commercial unit may be a single article (as a machine), or a set of

articles (as a suite of furniture or an assortment of sizes), or a quantity (as a bale, gross, or carload), or any other unit treated in use or in the relevant market as a single whole. (§ 2.105 ch 114 SLA 1962)

"Goods" has been held to have a broad meaning under the code and to embrace any species of property which is not real estate, choses in action, or investment securities, and the like. Prince v. LeVan, Sup. Ct. Op. No. 708 (File No. 1184), 486 P.2d 959 (1971).

And includes an airplane. — The term "goods" has been held to include an airplane. Prince v. LeVan, Sup. Ct. Op. No. 708 (File No. 1184), 486 P.2d 959 (1971).

Or a vessel. — By the plain meaning of the words of subsection (a) of this section, a vessel is covered. Prince v. LeVan, Sup. Ct. Op. No. 708 (File No. 1184), 486 P.2d 959 (1971).

The definition of goods is based on the concept of movability, and it is self evident that a vessel is within that definition and concept. Prince v. LeVan, Sup. Ct. Op. No. 708 (File No. 1184), 486 P.2d 959 (1971).

Or mobile homes. — Mobile homes, being highly movable, are "goods" as defined in this section. Morrow v. New Moon Homes, Sup. Ct. Op. No. 1253 (File No. 2206), 548 P.2d 279 (1976).

Applied in A & G Constr. Co. v. Reid Bros. Logging Co., Sup. Ct. Op. No. 1244 (File Nos. 2360, 2388), 547 P.2d 1207 (1976).

Quoted in Sinka v. Northern Commercial Co., Sup. Ct. Op. No. 747 (File Nos. 1360, 1361), 491 P.2d 116 (1971).

Cited in Rego v. Decker, Sup. Ct. Op. No. 679 (File No. 1128), 482 P.2d 834 (1971).

ALR references. — Electricity, gas, or water furnished by public utility as "goods" within provisions of Uniform Commercial Code, Art. 2 [AS 45.02] on Sales, 48 ALR3d 1060.

Sec. 45.02.106. Definitions: "contract"; "agreement"; "contract for sale"; "sale"; "present sale"; "conforming" to contract; "termination"; "cancellation." (a) In AS 45.02.101 — 45.02.725, unless the context otherwise requires, "contract" and "agreement" are limited to those relating to the present or future sale of goods. "Contract for sale" includes both a present sale of goods and a contract to sell goods at a future time. A "sale" consists in the passing of title from the seller to the buyer for a price (AS 45.02.401). A "present sale" means a sale which is accomplished by the making of the contract.

(b) Goods or conduct including any part of a performance are "conforming" or conform to the contract when they are in accordance with the obligations under the contract.

(c) "Termination" occurs when either party, under a power created by agreement or law, puts an end to the contract otherwise than for its breach. On "termination" all obligations which are still executory on both sides are discharged, but a right based on a prior breach of performance survives.

(d) "Cancellation" occurs when either party puts an end to the contract for breach by the other and its effect is the same as that of "termination," except that the cancelling party also retains any remedy for breach of the whole contract or an unperformed balance. (§ 2.106 ch 114 SLA 1962)

EMPLOYMENT IN SICs 20-39
(Based on 3/81 data)

Industry	No. Employers	No. Employees
SIC 20: Food and Kindred Products (includes bakeries, fish canneries and cold storages)	237	10,950
SIC 22: Textile Mill Products	2	NA
SIC 23: Apparel & Other Finished Products made from Fabrics and Similar Materials	9	56
SIC 24: Lumber and Wood Products, except Furniture (includes logging camps and sawmills)	88	2,489
SIC 25: Furniture and Fixtures (only covers manufacture of such items)	2	NA
SIC 26: Paper and Allied Products (include pulpmills)	3	989
SIC 27: Printing, Publishing, and Allied Industries (includes newspaper plants and commercial printing shops)	75	1,289
SIC 28: Chemicals and Allied Products	2	NA
SIC 29: Petroleum Refining and Related Industries	5	204
SIC 30: Rubber and Miscellaneous Plastics Products	5	59
SIC 32: Stone, Clay, Glass, and Concrete Products (include ready-mix concrete firms)	22	433
SIC 33: Primary Metal Industries	4	22
SIC 34: Fabricated Metal Products, except Machinery and Transportation Equipment	15	268
SIC 35: Machinery, except Electrical	14	91
SIC 36: Electrical and Electronic Machinery, Equipment and Supplies	2	10

Industry	No. Employers	No. Employees
SIC 37: Transportation Equipment (includes ship and boat building and repairing)	22	90
SIC 39: Miscellaneous Manufacturing Industries (includes manufacturing of jewelry)	22	89
Totals	529	17,384

There are a total of approximately 12,000 private sector employers in the state who employ 130,000 workers. Employers in the manufacturing industry, therefore, represents 4.4 percent of the employer population and 13 percent of the employee population.

NOTE REGARDING THE FOLLOWING FRAME(S) ON MICROFILM:
COMPLETE DOCUMENT IS AVAILABLE IN ORIGINAL FILES.
TITLE PAGE ONLY HAS BEEN FILMED.

OCCUPATIONAL HEALTH AND ENVIRONMENTAL CONTROL

OCCUPATIONAL SAFETY AND HEALTH STANDARDS

ALASKA DEPARTMENT OF LABOR

Division of Occupational Safety and Health

EDMUND N. ORBECK, COMMISSIONER
DEPARTMENT OF LABOR

JAY S. HAMMOND, GOVERNOR

Movie to follow Hearing

"SONG OF THE CANARY"

"A compelling chronicle of one of the biggest occupational health stories of the decade." -- Chicago Sun-Times

"Admirably assembled and obviously committed, the human factor is never forsaken in the face of statistics . . . "

-- Variety

"A frightening film, but a hopeful one in its display of the workers' resilience and spirit. Their voices shine through simply and eloquently." -- Dr. Barry Commoner, Washington University

Winner of . . .

First Prize, Athens Film Festival

Gold Hugo, Chicago International Film Festival

Best Film -- Mayor's Award, Mannheim Film Festival

Blue Ribbon, American Film Festival

Best Film, Melbourne Film Festival

First Prize, John Muir Medical Film Festival

COMMITTEE REPORT

SENATE

1/27/83

FURTHER:

Date: 5-11-83

Mr. President:

The Committee on RESOURCES has had SB 79

Relating to toxic and hazardous substances in the workplace; eff. date

under consideration and (a majority of the committee) (the committee) reports it back with the following recommendations:

[X] do pass [ ] do not pass

[ ] do pass with attached amendments(s)

[X] replace with CS for _____ [X] same title [ ] new title

and recommends _____

[X] AND attaches a "Letter of Intent" [ ] New Fiscal Note

[ ] reports it back without recommendation

[ ] referred to the _____ Committee

MEMBERS SIGNING
DO PASS

MEMBERS HAVING
OTHER RECOMMENDATIONS:

Bob Vandenberg

CHAIRMAN

S 60 (Rev. 12/78)