

ALABAMA HIGHER EDUCATION BOARD

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HB 5

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(1) Protective eye and face equipment shall be required where there is a reasonable probability of injury that can be prevented by such equipment. In such cases, employers shall make conveniently available a type of protector suitable for the work to be performed, and employees shall use such protectors. No unprotected person shall knowingly be subjected to a hazardous environmental condition. Suitable eye protectors shall be provided where machines or operations present the hazard of flying objects, glare, liquids, injurious radiation, or a combination of these hazards.

(A) An employer must provide all employees working with acids, protective clothing, as well as any other equipment needed for safety purposes.

(B) Goggles, hard hats, masks, shields, or other prescribed face, eye and head protection shall be worn by employees who are engaged in welding, grinding, torch cutting, snagging or chipping, handling molten metals, caustics, or who are exposed to harmful rays, dust or flying materials of any kind.

(2) Protectors shall meet the following minimum requirements.

(A) They shall provide adequate protection against the particular hazards for which they are designed.

(B) They shall be reasonably comfortable when worn under the designated conditions.

(C) They shall fit snugly and shall not unduly interfere with the movements of the wearer.

(D) They shall be durable.

(E) They shall be capable of being disinfected.

01.0402(a)(2)(F)

01.0403(a)(1)

(F) They shall be easily cleanable.

(G) Protectors shall be kept clean and in good repair.

(3) Persons whose vision requires the use of corrective lenses in spectacles, and who are required by this standard to wear eye protection, shall wear goggles of one of the following types:

(A) Spectacles whose protective lenses provide optical correction.

(B) Goggles that can be worn over corrective spectacles without disturbing the adjustment of the spectacles.

(C) Goggles that incorporate corrective lenses mounted behind the protective lenses.

(4) Every protector shall be distinctly marked to facilitate identification only of the manufacturer.

(5) When limitations or precautions are indicated by the manufacturer, they shall be transmitted to the user and care taken to see that such limitations and precautions are strictly observed.

(6) Design, construction, testing, and use of devices for eye and face protection shall be in accordance with American National Standard for Occupational and Educational Eye and Face Protection, Z87.1-1968.

01.0403 Respiratory protection. (a) Permissible practice.

(1) In the control of those occupational diseases caused by breathing air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors, the primary objective

01.0403(a)(1)

01.0403(b)(5)

shall be to prevent atmospheric contamination. This shall be accomplished as far as feasible by accepted engineering control measures (for example, enclosure or confinement of the operation, general and local ventilation, and substitution of less toxic materials). When effective engineering controls are not feasible, or while they are being instituted, appropriate respirators shall be used pursuant to the following requirements.

(2) Respirators shall be provided by the employer when such equipment is necessary to protect the health of the employees. The employer shall provide the respirators which are applicable and suitable for the purpose intended. The employer shall be responsible for the establishment and maintenance of a respiratory protective program which shall include the requirements outlined in 01.0403(b).

(3) The employee shall use the provided respiratory protection in accordance with instructions and training received.

(b) Requirements for a minimal acceptable program.

(1) Written standard operating procedures governing the selection and use of respirators shall be established.

(2) Respirators shall be selected on the basis of hazards to which the worker is exposed.

(3) The user shall be instructed and trained in the proper use of respirators and their limitations.

(4) Where practicable, the respirators should be assigned to individual workers for their exclusive use.

(5) Respirators shall be regularly cleaned and disinfected. Those issued for the exclusive use of one worker should be cleaned after each day's use, or more often if necessary. Those used by more than one worker shall be thoroughly cleaned and disinfected after each use.

(6) Respirators shall be stored in a convenient clean, and sanitary location.

(7) Respirators used routinely shall be inspected during cleaning. Worn or deteriorated parts shall be replaced. Respirators for emergency use, such as self-contained devices shall be thoroughly inspected at least once a month and after each use.

(8) Appropriate surveillance of work area conditions and degree of employee exposure or stress shall be maintained.

(9) There shall be regular inspection and evaluation to determine the continued effectiveness of the program.

(10) Persons should not be assigned to tasks requiring use of respirators unless it has been determined that they are physically able to perform the work and use the equipment. The local physician shall determine what health and physical conditions are pertinent. The respirator user's medical status should be reviewed periodically (for instance, annually.)

(11) Approved or accepted respirators shall be used when they are available. The respirators furnished shall provide adequate respiratory protection against the particular hazard for which it is designed in accordance with standards established by competent authorities. The U.S. Department of Interior, Bureau of Mines, and the U.S. Department of Agriculture are recognized as such authorities. Although respirators listed by the U.S. Department of Agriculture continue to be acceptable for protection against specified pesticides, the U.S. Department of the Interior, Bureau of Mines, is the agency now responsible for testing and approving pesticide respirators.

(c) Selection of respirators. Proper selection of respirators shall be made according to the guidance of American National Standard Practices for Respiratory Protection Z88.1-1969.

(d) Air quality.

(1) Compressed air, compressed oxygen, liquid air, and liquid oxygen used for respiration shall be of high purity. Oxygen shall meet the requirements of the United State Pharmacopoeia for medical or breathing oxygen. Breathing air shall meet at least the requirements of the specification for Grade D breathing air as described in Compressed Gas Association, Commodity Specification G-7.1-1966. Compressed oxygen shall not be used in supplied-air respirators or in open circuit self-contained breathing apparatus that have previously used compressed air. Oxygen must never be used with air line respirators.

(2) Breathing air may be supplied to respirators from cylinders or air compressors.

(A) Cylinders shall be tested and maintained as prescribed in the Shipping Container Specification Regulations of the Department of Transportation (49 CFR Part 178.)

(B) The compressor for supplying air shall be equipped with necessary safety and standby devices. A breathing air-type compressor shall be used. Compressors shall be constructed and situated so as to avoid entry of contaminated air into the system and suitable in-line purifying sorbent beds and filters installed to further assure breathing air quality. A receiver of sufficient capacity to enable the respirator wearer to escape from a contaminated atmosphere in event of compressor failure, and alarms to indicate compressor failure and overheating shall be in-

stalled in the system. If an oil-lubricated compressor is used, it shall have a high-temperature or carbon monoxide alarm, or both. If only a high-temperature alarm is used, the air from the compressor shall be frequently tested for carbon monoxide to insure that it meets the specifications in 01.0403(d)(1).

(3) Air line couplings shall be incompatible with outlets for other gas systems to prevent inadvertent servicing of air line respirators with non-respirable gases or oxygen.

(4) Breathing gas containers shall be marked in accordance with American National Standard Method of Marking Portable Compressed Gas Containers to Identify the Material Contained, Z48.1-1954; Federal Specification BB-A-1034a, June 21, 1968, Air, Compressed for Breathing Purposes; or Interim Federal Specification GG-B-00675b, April 27, 1965, Breathing Apparatus, Self-Contained.

(e) Use of respirators.

(1) Standard procedures shall be developed for respirator use. These should include all information and guidance necessary for their proper selection, use and care. Possible emergency and routine uses of respirators should be anticipated and planned for.

(2) The correct respirator shall be specified for each job. The respirator type is usually specified in the work procedures by a qualified individual supervising the respiratory protective program. The individual issuing them shall be adequately instructed to insure that the correct respirator is issued. Each respirator permanently assigned to an individual should be durably marked to indicate to whom it was assigned. This mark shall not affect the respirator performance in any way. The date of issuance should be recorded.

01.0403(e)(3)

01.0403(e)(4)

(3) Written procedures shall be prepared covering safe use of respirators in dangerous atmospheres that might be encountered in normal operations or in emergencies. Personnel shall be familiar with these procedures and the available respirators.

(A) In areas where the wearer, with failure of the respirator, could be overcome by a toxic or oxygen-deficient atmosphere, at least one additional man shall be present. Communications (visual, voice, or signal line) shall be maintained between both or all individuals present. Planning shall be such that one individual will be unaffected by any likely incident and have the proper rescue equipment to be able to assist the other(s) in case of emergency.

(B) When self-contained breathing apparatus or hose masks with blowers are used in atmospheres immediately dangerous to life or health, standby men must be present with suitable rescue equipment.

(C) Persons using air line respirators in atmospheres immediately hazardous to life or health shall be equipped with safety harnesses and safety lines for lifting or removing persons from hazardous atmospheres or other and equivalent provisions for the rescue of persons from hazardous atmospheres shall be used. A standby man or men with suitable self-contained breathing apparatus shall be at the nearest fresh air base for emergency rescue.

(4) Respiratory protection is no better than the respirator in use, even though it is worn conscientiously. Frequent random inspections shall be conducted by a qualified individual to assure that respirators are properly selected, used, cleaned and maintained.

(5) For safe use of any respirator, it is essential that the user be properly instructed in its selection, use and maintenance. Both supervisors and workers shall be so instructed by competent persons. Training shall provide the men an opportunity to handle the respirator, have it fitted properly, test its face-piece-to-face seal, wear it in normal air for a long familiarity period, and, finally, to wear it in a test atmosphere.

(A) Every respirator wearer shall receive fitting instructions including demonstrations and practice in how the respirator should be worn, how to adjust it, and how to determine if it fits properly. Respirators shall not be worn when conditions prevent a mask to skin face seal. To assure proper protection, the facepiece fit shall be checked by the wearer each time he puts on the respirator. This may be done by following the manufacturer's face-piece fitting instructions. Conditions which could prevent a mask to skin face seal may be a growth of beard, sideburns, a skull cap that projects under the facepiece, or temple pieces on glasses. Also the absence of one or both dentures can affect the fit of a facepiece. The worker's diligence in observing these factors shall be evaluated by periodic check.

(B) Providing respiratory protection for individuals wearing corrective glasses is a serious problem. A proper seal cannot be established if the temple bars of eye glasses extend through the sealing edge of the full face-piece. As a temporary measure, glasses with short temple bars or without temple bars may be taped to the wearer's head. Wearing of contact lenses in contaminated atmosphere with a respirator shall not be allowed. Systems have been developed for mounting corrective lenses inside full facepieces. When a workman must wear corrective lenses as part of the facepiece, the facepiece and lenses shall be fitted by qualified individuals to provide good vision, comfort, and a gas-tight seal.

(C) If corrective spectacles or goggles are required, they shall be worn so as not to affect the fit of the facepiece. Proper selection of equipment will minimize or avoid this problem.

(f) Maintenance and care of respirators.

(1) A program for maintenance and care of respirators shall be adjusted to the type of plant, working conditions, and hazards involved, and shall include the following basic services:

(A) Inspection for defects (including a leak check.)

(B) Cleaning and disinfecting.

(C) Repair, and

(D) Storage

Equipment shall be properly maintained to retain its original effectiveness.

(2) Inspection of respirators.

(A) All respirators shall be inspected routinely before and after each use. A respirator that is not routinely used but is kept ready for emergency use shall be inspected after each use and at least monthly to assure that it is in satisfactory working condition.

(B) Self-contained breathing apparatus shall be inspected monthly. Air and oxygen cylinders shall be fully charged according to the manufacturer's instruction. It shall be determined that the regulator and warning devices function properly.

(C) Respirator inspection shall include a check of the tightness of connections and the condition of the facepiece, headbands, valves, connecting tube, and canisters. Rubber or

elastomer parts shall be inspected for pliability and signs of deterioration. Stretching and manipulating rubber or elastomer parts with a massaging action will keep them pliable and flexible and prevent them from taking a set during storage.

(D) A record shall be kept of inspection dates and findings for respirators maintained for emergency use.

(3) Routinely used respirators shall be collected, cleaned, and disinfected as frequently as necessary to insure that proper protection is provided for the wearer. Each worker should be briefed on the cleaning procedure and be assured that he will always receive a clean and disinfected respirator. Such assurances are of greatest significance when respirators are not individually assigned to workers. Respirators maintained for emergency use shall be cleaned and disinfected after each use.

(4) Replacement or repairs shall be done only by experienced persons with parts designed for the respirator. No attempt shall be made to replace components or to make adjustment or repairs beyond the manufacturer's recommendations. Reducing or admission valves or regulators shall be returned to the manufacturer or to a trained technician for adjustment or repair.

(5) Storage of respirators.

(A) After inspection, cleaning, and necessary repair, respirators shall be stored to protect against dust, sunlight, heat, extreme cold, excessive moisture, or damaging chemicals. Respirators placed at stations and work areas for emergency use should be quickly accessible at all times and should be stored in compartments built for the purpose. The compartments should be clearly marked. Routinely used respirators, such as dust respirators, may

01.0403(f)(5)(A)
01.0403(g)(3)(A)

be placed in plastic bags. Respirators should not be stored in such places as lockers or tool boxes unless they are in carrying cases or cartons.

(B) Respirators should be packed or stored so that the facepiece and exhalation valve will rest in a normal position and function will not be impaired by the elastomer setting in an abnormal position.

(C) Instructions for proper storage of emergency respirators, such as gas masks and self-contained breathing apparatus, are found in "use and care" instructions usually mounted inside the carrying case lid.

(g) Identification of gas mask canisters.

(1) The primary means of identifying a gas mask canister shall be by means of properly worded labels. The secondary means of identifying a gas mask canister shall be by a color code.

(2) All who issue or use gas masks falling within the scope of 01.0403 shall see that all gas mask canisters purchased or used by them are properly labeled and colored in accordance with these requirements before they are placed in service and that the labels and colors are properly maintained at all times thereafter until the canisters have completely served their purpose.

(3) On each canister shall appear in bold letters the following:

(A) Canister for _____
or Type N Gas Mask Canister.

SUBCHAPTER 1 - GENERAL SAFETY CODE

Article 1 - General Safety and Health Considerations

01.0101 Purpose and Scope. (a) This subchapter sets forth the occupational safety and health standards adopted by the Commissioner of Labor for the purpose of providing the Alaskan work force with a healthful and safe place to work.

01.0102 Employer Requirements. (a) The employer shall furnish to each of his employees, employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees. This shall be implemented by the employer by complying with these regulations.

(b) The employer shall initiate and maintain accident prevention programs for the prevention of occupational illness and disease.

(c) Employers shall display a poster, furnished by the Alaska Department of Labor, in places where notices to employees are generally posted. The poster will outline appropriate provisions of AS 18.60.010 to AS 18.60.105.

01.0103 Employee Requirements. (a) Each employee shall comply with all regulations contained in this chapter which are applicable to his own actions while on the job.

(b) Employees shall conscientiously use all safety devices, procedures, and personal protective equipment required by these regulations.

01.0104 Reporting of Injuries. Occupational injuries shall be reported in accordance with AS 18.60.058.

01.0105 Accident-Prevention Program. (a) Program organization.

(1) Every employer shall start and maintain an accident prevention program. The program shall provide that personnel knowledgeable in the field of occupational safety and health shall make daily inspections of on the job equipment and activities. The employer shall insure that immediate action be taken to eliminate all hazards.

(2) Each employer shall adopt a code of safe practices and procedures which applies to his operation and which embraces the applicable provisions of these regulations. It shall be the obligation of the employer to have the safe practices code posted in a conspicuous location at each job site office.

(3) Each employer shall insure that the supervisory personnel shoulder their share of the responsibility for accidents. It is suggested that a written report be submitted by each supervisor associated with an accident. These reports should suggest a feasible means of avoiding future accidents of a similar nature.

(b) Recommendations.

(1) Each employer should display an interest in safety matters by:

(A) The display of safety posters and warning signs. A sign indicating how many consecutive accident free days have passed is often worthwhile.

(B) Considering the advisability of posting a list of all foremen who have kept their crews accident free for a certain period of time.

(C) Considering the advisability of establishing various forms of safety competition, including suitable rewards or recognition to individuals and crews with good records.

(c) General safety requirements.

(1) Anyone known to be under the influence of intoxicating liquor, narcotics or drugs shall not be allowed on the job while in that condition. Further, horseplay, scuffling, and other acts which tend to have an adverse influence on the safety or well-being of the employees shall be prohibited.

(2) No one shall knowingly be permitted or required to work while his ability and alertness is impaired by fatigue, illness, or other causes that might unnecessarily expose him or others to injury.



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AGENDA:

- 11:30 to 12:00 - Registration
- 12:00 to 12:30 - Lunch
- 1:30 PROGRAM
 - I. Asbestos in the Workplace
 - a. Source
 - b. Uses
 - II. Standards
 - III. Health Hazards
 - IV. Locations
 - V. Survey
 - VI. Identification
 - VII. Abatement Procedures and Removal Techniques
 - a. Types
 - b. Design
 - c. Procedures
 - VIII. Monitoring
 - a. Why
 - b. How
 - c. Standards
 - IX. Personal Protective Equipment
 - a. Clothing
 - b. Respirators
 - 1. Types
 - 2. Demonstration
 - X. Employee Training
 - XI. Legal Liability
 - XII. Insurance
 - XIII. EPA Demolition and Renovation Regulations
 - XIV. Waste Disposal Procedures and Permits
 - XV. Contractor Prequalification Requirements
 - XVI. Pending Legislation
 - XVII. Questions and Answers

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ASBESTOS
SAFETY AND HEALTH WORK PRACTICES GUIDE



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Respirator use, allowed under this section, is on a sliding scale according to exposure levels. Respirator use is allowed as follows, provided that they have NIOSH and ISEA approval:

1. Any respirator must be an approved type. Approval currently is a combined MSHA/NIOSH designation, which means that respiratory equipment is jointly approved by the Mine Safety and Health Administration and the National Institute of Occupational Safety and Health. In the future, it is possible that respirators will be approved only by NIOSH. All approved respirators carry an approval number. Respirators are approved only for specific types of hazard and within certain contamination limits. Make sure that respirators you are using are designed and approved for the hazard encountered and the concentration at which it is encountered.
2. Re-usable or single-use air purifying respirators for use in atmospheres with exposure up to 10 times that limit of 2 fibers per cubic centimeter (cc) of air for an 8-hour exposure or 10 times the limit of 10 fibers per cc for a short exposure.
3. Powered air purifying respirators for up to 100 times the limit.
4. Type C supplied air or pressure demand type respirators where the exposure exceeds 100 times the limit.

Disposable clothing is suggested for employees working in asbestos atmospheres (See Appendix C). In addition, monitoring of exposure levels on both an initial and continuing basis must be performed. Caution signs are required in work areas and all debris must be bagged and labeled before disposal in accordance with the provisions of 04.0102. Medical monitoring is another important part of the program. Every employee exposed to asbestos in concentrations greater than 0.1 fiber per cubic centimeter (f/cc) must have a medical examination made available to him within 30 days of his first exposure and annually thereafter. If an

employee terminates his employment, or is terminated, a medical exam must be available to him within 30 days of the termination. All medical records must be retained by employer for 20 years.

APPLICATION OF STANDARDS

The OSH code as written is extremely hard to comply with in the construction industry. They were written for static industrial applications. The entire 04.0102 asbestos standard is part of the 01.0101 verticalized standard and must be adhered to. The effects of asbestos do not show until as late as 20 years after the initial exposure. The legal and moral ramifications of not providing proper protection for employees are enormous. Liability suits in the millions of dollars have already been awarded to exposed employees and their associated costs far over-~~shadow~~ shadow OSH penalties. We are then faced with a two-fold problem in construction operations. First and foremost is whether or not employees are adequately protected and secondarily, are we in compliance with OSH standards? Since the existence of asbestos cannot be determined in the field, and many construction operations which come in contact with asbestos are of short duration we have a difficult time gaining 100% compliance with OSH regulations. This policy can only be a guide to initial employee protection and seeks a method of safeguarding the employee and OSH compliance.

This document is intended to aid in short term, small or low exposure routine situations. It is not intended for use on abatement projects where the scope of the project is solely to remove asbestos from a structure. Because of the many other factors involved in abatement work like EPA regulations, protection of the owners future interest, etc., monitoring should always be conducted for abatement projects.

ASBESTOS POLICY AND SAFE WORKING PRACTICES

For the purpose of simplification, we are dividing this sub-section into three areas we have been able to identify where the construction process comes into contact with asbestos.

Notify him that because he had taken these actions you will consider his rights waived unless he informs you within 5 days that he will take a physical. This notice should also be certified mail or personal service with certification. If you use our data base concept you will almost always have a provide medical monitoring since it is extremely unlikely that exposures would fall under the 0.1 fiber limit. If you do not use the data base you will have to air monitor to determine whether or not medical surveillance is required.

EMPLOYEE TRAINING

An important part of any asbestos program must be employee hazard awareness. Employees likely to be exposed must be told about what produces asbestos dust, such as cutting. While all of us are aware of the health hazard, many of us fail to realize that it is so abundant in repair, remodeling, and emergency work. We must instruct our employees in safe working practices, covering thoroughly the following topics:

- 1) The health hazard.
- 2) The areas of work most likely to have exposure problems.
- 3) The importance and proper use of respiratory protection.
- 4) The importance of treating all suspect material as asbestos until proven otherwise.
- 5) The importance of having all suspect material tested.
- 6) The importance of having air tests made.
- 7) A thorough understanding of OSH regulations.
- 8) A thorough knowledge of techniques for limiting airborne concentrations.
- 9) A thorough understanding of personal protective equipment.

DATA BASE CONCEPT

One way to handle the problem of air monitoring is to use a data base concept. The OSH standard is loosely worded about actual monitoring requirements and hard to apply to construction operations.

We feel that the monitoring requirements can be technically met if each company does air monitoring for a range of examples of exposures it deals with. This data could then be applied to different projects with similar circumstances and materials. Each company can in effect establish a data base of probable concentrations for each type of exposure and protect their employees accordingly.

Many contractor air samples indicate properly handled asbestos will be below two fibers, the current OSH respirator requirement level. In spite of this we feel that respirators are absolutely required for any work with asbestos containing materials. While the current OSH level is 2 fibers per cubic centimeter, we have reason to believe it will soon be lowered. It is only prudent to provide respiratory protection for all exposures including those assumed to be reasonably low. While it is possible to make an informed decision that air monitoring is not required, we do not feel that the same can be said for the use of respirators. It is a keystone of the data base concept that employee protection be supplied and used for the so called low level exposures (those below current OSH respiratory requirement limits).

When an asbestos exposure situation is encountered you have two choices: monitor or use the data base concept. If you use data basing, review your file for similar situations. Make an informed decision based on past exposure experience. Be on to allow an adequate safety factor when deciding on a respirator type. If your expected exposure is near the top of the allowable limits for the respirators you have selected, go to the next type up the protective ladder.

04.0102 — ASBESTOS

(a) Definitions.

For the purpose of this section.

(1) "Asbestos" includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite.

(2) "Asbestos fibers" means asbestos fibers longer than 5 micrometers.

(b) Permissible exposure to airborne concentrations of asbestos fibers.

(1) Standard effective July 7, 1972. The 8-hour time-weighted average airborne concentrations of asbestos fibers to which any employee may be exposed shall not exceed five fibers, longer than 5 micrometers, per cubic centimeter of air, as determined by the method prescribed in paragraph (c) of this section.

(2) Standard effective July 1, 1976. The 8-hour time-weighted average airborne concentrations of asbestos fibers to which any employee may be exposed shall not exceed two fibers, longer than 5 micrometers, per cubic centimeter of air, as determined by the method prescribed in paragraph (c) of this section.

(3) Ceiling concentration. No employee shall be exposed at any time to airborne concentrations of asbestos fibers in excess of 10 fibers, longer than 5 micrometers, per cubic centimeter of air, as determined by the method prescribed in paragraph (c) of this section.

(c) Methods of compliance.

(1) Engineering methods.

(i) Engineering controls. Engineering controls, such as, but not limited to, isolation, enclosure, exhaust ventilation, and dust collection, shall be used to meet the exposure limits prescribed in paragraph (b) of this section.

(ii) Local exhaust ventilation.

(a) Local exhaust ventilation and dust collection systems shall be designed, constructed, installed, and maintained in accordance with the American National Standard Fundamentals Governing the Design and Operation of Local Exhaust Systems, ANSI Z9.2-1971, which is incorporated by reference herein.

(b) See § 1910.8 concerning the availability of ANSI Z9.2-1971, and the maintenance of a historic file in connection therewith. The address of the American National Standards Institute is given in § 1910.100.

(iii) Particular tools. All hand-operated and power-operated tools which may produce or release asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section, such as, but not limited to, saws, scorers, abrasive wheels, and drills, shall be provided with local exhaust ventilation systems in accordance with subdivision (ii) of this subparagraph.

(2) Work practices.

(i) Wet methods. Insofar as practicable, asbestos shall be handled, mixed, applied, removed, cut, scored, or otherwise worked in a wet state sufficient to prevent the emission of airborne fibers in excess of the exposure limits prescribed in paragraph (b) of this section, unless the usefulness of the product would be diminished thereby.

(ii) Particular products and operations. No asbestos cement, mortar, coating, grout, plaster, or similar material containing asbestos shall be removed from bags, cartons, or other containers in which they are shipped, without being either wetted, or enclosed, or ventilated so as to prevent effectively the release of airborne asbestos fibers in excess of the limits prescribed in paragraph (b) of this section.

(iii) Spraying, demolition, or removal. Employees engaged in the spraying of asbestos, the removal, or demolition of pipes, structures, or equipment covered or insulated with asbestos, and in the removal or demolition of asbestos insulation or coverings shall be provided with respiratory equipment in accordance with paragraph (d)(2)(iii) of this section and with special clothing in accordance with paragraph (d)(3) of this section.

(3) Personal protective equipment.

(1) Compliance with the exposure limits prescribed by paragraph (b) of this section may not be achieved by the use of respirators or shift rotation of employees, except:

(i) During the time period necessary to install the engineering controls and to institute the work practices required by paragraph (c) of this section;

(24) Laundering:

(a) Laundering of asbestos contaminated clothing shall be done so as to prevent the release of airborne asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section.

(b) Any employer who gives asbestos-contaminated clothing to another person for laundering shall inform such person of the requirement in (a) of this subdivision to effectively prevent the release of airborne asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section.

(c) Contaminated clothing shall be transported in sealed impermeable bags, or other closed, impermeable containers, and labeled in accordance with paragraph (g) of this section.

(a) Method of measurement.

All determinations of airborne concentrations of asbestos fibers shall be made by the membrane filter method at 400-450 x (magnification) (4 millimeter objective) with phase contrast illumination.

(f) Monitoring.

(1) Initial determinations. Within 6 months of the publication of this section, every employer shall cause every place of employment where asbestos fibers are released to be monitored in such a way as to determine whether every employee's exposure to asbestos fibers is below the limits prescribed in paragraph (b) of this section. If the limits are exceeded, the employer shall immediately undertake a compliance program in accordance with paragraph (c) of this section.

(2) Personal monitoring.

(i) Samples shall be collected from within the breathing zone of the employee, on membrane filters of 0.3 micrometer porosity mounted in an open-face filter holder. Samples shall be taken for the determination of the 8-hour time-weighted average airborne concentrations and of the ceiling concentrations of asbestos fibers.

(ii) Sampling frequency and pattern. After the initial determinations required by subparagraph (1) of this paragraph, samples shall be of such frequency and pattern as to represent with reasonable accuracy

the levels of exposure of employees. In no case shall the sampling be done at intervals greater than 6 months for employees whose exposure to asbestos may reasonably be foreseen to exceed the limits prescribed by paragraph (b) of this section.

(3) Environmental monitoring.

(i) Samples shall be collected from areas of a work environment which are representative of the airborne concentrations of asbestos fibers which may reach the breathing zone of employees. Samples shall be collected on a membrane filter of 0.3 micrometer porosity mounted in an open-face filter holder. Samples shall be taken for the determination of the 8-hour time-weighted average airborne concentrations and of the ceiling concentrations of asbestos fibers.

(ii) Sampling frequency and pattern. After the initial determinations required by subparagraph (1) of this paragraph, samples shall be of such frequency and pattern as to represent with reasonable accuracy the levels of exposure of the employees. In no case shall sampling be at intervals greater than 6 months for employees whose exposures to asbestos may reasonably be foreseen to exceed the exposure limits prescribed in paragraph (b) of this section.

(4) Employee observation of monitoring. Affected employees, or their representatives, shall be given a reasonable opportunity to observe any monitoring required by this paragraph and shall have access to the records thereof.

(g) Caution signs and labels.

(1) Caution signs.

(i) Posting. Caution signs shall be provided and displayed at each location where airborne concentrations of asbestos fibers may be in excess of the exposure limits prescribed in paragraph (b) of this section. Signs shall be posted at such a distance from such a location so that an employee may read the signs, and take necessary protective steps before entering the area marked by the signs. Signs shall be posted at all approaches to areas containing excessive concentrations of airborne asbestos fibers.

(ii) Sign specifications. The warning signs required by subdivision (i) of this subparagraph shall conform to the requirements of 20" x 14" vertical format signs

Annual examinations. On or before January 1, 1973, and at least annually thereafter, every employer shall provide, or make available, comprehensive medical examinations for each of his employees engaged in occupations exposed to airborne concentrations of asbestos fibers. Such annual examination shall include, as a minimum, a chest roentgenogram (posterior-anterior 14 x 17 chest), a history to elicit symptomatology of respiratory disease, and pulmonary function tests to include forced vital capacity (FVC) and forced expiratory volume at 1 second (FEV_{1.0}).

Termination of employment. The employer shall provide, or make available, within 30 calendar days before or after the termination of employment of any employee engaged in an occupation exposed to airborne concentrations of asbestos fibers, a comprehensive medical examination which shall include, as a minimum, a chest roentgenogram (posterior-anterior 14 x 17 chest), a history to elicit symptomatology of respiratory disease, and pulmonary function tests to include forced vital capacity (FVC) and forced expiratory volume at 1 second (FEV_{1.0}).

Recent examinations. No medical examination is required of any employee, if adequate records show that the employee has been examined in accordance with this paragraph within the past 1-year period.

(i) Medical records.

(ii) Maintenance. Employers of employees examined pursuant to this paragraph shall cause to be maintained complete and accurate records of all such medical examinations. Records shall be retained by employers for at least 20 years.

(iii) Access. The contents of the records of the medical examinations required by this paragraph shall be made available, for inspection and copying, to the Assistant Secretary of Labor for Occupational Safety and Health, the Director of NIOSH, to authorized physicians and medical consultants of either of them, and, upon the request of an employee or former employee, to his physician. Any physician who conducts a medical examination required by this paragraph shall furnish to the employer of the examined employee all the information specifically required by this paragraph, and any other medical information related to occupational exposure to asbestos fibers.

On Friday November 4, 1973 OSHA issued an Emergency Temporary Standard (ETS) on asbestos. These emergency requirements will remain in effect for six months under the rules governing the issuance of Emergency Temporary Standards. This means that it will be in effect until May 4, 1974.

During this time period we expect OSHA to go through the formal rule making process in order to cause a permanent change in the existing standard. We would be very much surprised if this formalization process resulted in a final standard with provisions much different than those outlined in the ETS.

The complete text of the Emergency Temporary Standard is printed after this explanation.

The ETS does not effect the data base concept since we are providing employee protection from zero exposures on up. It does, however, reduce the margin of error and place an even greater emphasis on careful work procedures.

It requires additional employee training and lowers the permissible exposure level (PEL) to .5 fibers from the current 2 fibers per cc of air. This is a 75% reduction in the amount of asbestos that an employee can be exposed to without respiratory protection. The .1 fiber action level for medical surveillance remains unchanged.

In addition the approval level for each type of respirator is reduced to a multiple of the new lower PEL.

Single use respirators have a maximum concentration approval of 5 fibers per cc (10 times .5) rather than 20 fibers (10 times 2) for as long as the ETS is in effect. Our data base indicates that about 5% of all construction exposures could exceed the 5 fiber limit on single use respirators.

Full face piece purifying and powered air purifiers are approved up to 50 fibers per cc (100 times .5) rather than up to 200 fibers (100 times 2). Any concentration over 50 fibers requires the use of airline respirators.

CONTRACTORS GUIDE TO RESPIRATOR USE
AND
WRITTEN RESPIRATOR PROGRAMS



A Safety Service of the:

Alaska Chapter Associated General Contractors
3201 Spenard Road
P.O. Box 4-2500(99509)
Anchorage, Alaska
(907)561-5354

With co-operation and
technical assistance from:

OSH
Alaska Department of Labor
3301 Eagle Street
Pouch 7-022, (99510)
Anchorage, Alaska
(907)264-2599

Innovative Safety for an Innovative Industry

I-RESPIRATOR TYPES

A respirator is a device designed to ensure the wearer of a breathable non-contaminated supply of air. There are two basic types of respirators, those that purify the existing atmosphere by filtering contaminants out and those that provide clean air from an outside source. There are several types of respirators within each of the above categories. A basic respirator program starts with a thorough understanding of the respirators available and the uses and limitations of each.

Air-Purifying Respirators remove the contaminants from air before breathing by filtering out contaminants, such as dust, fumes and mists. The simplest form of respirator in this category is commonly known as a single use or disposable respirator. These units are low cost and offer protection for certain types of low level exposures. They are generally used for dusts and fiber removal. As with all types of respirators, each manufacturer's product is approved for only certain types of contaminants and specific exposure levels.

The next most complicated type of air-purifying respirators is also designed for dusts and mists and features removable purifying elements. It is reusable as long as the elements are changed and it is properly maintained and cleaned. It is generally approved for higher concentrations than the single-use respirator. It can be purchased in quarter-mask, half-mask and full-face piece styles. Each style offers, successively, more protection with the full-face piece offering some protection for the eyes as well.

Closely related to the above respirator style are chemical cartridge and canister respirators for gases and fumes. These respirators feature replaceable filter units and come in quarter, half and full-face styles. The filters remove harmful gases and vapors by way of a chemical reaction that absorbs or renders them harmless. Each filter element is effective only against a specific hazard or class of hazards. Filter cartridges are color coded according to a universal scheme, enabling the user to positively identify the proper cartridge for the hazard present.

The last type of respirator, in the air-purifying class, is known as a powered air purifying unit. This is a high efficiency mechanical unit. Powered air purifiers come in half-mask and full-face mask or hood styles. A fan forces contaminated air through a filter and pure air into the face piece. Depending on the approved cartridges used, they can be effective for particles and gases or vapors.

It is important to note that none of the air-purifying respirators can be used in oxygen deficient atmospheres, since they do not supply air. They are also only effective against the particular contaminant and the concentration they are approved for.

The second major category of respirators are termed air supply units. As the name implies, they provide their own source of air from an outside supply. They can be used in high concentrations of most any type of hazardous substance.

The values, we have been discussing, represent a term in Industrial Hygiene known as a TLV or threshold limit value. When we say carbon monoxide is regulated by OSHA at concentrations of 50 PPM, we mean that it has a TLV of that amount. A TLV is the concentration value below which workers, exposed for extended periods of eight hour days, are assumed to suffer no ill effects. Concentrations above the TLV are considered dangerous and require contractor action either in the form of engineering or administrative controls. TLV's are also referred to as PEL's (Permissible Exposure Limits) when talking in terms of OSHA compliance.

Another commonly used term in Industrial Hygiene is TWA or Time Weighted Average. PEL's are usually exposures in terms of Time-Weighted Averages. A time-weighted average is simply an average of the various exposures occurring during a normal work day. Using a TWA and carbon monoxide as an example an exposure of 4 hours at 75 PPM and 4 hours at 25 PPM yields a time-weighted average of 50 PPM or no excessive employee exposures. Occasionally, hazardous substances, which are regulated on the basis of Time-Weighted Averages, have upper exposure limits (UEL) which cannot be exceeded without proper employee protection.

IV TESTING EQUIPMENT AND METHODS

Effective health protection requires that monitoring of concentration levels be done. No effective program can exist without an accurate idea of the contaminant levels present in the work environment. Since respirators are only approved and effective for specific concentrations, the hazard concentration must be established even to make an accurate selection. The types and methods of air monitoring are varied, ranging from simple units for spot checks to sophisticated continuous monitors. Equipment suppliers can help you choose the exact type of monitoring equipment for your needs and the hazards you are encountering. Most of the time, they will train your employees in the use and maintenance of the equipment. It is important to know exactly the kind and extent of service the manufacturer will provide before purchasing any monitoring equipment. It is also possible to have monitoring handled by an outside consultant.

V ENGINEERING vs ADMINISTRATIVE CONTROL

The cornerstone of any Construction Program, involving Industrial Hygiene, Respirator Protection and Hazardous Substance Control, is an understanding of the relationship between Engineering and Administrative Controls. OSHA law requires that Engineering Control be applied first, wherever possible, to hazardous-substance situations. Engineering controls are methods of reducing the amount of contaminants in the work environment by controlling and modifying the source of the contaminant. They include such things as isolation, enclosure, ventilation and dust collection. Perhaps the most feasible administrative control for construction operations is substitution. Whenever possible, non-hazardous and non-toxic substances should be substituted for harmful ones. This truly limits the hazard at the source. The Construction Health Specialist is always alert for ways and places to substitute.

For example, the problem caused by asbestos has been virtually eliminated in new construction, through the use of new materials. The application of engineering controls can also be effectively achieved in many cases by changes in the work processes. The use of engineering controls require imaginative and innovative thought.

These basic elements must be covered in detail in your respiratory protection program. The writing of a program for your company is a major undertaking. Each company encounters different hazards in their day to day operation. Before beginning preparation of a written program:

1. Identify the hazards found in your activities. This can best be done by obtaining data sheets on all materials used. Someone must be responsible for obtaining this basis information.
2. Take every available option to eliminate the use of known hazardous substances.
3. Determine the exposure levels of hazardous substances that are in use. This can only be done through accurate monitoring.
4. Investigate the types of respiratory equipment, specifically designed and approved for the hazard encountered. Before buying any respiratory equipment, find out what services the seller supplies with his equipment. Will he help train and fit? Does he have specific and detailed use instructions?
5. Because construction operations are diverse, complex, and widespread, you must establish an internal notice of use of hazardous substances system. Make someone (job superintendent) responsible for notifying safety personnel of intended usage.
6. Set up a specific training and fitting program for respirator use. No one can tell for certain in construction, when and where in the construction process, hazardous substances will be encountered. Because of the high turnover, periodic general training of employees may not be sufficient. A training program, done immediately before respirator use, appears to be the only effective way to combat infrequent use of regulated hazardous substances.
7. Make one individual responsible for administering your program, keeping your records, and inspecting your equipment. Provide him with all the training possible.
8. Plan for every contingency. Be thoroughly prepared and avoid future trouble.
9. Establish a working relationship with a doctor or clinic familiar with industrial medicine and respirator use.

Having done the required "homework" you can now begin to draft your company's respiratory use program

VIII SAMPLE RESPIRATORY PROGRAM

A.

It is the intended purpose of company to provide a safe and healthful workplace environment for all employees. To further this purpose we have established this respirator use program. The requirements of this program are binding on all employees.

4. Whenever possible, respirators will be assigned to individual workers for their exclusive use. Workers will be responsible for maintenance and sanitation of respirators assigned to them. Periodic and frequent spot checks will be made by supervisory personnel to insure compliance. Respirators, for the exclusive use of an individual, will be cleaned at least once a day at the end of the shift. Respirators, used by more than one worker, shall be cleaned and disinfected after each use. Respirators will be stored in a clean, sanitary place on the jobsite reserved solely for that purpose. No respirators may be removed from any jobsite except on written authorization from the Safety Director. If respirators are individually assigned, they shall bear the name of the person to whom they are assigned.
5. Areas, where respirators are in use, shall be closely monitored to insure compliance and safe conditions. Unauthorized and untrained personnel will be prohibited from entering these areas. Crew sizes for work, requiring respiratory protection, will be kept to the smallest practical size and the makeup, for short-duration operations, will not be changed unless absolutely necessary.
6. This program will be under constant review to determine that it meets its stated goal of providing maximum employee protection. Suggestions for improvement of this program should be submitted to _____ at _____ and are openly encouraged. Questions should also be referred to _____.
7. _____ Company has made arrangements with _____ (Doctor or Clinic) to handle medical requirements for respirator use. Employees will be required to furnish medical information in order to be sure that respirator use will not, in itself, be detrimental to their health.

This policy will be amended, from time to time, to improve its performance. The proper use of respirators requires the active participation of all employees. The _____ Company is making a commitment to a healthful work environment for the good of us all.

President (etc.)

USING THE MODEL PROGRAM

OSHA regulations were designed for General Industry which is more static in nature. The work process and materials used change very seldom and with longer planning times in general industry. Construction is different altogether. The products we use are specified by owners and architects, and we have no control over them. Each construction project is unique and uses different materials. We do not have the luxury of knowing exactly what chemical hazards we may encounter down the road. This changeable nature makes respiratory protection programs hard to formulate. We cannot begin the selection process until we are able to identify the hazardous components of each project.

MEMORANDUM

State of Alaska

TO: Dick Stokes, SERO
Bob Flint, SCRO
Pete McGee, NRO

DATE: October 12, 1983

FILE NO:

TELEPHONE NO:

FROM: Stanley W. Hungerford, Chief
Air and Solid Waste Management

SUBJECT: Waste Asbestos
Disposal
Responsibilities

SWH

There seems to be some confusion concerning our role and responsibility in asbestos disposal. Specifically, what laws address asbestos, what permits are required, and who issues them. Dick Williams and Dave Estes have compiled a list of the pertinent laws and policies on asbestos activities. Please circulate copies to your staff for their reference.

I. ASBESTOS IS NOT A HAZARDOUS WASTE UNDER RCRA.

RCRA covers ignitable, corrosive, reactive, CP toxic, and listed wastes. It does not recognize long-term health effects as a separate criteria.

II. ASBESTOS IS A HAZARDOUS AIR POLLUTANT UNDER NESHAPS.

Federally, asbestos is an air pollutant addressed by 40 CFR 61. These regulations address air emissions from activities that involve asbestos, and specify operating procedures that should prevent hazardous emissions.

ADEC has not taken on that part of NESHAPS, and any situation encountered should be referred to EPA, Alaska Operations Office, Juneau.

III. NO FEDERAL PERMITS APPLY TO ASBESTOS DISPOSAL AT ALASKAN LANDFILLS.

IV. ASBESTOS IS A HAZARDOUS WASTE UNDER OUR SOLID WASTE REGULATIONS, 18 AAC 60.

18 AAC 60.910.(11)... "hazardous waste" means a solid waste or combination of solid wastes, which because of its quantity, concentration, or physical, chemical or biological characteristics may cause or significantly contribute to

- (a) an increase in mortality or an increase in serious irreversible, or incapacitating reversible illness; or
- (b) a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

Diseases caused by breathing asbestos dust, such as lung cancer and asbestosis, definitely increase mortality.

V. ASBESTOS DISPOSAL REQUIRES AN ADEC WASTE DISPOSAL PERMIT.

Asbestos is a solid waste and, therefore, requires a Waste Disposal Permit under AS 46.03.100 and 18 AAC 60.200.(a).

Asbestos is also "hazardous" and requires "specific approval" from the department according to 18 AAC 60.037.(a).

"Specific Approval" should be given via conditions in a new permit or an amendment of an existing permit.

Approvals should be granted for an overall operation, not for each bag, barrel or truckload.

V. ASBESTOS DISPOSAL PROCEDURES.

All the solid waste disposal standards in 18 AAC 60 apply to asbestos disposal. In addition, the following requirements must also be met:

- a. Waste asbestos must be thoroughly wetted and placed in a water-tight container before burial. Containers may be barrels, drums, or double -four mil or thicker- plastic bags.
or single 5 1/2 mil
- b. All containers shall have a warning label attached that states:

CAUTION

CONTAINS ASBESTOS

AVOID OPENING OR BREAKING CONTAINER

BREATHING ASBESTOS IS HAZARDOUS
TO YOUR HEALTH

- c. Apply 2 FEET of cover soil to the wastes at the end of each operating day, or if cover is not applied
 1. install fencing or provide other approved access controls, and
 2. post signs at site entrances and at 100 foot intervals along the site boundary that state in one inch or taller lettering:

ASBESTOS WASTE DISPOSAL SITE

DO NOT CREATE DUST

BREATHING ASBESTOS IS
HAZARDOUS TO YOUR HEALTH

VI. ASBESTOS REMOVAL AND HANDLING PROCEDURES ARE OSHA AND EPA CONCERNS.

ADEC should refer the public to these agencies when appropriate. We are not authorized or trained to interpret and enforce their regulations. Also, we lack the staff and funding needed to take on any more programs.

Conclusion:

Asbestos is a "hazardous solid waste" under Alaskan Law. We regulate its disposal with the Solid Waste Management Regulations, 18 AAC 60, and the Waste Disposal Permit program. All disposal must be approved in writing, i.e., by permit condition. Disposal activities must comply with departmental standards and procedures. Signs and fences are NOT required if the waste is covered on the day of deposition. All removal, handling, and air pollution control activities are EPA concerns and must be referred to them.

Please call Dick or Dave if you have any questions or corrections.

cc : Keith Kelton

RTW:SH:sz

Federal Regulations Affecting Asbestos

①

U.S. Dept. of Labor
OSHA

- Code of Fed. Regulations (CFR)
Title 29 Part 1910
- Work practices & worker protection
- Industrial exposure

EPA

Toxic Substances Control Act (TSCA)
Asbestos in Schools Rule

- CFR Title 40 Part 763
- Identifying friable asbestos containing material
- Employee & parent notification
- Record keeping

EPA

Clean Air Act (CAA) Section 112
National Emission Standards for
Hazardous Air Pollutants (NESHAPS)
(asbestos, beryllium, mercury,
vinyl chloride)

- CFR Title 40 Part 61 Subpart A
Subpart B replaced by subpart M
on 4/5/84 Fed. Reg. Vol. 49 No. 67
- standards for mills, roadways
manufacturing, demolition/renovation.

Demolition / Renovation of Friable Asbestos Material
CFR Title 40 Part 61 Subpart M Sections 61.140; 61.141,
61.145 - 61.147, 61.152, 61.154 and 61.156

Definitions - CFR 40 Part 61 Section 61.141

Friable asbestos material - any material containing more than 1 percent asbestos by weight that hand pressure can crumble, pulverize or reduce to powder when dry

Renovation - altering in any way one or more facility components.

Operations in which load-supporting structural members are wrecked or taken out are excluded

Demolition - wrecking or taking out of any load-supporting structural member of a facility together with any related handling operations.

Visible emissions - emissions containing particulate asbestos material that are visually detectable without the aid of instruments. Excludes condensed uncombined water vapor.

Facility Component - pipe, duct, boiler, tank, reactor, turbine, furnace

Demolition / Renovation of Friable Asbestos

- Applicability Categories Section 61.145

61.145(a)

Demolition \geq 260 lin. feet (pipes) or \geq 160 sq. ft other fac. comp.

Notification Req. Section 61.146

Written notification to EPA required.

Postmark/deliver 10 days prior to demolit.

- ① Name/add. of owner/rep. of rem./dem. firm
- ② Bldg. description (size, age, prior use)
- ③ Amount of asb. in facility
- ④ Fac. location for dem./renov.
- ⑤ Start date / Completion date
- ⑥ Descrip. of dem./renov. and methods
- ⑦ Procedures followed in dem./renov. to comply with Subpart M
- ⑧ Name & location of waste disp. site

Emission Control Proced. Section 61.147

- ① Remove asb. before wrecking or dismantling that would break asb. mat. or preclude access. Exception - dem. of asb. on fac. component encased in concrete
- Wet wherever asb. is exposed while dem.
- ② Removal of facility component w/ asbestos in sections
- Wet the areas to be cut
- Do not drop - lower the units to ground
- ③ Removing/stripping asb. from intact

Notification Req. Section 61.146

Emission Control Proceed. Section 61.147

- (d) After removing facility component w/ asb.
 - Wet during stripping - OR -
 - Use local exhaust vent. & collection (NO V.E. or designed & oper. 61.154)
- (e) All asbestos removed or stripped
 - Asb. must remain wet until contained for disposal
 - Do not drop - lower material to ground
 - Dust-tight chutes or containers if > 50 feet above ground. Exception: 61.147 (b)
- (+) Temp. at wetting point < 32°F
 - Comply w/ (d) and (e) - no other wetting requirements

SEND NOTIFICATIONS TO:
 EPA
 Alaska Operations Office
 3200 Hospital Dr.
 Suite 101
 Juneau, AK 99801
 TEN: KATHYNN PATTEN

Demolition/Renovation of Friable Asbestos

- Applicability Categories Section 61.145

61.145(b) Demolition < 260 lin. feet (pipes) or < 160 sq. ft. other fac. comp.

Notification Req. Section 61.146

Written notification to EPA required
Postmark/deliver 20 days prior to demol.

- ① Name/addr. of owner/sp. of rem./dem. firm
- ② Bldg. description (size, age, prior use)
- ③ Amount of asb. in facility
- Explain techniques of estimation
- ④ Fac. location for dem./renov.
- ⑤ Start date / Completion date

Emission Control Proced. Section 61.147

Not required by EPA regulations
But recommend follow 61.147 a-g

Demolition / Renovation of Friable Asbestos

Applicability Categories Section 61.145

61.145(c) Demolition - ORDERED BY State or local gov't., facility structurally unsound and in danger of imminent collapse.
≥ 260 lin.ft. (piped) or ≥ 160 sq. ft. other fac. comp.

Notification Req. Section 61.146

Written notification to EPA required as early as possible prior to demolit.
Recommend at least 10 days

Emission Control Proced. Section 61.147

- ① Name/add. of owner/op. of rem./dem. firm
- ② Bldg. description (size, age, prior use)
- ③ Amount of ash. in facility
- ④ Fac. location for dem./renov.
- ⑤ Start date / completion date
- ⑥ Descrip. of dem./renov. and methods
- ⑦ Procedures followed in dem./renov. to comply with Subpart M
- ⑧ Name & location of waste disc. site

Asbestos Removal Proc. Section 61.146

- (9) Name, title and authority of State/local gov. 4. rep. ordering demolition.

Emission Control Proced. Section 61.147

- (d) After removing facility component w/ asb.
- Wet during stripping - OR -
- Use local exhaust vent. & collection (No V.E. or designed & oper. 61.154)
- (e) All asbestos removed or stripped
- Asb. must remain wet until contained for disposal
- Do not drop - lower material to ground
- Dust-tight chutes or containers if > 50 feet above ground - Exception: 61.147 (b)
- (f) Temp. at wetting point < 32°F
- Comply w/ (d) and (e) - no other wetting requirements

SEND NOTIFICATIONS TO:

EPA

Alaska Operations Office

3200 Hospital DR.

Suite 101

Juneau, AK 99801

ATTEN: KATHRYN PARSONS

Renovation / Renovation of Friable Asbestos

Applicability Categories Section 61.145

61.145(d) Renovation \geq 260 lin-ft. pipes or \geq 160 sq. ft. other fac. comp

Notification Req. Section 61.146

Written notification to EPA required.
as early as possible prior to renov.
Recommend at least 10 days

- ① Name, add. of owner/op. of rem./dem. firm
- ② Bldg. description (size, age, prior use)
- ③ Amount of asb. in facility
- ④ Fac. location for dem./renov.
- ⑤ Start date / Completion date
- ⑥ Descrip. of dem./renov. any methods
- ⑦ Procedures followed in dem./renov.
to comply with Subpart M
- ⑧ Name & location of waste disp. site

Emission Control Proced. Section 61.147

- ① Remove asb. before wrecking or dismantling that would break asb. mat. or preclude access
- ② Removal of facility component w/ asbestos
in sections
 - Wet the areas to be cut.
 - Do not drop - lower the units to ground
- ③ Removing/stripping asb. from intact

Notification Req. Section 61.145

SEND NOTIFICATIONS TO:

EPA

ALASKA Operations Office

3200 Hospital Dr.

Suite 101

Juneau, AK 99801

Attn: Ventilation Division

Emission Control Proced. Section 61.147

Exception: Unavoidable damage to equipment

- Request EPA to make determination
- If damage unavoidable, must use exhaust ventilation & collection sys. (No v.e. or designed & oper. 61.154)
- (d) After removing facility component with asb.
 - Wet during stripping - OR -
 - Use local exhaust vent. & collection (No v.e. or designed & oper. 61.154)
- (e) All asbestos removed or stripped
 - Asb. must remain wet until contained for disposal
 - Do not drop - lower material to ground
 - Dust-tight chutes or containers if > 50 feet above ground - Exception: 61.147 (b)
- (f) Temp. at wetting point < 32°F
 - Comply w/ (d) and (e) - no other wetting requirements

Demolition / Renovation Projects
Standards for Waste Disposal of Friable Asbestos *

61.152

- (a) Deposit all asbestos waste (friable & control equip) at waste disposal site operated by 61.158
- (b) No visible emissions (collection, process, packaging, transport, deposit)

-OR-

1) Treat ash waste with water (no V.E. or use air cleaning 61.154)

- Seal wet asbestos in leak-tight containers (suggest 6 mil bag)

- Label containers (61.152(b)(1) iii OR 29CFR 1910.1001(G)(5)(i))

-OR-

2) Process asbestos waste into non-friable forms (no V.E. or use air cleaning 61.154)

-OR-

3) Submit alternative disposal to EPA for approval

* Demolition / Renovation projects < 260 lin. ft. or < 160 sq. ft. of friable ash are excluded from EPA waste disposal requirements but are not excluded from DofL or ADEC regulations.

Demolition / Renovation Projects

Active Waste Disposal

61.156

- a) No U.E. from waste disposal site
- b) Natural barrier or warning signs & fencing
- c) Instead of a) and b) at least once every 24 hours newly deposited asbestos waste covered with a minimum of 6 inches of compacted non-asbestos-containing material.

Substance	ppm	mg/M ³ (Note 2)
Coal tar oil volatiles, <i>see</i> Phenanthrene, acridine, chrysene		
Cobalt, metal fume & dust	0.1	
Copper fume	0.1	
Dusts and Mists	1	
Corundum Al ₂ O ₃ (Note 4)		
Cotton dust, raw - <i>See</i> §1910.1043 and (Note 7)		
Crag herbicide	1	
	15	
Crocol (all isomers)-Skin	5	22
	8	6
Crotonaldehyde	80	245
Cumene-Skin		

Substance (Note 1)	ppm	mg/M ³ (Note 2)
Cyanide (as CN)-Skin		5
Cyanogen	10	
Cyclohexane	500	1,050
Cyclohexanol	50	200
Cyclohexanone	50	200
Cyclohexene	200	1,015
Cycloheptadecane	75	200

2,4-D		10
DDT-Skin		1
DDVP, <i>see</i> Dichlorvos		
Dibromac-Skin	0.05	0.3
Demeton-Skin		0.1
Diacetone alcohol (4-hydroxy-4-methyl-2-pentanone)	50	240
1,2-Dibromoethane, <i>see</i> Ethylene-diamine		
Diazomethane	0.2	0.4
Diborane	0.1	0.1

C 1,2-Dibromoethane (ethylene dibromide)-Skin	25	190
Dibutyl phosphate	1	5
Dibutylphthalate		9
C Dichloroacetylene	0.1	0.4
C o-Dichlorobenzene	50	300
p-Dichlorobenzene	75	450
Dichlorodifluoromethane	1,000	4,950
1,3-Dichloro-5,8-dimethylhydantoin		0.2
1,1-Dichloroethane	100	400
1,2-Dichloroethane	50	200
1,2-Dichloroethylene	200	720
C Dichloroethyl ether-Skin	15	90

Dichloromethane, <i>see</i> Methylene-chloride		
Dichloromonofluoromethane	1,000	4,200
C 1,1-dichloro-1-nitroethane	10	60
1,2-Dichloropropane, <i>see</i> Propylenedichloride		
Dichlorotetrafluoroethane	1,000	500
Dichlorvos (DDVP)-Skin		1
Dieldrin-Skin		0.25
Diethylamine	25	75
Diethylamino ethanol-Skin	10	50
C Diethylene triamine-Skin	10	42
Diethyl ether, <i>see</i> Ethyl ether		
Difluorodibromomethane	100	260

C Diglycidyl ether (DGE)	0.5	2.9
Dihydroxybenzene, <i>see</i> Hydroquinone		
Dihydroxyacetone	50	250
Diboropyramine-Skin	5	20
Dimethoxymethane, <i>see</i> Methylal		
Dimethyl acetamide-Skin	10	25
Dimethylamine	10	13
Dimethylaminobenzenes, <i>see</i> Xylidene		
Dimethylamill (N-dimethylamine)-Skin	5	20
Dimethylbenzene, <i>see</i> Xylene		
Dimethyl 1,2-dibromo-2,2-dichloroethyl phosphate, (Dibrom)		3
Dimethylformamide-Skin	10	20
2,6-Dimethylheptanone, <i>see</i> Diisobutyl ketone		
1,1-Dimethylhydrazine-Skin	0.5	1
Dimethylphthalate		5
Dimethylsulfate-Skin	1	5
Dinitrobenzene (all isomers)-Skin		1
Dinitro-cresol-Skin		0.2
Dibutylamine-Skin		1.5
Dioxane (Dioxolene dioxide)-Skin	100	350
Diphenyl	0.2	1

Substance (Note 1)	ppm	mg/M ³ (Note 2)
Diphenylamine		10
Diphenylmethane diisocyanate <i>see</i> Methylene bisphenyl isocyanate MDI		
Dipropylene glycol methyl ether-Skin	100	600
Di-sec-octyl phthalate (Di-2-ethylhexylphthalate)		8

Emery (Note 4)		
Endosulfan (Thiodan)-Skin		0.1
Endrin-Skin		0.1
Epichlorohydrin-Skin	5	19
EPN-Skin		0.5
1,2-Epoxypropane, <i>see</i> Propylene oxide		
2,3-Epoxy-1-propanol, <i>see</i> Glycidol		
Ethane (Note 3)		
Ethanthiol, <i>see</i> Ethylmercaptan		
Ethanolamine	5	5
2-Ethoxyethanol-Skin	200	740
2-Ethoxyethylacetate (Cellulosolve acetate)-Skin	100	540
Ethyl acetate	400	1,400
Ethyl acrylate-Skin	25	100
Ethyl alcohol (ethanol)	1,000	1,500
Ethylamine	10	18
Ethyl sec-amiyl ketone (3-methyl-2-heptanone)	25	130
Ethyl benzene	100	435
Ethyl bromide	200	890
Ethyl butyl ketone (3-Heptanone)	50	230
Ethyl chloride	1,000	2,800
Ethyl ether	400	1,200
Ethyl formate	100	300
Ethyl mercaptan	0.5	1
Ethyl silicate	100	250
Ethylene (Note 3)		
Ethylene chlorohydrin-Skin	5	10
Ethylene-diamine	10	25
Ethylene dibromide, <i>see</i> 1,2-Dibromoethane		
Ethylene dichloride, <i>see</i> 1,2-Dichloroethane		

C Ethylene glycol diacetate and/or Nitroglycerine-Skin (Note 3)	0.2	
Ethylene glycol monomethyl ether acetate, <i>see</i> Methyl cellosolve acetate		
Ethyleneimine-Skin	0.5	1
Ethylene oxide	50	90
Ethylidene chloride, <i>see</i> 1,2-Dichloroethane		
N-Ethylmorpholine-Skin	2	0
94		

Ferbam		15
Ferrocadium dust		1
Fibrous glass (Note 4)		
Fluoride (as F)		2.5
Fluorine	0.1	0.2
Fluorotrichloromethane	1,000	5,600
C Formaldehyde	5	5
Formic acid	5	7
Furfural-Skin	5	20
Furfuryl alcohol	50	200

Gasoline (Note 9)		
Glycerine mist (Note 4)		
Glycidol (2,3-Epoxy-1-propanol)	50	150
Glycol monomethyl ether, <i>see</i> 2-Ethoxyethanol		

Substance	ppm (Note 1)	mg/M ³ (Note 2)
Graphite, (Synthetic) (Note 4)		
Guthion, <i>see</i> Azinphosmethyl		
Gypsum (Note 4)		
Helium		0.5
Hellum (Note 3)		
Heptachlor-Skin		0.5
Heptane (n-heptane)	500	2,000
Hexachloroethane-Skin	1	10
Hexachlorophthalene-Skin		0.2

RULES AND REGULATIONS

ment shall be cleaned and disinfected immediately after each use.

The following requirements from 29 CFR Part 1910 (General Industry) have been identified as applicable to construction (29 CFR 1926.103 Respiratory protection), in accordance with their respective scope and definitions.

§ 1910.91 Ventilation.

(a) Abrasive blasting.—(1) Definitions applicable to this paragraph

(ii) Abrasive-blasting respirator. A continuous flow air-line respirator constructed so that it will cover the wearer's head, neck, and shoulders to protect him from rebounding abrasive.

(5) Personal protective equipment. (i) Only respiratory protective equipment approved by the Bureau of Mines, U.S. Department of the Interior (see 30 CFR Part 11) shall be used for protection of personnel against dusts produced during abrasive-blasting operations.

(ii) Abrasive-blasting respirators shall be worn by all abrasive-blasting operators.

(3) When using silica sand in manual blasting operations where the nozzle and blast are not physically separated from the operator in an exhaust ventilated enclosure.

(8) Scope. This paragraph (a) applies to all operations where an abrasive is forcibly applied to a surface by pneumatic or hydraulic pressure, or by centrifugal force. It does not apply to steam blasting, or steam cleaning, or hydraulic cleaning methods where work is done without the aid of abrasives.

§ 1910.134 Respiratory protection.

(a) Permissible practice. (1) In the control of those occupational diseases caused by breathing air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors, the primary objective shall be to prevent atmospheric contamination. This shall be accomplished as far as feasible by accepted engineering control measures (for example, enclosure or confinement of the operation, general and local ventilation, and substitution of less toxic materials). When effective engineering controls are not feasible, or while they are being instituted, appropriate

respirators shall be used pursuant to the following requirements.

(2) Respirators shall be provided by the employer when such equipment is necessary to protect the health of the employee. The employer shall provide the respirators which are applicable and suitable for the purpose intended. The employer shall be responsible for the establishment and maintenance of a respiratory protective program which shall include the requirements outlined in paragraph (b) of this section.

(3) The employee shall use the provided respiratory protection in accordance with instructions and training received.

(b) Requirements for a minimal acceptable program. (1) Written standard operating procedures governing the selection and use of respirators shall be established.

(2) Respirators shall be selected on the basis of hazards to which the worker is exposed.

(3) The user shall be instructed and trained in the proper use of respirators and their limitations.

(4) Where practicable, the respirators should be assigned to individual workers for their exclusive use.

(5) Respirators shall be regularly cleaned and disinfected. Those issued for the exclusive use of one worker should be cleaned after each day's use or more often if necessary. Those used by more than one worker shall be thoroughly cleaned and disinfected after each use.

(6) Respirators shall be stored in a convenient, clean, and sanitary location.

(7) Respirators used routinely shall be inspected during cleaning. Worn or deteriorated parts shall be replaced. Respirators for emergency use such as self-contained devices shall be thoroughly inspected at least once a month and after each use.

(8) Appropriate surveillance of work area conditions and degree of employee exposure or stress shall be maintained.

(9) There shall be regular inspection and evaluation to determine the continued effectiveness of the program.

(10) Persons should not be assigned to tasks requiring use of respirators unless it has been determined that they are physically able to perform the work and use the equipment. The local physician shall determine what health and physical conditions are pertinent. The respirator user's medical status should be reviewed periodically (for instance, annually).

(11) Approved or accepted respirators shall be used when they are available. The respirator furnished shall provide adequate respiratory protection against the particular hazard for which it is designed in accordance with standards established by competent authorities. The U.S. Department of Interior, Bureau of Mines, and the U.S. Department of Agriculture are recognized as such authorities. Although respirators listed by the U.S. Department of Agriculture continue to be acceptable for protection against specified pesticides, the U.S. Department of the Interior, Bureau of Mines, is the agency now responsible for testing and approving pesticide respirators.

(c) Selection of respirators. Proper selection of respirators shall be made according to the guidance of American National Standard Practices for Respiratory Protection Z88.2-1969.

(d) Air quality. (1) Compressed air, compressed oxygen, liquid air, and liquid oxygen used for respiration shall be of high purity. Oxygen shall meet the requirements of the United States Pharmacopoeia for medical or breathing oxygen. Breathing air shall meet at least the requirements of the specification for Grade D breathing air as described in Compressed Gas Association Commodity Specification G-7.1-1966. Compressed oxygen shall not be used in supplied-air respirators or in open circuit self-contained breathing apparatus that have previously used compressed air. Oxygen must never be used with air line respirators.

(2) Breathing air may be supplied to respirators from cylinders or air compressors.

(i) Cylinders shall be tested and maintained as prescribed in the Shipping Container Specification Regulations of the Department of Transportation (49 CFR Part 178).

(ii) The compressor for supplying air shall be equipped with necessary safety and standby devices. A breathing air-type compressor shall be used. Compressors shall be constructed and situated so as to avoid entry of contaminated air into the system and suitable in-line air purifying sorbent beds and filters installed to further assure breathing air quality. A receiver of sufficient capacity to enable the respirator wearer to escape from a contaminated atmosphere in event of compressor failure, and alarms to indicate compressor failure and overheating shall be installed in the system. If an oil-lubricated compressor is used, it shall have a

RULES AND REGULATIONS

cleaning procedure and be assured that he will always receive a clean and disinfected respirator. Such assurances are of greatest significance when respirators are not individually assigned to workers. Respirators maintained for emergency use shall be cleaned and disinfected after each use.

(4) Replacement or repairs shall be done only by experienced persons with parts designed for the respirator. No attempt shall be made to replace components or to make adjustment or repairs beyond the manufacturer's recommendations. Reducing or admission valves or regulators shall be returned to the manufacturer or to a trained technician for adjustment or repair.

(5) (i) After inspection, cleaning, and necessary repair, respirators shall be stored to protect against dust, sunlight, heat, extreme cold, excessive moisture, or damaging chemicals. Respirators placed at stations and work areas for emergency use should be quickly accessible at all times and should be stored in compartments built for the purpose. The compartments should be clearly marked. Routinely used respirators, such as dust respirators, may be placed in plastic bags. Respirators should not be stored in such places as lockers or tool boxes unless they are in carrying cases or cartons.

(ii) Respirators should be packed or stored so that the facepiece and exhalation valve will rest in a normal position and function will not be impaired by the elastomer setting in an abnormal position.

(iii) Instructions for proper storage of emergency respirators, such as gas masks and self-contained breathing apparatus, are found in "use and care" instructions usually mounted inside the carrying case lid.

(3) **Identification of gas mask canisters.** (1) The primary means of identifying a gas mask canister shall be by means of properly worded labels. The secondary means of identifying a gas mask canister shall be by a color code.

(2) All who issue or use gas masks falling within the scope of this section shall see that all gas mask canisters purchased or used by them are properly labeled and colored in accordance with these requirements before they are placed in service and that the labels and color are properly maintained at all times thereafter until the canisters have completely served their purpose.

(3) On each canister shall appear in bold letters the following:

(1) —
Canister for _____
(Name for atmospheric contaminant)

or

Type N Gas Mask Canister

(ii) In addition, essentially the following wording shall appear beneath the appropriate phrase on the canister label: "For respiratory protection in atmospheres containing not more than _____ percent by volume of _____."

(4) Canisters having a special high-efficiency filter for protection against radionuclides and other highly toxic particulates shall be labeled with a statement of the type and degree of protection afforded by the filter. The label shall be affixed to the neck end of, or to the gray stripe which is around and near the top of, the canister. The degree of protection shall be marked as the percent of penetration of the canister by a

0.3-micron-diameter dioctyl phthalate (DOP) smoke at a flow rate of 85 liters per minute.

(5) Each canister shall have a label warning that gas masks should be used only in atmospheres containing sufficient oxygen to support life (at least 18 percent by volume), since gas mask canisters are only designed to neutralize or remove contaminants from the air.

(6) Each gas mask canister shall be painted a distinctive color or combination of colors indicated in Table 1-1. All colors used shall be such that they are clearly identifiable by the user and clearly distinguishable from one another. The color coating used shall offer a high degree of resistance to chipping, scaling, peeling, blistering, fading, and the effects of the ordinary atmospheres to which they may be exposed under normal conditions of storage and use. Appropriately colored pressure sensitive tape may be used for the stripes.

TABLE 1-1

Atmospheric contaminant to be protected against	Colors assigned*
Acid gases _____ Hydrocyanic acid gas _____	White. White with 4-inch green stripe completely around the canister near the bottom.
Chlorine gas _____	White with 4-inch yellow stripe completely around the canister near the bottom.
Organic vapors _____ Ammonia gas _____ Acid gases and ammonia gas _____	Black. Green. Green with 4-inch white stripe completely around the canister near the bottom.
Carbon monoxide _____ Acid gases and organic vapors _____ Hydrocyanic acid gas and chloroacetic acid vapor _____	Blue. Yellow. Yellow with 4-inch blue stripe completely around the canister near the bottom.
Acid gases, organic vapors, and ammonia gases. Radioactive materials, examples tritium and noble gases.	Brown. Purple (Maximal).
Particulates (dust, fumes, mist, fog, or smoke) in combination with any of the above gases or vapors.	Canister color for contaminant, as designated above, with 4-inch gray stripe completely around the canister near the top.
All of the above atmospheric contaminants _____	Red with 4-inch gray stripe completely around the canister near the top.

*Gray shall not be assigned as the main color for a canister designed to remove acids or vapors.
Note: Orange shall be used as a complete body, or stripe color to represent gases not included in this table. The user will need to refer to the canister label to determine the degree of protection the canister will afford.



MATERIAL SAFETY DATA SHEET

SUBSTANCE

(Chemical Name)

NO.

PRODUCT NAME, NUMBER, SYNONYM

COMMON OR TRADE NAME

MANUFACTURER'S NAME AND ADDRESS

TELEPHONE NUMBER

HEALTH HAZARDS

HAZARD RATING

 DANGER WARNING CAUTION

TYPE OF HAZARD

SYMPTOMS OF EXPOSURE

EFFECTS OF EXPOSURE

EMERGENCY FIRST AID

FIRE, EXPLOSION, AND REACTIVITY DATA

EXTINGUISHING AGENTS AND FIRE FIGHTING METHODS

FLASH POINT

FLAMMABLE OR EXPLOSIVE LIMIT

OPEN CUP

° C CLOSED CUP

°C

LOWER

% UPPER

%

IGNITION TEMPERATURE

°C

AUTO-IGNITION TEMPERATURE

°C

PRODUCTS FORMED BY FIRE OR EXCESSIVE HEAT

CONDITIONS TO AVOID

STABILITY

 Stable Unstable -- Explain Conditions

INCOMPATIBLE MATERIALS AND REACTIONS

PRODUCTS OF DECOMPOSITION

HAZARDOUS POLYMERIZATION

 Will not occur May occur -- Explain Reaction and Products

PROTECTION EQUIPMENT

PERSONAL PROTECTION

VENTILATION

ADDITIONAL PROTECTIVE EQUIPMENT

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing,
Shipbuilding, and Shipbreaking (29 CFR 1915, 1918, 1917)

SECTION I

MANUFACTURER'S NAME		EMERGENCY TELEPHONE NO.
ADDRESS (Number, Street, City, State, and ZIP Code)		
CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
CHEMICAL FAMILY	FORMULA	

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Unit)	ALLOYS AND METALLIC COATINGS	%	TLV (Unit)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Unit)

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H ₂ O=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	LFL	UFL
EXTINGUISHING MEDIA			
SPECIAL FIRE FIGHTING PROCEDURES			
UNUSUAL FIRE AND EXPLOSION HAZARDS			

SAMPLE P.O. CLAUSES

It is a direct condition of the term of this order that the vendor shall supply the purchaser with the information required on the Material Data Sheet attached hereto. In addition the vendor shall supply any material related to the safe use of this material and hazards associated with its use including but not limited to installation procedures and personnel protective equipment requirements. All hazardous components shall be identified. Data requested shall be furnished with the material shipment and a copy sent to this office at

No material will be accepted for delivery without the required information.

04.0101(e) TABLE 1-1

1910.1001	Asbestos.
1910.1002	Coal tar pitch volatiles; interpretation of term.
1910.1003	4-Nitrobiphenyl.
1910.1004	alpha-Naphthylamine.
1910.1005	4, 4'-Methylene bis(2-chloroaniline).
1910.1006	Methyl chloromethyl ether
1910.1007	3, 3'-Dichlorobenzene (and its salts)
1910.1008	bis-Chloromethyl ether.
1910.1009	beta-Naphthylamine.
1910.1010	Benzidine.
1910.1011	4-Aminodiphenyl.
1910.1012	Ethyleneimine.
1910.1013	beta-Propiolactone.
1910.1014	2-Acetylaminofluorene.
1910.1015	4-Dimethylaminoazobenzene.
1910.1016	N-Nitrosodimethylamine.
1910.1017	Vinyl Chloride.
1910.1018	Inorganic arsenic.
1910.1028	Benzene.
1910.1029	Coke Oven Emissions
1910.1043	Cotton dust.
1910.1044	1,2 - dibromo - 3 - chloropropane.
1910.1045	Acrylonitrile.
1910.1046	Exposure to cotton dust in cotton gins.



LAWS OF ALASKA

1983

Source

CSSB 79(Reg)

Chapter No.

93

AN ACT

Relating to toxic and hazardous substances in the workplace and providing for an effective date.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

THE ACT FOLLOWS ON PAGE 1, LINE 9

Approved by the Governor: July 25, 1983
Actual Effective Date: Sections 1, 3, and 4 take effect
July 26, 1983; and Section 2 takes effect July 1, 1984

AN ACT

Relating to toxic and hazardous substances in the work-
place; and providing for an effective date.

* Section 1. AS 18.60.030 is amended by adding new paragraphs to read:
(12) annually publish a list of toxic and hazardous
substances;

(13) maintain a current set of OSHA form 20's or equivalent
information for toxic and hazardous substances, and other information
relevant to toxic and hazardous substances;

(14) assist employers, upon request, to identify and obtain
information on toxic and hazardous substances and develop employee
safety education programs.

* Sec. 2. AS 18.60 is amended by adding new sections to read:

Sec. 18.60.065. IMPORTATION OF TOXIC AND HAZARDOUS SUBSTANCES.
Toxic and hazardous substances imported into the state shall be accom-
panied by a federal Occupational Safety and Health Administration
(OSHA) form 20 or equivalent information. This requirement does not
apply to a substance for which the in-state purchaser has already
received the most current information.

Sec. 18.60.066. EMPLOYEE SAFETY EDUCATION PROGRAMS. (a) An
employer shall conduct a safety education program for an employee
before the employee performs a new work assignment that may result in
the employee being exposed to a toxic or hazardous substance for which
the employee has not received safety instruction as provided under (b)

Chapter 93

1 of this section.

2 (b) An employee safety instruction program shall inform the
3 employee of

4 (A) the location, properties, and known or suspected
5 acute and chronic health effects of the hazardous or toxic sub-
6 stances to which the employee is exposed in the workplace;

7 (B) the nature of the operations that could result in
8 exposure to hazardous or toxic substances, as well as any neces-
9 sary handling or hygienic practices or precautions; and

10 (C) the location, purpose, proper use, and limitations
11 of personal protective equipment used in the workplace.

12 Sec. 18.60.067. INFORMATION PROVIDED ON EMPLOYEE'S REQUEST. (a)
13 An employer shall make available to an employee on request a copy of
14 the most recent OSHA form 20 or equivalent written information for a
15 toxic or hazardous substance to which the employee may be exposed. If
16 the employer does not have the copy or information requested, the
17 employer shall request a copy from the department or the manufacturer
18 of the substance within three state government working days after
19 receiving the request.

20 (b) If the copy or information requested under (a) of this
21 section is not made available to the employee within 15 calendar days
22 after the request is received, the employer shall take measures to
23 assure that employees are not exposed to the substance to which the
24 copy or information pertains until the copy or information is made
25 available to the employee who made the request. This subsection
26 applies only to substances for which an OSHA form 20 or equivalent
27 information is required under OSHA regulations. This subsection does
28 not alter, deny, or abrogate any right an employee may have under law
29 to refuse to work under hazardous circumstances.

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Sac. 18.60.068. POSTING OF INFORMATION IN WORKPLACE. (a) The department shall print and make available to employers posters that contain notice of the provisions of this chapter relating to toxic and hazardous substances.

(b) An employer whose employees are or may be exposed in the workplace to a toxic or hazardous substance shall display the following information in a manner designed to notify the employees:

(1) a poster printed by the department under (a) of this section; and

(2) an OSHA form 20 or equivalent information for each toxic or hazardous substance to which an employee may be exposed in the workplace

(A) under normal conditions of work; or

(B) during a reasonably foreseeable emergency, including equipment failure and rupture of containers.

(c) Instead of posting the information required under (b)(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 information listed under (b)(2) of this section.

* Sec. 3. AS 18.60.105 is amended by adding new paragraphs to read:

(6) "be exposed" means to ingest, inhale, or absorb through the skin or eyes a substance, or fumes or other potentially harmful aspect of a substance;

(7) "OSHA" means the federal Occupational Safety and Health Administration;

(8) "toxic or hazardous substance" includes

Chapter 93

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

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

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

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

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

18 (A) substances that because of their physical state,
19 volume, or concentration do not pose a health hazard upon expo-
20 sure;

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

23 (C) substances in transit;

24 (10) "transit" means conveyed in a sealed or unopened con-
25 tainer by a mode of transportation.

26 * Sec. 4. AS 18.60.105 is amended by adding a new subsection to read:

27 (b) In AS 18.60.130(14), 18.60.065 - 18.60.068, and 18.60.105-
28 (a)(9)

29 (1) "employee" means a person who works for an employer.

but not in a place used primarily as a personal residence;

(2) "employer" means a person, including the state and a political subdivision of the state, who has one or more employees working in a place not used primarily as a personal residence.

(3) "health hazard" means a substance capable of causing acute or chronic adverse effects to health;

(4) "workplace" means a place of employment other than a place used primarily as a personal residence.

* Sec. 5. Sections 1, 3, and 4 of this Act take effect immediately in accordance with AS 01.10.070(c).

* Sec. 6. Section 2 of this Act takes effect July 1, 1984.

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: CORDOVA AREA STREET SWEEPER CONTRACT, CENTRAL REGION, STATE OF ALASKA
85-25-1-052

The project consists of establishing, on an as needed basis, a no guaranteed minimum usage contract for rental of a street sweeper w/operator to be used in the Cordova area. A Contractors License is required. A Business License is required prior to award.

761
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562-

E: May 3, 1984 at 2:00 PM
State of Alaska
Dept. of Trans. & Pub. Facil.
Central Region, Headquarters
4111 Aviation Ave. (Pouch 6173)
Anchorage, Alaska 99502

PLANS: State of Alaska
Dept. of Trans. & Pub. Facil.
Chief, Technical Services
Pouch 6900 (4111 Aviation Ave.)
Anchorage, Alaska 99502
NO CHARGE

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C-25

: BARTLETT HIGH SCHOOL, ASBESTOS ABATEMENT, ANCHORAGE SCHOOL DISTRICT, ANCHORAGE, ALASKA

The work includes extensive removal and disposal of asbestos-containing material, demolition and reconstruction of ceilings, walls, and electrical and mechanical systems. Bidders will be prequalified. Because of the highly specialized nature of this construction work, only prequalified bidders will receive Bid Documents and be allowed to submit bids for this project. Prequalification requirements include Alaska contractor's and business licenses, previous asbestos abatement experience involving spray-applied asbestos acoustical and fireproofing material, excellent contract performance record and references.

ank
ject

TE: May 8, 1984 at 3:00 PM
Anchorage School District
Purchasing Department
4600 Debarr Avenue
(Pouch 6-614)
Anchorage, Alaska 99502

PLANS: Will be distributed by April 6, 1984
to interested bidders who prequalify

A-26

T: FIVE SCHOOLS - DIMOND, EAST, WEST HIGH SCHOOLS, CLARK JR. HIGH SCHOOL, AND MT. SPURR ELEMENTARY SCHOOL, ASBESTOS ABATEMENT, ANCHORAGE SCHOOL DISTRICT, ANCHORAGE, ALASKA

The work includes extensive removal and disposal of asbestos-containing material, demolition and reconstruction of ceilings, walls, and electrical and mechanical systems. Bidders will be prequalified. Because of the highly specialized nature of this construction work, only prequalified bidders will receive Bid Documents and be allowed to submit bids for this project. Prequalification requirements include Alaska contractor's and business licenses, previous asbestos abatement experience involving spray-applied asbestos acoustical and fireproofing material, excellent contract performance record and references.

est),
cost
area

TE: May 8, 1984 at 2:00 PM
Anchorage School District
Purchasing Department
4600 DeBarr Avenue (Pouch 6-614)
Anchorage, Alaska 99502

PLANS: Will be distributed by April 6, 1984
to interested bidders who prequalify

A-15

Carpenter claims material in Fairbanks center unsafe

PNM 1/26/85

By SUSAN FISHER
Staff Writer

A local carpenter refusing to work on the South Fairbanks Community Center because of asbestos materials says the city is inviting future hazards, but city and state officials disagree.

The new center, which was to be completed this month, is about a month behind schedule. It will be used as a child care center and community meetings.

The issue are thin wall boards containing asbestos and silica. The tiny particles from either can be hazardous if inhaled. Asbestos is a known cancer-causing substance if exposure is prolonged.

But the Fairbanks city engineer and two state labor officials say there are no hazards to workers installing the boards providing precautions are taken. Once in place, the materials pose no hazards to people using the building, he said.

The \$1 million center at 24th and Tiert streets is being built with state and federal funds. On Feb. 11, Fairbanks City Council will hold a public hearing on a bill giving a 20-year lease, for one dollar a year, to the Presbyterian Ministry Center, which wants to operate the center.

The Rev. Lennell Cleaver, who leads the alliance's building committee, said he personally made inquiries at the hearing about carpenter Ray Halderman's concerns, and he is satisfied there will be no hazards.

The amount of particles that could escape is an amount that wouldn't hurt anything," Cleaver concludes from his conversations with various officials.

But Ray Halderman, a member of the Carpenters Union, says the city is inviting future risk in using the cement asbestos boards in the center's



POSSIBLE DANGER—Mert Meeker, project manager for Toombs Construction project on the South Fairbanks Community Center, points to the caution warning on a sheet of asbestos wallboard. He is in a room specially sealed off with plastic in order to cut the asbestos. (Staff photo by Charles Mason)

kitchen and bathroom areas. Halderman says he's been raising his concerns to officials the past two months, and he refuses to work at the site.

"They're seeming to say it's not a problem, but I say it's dumb putting this material in," he says, when there are cheaper and less hazardous materials available.

"The main problem is the danger of it being cut after it's installed," Halderman says.

City Engineer John Phillips disagrees. "We haven't been able to find anybody other than Mr. Halderman" who sees a hazard, Phillips says.

The cement asbestos boards were

CARPENTER. . .

(Continued from page 1)

recommended by architect Roger Cotting, and are specified in the city's contract with Toombs Construction Co.

Phillips has called a number of agencies, including the federal Environmental Protection Agency. The only hazards appear to be during cutting and installation.

"We still have an open mind about this, but no one has recommended that we not use this material," Phillips said Friday.

Meanwhile, two officials with the Alaska Department of Labor's OSHA sections say the contractor's plans for protecting workers go beyond employer requirements. They do not see hazards for building users once construction is finished and the area is thoroughly vacuumed.

Halderman, though, wonders what will happen if someone unwittingly damages, cuts or puts a hole in the boards without knowing of the asbestos fibers and silica particles.

Phillips replies: "The lease agreement for the building contains a clause there will be no additions, alterations, etc. without obtaining the city engineer's written approval in advance."

Mert Meeker, Toombs Construction project manager, says Glasweld, manufactured in Pennsylvania, is specified in the contract.

The boards, about one-eighth-inch thick, come in large sheets. Those are cut to size, and cuts are made for fixtures. Glasweld, contains 51 percent cement, 15 percent asbestos and 34 percent silica, said Meeker.

Among attractive qualities of this product are its resistance to fire, its durability, moisture resistance and easy maintenance. The boards are being installed over sheetrock at the new center.

Meeker expresses concern over the silica, and says the extra precautions, which Toombs will pay out of its own pocket, are as much due to the silica as the asbestos.

put in asbestos bill fill

Workers will wear disposable coveralls and use respirators to avoid inhaling particles. The work areas will be covered with Visqueen with an air chamber leading to them. Special filters will be placed on the vacuum system, Meeker said.

Toombs Construction and the city engineering office are relying on the free advice of a state OSHA consultant, Pat Patterson, who has been at the job site and made his recommendations.

Bill Blythe, an OSHA industrial hygienist, said installing this type of asbestos product is far less hazardous than, say, removal of older asbestos products, which can flake. It is those older products that are the subject of expensive removals in schools throughout the nation and Alaska.

This board, Blythe said, is "very well bonded."

Once the building is complete, users should not be exposed to hazards. "If people working on it or cutting on it or scraping things off of it, you may generate asbestos fiber, but it's hard to imagine there would be any exposure. The hazard comes from fibers in the air. Just because it's in the building doesn't mean it's in the air," said Blythe.

... FACE TOXIC HAZARDS

the past decade create a new set of problems. Known as closed environments, these buildings have central ventilation systems that recirculate air—with little venting or fresh air intake. Employees and students in these schools report a wide range of health problems—including headaches, dizziness, nausea, fatigue, respiratory problems, and flu-like illnesses—symptomatic of chemical poisoning.

The buildings contain such a wide variety of potential health hazards that it's often extremely difficult to determine the source of problems in any one school. Central ventilation systems can malfunction, not allowing sufficient fresh air into the building. Or the fumes from a toxic substance in one location can be circulated throughout the school.

Four years ago, students and staff at Oakland (Calif.) High School developed symptoms of chemical poisoning shortly after the brand new building opened. Formaldehyde gas and other toxic substances were vaporizing from bookshelves, particle board, and carpeting in the closed-environment school. Exhaust fans had to be installed, and some areas of the school coated with a plastic sealant.

At the closed-environment Willamina (Oregon) Elementary/Middle School, local Association president Sally Davis reports, "The faculty has been complaining of frequent sinus infections and headaches, itching eyes, and extended flu-like illnesses ever since the building opened several years ago." Formaldehyde and carbon dioxide levels have been tested without finding the cause of health problems at Willamina. Davis, who teaches in the school, faces a common problem. "It's so difficult to prove anything," she says, "or to know the cause of our health complaints."

Many of America's public schools are built on or near landfills that contain toxic wastes. They are also located near nuclear plants, factories that emit dangerous pollutants, or freeways where automobile exhaust fumes cause dangerously high concentrations of lead. Our schools, in short, are subject to all hazards present in the towns, cities, and suburbs in which they're located.

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Toxic hazards in schools are a danger to all. Chemical fumes can threaten employees and students who never enter the chemistry lab; a duplicating machine's methanol fumes can be circulated throughout the school. The janitor

who sweeps up clay dust at the end of the day is no more aware than the art teacher or student that the dust he inhales may contain asbestos or silica.

Wherever they're found, toxic hazards pose two types of health risks. An acute exposure will result in immediate and visible symptoms. The more insidious danger is from chronic exposure. Day after day, year after year, both teachers and support staff come into contact with hazardous substances. The damage goes unnoticed until, years later, a cancer or other serious health problem develops—it's cause rarely known.

Health hazards can be controlled. In many cases, a toxic substance can be replaced by a nonpoisonous material. When a material with a toxic ingredient is crucial either to the learning process or to upkeep of the school, it should be handled with the same precautions industrial workers demand from their employers.

The federal Occupational Safety and Health Act doesn't cover public school employees. Since it's up to the legislatures to pass laws extending occupational safety and health protections to school personnel, the situation varies from state to state.

It is left to school employees to ensure that their schools are not hazardous to their health. Local Associations can form health and safety committees to become the toxic watchdogs for their schools.

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Making schools safe takes work. But our health—even our lives—and those of our students may depend on our efforts.

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RESOURCES

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New Jersey Local Identifies Asbestos Hazard

Questions about the safety of asbestos removal in some 200 New Jersey schools created a crisis as schools prepared to open this September. Less than a week before the scheduled beginning of the school year, a state official's report charged that unsafe asbestos removal over the summer may have endangered summer workers and could pose a future threat to students and employees.

The New Jersey Education Association, on September 25, sued over 200 school boards and asbestos-related firms, demanding that they set up a trust fund to pay for regular checkups for school employees exposed to asbestos.

At least one New Jersey school district, however, is not affected by the crisis. In East Windsor, the NJEA support staff affiliate and the local parents group had successfully fought to have asbestos removed the previous year.

"We knew where the asbestos was,"



Officers of the support and teachers associations in front of one of the East Windsor, N.J., schools where they won asbestos removal. From left: Mariya Nemeth, Bill Sweeney, Flo Rilecio, and Bob Patton.

recalls East Windsor Regional Supportive Staff Association President Bill Sweeney. "It was in every school."

"The school board claimed the asbestos wasn't dangerous," Sweeney adds. But the parents and the Association kept insisting on action. When they finally forced the board to test all asbestos-containing materials in the schools, friable asbestos was found.

Removal began in the summer of 1983. Sweeney, who has been trained in asbestos removal, emphasizes that this process requires extreme caution.

"EPA guidelines must be strictly followed," he says. "Sloppy removal work actually increases the danger—not only for the workers, but for all employees and students in the school."

—H.S.

STATE OF ALASKA

BILL SHEFFIELD, GOVERNOR

DEPARTMENT OF LABOR

Pouch 7-018
Anchorage, Alaska 99510

OFFICE OF THE COMMISSIONER

Alaska Safety Advisory Council

January 29, 1985

Alaska State Legislature
Joint HESS Committee
Max F. Gruenberg, Jr.
Sponsor, HB-5
Pouch V
Juneau, Alaska 99811

Members of the Committee:

As a result of the teleconference on HB-5 on Friday, January 25, 1985, the Asbestos Abatement Fact Finding Committee offers the enclosed outline of our report to the Commissioner of Labor. This outline is offered to alert you to the areas we are addressing. We recognize that it is not very informative, but the development of the report has been directed towards a presentation date of February 15, 1985.

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Please contact Nancy Cannington at 264-2400 if you have any questions.

Very truly yours,



Ambrose Bittner II
Chairman
Asbestos Abatement Fact Finding Committee
Director - Apprenticeship & Training - US Department of Labor

AB:bv

cc: Commissioner Jim Robison, Alaska Department of Labor
Robert Landau
Eileen Plate

FACE TOXIC HAZARDS

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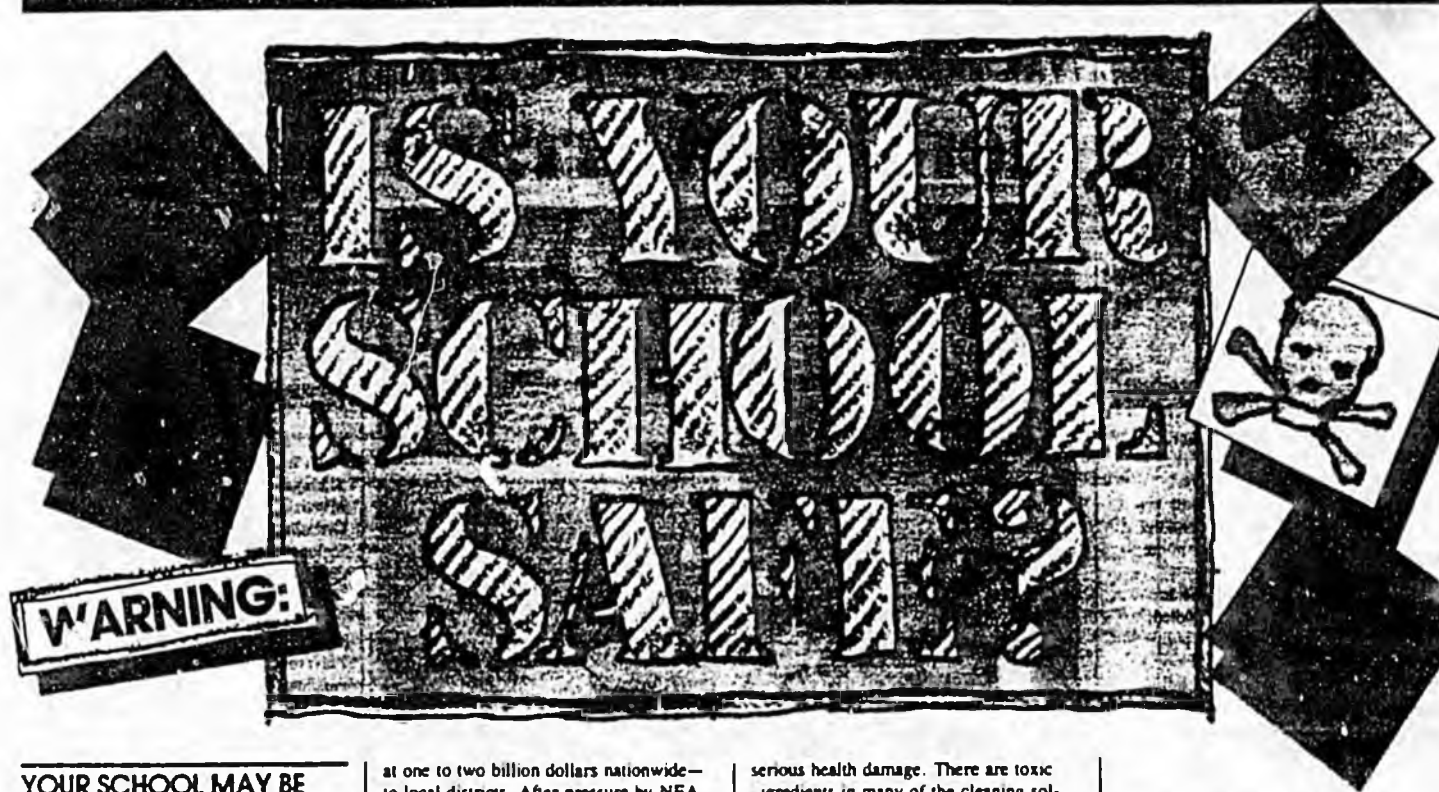
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—H.S.

EMPLOYEES AND STUDENTS . . .



YOUR SCHOOL MAY BE HAZARDOUS TO THE HEALTH OF STAFF AND STUDENTS ALIKE.

Maybe you think you're safe—that occupational exposure to toxic hazards is limited to places like steel mills, petroleum refineries, and chemical plants.

Schools, after all, are where children learn. No manufacturing takes place; there are no dangerous chemicals, no poisonous emissions. Schools are "safe."

Ten years ago few would have disputed that comfortable assumption. The absence of noxious fumes and billowing smokestacks provided a sense of security. No longer. We now recognize that unseen toxic hazards inhabit our schools.

Asbestos provided the first warning of toxic danger. For more than three decades, asbestos was the material of choice for fireproofing, soundproofing, and insulation in schools. Then scientists and public officials began to worry. A proven—and potent—cancer-causing agent, asbestos is virtually indestructible. But the materials that bind it together are not. These materials can become friable (easily crumbled) and release asbestos fibers into the air.

Slowly the recognition grew that asbestos is a time bomb ticking away in our nation's schools. In 1980 Congress passed legislation requiring school districts to inspect all buildings and notify parents and employees if friable asbestos was found. But the government does not require friable asbestos to be either sealed off or removed.

Last August, Congress passed the School Hazard Abatement Act of 1984, authorizing the Environmental Protection Agency (EPA) to spend up to \$600 million over the next seven years on grants and loans to school districts for asbestos removal. Initially the EPA told Congress it would not use the funds but would leave the cost of asbestos cleanup—estimated

at one to two billion dollars nationwide—to local districts. After pressure by NEA and other concerned groups, the Reagan EPA reversed itself, announcing last month that the funds would be used.

The EPA estimates that 15 million children and 1.4 million employees study and work in schools containing friable asbestos.

Asbestos is only the tip of the toxic iceberg. The potential health hazards in schools are many, and students as well as school employees are potentially at risk. Teachers, custodians, clerical workers, paraprofessionals, mechanics, and administrators—no school employee is immune from occupational health hazards.

Toxic hazards can be found in art rooms, science labs, and vocational shops. Most duplicating fluids contain methanol, a powerful solvent that can cause

serious health damage. There are toxic ingredients in many of the cleaning solvents and pesticides used in schools. Even the sites on which schools are built and the air that circulates through them can pose health dangers.

Some hazards, like asbestos, take considerable detective work and expertise to track down—and a lot of money to correct. Others are more easily identified and removed. They are dangers that—with awareness, some work, and cooperation—employees and parents can eliminate.

Art classrooms may be the most dangerous rooms in school. A major reason for the danger is lack of awareness that many art materials—including those designed for young children—contain substances that can cause cancer or damage to the reproductive, nervous, and respiratory systems, the heart, and other vital organs.

"Art materials aren't adequately labeled," explains Lou Spelich, an NEA-New York member in Albany who has taught art for 30 years. "We have to find the hazards," he adds, "because children—and especially teachers—are at risk."

From paints and magic markers to glues, clays, glazes, and silkscreen inks—the list of art materials containing ingredients that can cause long-term, serious health damage is astounding. As with any toxic substance, these materials pose a danger when inhaled, absorbed through the skin, or ingested by a person who licks his or her fingers, eats, chews gum, or smokes in their presence.

Safety has been a concern for many years in both science laboratories and vocational education workshops. But only recently has it been recognized that many commonly used materials pose serious health risks for students and employees alike.

A 1981 survey by the Consumer Product Safety Commission concluded that school science labs routinely contain "312 stock chemicals including 27 recognized or suspected carcinogens and 11 suspected teratogens" (chemicals that cause birth defects). Other health threats—such as damage to the lungs, liver, and kidneys—come from acids, organic solvents, and other chemical substances that are not cancer agents.

Many of the specimens used for dissection in biology labs are pickled in formaldehyde, a proven carcinogen in animals and a suspected one in humans.

In many schools, vocational shops now resemble mini-industrial workplaces, filled with sophisticated machinery and equipment, and posing health hazards similar to those found in the workplaces themselves. Dangers run the gamut: poisonous gases released during welding, carbon monoxide fumes in auto shops, toxic chemicals in cosmetology classes.

The many energy-efficient, "air-tight" school buildings constructed dur-

Ventilation Problems at Indian Brook

Teachers and students at Indian Brook Elementary School in Plymouth, Mass., began noticing health problems during the 1981-82 school year, more than four years after the new closed-environment school opened.

"Teachers and students were reporting frequent headaches, dizziness, nausea, and respiratory problems," recalls Susan Offner, a biology teacher and activist in the Education Association of Plymouth and Carver.

An unusually high number of childhood cancers were reported among students in the school. "Then we started counting," Offner reports. "We realized that out of 20 teacher pregnancies since 1979, there were four babies born with serious birth defects, three miscarriages, and one stillbirth. Something was terribly wrong."

Finding out what was wrong took investigations by three federal agencies, three state agencies, and one private lab.

"It was a very emotional period," says Mary LeSueur, president of the local Association. "We really weren't sure what was causing the problems."

The experts finally determined that due to a malfunction in the school's central ventilation system, no fresh air was entering the closed building. In addition, an unvented duplicating machine in the teacher's lounge was releasing methanol fumes that were circulating throughout the school.

After the duplicating machine was moved and vented, and the building's fresh air intake adjusted, the complaints of headaches, dizziness, and nausea stopped. The problem pregnancies remain unexplained.

"The most important thing," Susan Offner reflects, "is that other people learn of the problems we faced—and that they are alert for health problems in their own closed-environment schools."

—H.S.

DEPARTMENT OF LABOR

Pouch 7-018
Anchorage, Alaska 99510

OFFICE OF THE COMMISSIONER

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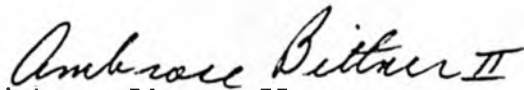
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Very truly yours,



Ambrose Bittner II
Chairman
Asbestos Abatement Fact Finding Committee
Director - Apprenticeship & Training - US Department of Labor

AB:bv

cc: Commissioner Jim Robison, Alaska Department of Labor
Robert Landau
Eileen Plate

Asbestos Abatement Facting Finding Committee

I. Introduction

Commissioner Robison to satisfy many petitions to approve asbestos abatement training programs, such as described by the following excerpt from a "Request for Proposals" by the Municipality of Anchorage:

"Contractor shall provide notarized certification by name and social security (number) certifying that all employees involved in asbestos removal have been thoroughly instructed through an Asbestos Removal Training Program as approved by the State of Alaska Department of Labor in the hazards of exposure to asbestos fibers; proper care and use of protective respiratory equipment; proper use of protective clothing; decontamination procedures and all other conditions and requirements as reviewed under relevant DOSH, EPA, and OSHA standards."

and a response by the purchasing officer to the members of the request for proposal evaluating committee to wit: that eight of nine proposers offered training programs of varying scope and strength. "Notwithstanding inferences to the contrary, no federal, state, or municipal guidelines exist against which specific training programs can be objectively evaluated. Absent such guidelines, the adequacy of individual programs remain in question."

The Commissioner recognizing the need as identified above and his responsibility to lead the way in this critical area of worker safety and health, appointed our industry (government, labor and management) task force to act as a fact finding committee for asbestos abatement and related problems.

The committee, although few in number, represents all aspects of this industry:

The committee includes:

1. Chair, Ambrose Bittner - State Director
U.S. Department of Labor - Bureau of Apprenticeship and Training
2. Co-Chair, Ron Cunningham - Safety and Health Director
Alaska General Contractors
3. Ray Jorgensen - Chief of Industrial Health Comp.
Alaska Department of Labor, Department of Safety and Health
4. Dan Middaugh - Member Asbestos Workers Local 91
Joint Apprenticeship and Training Committee Asbestos Abatement Instructor
Member, Board of Directors, Alaska Health Project
5. Leonard Limtiaco - Area Director
U.S. Department of Labor, Occupational Safety and Health Agency
6. Joe Churchill - Manager
E. J. Bartell Company
Secretary - Asbestos Workers Joint Apprenticeship and Training Committee
President, Western Insulation Contractors Association

7. Les Lauinger - Training Director
AGC - Laborers Training Trust
Instructor - Abestos Abatement

3. Nancy Cannington - Special Assistant to the Commissioner

The committee in its collective wisdom did not attempt to reinvent a wheel, but rather outline and describe existing practices and procedures. The committee report outlines procedures and programs to deal with the safety and health concerns of those involved in an asbestos abatement project.

Our report follows.

II. Scope

This report is intended to describe recommended rules which are in existence and to establish minimum content for an acceptable training program, provide for certification of trainers, recognition of trainers, and to establish the requirements for a presurvey and provide disposal procedures while performing demolition, removal, enclosure, remodeling and disposal of asbestos contaminated materials.

III Asbestos Abatement Safety and Health Standards and Regulations

A. Federal and State Regulatory Agencies

B. Federal and State Applicable Regulations

In addition to enforced regulations, the agencies have enforcement policies and regulation interpretations that affect the contractor/employer, worker/employer, and owner/operator asbestos abatement/compliance programs.

IV Asbestos Abatement Project Responsibilities

A review of the standards and regulations in Section III of this report revealed a need for the assignment of specific responsibilities of owner./operators, contractors/employers and workers/employees prior to the initiation or commencement of work on any asbestos abatement project. Therefore, this Fact Finding Committee has determined that specific responsibilities be assigned:

A. Owners/Operators

B. Contractor/Employers

C. Workers/Employees

V Recommended Procedures for Abatement Projects

The Fact Finding Committee, based on information uncovered and their collective experience dealing with asbestos abatement, safety and health and training, recommends the following procedures for:

A. Owner/Operator

B. Contractor/Employer

C. Worker/Employee

VI Conclusions

Committee Recommendations to the Commissioner

35 U.S. School Boards Sue to Force Manufacturers to Remove Asbestos

By JAMES BARRON

With the Environmental Protection Agency stepping up its campaign against asbestos in schools, more than 35 school boards around the nation have filed lawsuits to get asbestos manufacturers to pay for removing the potentially hazardous material from their buildings.

The agency says 62 percent of the school districts it has inspected violate some of the Federal regulations that require local school officials to inspect and report on asbestos. Alvin Alm, Deputy Administrator of the E.P.A., said the figure dropped as low as 50 percent earlier in the year but climbed recently as the inspections continued.

To improve the compliance rate, the environmental agency has proposed fines of more than \$300,000 against 16 school districts where Federal inspectors found problems.

Four of the school districts fined were in New Jersey: Brick Township, South Orange, Springfield Township and Dunellen. The largest fine was \$102,000 against the Waterbury public schools in Connecticut. There, the agency said it had found that 16 of 26 schools contained asbestos that could become airborne.

Some Call E.P.A. Rules Vague

Some local school officials say the agency's rules are vague and subjective and its inspectors interpret them arbitrarily. But others have turned to the courts because of the high cost of removing asbestos, more than \$100,000 a school by some estimates.

One case in South Carolina was settled last month when U.S. Gypsum agreed to pay \$675,000 to the school district in Lexington County. One in Pennsylvania may be used as the basis for a suit that would consolidate all the claims against manufacturers by school boards around the country.

Asbestos was widely used as fireproofing insulation between World War II and the late 1970's. It has since been found to pose a threat of a variety of serious diseases, including mesothelioma, a cancer of the lining of the lungs that is often fatal.

The E.P.A. says it cannot estimate how many children face possible future health problems from attending classes in schools containing asbestos or how much exposure causes a health hazard. The National Education Association, which maintains that children are more susceptible to asbestos-related diseases than adults, says there are asbestos problems in 14,000 schools. The teachers' union has threatened to make asbestos removal a bargaining issue this year.

Under the Federal rules, more than 121,000 public and private schools with more than 50 million pupils are required to notify parents and school em-

ployees if asbestos is found by inspectors. In most cases, there are two types of asbestos in schools: asbestos in ceiling insulation and asbestos wrapping on plumbing and heating equipment.

The environmental agency's inspectors are supposed to check for asbestos that crumbles or can be pulverized at a touch, but they may also cite school districts for failing to keep detailed records on their own inspections.

"The unsettling thing is I'm afraid that is sidetracking the E.P.A.'s attention from the real issue, which is what's hazardous," said William Anderson, a lawyer who represents the National Association of School Boards. "It's also creating an adversarial situation. The E.P.A. is making enemies of many school districts as a result of what the schools see as nit-picking and unfair enforcement."

The Syracuse public schools complied with New York state regulations before the Federal environmental inspectors arrived. Ernest Rookie, the system's facilities supervisor, said the Federal inspectors questioned whether there was asbestos in an auditorium ceiling at Fowler High School.

"We had already taken samples in nine different spots," he said. "They were proved to be not asbestos. The E.P.A. came through and demanded a lab analysis. It cost \$450, and we were sure that stuff wasn't asbestos."

Fine Is Called 'Unreasonable'

In Waterbury, Thomas G. Parisot, an assistant corporation counsel, called the proposed fine "unreasonable" and questioned how the agency had determined it. Long before the Federal inspectors showed up, he said, Waterbury made plans to have the asbestos removed.

"The E.P.A. inspected only four schools before it lowered the boom," he said. "They were not really familiar with the makeup of our school system when they issued their complaint. We say any asbestos-containing material is limited in comparison to other districts. We don't have any spray-on beam insulation, wall insulation, or the kinds of materials that are a great deal more friable."

He said samples taken before the E.P.A. inspection "indicated there was no exposure problem for airborne concentrations."

Many school boards are divided on how to proceed with the suits, stalled since Federal District Judge James M. Kelly ruled in Philadelphia that all the cases should be combined and tried there.

After lawyers representing many of the other districts with pending cases protested, he scheduled a hearing on whether to go ahead with the merged legal actions. The case before him originally concerned only the schools in

Lancaster, Pa., which had sued the Lake Asbestos Company, a Canadian company, among others.

"To require thousands of lawsuits to be tried in one forum means that each individual school district will be lost in the mass," said Daniel Speights, a Hampton, S.C., lawyer handling more than a dozen cases. "Historically, parties in a class action do not get the amount in damages that they would get if they tried their cases separately. Many of them could file locally and try the case in a year or less."

David Berger, one of the lawyers who represented the Lancaster districts when the case began, said individual trials would prove "costly, repetitive and duplicative."

"If everyone operates independently," he said, "that might make it impossible for anyone to recover. There is no way this industry could withstand \$4 billion or \$5 billion in judgments relating to school claims, which is what would happen if we used the tremendously ineffective case-by-case basis."

Ruckelshaus En-

By PHILIP SHABECOFF

Special to The New York Times

WASHINGTON, May 19 — One year after his return as Administrator of the Environmental Protection Agency, William D. Ruckelshaus is widely credited with restoring morale, stability, purpose and credibility to an agency he found in a state of chaos.

But his critics, including members of Congress and environmentalists, charge that he has failed in leadership on such important environmental issues as emissions into the air of sulfur and nitrogen oxides that fall in particles called acid rain, killing aquatic life and threatening forests; that he is seeking to weaken environmental regulation by weighing risks to health against other social values; that he is serving as a benign front for what the critics call the anti-environmental policies of the Reagan Administration.

In an interview in his office overlooking the Potomac, Mr. Ruckelshaus denied that the Administration was anti-environment.

"It is a fair criticism of this Administration that the environment is not one of its high priorities — it has not been a high priority of the President in his career," he said. But he added that "this Administration has much more sympathy for the environment than the Nixon Administration," though many major environmental laws were passed in that Administration's tenure. IN the

Bartlett calendar approved

By ANDREW PERALA
Daily News reporter

The Anchorage School Board unanimously approved an extended summer vacation for students at Bartlett High School next year to give contractors time to remove asbestos from campus buildings.

Representatives of the school's students, teachers, parents and staff had supported the new school calendar, which will also extend the school day by 90 minutes beginning Jan. 21, 1985.

Under the plan, students at Bartlett will be out of school from April 26 to Oct. 15, 1985. The long summer break will allow contractors to remove asbestos insulation from inside the school building.

In a separate action, the board approved a \$14.8 million contract to Vertecs Corporation for removal of the asbestos.

Of that amount, \$13.4 million will be for the base contract and \$1.3 million will be reserved as a contingency fund.

The contingency fund, said district superintendent Gene Davis, will cover unforeseen problems encountered during the 150-day asbestos removal project.

"It has not even been determined how many lights will have to be removed" from the school's ceilings, Davis said.

Removal of the asbestos has been classified as an emergency and the state Department of Education ruled

See Page C-3, BARTLETT

Bartlett

Continued from Page C-1

recently that the district can alter the school calendar.

Any new asbestos-removal expenses over \$20,000 will require approval of the board. Amounts under \$20,000 will be approved at the discretion of the superintendent, Davis said.

The 5½-month Bartlett summer vacation won't come without a price, however. In order for students to get the equivalent of 162 days of classroom instruction, the class day will be lengthened by an hour and a half. Students will start school at 7:30 a.m. as usual, but will not be released from classes until 3:30 p.m.

The extra-long summer break aroused the most concern from the speakers before the School Board.

"Our one concern is that students remain active" during the long break, said Karla Josephson, who spoke on behalf of the high school's staff. "Most students do like the idea of a five-and-a-half month summer," said student representative Brian Schmidt. The calendar plan represents a better solution than attending school on Saturdays or double-shifting with another school, he said.

In conjunction with approving the new calendar, the board also approved spending an additional \$231,432 in the spring semester of this school year to accommodate the extra costs of changing the school calendar.

About \$98,000 will go toward the expected added costs of school buses the district will have to pay a bus contractor. And \$78,000 will be allotted to local moving companies to move the hundreds of student desks and other furniture into the school's gymnasium.

News Miner
2/1/84

EPA: schools ignore law about asbestos warnings

WASHINGTON (AP)—Local school officials, worried about their budgets or about "panic and hysteria," are widely ignoring a federal law requiring parents to be notified about dangerous asbestos in their school buildings, a government study says.

The study by the Environmental Protection Agency said that study said.

In many cases, the study said, school officials did not want to notify parents because of the money the school district would have to spend if forced to clean up the asbestos hazard.

School officials "are reluctant to notify parents because they believe this will result in a redirection of limited operating funds and-or create unnecessary panic and hysteria," the study said.

But whatever the reason, the EPA study added, it is undermining the program to get rid of hazards from asbestos that face millions of school-children.

"The success or failure of the asbestos in schools rule, which relies heavily upon public involvement, is the degree to which information is communicated to the public," the study said. "Poor public awareness has resulted in only slight activity on the part of the parent groups in schools."

The findings are included in an internal program review requested by EPA Deputy Administrator Al Alm and completed in December. A copy was obtained by The Associated Press.

The study involves asbestos insulation that once was widely used in schools and other public buildings. Health officials now say that some types of asbestos can flake into mic-

roscopic particles that can be inhaled, causing lung cancer or other lung diseases. There is no known safe exposure level.

Under federal law, school officials are required to inspect their buildings for hazardous asbestos and to notify parents and school employees if it is found. It is then up to the local officials to decide what to do.

The law covers more than 37,000 public, private and parochial school systems with more than 50 million students.

The EPA study was intended to find out how well the program was working. Some of its findings, including the conclusion that two-thirds of the nation's schools are in violation of some part of the law, have been reported earlier.

The EPA study did not blame school officials alone. It also found that the agency itself needed to devote more money and people to the program, including more than doubling the EPA inspection program.

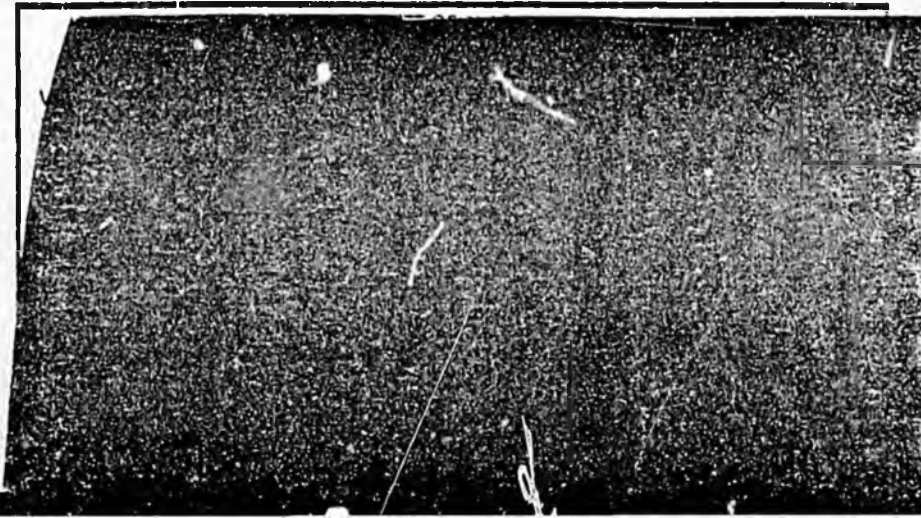
"The agency has not issued a high-

level statement detailing the risks of exposure to asbestos and the importance of considering various abatement options," the study said. "The regions and the public have not been made fully aware and have received mixed signals on the seriousness of asbestos health hazards."

The congressional author of the asbestos in schools law, Rep. George Miller, D-Calif., focused on those shortcomings in his analysis of the report.

"This document, drafted by EPA's own experts, again confirms the shocking inadequacy of this administration's approach to a threat that endangers the health of millions of school children," Miller said. "It is apparent that at least some officials within EPA are trying to warn their agency about the consequences of the current policies."

Whatever the failings of the agency, however, the study indicated that school officials have not endorsed the program wholeheartedly.



A-4 The Anchorage Times, Wednesday, February 1, 1984

Funding limits asbestos removal

Associated Press

Washington — Local school officials, worried about their budgets or about "panic and hysteria," are widely ignoring a federal law requiring parents to be notified about dangerous asbestos in their school buildings, a government study says.

The study by the Environmental Protection Agency said that of 275 schools inspected by EPA, 190 were found to be violating the federal law on asbestos insulation. Of those 190, the EPA said, 134 had violated the requirement that parents be notified of the excess levels.

"Consequently, we can conclude that the parents of students exposed are in many cases unaware of the existence of such a hazard," the study said.

In many cases, the study said, school officials did not want to notify parents because of the money the school district would have

to spend if forced to clean up the asbestos hazard.

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Federal funds to help remove asbestos

by Stephen J. Downes
Times Writer

2/9/81

The federal government has offered at least \$2.1 million to help remove asbestos at Bartlett High School, a school district official said Wednesday.

—And federal dollars will also pay for removing asbestos at Mount Spurr Elementary School, said assistant superintendent Tom Freeman.

—Freeman said the federal Department of Education made the offer in a letter received by the district Tuesday, after three months of lobbying by the school district and members of the school board.

—The district wanted the federal government to pay a portion of the bill for the schools because they are both on federal land.

—About 35 acres of Bartlett is on federal land and technically belongs to the federal government, Freeman said. The other 118 acres have been deeded to the municipality, he said. The district operates the whole school.

—Mount Spurr is on Elmendorf Air Force Base. The school district estimates it will cost \$80,000 to remove asbestos at the school.

Negotiations between the district and the DOE that might result in even more money being obtained are still continuing. The district is seeking additional funds because cost estimates for Bartlett are increasing, Freeman said.

The \$2.1 million represents 39 percent — the federal government's share — of what the district originally believed the Bartlett project would cost: \$5.5 million.

"We've informed them that it may be more," Freeman said.

Howard Games, a DOE project engineer in Seattle, said a request for the money would go to DOE offices in Washington as soon as the school district provides a revised estimate of the cost. The estimate could come as early as next week.

Construction firms will be asked to come up with estimated costs of removing asbestos at Bartlett. The firms will also seek a way to complete the work without disrupting the school year, which could mean higher costs.

The federal Environmental Protection Agency has linked exposure to asbestos with lung can-

cer and other diseases. The Anchorage School Board last year ordered asbestos removed from all district buildings.

The state legislature is now considering a district request for \$10 million to remove asbestos from six schools, among them Bartlett and Mount Spurr. Bartlett is the top priority and has by far the most asbestos.

Anchorage lawmakers have already proposed \$7 million for Anchorage asbestos removal.

DOE representatives will come to Anchorage in the next couple of weeks to advertise for bids on the Mount Spurr project, Freeman said.

The bid specifications will be drawn up by Gobbell, Hays and Pickering, the firm evaluating the asbestos problem for the school district.

Another DOE official, Jim Ishihara, said the federal government is also paying for asbestos removal on other Alaska schools: a \$2.2 million project at Reeve Junior and Senior High School in Adak, and a \$250,000 project at nine schools in Fairbanks.

5/8/77

Parents, scientists tell EPA to ban asbestos in schools

By BETTY ANNE WILLIAMS
The Associated Press

WASHINGTON — Scientists, union officials and parents urged the Environmental Protection Agency on Monday to require the removal of the carcinogen asbestos from schools and other public buildings.

"Ultimately, what you will do is decide who will live and who will die," said Irving Selikoff, director of the environmental sciences laboratory at Mount Sinai School of Medicine and an authority on the health effects of asbestos.

"We're gazing at children being exposed to asbestos. We're seeing teachers, personnel being exposed. We don't really need any additional research about what can happen. What we need now is controls."

Selikoff and other witnesses testified as the EPA held the first of four hearings on what to do about the asbestos which was used in public building construction and insulation until it was pinpointed as a cancer-causing agent in humans in the late 1970s. Other hearings will be held in Boston, San Francisco and Chicago in June.

The hearings series was planned after the Service Employees International Union petitioned the EPA to issue an asbestos abatement rule which would assure the removal of the

substance from schools and other types of public buildings.

William Borwegan, director of occupational safety and health for the union, said the EPA should be prepared to come up with more money and staff to implement a tougher standard and monitor its enforcement.

"At a minimum, the agency should immediately train at least 100 individuals that can act as technical advisers to advise building owners and local school districts on how to evaluate and control asbestos in building hazards," he said.

National Education Association Vice President Keith Geiger estimated that as many as 650,000 teachers and other workers and three million children are exposed to asbestos every school day in 14,000 institutions.

"An emergency exists in our schools. Each day that the asbestos hazard goes unabated, the likelihood increases that there will be more victims," he said.

The EPA believes only 250,000 teachers and other school personnel are at risk but does not quarrel with the other estimates cited by the NEA.

Geiger also called the asbestos problem "a national disaster" and said the federal government must take the lead in arranging for the cleanup.

White House rejects suggestion to cut Social Security benefits

The Associated Press

WASHINGTON — Democrats in Congress criticized Treasury Secretary Donald

Nevertheless, Senate Minority Leader Robert Byrd, D-W.Va., said the Reagan

unitary item," said House Speaker Thomas O'Neill

Del to

alaska women's run 1981



"I made it all the way

On June 12, there will be very special runners among hundreds of participants in the Alaska Women's Run 1981. These ten women, coached by ARC, are giving their personal best for money for The Association of Retarded Citizens of Anchorage. They know how much ARC help people with mental retardation.

Soon, volunteers will be asking you to pledge an amount



School asbestos program failing

By Carol Stevens
USA TODAY

Mary Banscombe hopes to find out today if her sixth-grade son is being exposed to cancer-causing asbestos at his Goffstown, N.H., school.

The suburban Manchester district will get results of an inspection ordered after it was fined 11 days ago for failing to tell parents about possible asbestos dangers.

Meanwhile Banscombe, like many USA parents, is worried: "At this point we don't know what we're dealing with."

Says executive director James Fite of the White Lung Association: "Conditions in the nation's schools are absolutely horrible . . . and getting worse."

The federal Environmental Protection Agency's \$24,000 fine against Goffstown was its first at any school.

It's been a decade since EPA outlawed asbestos as a fire-proofing agent because of studies linking it to cancer. Yet EPA estimates asbestos is still present in as many as half the USA's 121,000 schools.

As a result, 3 million to 5 million children in schools built in 1940-60 risk asbestos exposure, says Arnold Fege of the National Congress of Parents and Teachers.

EPA's voluntary cleanup program is partly to blame. Schools had until June 1983 to inspect buildings and tell parents of the asbestos dangers.

Nine months after the federal deadline, EPA says the regulations have failed. Spot checks of 275 school districts found more than 69 percent violating asbestos standards.

Administrators say they can't afford cleanup at \$100,000 per school.

FRI./SAT./SUN. MARCH 23-25, 1984



January 18, 1984

MEMORANDUM

To: HESS Committee members
From: Nancy Bennett, Committee staff
Re: Asbestos history/Alaska information

IN YOUR FOLDER:

A copy of SSHB 5, asbestos health hazard enabling legislation, and HB 57, the companion appropriation bill.

A section analysis of SSHB 5 and memorandum from DOTPF on the costs of inspecting state buildings for asbestos.

School district information on asbestos.

Relevant periodical and newspaper articles.

Information from the EPA/Alaska specific.

Alaska Health Project asbestos packet.

Packet of materials from the Association of General Contractors

ALASKA SCHOOLS INFORMATION:

The EPA has estimated from their Alaskan survey that only half of the school districts have inspected their facilities for asbestos, leaving approximately 220 buildings for review. By regulation, all schools in the USA were to be tested by June 30, 1983, parents and school boards were to be notified of the findings, school employees were to be instructed on minimization of health risks and records were to be maintained on testing and notification.

District needs in Alaska for asbestos abatement:

Kodiak	\$ 1,138,507
Petersburg	107,000
Delta Greely	99,700
Cordova	120,000
Nenana	15,000
Anchorage	11,000,000 (Phase II)
Skagway	25,000
Kuspuk	5,296
Mat-Su	105,959
Juneau	300,000 (expended, estimate the possibility of several million)

Ketchikan

(unknown, estimates the possibility of several million)

HISTORY

Following World War II, asbestos was widely recognized as a miracle fiber - it was an excellent insulator and would not burn - and was therefore widely used in construction during the "Baby Boom" period.

Asbestos was known to be dangerous long before Congressional hearings in the late 1970's, when the Johns-Manville Corporation admitted to paying physicians to down-play the health hazards. Most early reported cases were among pipefitters and shipyard workers who faced heavy exposure in the workplace, but it was soon discovered that family members and people living in close proximity to factories were also affected. Asbestos is an inert material which cannot be removed from the body, and although the symptoms of asbestosis and mesothelioma often take decades to surface, the diseases are always fatal.

Congressional action in 1980 aimed at the removal of asbestos from schools was prompted by the increased susceptibility of children to asbestos because of their higher activity level and elevated respiration.

In 1984, the EPA began applying sanctions to individual school districts for non-compliance, rewrote their regulations for demolition and renovations with asbestos products and have more recently been receiving public pressure to take a more aggressive stance on asbestos in schools. Many speculate that the regulations were designed to bring pressure on states to fund asbestos removal by public notification, placing districts in the precarious position of raising concern about an issue they are unable to address financially. The \$172 million authorized by the Asbestos Health Hazard Detection and Control Act of 1980 was never appropriated, although the federal government has made limited funds available in some schools on federal land.

A flurry of lawsuits filed in the last few years against manufacturers, contractors and school districts has pointed out confusion over the issue of liability. In addition, resource limitations of the EPA (they have .1 staff working on asbestos in Alaska) have created difficulty for rural schools districts to receive the type of assistance needed in this technical area

MEDICAL ASPECTS OF ASBESTOS EXPOSURE

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**1984 ASBESTOS SYMPOSIUM
THE GEORGIA INSTITUTE OF TECHNOLOGY
ATLANTA, GEORGIA
MARCH 19-23, 1984**

1 of 30

Asbestos-Related Diseases

and

Medical Surveillance

Prepared by:

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- I Causes of death among 17,800 insulators (1). Estimated exposure approximately 15 fibers/ml. of mostly chrysotile and some amosite throughout working life. Note that almost 10% of deaths were due to asbestosis, but that the major problem is cancer.

TABLE 1 DEATHS AMONG 17,800 ASBESTOS INSULATION WORKERS IN THE UNITED STATES AND CANADA, JANUARY 1, 1967 TO DECEMBER 31, 1976*

Underlying Cause of Death	Expected†	Observed		Ratio, Observed/Expected	
		(BE)	(DC)	(BE)	(DC)
Total deaths, all causes	1658.9	2271	2271	1.37	1.37
Total cancer, all sites	319.7	995	922	3.11	2.88
Cancer of lung	105.6	486	429	4.60	4.08
Pleural mesothelioma	1	63	25	—	—
Peritoneal mesothelioma	1	112	24	—	—
Mesothelioma, n.o.s.	1	0	55	—	—
Cancer of esophagus	7.1	18	18	2.53	2.53
Cancer of stomach	14.2	22	18	1.54	1.26
Cancer of colon-rectum	38.1	59	58	1.55	1.52
Cancer of larynx	4.7	11	9	2.34	1.91
Cancer of pharynx, buccal	10.1	21	16	2.08	1.59
Cancer of kidney	8.1	19	18	2.36	2.23
All other cancer	131.8	184	252	1.40	1.91
Non-infectious pulmonary diseases, total	59.0	212	188	3.59	3.19
Asbestosis	1	168	78	—	—
All other causes	1280.2	1054	1161	0.83	0.91

*Number of men 17,800, man-years of observation 166,853

†Expected deaths are based upon white male age-specific U.S. death rates of the U.S. National Center for Health Statistics, 1967-1976

‡Rates are not available, but these have been rare causes of death in the general population

(BE) Best evidence: Number of deaths categorized after review of best available information (autopsy, surgical, clinical)

(DC) Number of deaths as recorded from death certificate information only

- II Concept of mesothelioma as a "signal" tumor (2). When mesothelioma occurs in the United States, the cause is likely to be past asbestos exposure until proven otherwise. But note that mesothelioma is frequently mis-diagnosed, especially the peritoneal (abdominal) variety, and hence under-reported. Mesothelioma may occur with minimal exposure (bystanders, household contacts, neighborhood cases).
- III Lung cancer numerically the most important problem. This burden falls mainly on cigarette smokers (3). Risk of lung cancer among cigarette smoking insulators approximately 53 times risk of non-smoking U.S. white males. However, risk is elevated among non-smoking and ex-smoking insulators as well.

IV Latency Period. Crucial concept for understanding asbestos-related diseases. Note that only a few deaths of lung cancer, mesothelioma, and the other asbestos-related diseases occur prior to 20 years from the time of first exposure (4). However, the duration of exposure need not be long (a few days for mesothelioma, a few weeks, perhaps, for lung cancer - the lower limits are not entirely known). Note that if exposure begins early, cancers will occur in young adulthood or middle age.

TABLE 2
DEATHS AMONG 17,800 ASBESTOS INSULATION WORKERS IN UNITED STATES AND CANADA, JANUARY 1, 1967-DECEMBER 31, 1976
ANALYSIS BY DURATION FROM ONSET OF EMPLOYMENT

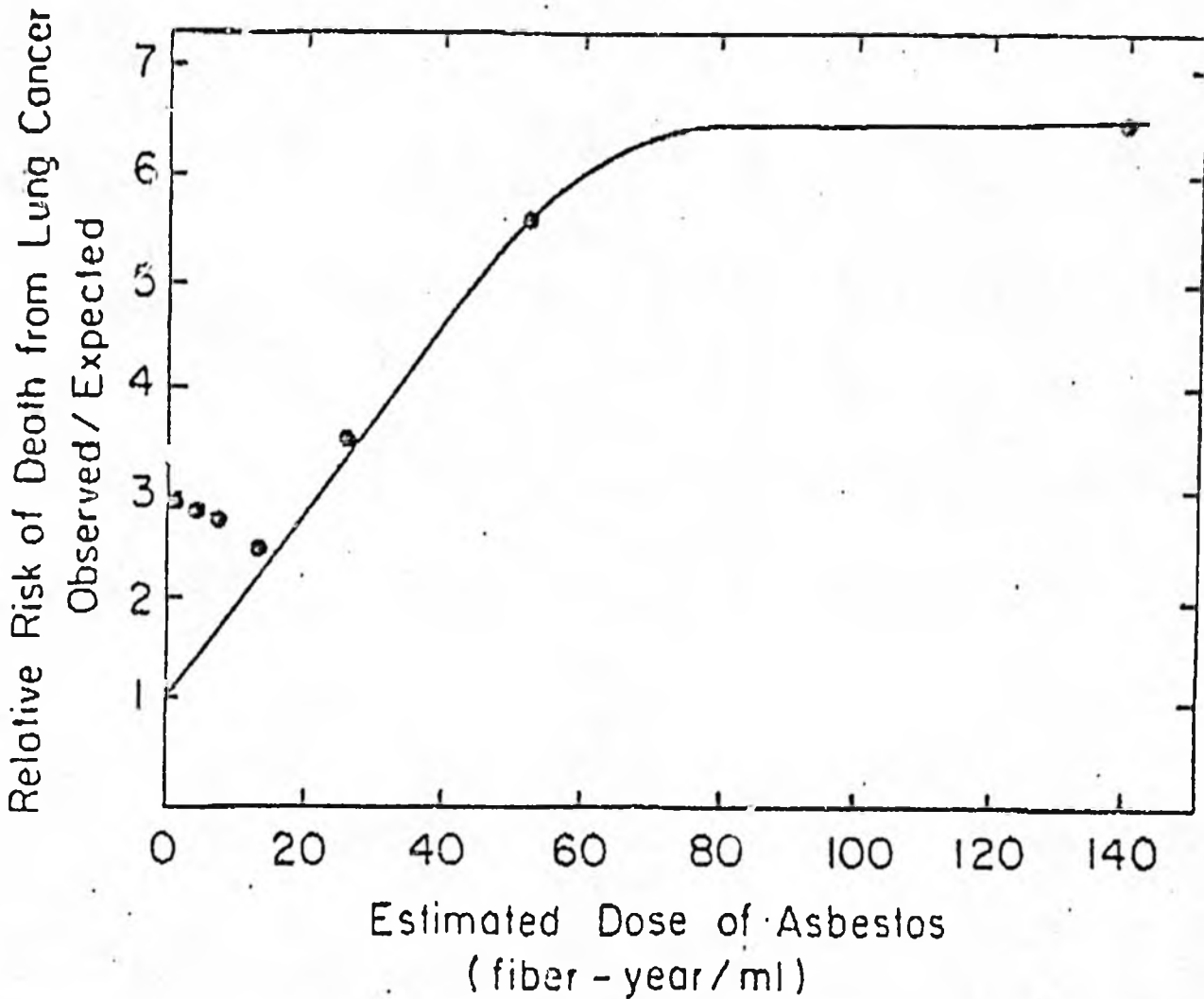
Duration from Onset (Years)	Number of Men	Person-years of Observation	Exp.*	Lung Cancer				Pleural Mesothelioma			Peritoneal Mesothelioma		
				Observed		Ratio o/e		Number		No./1000 Person-years	Number		No./10 Person-year
				(BE)	(DC)	(BE)	(DC)	(BE)	(DC)	(BE)	(BE)	(DC)	(BE)
<10	8,190	26,393	0.7	0	0	—	—	0	0	0	0	0	0
10-14	9,063	29,003	2.7	7	5	2.55	1.62	0	0	0	0	0	0
15-19	9,948	34,066	8.5	29	27	3.40	3.17	2	2	0.06	3	0	0.09
20-24	8,887	31,262	17.0	59	57	3.46	3.26	6	4	0.19	3	2	0.10
25-29	6,596	20,657	21.0	105	96	5.00	4.52	13	5	0.63	19	3	0.92
30-34	3,547	11,598	18.4	112	103	6.05	5.59	9	3	0.78	23	6	1.92
35-39	2,070	5,403	11.5	65	57	5.68	4.98	15	4	2.78	19	5	3.52
40-44	1,108	3,160	8.1	40	131	4.93	3.62	4	3	1.27	16	3	5.06
45+	1,448	5,305	17.8	69	53	3.89	2.96	14	4	2.64	29	5	5.47

*Expected deaths are based upon white male age-specific U.S. death rates of the U.S. National Center for Health Statistics, 1967-1976. Smoking habits not taken into account.

(BE): Best evidence. Number of deaths categorized after review of best available information (autopsy, surgical, clinical)

(DC): Number of deaths as recorded from death certificate information only.

V Dose-Response Relationship. Extremely complex subject. All data available are compatible with a linear dose-risk relationship with a levelling-off, or "saturation", of risk at higher levels. The corollary of this is: no known zero-risk exposure level (5).



VI Medical Surveillance of People Exposed to Asbestos. Contents of such a program determined by objective:

- A. Objective: to determine whether asbestos exposure has been sufficient in a given population to cause disease. For this objective, medical data are a useful adjunct to dust measurements, engineering specifications and information concerning work practices. Unique advantage of medical data: dust levels in the past cannot be known if no measurements were done, but the human body acts as an "integrator" of exposure over the years. Most useful medical tools here would be chest X-ray, medical history, occupational history and search for mesothelioma deaths among people with sufficient latency period (20 years or more since first exposure).
- B. Objective: Minimization of disease among those known to have been exposed and known to be at risk. This objective essentially calls for secondary prevention of disease, early detection, and aggressive treatment of early lesions, especially cancer.

VII Elements of the Port Allegany Asbestos Health Program

- A. Establishment of a computerized registry of all those at risk: workers and their household contacts.
 1. Maintenance of the registry (address changes, name changes, etc.)
- B. Establishment of intensive medical surveillance tailored to each person's degree of risk (cigarette smoking, latency very important). Utilization of standard cancer-detection tests: chest X-rays, sputum cytology, stool blood, examination of mouth, tongue and throat, etc.
- C. Health education for those at risk. Necessary to provide a balanced view of the risks; useful in promoting compliance with program, calming unwarranted fears, and promoting good health behavior.
- D. Smoking cessation assistance. A powerful intervention.
- E. Continuing education for local medical providers concerning asbestos-related diseases.
- F. Adjunct measures: influenza and pneumonia vaccines.
- G. Review and evaluation.

References

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ASBESTOS:
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