HB

5

CSSSHB 5(Fin)am -- Additional Backup Material
for
Senate Labor and Commerce Committee

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REPRESENTATIVE JOHNE BINKLEY

MEMORANDUM

March 22, 1985

TO: Representative Al Adams

From: Representative Johne Binkley
Chair of Subcommittee on HB 5

RE: House Bill 5

The subcommittee on House Bill 5 is recommending that the full committee adopt the proposed House Finance Committee Substitute with a revised fiscal note dated March 21, 1985.

This fiscal note would increase the contractual line item in order to hire two industrial hygienist for a two year period to carry out the survey program, particularly in small school districts, as the large districts have for the most part complied. Personal Services would be provided to hire a temporary industrial hygienist for the certification program for ten months to do regulations and start the program.

The Department of Labor will try to run the program with the FY87 amounts indicated in the fiscal note. The subcommittee indicated that if that amount was not sufficient additional funds should be requested in the FY 87 budget.

BREAKDOWN OF ASBESTOS PROJECTS
FUNDED FROM CHAPTER 24, SLA 1984

Cordova City Schools - $48,870.79- Asbestos Removal from Mt. Eccles Elementary School basement. PROJECT COMPLETE.

Delta/Greely School District - $99,500 - Survey & Removal of asbestos at Delta Junction and Ft. Greely Schools. Final inspection and reinsulation.

Tanana City School District - $285,104.25 - Removal of asbestos in main boiler room, classrooms, teachers lounge, bathroom, and fan room , above ceiling tiles, water lines and heating pipes . Reinsulation with fiberglass. Encapsulation of asbestos in hallway boiler room. Clean up and final inspections. PROJECT COMPLETE.

Petersburg City Schools - $107,000 - Removal of asbestos from old high school building.

Alaska Gateway School District - $75,206.26 - Specifications, technical, and professional services for the removal and encapsulation of asbestos containing material at Tok School. Final inspection. PROJECT COMPLETE.

Lake & Peninsula School District - $6995.00 - Inspection of 14 school sites and abatement at three sites where asbestos was identified.

Kodiak Island Borough Schools - $89,673.76 - Funds were spent as follows:
Kodiak Jr. High - demolition phase of remodel for asbestos removal.
Port Lions School - Removal of asbestos pipe insulation at elementary school.
Old Main Elementary - Removal of asbestos pipe insulation.
Kodiak High School - Removal of asbestos fireproofing from roof beam above Gym and cost estimate and analysis for total high school project.
ALL OF THE ABOVE PROJECTS ARE COMPLETE

Sitka Borough Schools - $150,000 - Asbestos removal from boiler rooms at Sitka High School, Blatchley Jr. High and Etolin St. Elementary School.

Juneau Borough Schools - $400,000 - Survey of 11 schools in the district and removal of all asbestos found.

Fairbanks North Star Borough School District - $697,000 - Removal of all asbestos containing structural materials throughout the school district. Fairbanks has requested an additional $500,000 for completion of this project.

Mat-Su Borough Schools - $225,000 - Funds applied for 3/85 for asbestos abatement.

OCCUPATIONAL HEALTH AND
ENVIRONMENTAL CONTROL

OCCUPATIONAL SAFETY AND HEALTH STANDARDS

ALASKA DEPARTMENT OF LABOR
Division of Labor Standards and Safety

Jim Robison, Commissioner
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The standards prescribed in this subchapter are effective as of June 30, 1973, as amended February 19, 1984. Alaska safety codes and standards apply to all places of employment. Information relative to the safety codes will be furnished by the above offices.

CONTENTS

ARTICLE 1 - OCCUPATIONAL HEALTH AND ENVIRONMENTAL CONTROL

04.0102 Asbestos. (a) Definitions, for the purpose of 04.0102.

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

(2) "Asbestos fibers" means asbestos fibers longer than five 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 five micrometers, per cubic centimeter of air, as determined by the method prescribed in 04.0102(e).

(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 five micrometers, per cubic centimeter of air, as determined by the method prescribed in 04.0102(e).

(3) Ceiling concentration. No employee shall be exposed at any time to airborne concentrations of asbestos fibers in excess of 10 fibers, longer than five micrometers, per cubic centimeter of air, as determined by the method prescribed in 04.0102(e).

(c) Methods of compliance.

(1) Engineering methods.

(A) 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 04.0102(b).

(B) Local exhaust ventilation

(i) 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.

(ii) See 1910.8 of the Federal Occupational Safety and Health Act 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 04^109.

(C) Particular tools. All hand-operated and power-operated tools which may produce or release asbestos fibers in excess of the exposure limits prescribed in 04.0102(b), such as, but not limited to, saws, scorers, abrasive wheels, and drills, shall be provided with local exhaust ventilation systems in accordance with 04.0102(c)(1)(B).

(2) Work practices.

(A) 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 04.0102, unless the usefulness of the product would be diminished thereby.

(B) 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 04.0102.

(C) 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 04.0102(d)(2)(C) and with special clothing in accordance with 04.0102(d)(3).

(d) Personal protective equipment.

(1) Compliance with the exposure limits prescribed by 04.0102(b) may not be achieved by the use of respirators or shift rotation of employees, except:

(A) During the time period necessary to install the engineering controls and to institute the work practices required by 04.0102(c);

(B) In work situations in which the methods prescribed in 04.0102(c) are either technically not feasible or feasible to an extent insufficient to reduce the airborne concentrations of asbestos fibers below the limits prescribed by 04.0102(b); or

(C) In emergencies.

(D) Where both respirators and personnel rotation are allowed by 04.0102(d)(1)(A), (B) or (C), and both are practicable, personnel rotation shall be preferred and used.

(2) Where a respirator is permitted by 04.0102(d)(1), it shall be selected from among those approved by the Bureau of Mines, Department of the Interior, or the National Institute for Occupational Safety and Health, Department of Health, Education, and Welfare, under the provisions of 30 CFR Part 11 (37 F.R. 6244, Mar. 25, 1972), and shall be used in accordance with 04.0102(d)(2)(A), (B), (C) and (D).

(A) Air purifying respirators. A reusable or single use air purifying respirator, or a respirator described in 04.0102(d)(2)(B) or (C), shall be used to reduce the concentrations of airborne asbestos fibers in the respirator below the exposure limits prescribed in 04.0102(b), when the ceiling or the 8-hour time weighted average airborne concentrations of asbestos fibers are reasonably expected to exceed no more than 10 times those limits.

(B) Powered air purifying respirators. A full facepiece powered air purifying respirator, or a powered air purifying respirator, or a respirator described in 04.0102(d)(2)(C), shall be used to reduce the concentrations of airborne asbestos fibers in the respirator below the exposure limits prescribed in 04.0102(b), when the ceiling or the 8-hour time weighted average concentrations of asbestos fibers are reasonably expected to exceed 10 times, but not 100 times, those limits.

(C) Type "C" supplied-air respirators, continuous flow or pressure-demand class. A type "C" continuous flow or pressure-demand, supplied-air respirator shall be used to reduce the concentrations of airborne asbestos fibers in the respirator below the exposure limits prescribed in 04.0102(b), when the ceiling or the 8-hour time weighted average airborne concentrations of asbestos fibers are reasonably expected to exceed 100 times those limits.

(D) Establishment of a respirator program.

(i) The employer shall establish a respirator program in accordance with the requirements of the American National Standards Practices for Respiratory Protection, ANSI Z88.2–1969, which is incorporated by reference herein.

(ii) See 1910.6 of the Federal Occupational Safety and Health Act concerning the availability of ANSI Z88.2–1969 and the maintenance of a historic file in connection therewith. The address of the American National Standards Institute is given in 04.0109.

(iii) No employee shall be assigned to tasks requiring the use of respirators if, based upon his most recent examination, the examining physician determines that the employee will be unable to function normally wearing a respirator, or that the safety or health of the employee or other employees will be impaired by his use of a respirator. Such employee shall be rotated to another job or given the opportunity to transfer to a different position whose duties he is able to perform with the same employer, in the same geographical area and with the same seniority, status, and rate of pay he had just prior to such transfer, if such a different position is available.

(3) Special clothing. The employer shall provide, and require the use of, special clothing, such as coveralls or similar whole body clothing, head coverings, gloves, and foot coverings for any employee exposed to airborne concentrations of asbestos fibers, which exceed the ceiling level prescribed in 04.0102(b).

(4) Change rooms.

(A) At any fixed place of employment exposed to airborne concentrations of asbestos fibers in excess of the exposure limits prescribed in 04.0102(b), the employer shall provide change rooms for employees working regularly at the place.

(B) Clothes lockers. The employer shall provide two separate lockers or containers for each employee, so separated or isolated as to prevent contamination of the employee's street clothes from his work clothes.

(C) Laundering.

(i) 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 04.0102(b).

(ii) Any employer who gives asbestos-contaminated clothing to another person for laundering shall inform such person of the requirement in 04.0102(d)(4)(C)(i) to effectively prevent the release of airborne asbestos fibers in excess of the exposure limits prescribed in 04.0102(b).

(iii) Contaminated clothing shall be transported in sealed impermeable bags, or other closed, impermeable containers, and labeled in accordance with 04.0102(g).

(e) 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 six months of the publication of 04.0102 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 04.0102(b). If the limits are exceeded, the employer shall immediately undertake a compliance program in accordance with 04.0102(c).

(2) Personal monitoring.

(A) Samples shall be collected from within the breathing zone of the employees, on membrane filters of 0.8 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.

(B) Sampling frequency and patterns. After the initial determinations required by 04.0102(f)(1), 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 six months for employees whose exposure to asbestos may reasonably be foreseen to exceed the limits prescribed by 04.0102(b).

(3) Environmental monitoring.

(A) Samples shall be collected from areas of a work environment which are representative of the airborne concentration of asbestos fibers which may reach the breathing zone of employees. Samples shall be collected on a membrane filter of 0.8 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.

(B) Sampling frequency and patterns. After the initial determinations required by 04.0102(f)(1), 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 six months for employees whose exposures to asbestos may reasonably be foreseen to exceed the exposure limits prescribed in 04.0102(b).

(4) Employee observation of monitoring. Affected employees, or their representatives, shall be given a reasonable opportunity to observe any monitoring required by 04.0102 and shall have access to the records thereof.

(g) Caution signs and labels.

(1) Caution signs.

(A) 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 04.0102(b). 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.

(B) Sign specifications. The warning signs required by 04.0102(g)(1)(A) shall conform to the requirements of 20 inches by 14 inches vertical format signs specified in 02.0105 and to 04.0102(g)(1)(B). The signs shall display the following legend in the lower panel, with letter sizes and styles of a visibility at least equal to that specified in 04.0102(g)(1)(B).

Legend	Notation
Asbestos	1 in. Sans Serif, Gothic or Block
Dust hazard	½ in. Sans Serif, Gothic or Block
Avoid breathing dust	½ in. Gothic
Wear assigned protective equipment	½ in. Gothic
Do not remain in area unless your work requires it.	½ in. Gothic
Breathing asbestos dust may be hazardous to your health	14 point Gothic

Spacing between lines shall be at least equal to the height of the upper of any two lines.

(2) Caution labels.

(A) Labeling. Caution labels shall be affixed to all raw materials, mixtures, scrap, waste, debris, and other products containing asbestos fibers, or to their containers, except that no label is required where asbestos fibers have been modified by a bonding agent, coating, binder, or other material so that during any reasonably foreseeable use, handling, storage, disposal, processing, or transportation, no airborne concentrations of asbestos fibers in excess of the exposure limits prescribed in 04.0102(b) will be released.

(B) Label specifications. The caution labels required by 04.0102(g)(2)(A) shall be printed in letters of sufficient size and contrast as to be readily visible and legible. The label shall state:

CAUTION

Contains Asbestos Fibers
Avoid Creating Dust
Breathing Asbestos Dust May Cause
Serious Bodily Harm

(h) Housekeeping.

(1) Cleaning. All external surfaces in any place of employment shall be maintained free of accumulations of asbestos fibers if, with their dispersion, there would be an excessive concentration.

(2) Waste disposal. Asbestos waste, scrap, debris, bags, containers, equipment, and asbestos-contaminated clothing, consigned for disposal, which may produce in any reasonably foreseeable use, handling, storage, processing, disposal, or transportation, airborne concentrations of asbestos fibers in excess of the exposure limits prescribed in 04.0102(b), shall be collected and disposed of in sealed impermeable bags, or other closed, impermeable containers.

(i) Recordkeeping.

(1) Exposure records. Every employer shall maintain records of any personal or environmental monitoring required by 04.0102. Records shall be maintained for a period of at least 20 years and shall be made available upon request to the Assistant Secretary of Labor for Occupational Safety and Health, the Director of the National Institute for Occupational Safety and Health, and to authorized representatives of either.

(2) Employee access. Every employee and former employee shall have reasonable access to any record required to be maintained by 04.0102(i)(1) which indicates the employee's own exposure to asbestos fibers.

(3) Employee notification. Any employee found to have been exposed at any time to airborne concentrations of asbestos fibers in excess of the limits prescribed in 04.0102(b) shall be notified in writing of the exposure as soon as practicable but not later than five days of the finding. The employee shall also be timely notified of the corrective action being taken.

(j) Medical examinations.

(1) General. The employer shall provide or make available at his cost, medical examinations relative to exposure to asbestos required by 04.0102(j).

(2) Preplacement. The employer shall provide or make available to each of his employees, within 30 calendar days following his first employment 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 inches), a history to elicit symptomatology of respiratory disease, and pulmonary function tests to include forced vital capacity (FVC) and forced expiratory volume at one second ($FEV_{1.0}$).

(3) Annual examinations. On or before January 31, 1973, and at least annually thereafter, every employer shall provide, or make available, comprehensive medical examinations to 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 inches), a history to elicit symptomatology of respiratory disease, and pulmonary function tests to include forced vital capacity (FVC) and forced expiratory volume at one second ($FEV_{1.0}$).

(4) 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 inches), a history to elicit symptomatology of respiratory disease, and pulmonary function tests to include forced vital capacity (FVC) and forced expiratory volume at one second ($FEV_{1.0}$).

(5) Recent examinations. No medical examination is required of any employee, if adequate records show that the employee has been examined in accordance with 04.0102(j) within the past one-year period.

(6) Medical records.

(A) Maintenance. Employers of employees examined pursuant to 04.0102(j) 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.

(B) Access. The contents of the records of the medical examinations required by 04.0102(j) 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 04.0102 (j) shall furnish to the employer of the examined employee all the information specifically required by 04.0102(j) and any other medical information related to occupational exposure to asbestos fibers.

04.0103 Ventilation. (a) Abrasive blasting.

(1) Definitions applicable to 04.0103.

(A) Abrasive. A solid substance used in an abrasive blasting operation.

(B) 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.

(C) Blast cleaning barrel. A complete enclosure which rotates on an axis, or which has an internal moving tread to tumble the parts, in order to expose various surfaces of the parts to the action of an automatic blast spray.

(D) Blast cleaning room. A complete enclosure in which blasting operations are performed and where the operator works inside of the room to operate the blasting nozzle and direct the flow of the abrasive material.

(E) Blasting cabinet. An enclosure where the operator stands outside and operates the blasting nozzle through an opening or openings in the enclosure.

(F) Clean air. Air of such purity that it will not cause harm or discomfort to an individual if it is inhaled for extended periods of time.

(G) Dust collector. A device or combination of devices for separating dust from the air handled by an exhaust ventilation system.

(H) Exhaust ventilation system. A system for removing contaminated air from a space, comprising two or more of the following elements: (a) enclosure or hood, (b) duct work, (c) dust collecting equipment, (d) exhauster, and (e) discharge stack.

(I) Particulate-filter respirator. An air purifying respirator, commonly referred to as a dust or a fume respirator, which removes most of the dust or fume from the air passing through the device.

(J) Respirable dust. Airborne dust in sizes capable of passing through the upper respiratory system to reach the lower lung passages.

(K) Rotary blast cleaning table. An enclosure where the pieces to be cleaned are positioned on a rotating table and are passed automatically through a series of blast sprays.

(L) Abrasive blasting. The forcible application of an abrasive to a surface by pneumatic pressure, hydraulic pressure, or centrifugal force.

(2) Dust hazards from abrasive blasting.

(A) Abrasives and the surface coatings on the materials blasted are shattered and pulverized during blasting operations and the dust formed will contain particles of respirable size. The composition and toxicity of the dust from these sources shall be considered in making an evaluation of the potential health hazards.

(B) The concentration of respirable dust or fume in the breathing zone of the abrasive-blasting operator or any other worker shall be kept below the levels specified in 04.0101.

SUBCHAPTER 1 - GENERAL SAFETY CODE

ARTICLE 4 - PERSONAL PROTECTIVE EQUIPMENT

01.0401 General requirements. (a) Application. Protective equipment, including personal protective equipment for eyes, face, head, and extremeties, protective clothing, respiratory devices, and protective shields and barriers, shall be provided, used, and maintained in a sanitary and reliable condition wherever it is necessary by reason of hazards of processes or environment, chemical hazards, radiological hazards, or mechanical irritants encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation or physical contact.

(b) Employee-owned equipment. Where employees provide their own protective equipment, the employer shall be responsible to assure its adequacy, including proper maintenance, and sanitation of such equipment.

(1) Other personal safety equipment or clothing, such as rubber gloves, rubber boots, leggings, aprons, hand pads, safety belts, life lines, buoyant vests, shall be furnished to the employees who are exposed to hazards where such device may be expected to prevent injury.

(c) Design. All personal protective equipment shall be of safe design and construction for the work to be performed.

(d) Sterilization. Goggles, rubber gloves, respirators and other protectors shall not be interchanged among employees unless they have been sterilized.

01.0402 Eye and face protection. (a) General.

(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 enviornmental 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.

(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

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.

(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 facepiece-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 facepiece 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 facepiece. 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

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 initate 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.

STATE OF ALASKA

DEPARTMENT OF LABOR

BILL SHEFFIELD, GOVERNOR

BOX 1149
JUNEAU, ALASKA 99802
PHONE:
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January ~~31~~ 29, 1985

The Honorable Max Gruenberg
Pouch V
Juneau, Alaska 99811

Dear Representative Gruenberg:

In response to your request during the January 25, 1985 hearing on Sponsor Substitute for House Bill No. 5, An Act Establishing an Asbestos Health Hazard Abatement Program, the department is providing you with the following information:

1. A copy of the State and Federal OSHA asbestos regulations dealing with worker protection.

2. We have contacted the states of Maryland and New Jersey which have requirements for certification of asbestos workers and asked them to send us copies of their laws, regulations and guidelines on this subject. We will send you copies as soon as we receive this material. We plan to study these materials to determine what type of guidelines should be adopted in Alaska.

3. There are some private training/consultation firms that will provide, for a fee, training in asbestos handling and abatement that employers could use to certify their workers. During the past 12 months, the department has been contacted by Sam Summeg who represents Polytechnic of 2023-2, Blueberry, Fairbanks, and by Phil Pleasant of 4437 East 7th Avenue, Anchorage, who represents Tenn-Tex Co., Inc. offering to provide asbestos health hazard training.

   We have also contacted Alaska Health Project, a non-profit training and information provider, and they have indicated a willingness to provide such training. Lawrence D. Weiss, Executive Director of Alaska Health project, indicated that his organization would need approximately a $80,000 grant or loan to properly develop such training. According to Mr. Weiss these monies would be needed for front end costs to hire a trainer and to procure the training materials necessary to develop the course. After the course is developed, Alaska Health Project, could recover most of these costs by charging a fee from those attending the course.

All of the above training would be available to both non-union and union employers and employees.

Several other organizations such as the Association General Contractors (AGC), the Laborer's Union and the Asbestos Workers Union also put on asbestos training. These courses, however, may be available only to members of these organizations. Another potential source of such training is the American Society of Safety Engineers who have sponsored various safety and health training courses in the past.

Also, the department as well as other government agencies such as EPA provide, on a very limited basis, training on asbestos. This training would, of course, be open to all interested persons.

4. We can assure you that all interested parties will have an opportunity to provide recommendations to the department when it develops its guidelines for the certification program. We will need the help of organizations such as AGC to come up with an effective, yet reasonable set of guidelines that will assure the protection of the worker, the student, the teacher, and the public when asbestos is identified and the hazard is abated in Alaska's school buildings.

5. The department will enter into an agreement with EPA so that it can assist school districts to comply with EPA regulations. No revision of the current legislation is required for the department and EPA to enter into such an agreement.

We appreciate the opportunity to work with you on this important bill and if there is any further information you require, please let us know.

Sincerely,

Robert W Jordan, Deputy Comm.

for Jim Robison
Commissioner

Enclosure

TABLE Z-3—MINERAL DUSTS—Continued

Substance	Mppcf[a]	Mg/M³
Amorphous, including natural diatomaceous earth	20	80mg/M³ %SiO₂
Silicates (less than 1% crystalline silica):		
Mica	20	
Soapstone	20	
Talc (non-asbestos-form)	20[e]	
Talc (fibrous). Use asbestos limit		
Tremolite (see talc, fibrous)		
Portland cement	50	
Graphite (natural)	15	
Coal dust (respirable fraction less than 5% SiO_2)		2.4mg/M³ or 10mg/M³
For more than 5% SiO_2		%SiO_2+2
Inert or Nuisance Dust:		
Respirable fraction	15	5mg/M³
Total dust	50	15mg/M³

NOTE: Conversion factors—mppcf × 35.3 = million particles per cubic meter = particles per c.c.

[a] Millions of particles per cubic foot of air, based on impinger samples counted by light-field technics.

[d] The percentage of crystalline silica in the formula is the amount determined from air-borne samples, except in those instances in which other methods have been shown to be applicable.

[e] Both concentration and percent quartz for the application of this limit are to be determined from the fraction passing a size-selector with the following characteristics:

[f] Containing <1% quartz; if 1% quartz, use quartz limit.

Aerodynamic diameter (unit density sphere)	Percent passing selector
2	90
2.5	75
3.5	50
5.0	25
10	0

The measurements under this note refer to the use of an AEC instrument. The respirable fraction of coal dust is determined with a MRE; the figure corresponding to that of 2.4 Mg/M³ in the table for coal dust is 4.5 Mg/M³.

(Secretary of Labor's Order No. 8-76 (41 CFR Part 25059); 29 CFR Part 1911)

[39 FR 23502, June 27, 1974. Redesignated and amended at 40 FR 23073, May 28, 1975; 42 FR 22525, May 3, 1977; 43 FR 2600, Jan. 17, 1978; 43 FR 5963, Feb. 10, 1978; 43 FR 13567, Mar. 31, 1978; 43 FR 19624, May 5, 1978; 43 FR 27394, June 23, 1978; 43 FR 45809, Oct. 3, 1978; 43 FR 53007, Nov. 14, 1978; 43 FR 57602, Dec. 8, 1978; 46 FR 32022, June 19, 1981]

§ 1910.1001 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 (e) 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 (e) 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 (e) 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 § 1910.6 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.

(d) *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;

(ii) In work situations in which the methods prescribed in paragraph (c) of this section are either technically not feasible or feasible to an extent insufficient to reduce the airborne concentrations of asbestos fibers below the limits prescribed by paragraph (b) of this section; or

(iii) In emergencies.

(iv) Where both respirators and personnel rotation are allowed by paragraphs (d)(1) (i), (ii), or (iii) of this section, and both are practicable, personnel rotation shall be preferred and used.

(2) Where a respirator is permitted by paragraph (d)(1) of this section, it shall be selected from among those approved by the Bureau of Mines, Department of the Interior, or the National Institute for Occupational Safety and Health, Department of Health, Education, and Welfare, under the provisions of 30 CFR Part 11 (37 F.R. 6244, Mar. 25, 1972), and shall be used in accordance with subdivisions (i), (ii), (iii), and (iv) of this subparagraph.

(i) *Air purifying respirators.* A reusable or single use air purifying respirator, or a respirator described in paragraphs (d)(2) (ii) or (iii) of this section, shall be used to reduce the concentrations of airborne asbestos fibers in the respirator below the exposure limits prescribed in paragraph (b) of this section, when the ceiling or the 8-hour time-weighted average airborne concentrations of asbestos fibers are reasonably expected to exceed no more than 10 times those limits.

(ii) *Powered air purifying respirators.* A full facepiece powered air purifying respirator, or a powered air purifying respirator, or a respirator described in paragraph (d)(2)(iii) of this section, shall be used to reduce the concentrations of airborne asbestos fibers in the respirator below the exposure limits prescribed in paragraph (b) of this section, when the ceiling or the 8-hour time-weighted average concentrations of asbestos fibers are reasonably expected to exceed 10 times, but not 100 times, those limits.

(iii) *Type "C" supplied-air respirators, continuous flow or pressure-demand class.* A type "C" continuous flow or pressure-demand, supplied-air respirator shall be used to reduce the concentrations of airborne asbestos fibers in the respirator below the exposure limits prescribed in paragraph (b) of this section, when the ceiling or the 8-hour time-weighted average airborne concentrations of asbestos fibers are reasonably expected to exceed 100 times those limits.

(iv) *Establishment of a respirator program.* (*a*) The employer shall establish a respirator program in accordance with the requirements of the American National Standards Practices for Respiratory Protection, ANSI Z88.2-1969, which is incorporated by reference herein.

(*b*) See § 1910.6 concerning the availability of ANSI Z88.2-1969 and the maintenance of a historic file in connection therewith. The address of the American National Standards Institute is given in § 1910.100.

(*c*) No employee shall be assigned to tasks requiring the use of respirators if, based upon his most recent examination, an examining physician determines that the employee will be unable to function normally wearing a respirator, or that the safety or health of the employee or other employees will be impaired by his use of a respirator. Such employee shall be rotated to another job or given the opportunity to transfer to a different position whose duties he is able to perform with the same employer, in the same geographical area and with the same seniority, status, and rate of pay he had just prior to such transfer, if such a different position is available.

(3) Special clothing: The employer shall provide, and require the use of, special clothing, such as coveralls or similar whole body clothing, head coverings, gloves, and foot coverings for any employee exposed to airborne concentrations of asbestos fibers, which exceed the ceiling level prescribed in paragraph (b) of this section.

(4) Change rooms: (i) At any fixed place of employment exposed to airborne concentrations of asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section, the employer shall provide change rooms for employees working regularly at the place.

(ii) Clothes lockers: The employer shall provide two separate lockers or containers for each employee, so separated or isolated as to prevent contamination of the employee's street clothes from his work clothes.

(iii) Laundering: (*a*) Laundering of asbestos contaminated clothing shall be done so as to prevent the release of air-borne 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 paragraph (d)(4)(iii)(*a*) of this section 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.

(e) *Method of measurement.* All determinations of airborne concentrations of asbestos fibers shall be made by the membrane filter method at 400-450 × (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 employees, on membrane filters of 0.8 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 patterns. After the initial determinations required by paragraph (f)(1) of this section, 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 0.8 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 patterns.* After the initial determinations required by paragraph (f)(1) of this section, 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 paragraph (g)(1)(i) of this section shall conform to the requirements of 20" × 14" vertical format signs specified in § 1910.145(d)(4), and to this subdivision. The signs shall display the following legend in the lower panel, with letter sizes and styles of a visibility at least equal to that specified in this subdivision.

Legend	Notation
Asbestos	1" Sans Serif, Gothic or Block.
Dust Hazard	1" Sans Serif, Gothic or Block.
Avoid Breathing Dust	1" Gothic.
Wear Assigned Protective Equipment.	1" Gothic.
Do Not Remain In Area Unless Your Work Requires It.	1" Gothic.
Breathing Asbestos Dust May Be Hazardous To Your Health.	14 point Gothic.

Spacing between lines shall be at least equal to the height of the upper of any two lines.

(2) *Caution labels*—(i) *Labeling.* Caution labels shall be affixed to all raw materials, mixtures, scrap, waste, debris, and other products containing asbestos fibers, or to their containers, except that no label is required where asbestos fibers have been modified by a bonding agent, coating, binder, or other material so that during any reasonably foreseeable use, handling, storage, disposal, processing, or transportation, no airborne concentrations of asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section will be released.

(ii) *Label specifications.* The caution labels required by paragraph (g)(2)(i) of this section shall be printed in letters of sufficient size and contrast as to be readily visible and legible. The label shall state:

CAUTION

Contains Asbestos Fibers

Avoid Creating Dust

Breathing Asbestos Dust May Cause Serious Bodily Harm

(h) *Housekeeping*—(1) *Cleaning.* All external surfaces in any place of employment shall be maintained free of accumulations of asbestos fibers if, with their dispersion, there would be an excessive concentration.

(2) *Waste disposal.* Asbestos waste, scrap, debris, bags, containers, equipment, and asbestos-contaminated clothing, consigned for disposal, which may produce in any reasonably fore-

seeable use, handling, storage, processing, disposal, or transportation airborne concentrations of asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section shall be collected and disposed of in sealed impermeable bags, or other closed, impermeable containers.

(i) *Recordkeeping*—(1) *Exposure records.* Every employer shall maintain records of any personal or environmental monitoring required by this section. Records shall be maintained for a period of at least 20 years and shall be made available upon request to the Assistant Secretary of Labor for Occupational Safety and Health, the Director of the National Institute for Occupational Safety and Health, and to authorized representatives of either.

(2) *Access.* Employee exposure records required by this paragraph shall be provided upon request to employees, designated representatives, and the Assistant Secretary in accordance with 29 CFR 1910.20 (a)-(e) and (g)-(i).

(3) *Employee notification.* Any employee found to have been exposed at any time to airborne concentrations of asbestos fibers in excess of the limits prescribed in paragraph (b) of this section shall be notified in writing of the exposure as soon as practicable but not later than 5 days of the finding. The employee shall also be timely notified of the corrective action being taken.

(j) *Medical examinations*—(1) *General.* The employer shall provide or make available at his cost, medical examinations relative to exposure to asbestos required by this paragraph.

(2) *Preplacement.* The employer shall provide or make available to each of his employees, within 30 calendar days following his first employment 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 × 17 inches), 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 ($FEV_{1.0}$).

(3) *Annual examinations.* On or before January 31, 1973, and at least annually thereafter, every employer shall provide, or make available, comprehensive medical examinations to 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 × 17 inches), 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 ($FEV_{1.0}$).

(4) *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 × 17 inches), 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 ($FEV_{1.0}$).

(5) *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.

(6) *Medical records*—(i) *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.

(ii) *Access.* Records of the medical examinations required by this paragraph shall be provided upon request to employees, designated representatives, and the Assistant Secretary in accordance with 29 CFR 1910.20 (a)-(e) and (g)-(i). These records shall also be provided upon the request to the Director of NIOSH. Any physician who conducts a medical examination required by this paragraph shall furnish to the employer of the examined employee all the information specifi-

cally required by this paragraph, and any other medical information related to occupational exposure to asbestos fibers.

(Secs. 6(b), 8(c) and 8(g) (84 Stat. 1593, 1599, 1600; 29 U.S.C. 655, 657), the Secretary of Labor's Order 8-76 (41 FR 25059) and 29 CFR Part 1911, Ch. XVII of Title 29)

[39 FR 23502, June 27, 1974. Redesignated at 40 FR 27073, May 28, 1975, and amended at 41 FR 11505, Mar. 19, 1976; 45 FR 35281, May 23, 1980]

§ 1910.1002 Coal tar pitch volatiles; interpretation of term.

[illegible] used in § 1910.1000 (Table Z-1), tar pitch volatiles include the polycyclic hydrocarbons which volatilize from the distillation residues of coal, petroleum, wood, and other organic matter.

(Sec. 8(g), 84 Stat. 1600, 29 U.S.C. 657)

[39 FR 23502, June 27, 1974. Redesignated and amended at 40 FR 23073, May 28, 1975]

§ 1910.1003 4-Nitrobiphenyl.

(a) *Scope and application.* (1) This section applies to any area in which 4-Nitrobiphenyl, Chemical Abstracts Service Registry Number 92933 is manufactured, processed, repackaged, released, handled, or stored, but shall not apply to trans-shipment in sealed containers, except for the labeling requirements under paragraphs (e) (2), (3), and (4) of this section.

(2) This section shall not apply to solid or liquid mixtures containing less than 0.1 percent by weight or volume of 4-Nitrobiphenyl.

(b) *Definitions.* For the purposes of this section: (1) "Absolute filter" is one capable of retaining 99.97 percent of a mono disperse aerosol of 0.3 μm particles.

(2) "Authorized employee" means an employee whose duties require him to be in the regulated area and who has been specifically assigned by the employer.

(3) "Clean change room" means a room where employees put on clean clothing and/or protective equipment in an environment free of 4-Nitrobiphenyl. The clean change room shall be contiguous to and have an entry from a shower room, when the shower room facilities are otherwise required in this section.

(4) "Closed system" means an operation involving 4-Nitrobiphenyl where containment prevents the release of 4-Nitrobiphenyl into regulated areas, non-regulated areas, or the external environment.

(5) "Decontamination" means the inactivation of 4-Nitrobiphenyl or its safe disposal.

(6) "Director" means the Director, National Institute for Occupational Safety and Health, or any person directed by him or the Secretary of Health, Education, and Welfare to act for the Director.

(7) "Disposal" means the safe removal of 4-Nitrobiphenyl from the work environment.

(8) "Emergency" means an unforeseen circumstance or set of circumstances resulting in the release of 4-Nitrobiphenyl which may result in exposure to or contact with 4-Nitrobiphenyl.

(9) "External environment" means any environment external to regulated and nonregulated areas.

(10) "Isolated system" means a fully enclosed structure other than the vessel of containment of 4-Nitrobiphenyl, which is impervious to the passage of 4-Nitrobiphenyl, and which would prevent the entry of 4-Nitrobiphenyl into regulated areas, nonregulated areas, or the external environment, should leakage or spillage from the vessel of containment occur.

(11) "Laboratory type hood" is a device enclosed on three sides and the top and bottom, designed and maintained so as to draw air inward at an average linear face velocity of 150 feet per minute with a minimum of 125 feet per minute; designed, constructed, and maintained in such a way that an operation involving 4-Nitrobiphenyl within the hood does not require the insertion of any portion of any employee's body other than his hands and arms.

(12) "Nonregulated area" means any area under the control of the employer where entry and exit is neither restricted nor controlled.

(13) "Open-vessel system" means an operation involving 4-Nitrobiphenyl in an open vessel, which is not in an iso-

04.0102 Asbestos. (a) Definitions, for the purpose of 04.0102.

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

(2) "Asbestos fibers" means asbestos fibers longer than five 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 five micrometers, per cubic centimeter of air, as determined by the method prescribed in 04.0102(e).

(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 five micrometers, per cubic centimeter of air, as determined by the method prescribed in 04.0102(e).

(3) Ceiling concentration. No employee shall be exposed at any time to airborne concentrations of asbestos fibers in excess of 10 fibers, longer than five micrometers, per cubic centimeter of air, as determined by the method prescribed in 04.0102(e).

(c) Methods of compliance.

(1) Engineering methods.

(A) 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 04.0102(b).

(B) Local exhaust ventilation.

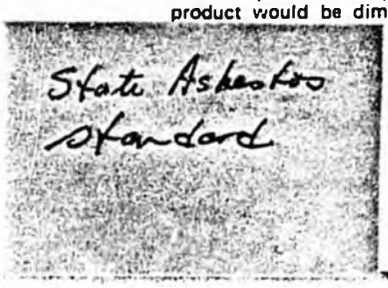
(i) Local exhaust ventilation and dust collection systems shall be designed, constructed, installed, and maintained in accordance with the American National Standard Fundamentals Governing the Design and Operation of Local Exhaust Systems, ANSI Z9.2-1971, which is incorporated by reference herein.

(ii) See 1910.6 of the Federal Occupational Safety and Health Act 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 04.0109.

(C) Particular tools. All hand-operated and power-operated tools which may produce or release asbestos fibers in excess of the exposure limits prescribed in 04.0102(b), such as, but not limited to, saws, scorers, abrasive wheels, and drills, shall be provided with local exhaust ventilation systems in accordance with 04.0102(c)(1)(B).

(2) Work practices.

(A) 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 04.0102, unless the usefulness of the product would be diminished thereby.



(B) 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 04.0102.

(C) 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 04.0102(d)(2)(C) and with special clothing in accordance with 04.0102(d)(3).

(d) Personal protective equipment.

(1) Compliance with the exposure limits prescribed by 04.0102(b) may not be achieved by the use of respirators or shift rotation of employees, except:

(A) During the time period necessary to install the engineering controls and to institute the work practices required by 04.0102(c);

(B) In work situations in which the methods prescribed in 04.0102(c) are either technically not feasible or feasible to an extent insufficient to reduce the airborne concentrations of asbestos fibers below the limits prescribed by 04.0102(b); or

(C) In emergencies.

(D) Where both respirators and personnel rotation are allowed by 04.0102(d)(1)(A), (B) or (C), and both are practicable, personnel rotation shall be preferred and used.

(2) Where a respirator is permitted by 04.0102(d)(1), it shall be selected from among those approved by the Bureau of Mines, Department of the Interior, or the National Institute for Occupational Safety and Health, Department of Health, Education, and Welfare, under the provisions of 30 CFR Part 11 (37 F.R. 6244, Mar. 25, 1972), and shall be used in accordance with 04.0102(d)(2)(A), (B), (C) and (D).

(A) Air purifying respirators. A reusable or single use air purifying respirator, or a respirator described in 04.0102(d)(2)(B) or (C), shall be used to reduce the concentrations of airborne asbestos fibers in the respirator below the exposure limits prescribed in 04.0102(b), when the ceiling or the 8-hour time weighted average airborne concentrations of asbestos fibers are reasonably expected to exceed no more than 10 times those limits.

(B) Powered air purifying respirators. A full facepiece powered air purifying respirator, or a powered air purifying respirator, or a respirator described in 04.0102(d)(2)(C), shall be used to reduce the concentrations of airborne asbestos fibers in the respirator below the exposure limits prescribed in 04.0102(b), when the ceiling or the 8-hour time weighted average concentrations of asbestos fibers are reasonably expected to exceed 10 times, but not 100 times, those limits.

(C) Type "C" supplied-air respirators, continuous flow or pressure-demand class. A type "C" continuous flow or pressure-demand, supplied-air respirator shall be used to reduce the concentrations of airborne asbestos fibers in the respirator below the exposure limits prescribed in 04.0102(b), when the ceiling or the 8-hour time weighted average airborne concentrations of asbestos fibers are reasonably expected to exceed 100 times those limits.

(D) Establishment of a respirator program.

(i) The employer shall establish a respirator program in accordance with the requirements of the American National Standards Practices for Respiratory Protection, ANSI Z88.2–1969, which is incorporated by reference herein.

(ii) See 1910.6 of the Federal Occupational Safety and Health Act concerning the availability of ANSI Z88.2–1969 and the maintenance of a historic file in connection therewith. The address of the American National Standards Institute is given in 04.0109.

(iii) No employee shall be assigned to tasks requiring the use of respirators if, based upon his most recent examination, the examining physician determines that the employee will be unable to function normally wearing a respirator, or that the safety or health of the employee or other employees will be impaired by his use of a respirator. Such employee shall be rotated to another job or given the opportunity to transfer to a different position whose duties he is able to perform with the same employer, in the same geographical area and with the same seniority, status, and rate of pay he had just prior to such transfer, if such a different position is available.

(3) Special clothing. The employer shall provide, and require the use of, special clothing, such as coveralls or similar whole body clothing, head coverings, gloves, and foot coverings for any employee exposed to airborne concentrations of asbestos fibers, which exceed the ceiling level prescribed in 04.0102(b).

(4) Change rooms.

(A) At any fixed place of employment exposed to airborne concentrations of asbestos fibers in excess of the exposure limits prescribed in 04.0102(b), the employer shall provide change rooms for employees working regularly at the place.

(B) Clothes lockers. The employer shall provide two separate lockers or containers for each employee, so separated or isolated as to prevent contamination of the employee's street clothes from his work clothes.

(C) Laundering.

(i) 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 04.0102(b).

(ii) Any employer who gives asbestos-contaminated clothing to another person for laundering shall inform such person of the requirement in 04.0102(d)(4)(C)(i) to effectively prevent the release of airborne asbestos fibers in excess of the exposure limits prescribed in 04.0102(b).

(iii) Contaminated clothing shall be transported in sealed impermeable bags, or other closed, impermeable containers, and labeled in accordance with 04.0102(g).

(e) 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 six months of the publication of 04.0102 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 04.0102(b). If the limits are exceeded, the employer shall immediately undertake a compliance program in accordance with 04.0102(c).

(2) Personal monitoring.

(A) Samples shall be collected from within the breathing zone of the employees, on membrane filters of 0.8 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.

(B) Sampling frequency and patterns. After the initial determinations required by 04.0102(f)(1), 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 six months for employees whose exposure to asbestos may reasonably be foreseen to exceed the limits prescribed by 04.0102(b).

(3) Environmental monitoring.

(A) Samples shall be collected from areas of a work environment which are representative of the airborne concentration of asbestos fibers which may reach the breathing zone of employees. Samples shall be collected on a membrane filter of 0.8 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.

(B) Sampling frequency and patterns. After the initial determinations required by 04.0102(f)(1), 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 six months for employees whose exposures to asbestos may reasonably be foreseen to exceed the exposure limits prescribed in 04.0102(b).

(4) Employee observation of monitoring. Affected employees, or their representatives, shall be given a reasonable opportunity to observe any monitoring required by 04.0102 and shall have access to the records thereof.

(g) Caution signs and labels.

(1) Caution signs.

(A) 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 04.0102(b). 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.

(B) Sign specifications. The warning signs required by 04.0102(g)(1)(A) shall conform to the requirements of 20 inches by 14 inches vertical format signs specified in 01.1202(d)(4), Subchapter 1, General Safety Code, AOSAHS, and to 04.0102(g)(1)(B). The signs shall display the following legend in the lower panel, with letter sizes and styles of a visibility at least equal to that specified in 04.0102(g)(1)(B).

Legend	Notation
Asbestos	1 in. Sans Serif, Gothic or Block
Dust hazard	3/4 in. Sans Serif, Gothic or Block
Avoid breathing dust	¼ in. Gothic
Wear assigned protective equipment	¼ in. Gothic
Do not remain in area unless your work requires it.	¼ in. Gothic
Breathing asbestos dust may be hazardous to your health	14 point Gothic

Spacing between lines shall be at least equal to the height of the upper of any two lines.

(2) Caution labels.

(A) Labeling. Caution labels shall be affixed to all raw materials, mixtures, scrap, waste, debris, and other products containing asbestos fibers, or to their containers, except that no label is required where asbestos fibers have been modified by a bonding agent, coating, binder, or other material so that during any reasonably foreseeable use, handling, storage, disposal, processing, or transportation, no airborne concentrations of asbestos fibers in excess of the exposure limits prescribed in 04.0102(b) will be released.

(B) Label specifications. The caution labels required by 04.0102(g)(2)(A) shall be printed in letters of sufficient size and contrast as to be readily visible and legible. The label shall state:

CAUTION

Contains Asbestos Fibers
Avoid Creating Dust
Breathing Asbestos Dust May Cause
Serious Bodily Harm

(h) Housekeeping.

(1) Cleaning. All external surfaces in any place of employment shall be maintained free of accumulations of asbestos fibers if, with their dispersion, there would be an excessive concentration.

(2) Waste disposal. Asbestos waste, scrap, debris, bags, containers, equipment, and asbestos-contaminated clothing, consigned for disposal, which may produce in any reasonably foreseeable use, handling, storage, processing, disposal, or transportation, airborne concentrations of asbestos fibers in excess of the exposure limits prescribed in 04.0102(b), shall be collected and disposed of in sealed impermeable bags, or other closed, impermeable containers.

(i) Recordkeeping.

(1) Exposure records. Every employer shall maintain records of any personal or environmental monitoring required by 04.0102. Records shall be maintained for a period of at least 20 years and shall be made available upon request to the Commissioner of Labor, the Director of the Division of Occupational Safety and Health, and to authorized representatives of either.

(2) Employee access. Every employee and former employee shall have reasonable access to any record required to be maintained by 04.0102 (l)(1) and 8 AAC 61.270 which indicates the employee's own exposure to asbestos fibers.

(3) Employee notification. Any employee found to have been exposed at any time to airborne concentrations of asbestos fibers in excess of the limits prescribed in 04.0102(b) shall be notified in writing of the exposure as soon as practicable but not later than five days of the finding. The employee shall also be timely notified of the corrective action being taken.

(j) Medical examinations.

(1) General. The employer shall provide or make available at his cost, medical examinations relative to exposure to asbestos required by 04.0102(j).

(2) Preplacement. The employer shall provide or make available to each of his employees, within 30 calendar days following his first employment 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 inches), a history to elicit symptomatology of respiratory disease, and pulmonary function tests to include forced vital capacity (FVC) and forced expiratory volume at one second ($FEV_{1.0}$).

(3) Annual examinations. On or before January 31, 1973, and at least annually thereafter, every employer shall provide, or make available, comprehensive medical examinations to 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 inches), a history to elicit symptomatology of respiratory disease, and pulmonary function tests to include forced vital capacity (FVC) and forced expiratory volume at one second ($FEV_{1.0}$).

(4) 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 inches), a history to elicit symptomatology of respiratory disease, and pulmonary function tests to include forced vital capacity (FVC) and forced expiratory volume at one second ($FEV_{1.0}$).

(5) Recent examinations. No medical examination is required of any employee, if adequate records show that the employee has been examined in accordance with 04.0102(j) within the past one-year period.

(6) Medical records.

(A) Maintenance. Employers of employees examined pursuant to 04.0102(j) 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.

(B) Access. The contents of the records of the medical examinations required by 04.0102 (j) shall be made available, in accordance with 8 AAC 61.270 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 04.0102 (j) shall furnish to the employer of the examined employee all the information specifically required by 04.0102 (j) and any other medical information related to occupational exposure to asbestos fibers.

04.0103 Ventilation. (a) Abrasive blasting.

(1) Definitions applicable to 04.0103.

(A) Abrasive. A solid substance used in an abrasive blasting operation.

(B) 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.

(C) Blast cleaning barrel. A complete enclosure which rotates on an axis, or which has an internal moving tread to tumble the parts, in order to expose various surfaces of the parts of the action of an automatic blast spray.

(D) Blast cleaning room. A complete enclosure in which blasting operations are performed and where the operator works inside of the room to operate the blasting nozzle and direct the flow of the abrasive material.

(E) Blasting cabinet. An enclosure where the operator stands outside and operates the blasting nozzle through an opening or openings in the enclosure.

(F) Clean air. Air of such purity that it will not cause harm or discomfort to an individual if it is inhaled for extended periods of time.

(G) Dust collector. A device or combination of devices for separating dust from the air handled by an exhaust ventilation system.

(H) Exhaust ventilation system. A system for removing contaminated air from a space, comprising two or more of the following elements: (a) enclosure or hood, (b) duct work, (c) dust collecting equipment, (d) exhauster, and (e) discharge stack.

(I) Particulate-filter respirator. An air purifying respirator, commonly referred to as a dust or a fume respirator, which removes most of the dust or fume from the air passing through the device.

(J) Respirable dust. Airborne dust in sizes capable of passing through the upper respiratory system to reach the lower lung passages.

(K) Rotary blast cleaning table. An enclosure where the pieces to be cleaned are positioned on a rotating table and are passed automatically through a series of blast sprays.

(L) Abrasive blasting. The forcible application of an abrasive to a surface by pneumatic pressure, hydraulic pressure, or centrifugal force.

(2) Dust hazards from abrasive blasting.

(A) Abrasives and the surface coatings on the materials blasted are shattered and pulverized during blasting operations and the dust formed will contain particles of respirable size. The composition and toxicity of the dust from these sources shall be considered in making an evaluation of the potential health hazards.

(B) The concentration of respirable dust or fume in the breathing zone of the abrasive-blasting operator or any other worker shall be kept below the levels specified in 04.0101.

Asbestos Abatement Fact 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 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 the nine proposers offered training programs of varying scope and strength. "Not withstanding 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 represents all aspects of this industry with over 125 years combined experience in asbestos-related work.

The committee includes:

1. Chair, Ambrose Bittner - State Director
   U.S. Department of Labor - Bureau of Apprenticeship and Training; Member, Alaska Safety Advisory Council

2. Co-Chair, Ron Cunningham - Safety and Health Director
   Alaska General Construction Company
   Member AGC Safety Committee

3. Ray Jorgensen - Chief of Industrial Health Compliance
   Alaska Department of Labor, Division of Labor Standards and Safety, Occupational Safety and Health Section

4. Dan Middaugh - Member Asbestos Workers Local 97
   Joint Apprenticeship and Training Committee
   Asbestos Abatement Instructor
   President, Board of Directors, Alaska Health Project

5. Leonard Limtiaco - Occupational Safety & Health Manager
   U.S. Department of Labor, Occupational Safety and
   Health Administration

6. Joe Churchill - Manager
   E. J. Bartell Company
   Secretary - Asbestos Workers Joint Apprenticeship and
   Training Committee
   President, Alaska Chapter, Western Insulation
   Contractors Association
   Secretary-Treasurer - Western Insulation Contractors
   Association

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

8. Nancy Cannington - Special Assistant to the Commissioner
   Executive Assistant - Alaska Safety Advisory Council

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, Rules and Regulations

A. Agencies

There are many regulations that must be followed to implement an effective asbestos abatement program. There are, for the most part, four agencies that are responsible for administering asbestos related regulation:

1. U.S. Environmental Protection Agency (EPA)

2. Alaska Department of Environmental Conservation (DEC)

3. U.S. Department of Labor, Occupational Safety and Health Administration (OSHA)

4. Alaska Department of Labor, Labor Standards and Safety Division, Occupational Safety and Health Section (DOSH)

B. Regulations

EPA and DEC regulation covers non-work related exposures, transportation and disposal of asbestos containing material. Municipalities have set up procedures and areas for the disposal sites. Virtually all of the OSHA regulations are mirrored by DOSH regulation. The State Department of Labor has enforcement jurisdiction at most places of employment in Alaska (exceptions are navigable water ways and federal/ military employees). The regulations and/or industry standards are:

1. EPA 40 CFR Part 61 Subpart M

The Environmental Protection Agency's 40 CFR Part 61 is the national emission standard for hazardous air pollutants. Subpart M is the national emission standard for asbestos.

2. Occupational Safety and Health Standards Subchapter 4, Article 1, Occupational Health and Environmental Control (OH & EC)

Occupational SAfety and Health Standards Subchapter 4, Article 1, Occupational Health and Environmental Control (OH & EC) Section 04.0102 specifically lists the requirements to abate exposure to asbestos. It defines the permissible exposure to airborne concentrations of asbestos fibers, methods of compliance, monitoring and medical records.

3. Occupational Safety and Health Standards Subchapter/General Safety and Health Code (GSC) Articles/Section 01.0101 to Article 15

   Occupational Safety and Health Standards Subchapter/General Health Safety Code Articles/ Section 01.0101 to Article 15.15.0101(j)(14) lists the requirements for establishing an accident prevention program, work platforms, hazardous materials and operations, personal protective equipment including respiratory protection, medical and first aid, fire protection, etcetera on to hazard communication (the right to know and be informed of hazardous substances in the work places).

4. 30 CFR Part II (37F.R. 6244, Mar. 25, 1972)

   Provides for the approval of respirators by NIOSH.

5. Alaska Statutes (AS) Section 1860.010-18.60.105

   Alaska Statutes Secs. 18.60.010-18.60.105 Alaska Department of Labor, Division of Labor Standards and Safety "Prevention of Accident and Health Hazards". This statute lists the duties of the Department of Labor. Some of the duties described enable the Department of Labor to (a) plan and execute safety programs, including educational campaigns, (b) establish and enforce occupational safety and health standards, (c) participate in occupational safety and health programs, and (d) assist employers to identify and obtain information on toxic and hazardous substances and develop employee education programs.

6. Alaska Administrative Code (AAC) Title 8 8AAC60.010-8AAC 80.010.

   Alaska Administrative Code Title 8 8AAC60.010-8AAC80.010 Alaska Department of Labor Division of Labor Standards and Safety charge the division with the responsibility and the authority to:

   a. Enforce all laws and lawful orders requiring work and work places to be safe and healthful;

   b. Investigate disabling or fatal occupational injuries and illnesses;

   c. Develop occupational safety and health standards which, after adoption, have the affect of law and,

d. Establish special orders, or rules and regulations, to cover a specific place of employment or process or work.

Section 8 AAC 61.270 provides for the access to records of employee's past or present exposure to toxic substances or harmful physical agents and job duties or working conditions by the Department of Labor and employees or their representatives.

7. American National Standards (ANSI) 288.2-1969 and 1980 are adopted by reference in the GSC and OH & EC.

American National Standards 288.2 - 1969 and 1980 cover the use of respiratory protection.

288.2 - 1980 section 7.2 requires the respirator issuer and wearer be given adequate training by a qualified person and describes training subjects (topics).

288.2 - 1969 section 7.4 requires the supervisors and workers be so instructed by competent persons and lists minimum training (topics).

American National Standards 29.2 - 1971 addresses the design and operation of local exhaust systems required to control exposure to asbestos.

In addition to enforced regulations, the agencies have enforcement policies and regulation interpretations that affect the owner/operator, contractor/employer, and worker/employee of 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 owners/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

1. Ensure that a survey is conducted to identify the presence of asbestos materials and the actual location of these materials prior to the preparation of bid specifications for the abatement project.

2. Include in the bid specifications the designated disposal site and methods/procedures for disposal.

3. Provide in the bid specifications the requirements for inspection and monitoring of the work performance during the abatement project.

B. Contractor/Employer

1. Provide a skilled workforce of qualified workers who have received safety and health training prior to commencement of any asbestos abatement work.

2. Provide adequate material and equipment to safely perform the asbestos abatement project such as: approved respirators, personal protective equipment and clothing, work clothing change rooms, disposal packaging materials and monitoring equipment. (Reference - Attachment 1)

3. Ensure that trainers/instructors and supervisors are familiar with Safety and Health Rules and Regulations and Environmental Protection Agency Standards.

4. Provide a written training program for workers and maintain documentation of the completed training of each worker.

C. Workers/Employees

1. Be familiar with and abide by Safety and Health requirements and procedures when working with asbestos materials.

2. Be familiar with personal protective equipment and ensure that equipment and protective clothing are used and worn when working with asbestos materials.

V Recommended Procedures for Abatement Projects

In Alaska, the magnitude of the asbestos problem is just now being uncovered. Recently, many of our schools, military structures, and other public and private buildings have been found to contain asbestos. Legislation has been introduced this year to determine in more detail the extent of the asbestos problem in Alaska. At issue is the actual and potential dangers from "intermittent" asbestos exposure Alaskan construction workers face as they remodel and/or demolish these structures. In order to combat this problem and prevent future unsuspected asbestos exposure to Alaskan

workers, a proper survey of any building and plant prior to remodel or demolition is the most important first step.

Such a survey would check all materials in a building or plant that are known to possibly contain asbestos. Materials found to contain asbestos would then be charted as to type and amount (percentage) of asbestos present. This would allow the survey personnel to recommend removal/handling techniques to keep exposure at a minimum. (Reference Attachment 2)

A. Owner/Operator

1. Have survey performed by appropriate agency. (Reference Attachment 3)

Only properly trainined personnel should pre-survey remodel/demolition operations for asbestos-bearing materials. Survey personnel must be familiar with building construction, as well as be acquainted with all materials that may contain asbestos. Such persons should be capable of locating the suspect materials, collecting bulk samples, checking the samples and following them through the lab procedure and making recommendation on how to handle these materials during demolition/remodel.

The training of survey technicians is very important. These persons are the key in preventing unnecessary exposure to asbestos. Survey personnel must be proficient in self protection, removal, encapsulation, monitoring, lab techniques, basic building construction and identification of asbestos bearing materials.

2. Disposal Site

It is recommended that each owner/operator be be required to identify, in the bid specifications of all asbestos abatement projects, the location of the disposal site and provide disposal procedures to include as a minimum : (Reference Attachment 3)

a. The geographical area or locale which the disposal facility will accept materials from.

b. The time and dates that the facility will accept asbestos materials for disposal.

c. Procedures for making arrangements for disposal to include contact points and telephone numbers.

d. Procedures for packaging, transporting, labeling and processing of the materials for acceptance at the disposal facility.

3. Specifications for Worker Safety-Health and Environmental Concerns.

The following general specifications are recommended for demolition, removal, disposal, enclosure and remodeling of asbestos abatement projects. If these recommended specifications are incorporated into contracts and strictly enforced, the exposure of asbestos to both public and employees will avoid unsafe and unhealthful exposures. Contractors must receive training and must train their workers in safe work practices. Owners/operators of buildings must identify projects with asbestos contained materials prior to issuance of bids. (Reference Attachment 4)

a. Regulations

Contractors shall comply with the requirements of the EPA regulations, OSHA regulations on asbestos, and any applicable State and Local Government regulations which are incorporated by reference.

b. Scope of Work

1. The contractor shall furnish all labor, materials, services, insurance, and equipment necessary to carry out the operation in accordance with the EPA and OSHA regulations (and any applicable State and Local Government regulations).

2. The contractor shall be responsible for obtaining approval for a waste disposal site in compliance with section 61.25 of the EPA regulations.

3. Contractors shall post the EPA, OSHA, State DOSH and any applicable Local Government regulations at the job site.

c. Workers Protection (any and all personnel entering contaminated area)

1. The contractor shall provide workers with approved respirators as determined by the exposure level (filtration or air supplied) as applicable. The contractor shall provide a sufficient quantity of filters approved for asbestos so that workers can change filters

during the work day. Filters shall not be used any longer than one (1) work day. The respirator filters shall be stored at the job site in the change room and shall be totally protected from exposure to asbestos prior to their use.

2. Workers shall always wear a respirator properly fitted on the face in the work area.

3. Contractors shall instruct and train workers in proper respirator use.

4. Workers shall wear disposable, full-body coveralls and disposable head and foot wear in the work area. Footwear may be disposable. Non-disposable footwear shall be left in the work area at all times until disposal at job completion.

5. The contractor shall set up a decontamination facility to include a shower outside of the work area. (Example: Reference Attachment 5)

6. All workers without exception shall:

   a. Remove street clothes in the change room and put on the disposable coveralls and head covers and respirator before entering the work area.

   b. Remove the disposable coveralls, head covers and footwear in the work area before leaving the work area. Still wearing their respirators, proceed to the showers and remove their respirators while showering with soap and water.

   c. Shower at the end of each day's work before entering the change room to change into street clothes.

7. Workers shall not eat, drink, smoke, chew gum, or chew tobacco in the work area. To eat, drink or smoke, workers shall remove the disposable work clothes and footwear in the work area before leaving the work area. Still wearing their respirators, workers shall proceed to the showers and remove respirators while showering with soap and water. Workmen shall then dress into new, clean, disposable coverall to eat, smoke, or drink. The new coverall can be worn to reenter the work area.

8. The contractor shall provide a respirator and disposable coveralls, head cover, and footwear to any official representative who inspects the job site.

9. All persons entering the work area shall wear an approved respirator and disposable coveralls, head cover, and footwear.

d. Work Area Preparation

1. The Contractor shall set up a decontamination facility outside of the work area which will consist of a change room, shower area, and equipment area. (Reference Attachment 5)

2. The contractor shall isolate the work area for the duration of the work by completely sealing off all openings and fixtures in the work areas including, but not limited to, heating and ventilation ducts, doorways, corridors, windows, skylights, and lighting with plastic sheeting taped securely in place.

3. The contractor shall build double barriers of plastic sheeting at all entrances and exits to the work area so that the work area is always closed off by one barrier when workers enter or exit.

4. All floor and wall surfaces in the work area shall be covered with plastic sheeting taped securely in place to protect from water damage (or damage by sealants).

5. Before the work has begun, the contractor shall wet clean all removable items and equipment, remove them from the work area, and then return these items and equipment to the work area after the job has been completed and the area has been decontaminated.

6. The contractor shall cover all non-removable items and equipment in the work area with plastic sheeting taped securely in place.

7. After work area isolation the contractor shall take out detachable electrical heating, ventilation equipment, and other items located on the asbestos material, clean them before covering with plastic sheeting taped securely in place, and return them to their proper places after the job has been completed and the work area has been decontaminated.

8. The contractor shall remove all heating, ventilation, and air conditioning system filters, pack them in sealable plastic bags (6-mil minimum) for burial in the approved waste disposal site and replace them with new filters.

9. The contractor shall establish emergency and fire exits from the work area. Emergency procedures shall have priority.

e. Method of Removal

1. The asbestos material shall be sprayed with water containing a wetting agent to enhance penetration. A fine spray of the amended water shall be applied to reduce fiber release preceeding removal of the asbestos material. The material shall be sufficiently saturated to prevent emission of airborne fibers in excess of the exposure limits prescribed in the OSHA and State regulations referenced in these specifications.

2. The asbestos material shall be removed in small sections by two-man teams on staging platforms. Before beginning the next section, the material shall be packed while still wet into sealable plastic bags (6-mil minimum) and placed into fiber or metal drums or skips for transport. Bags, drums, and skips shall be marked with the OSHA/State DOSH label prescribed by the OSHA/State DOSH regulations referenced in these specifications. The outside of all containers shall be clean before leaving the work area.

3. All plastic sheeting, tape, cleaning material, clothing and all other disposable material or items used in the work area shall be packed into sealable plastic bags (6-mil minimum) and placed into metal or fiber drums or skips for transport. The drums and skips shall be marked with the OSHA/State DOSH label prescribed by the OSHA/State DOSH regulations referenced in these specifications.

4. The contractor shall transport the sealed drums or skips to the approved waste disposal site. The sealed plastic bags may be dumped from the drums into the burial site unless the bags have been broken or damaged. The damaged bags shall be left in the drum and the entire contaminated drum shall be buried. Uncontaminated drums may be recycled.

5. As a highly recommended engineering control method and as an industrywide practice whenever feasible, HEPA filtered air exhaust should be used to create a negative pressure and allow for thorough cleanup.

f. Decontamination of Work Area

1. The contractor shall completely decontaminate all tools before removal from work area. The contractor shall clean all surfaces with a HEPA filtered vacuum (HEPA - High Efficiency Particulate Absolute) and/or water. (HEPA vacuums fail when used on wet material.) After cleaning the work area, the contractor shall wait 24 hours to allow for settlement of dust and then wet-clean all surfaces in the work area. After completion of wet-cleaning and when all surfaces are completely, dry, the contractor shall take two air samples, minimum six hours duration each, within 48 hours and 24 hours apart. Such air samples shall be taken while activities normal to the use of the area are simulated i.e., sweeping floor, dusting counters, vacuuming with standard vacuum, air handling system functioning, or any other air disturbing activity that would normally take place in the area after takeover by owner/operator.

2. If the air samples results show that the work area has not been decontaminated, the contractor shall repeat the cleaning and air monitoring until the work area is in compliance.

3. After the work area is found to be in compliance, all entrances and exits are unsealed and the plastic sheeting, tape, and any other trash and debris is disposed of in sealable plastic bags (6-mil minimum) and buried in the approved waste disposal site.

g. Air Monitoring

1. Air monitoring shall be conducted by a certified agency/laboratory to ensure compliance with the OSHA/State DOSH regulations.

2. Air monitoring will be conducted according to the method prescribed by OSHA/State DOSH regulations.

3. Air monitoring shall be performed to provide the following samples during the period of asbestos operations.

Area to be Sampled	Minimum Number of Samples for each Work Day	Each Sample Minimum Time
Work Area	2	6 Hrs.
Personnel	Each Job Title	6 Hrs.
Outside Building	1	6 Hrs.
Outside Work Area	1	6 Hrs.

B. Contractor/Employer

1. Provide Asbestos Abatement Training Program

The Committee recommends a minimum three-day asbestos training program, as outlined in Attachment 6.

2. Provide Qualified Supervisors and Instructors

The Committee recommends the following minimum requirements:

a. Recognize distinction between legal vs. recommended practices.

b. Capable of reading analyses between bulk and air samples.

c. Know requirements of OSHA, State DOSH, EPA and DEC in regards to asbestos.

d. Knowledge of jurisdictional issues between regulatory agencies listed in item C.

e. Knowledgeable in respirator requirements.

C. Worker/Employee

1. The employee should receive instruction pertaining to aforementioned training. (Health effects, respirator program, abatement procedures, engineering controls, waste disposal, and any applicable regulations.)

2. Follow procedures outlined in the training program.

3. Participate in on-the-job safety meetings.

4. Work with the contractor to identify and participate in any corrective actions deemed necessary.

5. Avoid shortcuts in work procedures involving safety.

6. Be a productive and safe worker by following recommended practices.

VI. Conclusions - Committee Recommendations to the Commissioner

1. Require pre-surveys for asbestos containing materials in demolition and remodeling projects. Pre-survey should be performed by competent person using a check list of prominent asbestos containing materials.

2. Identify appropriate sites and provide operational guidelines for disposal of asbestos containing materials consistent with VA2, page 7.

3. Adopt minimum training standards for asbestos abatement (Reference Attachment 6)

4. Establish instructor qualifications for Asbestos Abatement training (Reference VB2, page 8)

5. Require workers to successfully complete minimum training program prior to employment in hazardous or contaminated work areas, (Reference VC2 Page 9)

We further recommend that the Commissioner adopt certification procedures for standards of training, instructor qualifications and worker skills.

Respectfully Submitted:

Ambrose Britton II — Chairman

Ronald E. Cunningham — Co-Chairman

Daniel McClanahan — Member

Lloyd L. Churchill — Member

Leslie H. Billings — Member

Leonardo P. Fuentes — Member

Raymond L. Jorgenson — Member

Nancy E. Carrington — Member

Attachment 1

ASBESTOS ABATEMENT

EQUIPMENT MANUFACTURERS

Mention of trade names of specific products does not constitute endorsement by the committee.

1. High Efficiency Particulate Air (H.E.P.A.) Vacuum

    a. Nilfisk
    b. Pullman-Holt

2. Protective Clothing

    a. Durafab
    b. Tyviek
    c. Best Manufacturing

3. Respirators

    a. Filtered Face Masks

        1. HSC
        2. Norton
        3. Wilson

    b. Self Contained Air Supplied Systems

        1. 3M
        2. Aqualung-Safety Division
        3. Scott

    c. Grade "D" Air Supplied Systems

        1. Racal
        2. Scott

4. Negative Air Pressure Systems With H.E.P.A. Filters

    a. Nilfisk
    b. Pullman-Holt

5. Removal Bags

    a. Profo
    b. Durafab
    c. Safe-T-Strip

6. Disposal Bags

    a. Profo
    b. Associated Bag
    c. DuraFab

ASBESTOS ABATEMENT

EQUIPMENT MANUFACTURERS

7. Warning Signs

   a. Sa-So
   b. National Marker Co.

8. Decontamination Trailers

   a. Mators Mobile Detox

9. Surfactant Wetting Application Sprayer

   a. Hudson

ASBESTOS ABATEMENT

EQUIPMENT SUPPLIERS

Sahlberg Equipment Inc.
1702 Ship Ave.
Anchorage, Alaska 99501

E. J. Bartells Co.
601 Whitney Rd.
Anchorage, Alaska 99501

Reynolds Equipment Co., Inc.
1537 E 5th Ave
Anchorage, Alaska 99501

Safety and Supply Co.
901 Orca
Anchorage, Alaska 99502

EQUIPMENT NEEDED FOR ASBESTOS ABATEMENT

1. On Site Decontamination

   a. Portable Trailer
   b. Visqueen Enclosure

2. Scaffolding

3. Showers

4. H.E.P.A. Vacuum

TOOLS REQUIRED

1. Saws

2. Nippers (Wire Cutters)

3. Scissors

4. Scrapers

5. Knife and Sharpener

MATERIALS NEEDED

1. Framing Lumber

2. Visqueen Walls and Ceilings 4 Mil; Floors 6 Mil

3. Respirators

4. Protective Clothing

5. H.E.P.A Filters

6. Removal and Disposal Bags

7. Warning Signs

8. Tape

Attachment 2

ASBESTOS ABATEMENT
WHERE TO LOOK IN A BUILDING FOR ASBESTOS BEARING MATERIALS

1. Floors

   Vinyls
   Linoleum
   Underlayment for Sheet Type Flooring

2. Ceilings
   Accoustic Tiles
   Sprayed/Non-Sprayed Textures
   Paints

3. Outer Walls (Outside)

   Sidings

4. Above Ceilings

   Sprayed Fireproofing
   Insulation Products - Asbestos Insulation
   Asbestos Insulation Cement, i.e., Grease Ducts
   Mud Fittings, Mud Seams on Air Ducts with Canvas
   Covers Over Insulation

5. Walls

   Drywall Seam Filler (Taping Mud)
   Asbestos Wallboard (Cement Asbestos Board)
   Asbestos Millboard (At Fireplaces or Around Furnaces)
   Paints (Masonry or Concrete Filler Type)
   Wall Texture
   Felt Type Vapor Barriers (Under Drywall)
   Chalkboards (Schools)
   Plaster

6. Mechanical Rooms

   Electrical Switchboards
   Insulations on any Mechanical Appliance or Piping System
   Mud Seams on Ductwork with Canvas over Insulation
   Insulation on Flues
   Insulation on Emergency Generator
   Exhaust Systems

7. Roofs

   Fire Retardant Cedar Underlayment
   Shingles
   Felt Type Vapor Barrier
   Built-Up Roofing Membrane
   Roofing Felt
   Asphalt/Asbestos Roof Coatings

8. Laboratories

   Furniture
   Hoods/Vents for Corrosive Chemicals
   Gas Vapor Ducts for Corrosive Compounds
   Table Pads/Heat Protective Mats
   Fire proof Draperies

9. Theaters

   Curtains
   Sprayed Accoustic Materials

Attachment 3

MUNICIPALITY OF ANCHORAGE
SOLID WASTE SERVICES

OPERATIONS PROCEDURE

TITLE: ASBESTOS DISPOSAL

EFFECTIVE DATE:

1. Only asbestos generated within the Municipality will be accepted for disposal.

2. Asbestos will be accepted at the Merrill Field Landfill on a scheduled basis. (The time and dates will be established by the department.)

3. Prior arrangements, by the asbestos generator/disposer, will be made with the Processing and Disposal General Foreman before asbestos is accepted.

4. Asbestos must be transported, packaged, and marked in accordance with all federal, state, and municipal regulations. These regulations include, as a minimum:

   -transport in a closed vehicle
   -asbestos must be thoroughly wetted and placed in a water tight container before burial. Containers may be barrels, drums, or doubled 6 mil or thicker plastic bags. All asbestos containers will display the following label:

   CAUTION
   CONTAINS ASBESTOS
   AVOID OPENING OR BREAKING CONTAINER
   BREATHING ASBESTOS IS HAZARDOUS TO YOUR HEALTH

   -all containers will be hand placed in designated area.
   -any asbestos containers determined by Solid Waste Services to be inadequate will be repackaged or removed, by the disposer, from the Merrill Field Landfill immediately.

5. All asbestos will be covered on a daily basis by at least six inches of soil.

6. Cost for disposal of asbestos will be based on actual time and materials and will include but not be limited to equipment rental, equipment operator's time, administrative time and cover material as required.

Attachment 4

GENERAL INSTRUCTIONS AND GUIDELINES FOR ASBESTOS REMOVAL

1. Notify proper authorities of intent to remove asbestos

2. Seal off work area, put up caution signs and build change areas and transition area.

3. If possible, have adequate "wet down" water supply available. If a pressure system is not available, provide sprayer cans.

4. Provide each employee with duplicate copies of the Asbestos Removal Instructions. Retain employee-signed copy in files.

5. Have all equipment necessary, i.e., disposable coveralls, respirators, etc., available.

6. Have air monitoring equipment in position.

7. Proceed with the removal and bagging procedure.

8. Dispose of waste. The dump area should be checked out prior to actual haouling to be sure it will accept asbestos waste.

9. Provide to each employee, by hand or mail, duplicate copies of the medical examination form. Retain employee-signed copy in files.

10. Records of all medical examinations shall be retained for the required 20 years storage.

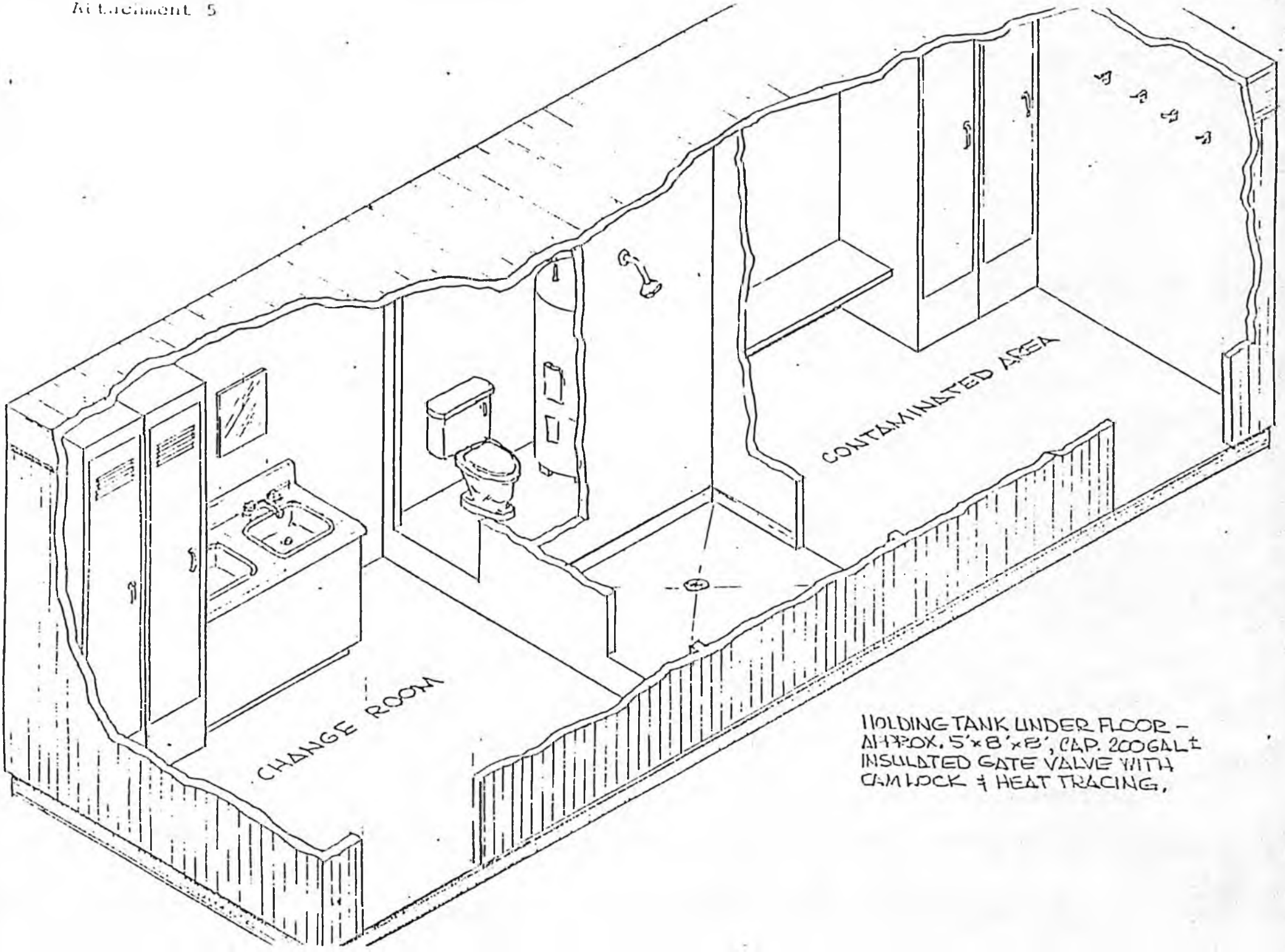
11. Monitoring records will also be retained for the required 20 years storage.

12. Any employee found to have been exposed to airborne concentrations of asbestos fibers in excess of the limits set in paragraph (b) of the)SHA standards shall be notified in writing within five (5) days.

13. The key to a successful operation is the keep the fiber count down. This means containment of the fibers either by water or encapsulation.

14. Check local EPA or State requirements.

Attachment 5



Attachment 6

MINIMUM ASBESTOS ABATEMENT TRAINING

DAY 1

8:00 - 12:00	INTRODUCTIONS - Asbestos History Health Affects (Lecture, film, slides, materials, speakers) "More Than A Paycheck" "A Way To A Dusty Death"
12:30 - 1:30	Federal Asbestos Standards State Asbestos Standards (Each Student Should Receive A Copy Of The Current Standards And The Class Should Go Through It In Its Entirety)
1:30 - 3:30	Respirator Protection/Standards (Different Types, Uses, Fit Testing, What A Respirator Program Consists Of, Filters, Maintenance)
3:30 - 4:30	Respirator Lab (Part Of The Class Does Fit Testing With Different Masks)

MINIMUM ASBESTOS ABATEMENT TRAINING

DAY 2

8:00 - 12:00	Engineering Controls
	(Lowering Fiber Count With Encapsulation, Negative Air Pressure, HEPA Vacuums, Decontamination Rooms, Protective Clothin Wet Methods, House Keeping.)
12:30 - 1:30	Air Monitoring
	(Instructional Film, Practical Applicatio
1:30 - 2:30	Work Area Preparation - Hazard Recognitio
	(Taping, Planning, Draw Schematic of Actu Work Site) Ask Students to Outline How T Proceed With This Particular Project.
2:30 - 3:30	Waste Disposal
	(EPA Regulations, Labeling, Double Baggin Land Fills)
3:30 - 4:30	Respirator Fit Testing
	(Other Half of Group Doing Fit Testing Wi Different Masks)

MINIMUM ASBESTOS ABATEMENT TRAINING

DAY 3

8:00 - 10:00	Working With Scaffolding (Setting Up, Tearing Down, Safety Regulation, Asbestos Abatement Applicatior
10:00 - 12:00	Actual Work Area Preparation (Scaffold Setting, Taping, Setting Up Change Rooms)
12:30 - 2:30	Continuing Hands On Work Area Preparation (Switch Tasks, Suit Up In Asbestos Abatement Gear, Using Respirators, And Perform Work Area Preparation.)
2:30 - 3:30	Review and Give Final Test on Material Covered

ANCHORAGE
SCHOOL DISTRICT
4600 DeBarr Avenue
Pouch 6-614
Anchorage, Alaska 99502
[907] 333-9561

May 14, 1984

The Honorable Joe P. Josephson
Alaska State Legislature
Pouch V
Juneau, Alaska 99811

Dear Senator Josephson:

The Anchorage School District has been monitoring the asbestos fiberous material that is located within 55 schools since 1979. This requirement was federally mandated by the Environmental Protection Agency (EPA). In June, 1983, we were again mandated by the EPA to post each school that contained asbestos and to notify all occupants of the building of its location.

The Anchorage School District structured a formal process by which prequalified bidders were selected and given the opportunity to bid on six abatement projects. Bartlett-Begich Junior/Senior High School was a separate item due to the magnitude of asbestos within the school. The five other schools were bid as a unit which includes West, East, and Dimond High Schools, Clark Junior High School, and Mt. Spurr Elementary School.

The bids were opened on Wednesday, May 9, 1984. The base bid for Bartlett had a low $13,005,300 and a high of $22,166,000. We received three bids for this project. We received two bids for the five school project with a high of $1,980,000 to a low of $1,538,240.

We will be approximately $10 million short from awarding a contract for the removal of asbestos at Bartlett. At the present time the District is very appreciative of the approximately $6.5 million which was awarded in HB 403.

The low bid, if accepted, is $14,543,540. This bid indicates that Bartlett would have to be closed for at least one semester. The District is analyzing some of the options for Bartlett's 2,000 students which would not impact on the educational program.

If Bartlett was to be completed over two summers, it would require an additional $4 million. This, however, does not include storage for all of the furniture and equipment housed in Bartlett's 324,000 square feet.

The options available to us is to reject all bids, rebid the five schools by themselves, or reject Bartlett because of lack of funds. This question comes to the School Board on May 21, 1984, and it is imperative that the District receive the funding for this very important program.

We have appreciated all your efforts on behalf of the Anchorage community, its children, and their future.

Sincerely,

E. E. (Gene) Davis

E. E. (Gene) Davis, Ed.D.
SUPERINTENDENT

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cc Bill Miles

P.S. Enclosed is an article from "What's Happening In Washington", published by The National PTA.

ANCHORAGE
SCHOOL DISTRICT
4600 DeBarr Avenue
Pouch 6-614
Anchorage, Alaska 99502
[907] 333-9561

March 7, 1984

RECEIVED

Honorable Joe Josephson
Alaska State Legislature
Pouch V (MS 3100,
Juneau, Alaska 99811

Dear Senator Josephson:

Subject: Asbestos Abatement Program For The Anchorage School District

The following information has been gathered to provide you with backup knowledge of the asbestos problem facing the Anchorage School District.

The Anchorage School District has not moved hastily into its decision on asbestos. The District began by implementing the EPA's voluntary asbestos identification program in 1979, and continued with the EPA's mandatory asbestos identification and notification program in 1982. The School Board appointed a Technical Advisory Panel which included local and state health officials, outside medical consultants with expertise and knowledge of asbestos health hazards, School Board members, and local government and civic leaders. This Panel was Chaired by School Board Member Jim Robinson. The Panel did not just debate the issue, but researched it on their own, attended educational and informational seminars, and solicited advice and information from knowledgeable and experienced sources, before making their recommendations.

Enclosed is School Board Memorandum #534 (82-83), May 23, 1983, which approved the recommendations by the Panel and authorized the Superintendent to search for a competent firm to assist the District in designing the abatement program. The firm of Gobbell Hays Pickering was approved by the School Board on July 11, 1983, ASD Memorandum #9 (83-84). The firm is from Nashville, Tennessee. It was chosen to do the design work and the monitoring of the abatement project. This firm has done over 500 school buildings and over 140 hospitals and government-type buildings. They have over 230 personnel in their firm and are well versed on the current state of the art of asbestos removal and replacement processes.

Also enclosed is the U. S. Attorney General's Asbestos Liability Report to the Congress and it states "Congress has determined that 'medical science has not established any minimum level of exposure to asbestos fibers which is considered to be safe to individuals exposed to fibers' and 'the presence in school buildings of friable or easily damaged asbestos creates an unwarranted hazard to the health of the school children and school employees who are exposed to such materials.'"

Enclosed is some medical research data which indicates that there are no safe lower limits of exposure. A letter from Mr. Wayne Tansil, Gobbell Hays Pickering, is enclosed which outlines encapsulation problems versus removal, and other information indicating the hazards of asbestos.

There are numerous reported examples of premature deaths from low-level exposure. Steve McQueen died of mesothelioma--his only reported exposure was a summer as a dock worker. A similar situation was reported with a Georgia Tech football coach. A Yale librarian was reported to have died of mesothelioma after seven years working in a library with deteriorating asbestos fireproofing above a dropped ceiling. A thirteen year old boy died of mesothelioma developed from exposure to asbestos while helping his father work on brake linings.

I believe the information contained within this booklet outlines the compounding health hazard to school children of asbestos exposure. This means children exposed to friable asbes[illegible] at an early age have the possibility of being affecte[illegible]y an asbestos-related disease in the prime of life, given the 20-30 year latency period of such diseases.

If I could be of further assistance, please let me know.

Sincerely,

L. T. Freeman
Assistant Superintendent
for Business Management

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BM5.33

Enclosure

KETCHIKAN GATEWAY BOROUGH SCHOOL DISTRICT

Darroll Hargraves
SUPERINTENDENT

ASBESTOS HAZARD ABATEMENT in the KETCHIKAN GATEWAY BOROUGH SCHOOL DISTRICT

INTRODUCTION:

Asbestos hazard abatement and rehabilitation of existing schools is a recognized need in Ketchikan. The situation leaves planners anxious to create safe and adequate abatement. Hazard abatement efforts require considerable financial backing. State involvement in funding efforts is an essential component of asbestos hazard abatement. The asbestos dilemma is a serious one, with no easy solution. Some Alaskan communities have experienced considerable expense in asbestos abatement programs. Excessive expense and unsafe removal are situations that Ketchikan wants to avoid.

PRUDENT PLANNING:

Good planning for asbestos removal is prudent, necessary and will allow for a variety of options to be investigated. The planning stage is a vital, necessary and cost saving effort. It is initially inexpensive when compared to the long term inconvenience of a poorly planned hazard abatement program.

POUCH Z • KETCHIKAN, ALASKA 99901 • (907) 225-2118

COMMUNITY PRIORITY:

Education is a high priority in Ketchikan. Local taxpayers have recently passed a 16.9 million dollar bond issue which will enable the District to meet construction and maintenance needs.

Impending growth due to the anticipated opening of a new molybdenum mine near Ketchikan has forced the community to pay close attention to the current and future needs of public schools in Ketchikan, and make improvements as needed. The threat of asbestos means that state dollars are needed for study and subsequent asbestos hazard abatement.

BUDGET REQUIREMENTS:

A minimum of $1.5 million will be required to begin hazard abatement procedures in the Ketchikan schools. Limited study of the asbestos problem indicates that asbestos is present in some schools. Continued investigation is required to fully identify the extent of the problem.

Some asbestos hazard abatement and code upgrades will be in order subsequent to the initial study. Administration of the study and subsequent remedy is also a necessary expense.

CONCLUSION:

State sponsored allocation of the necessary funds to put adequate plans in place will help provide for an organized plan for encapsulation, containment or removal of asbestos throughout School District facilities. Such action will put Ketchikan in a position to "plan for the future" and deal with asbestos in a well organized, safe manner.

FUND: 01
LOCATION: 190 - District Wide
FUNCTION: ASBESTOS ABATEMENT

310	MANAGERIAL	9,000
330	CLASSIFIED	3,000
351	INSURANCE	1,200
353	UNEMPLOYMENT	50
354	WORKMAN'S COMPENSATION	5
355	FICA	270
356	RETIREMENT - TRS	750
357	RETIREMENT - PERS	550
359	OTHER EMPLOYEE BENEFITS	150
400	PROFESSIONAL & TECHNICAL SERVICES	100,000
426	TRAVEL	925
502	BUILDINGS	
	502-1 ARCHITECTS/ENGINEERS	130,000
	502-2 CONTRACTORS	1,250,000
530	OTHER EXPENSES	4,100
		$1,500,000.00

INFORMATION FOR NANCY BENNETT, Health Education and Social Services Committee.

The following information augments Les Riedlinger's January 25th's testimony regarding the need to ensure that the $26,000,000.00 proposed by HB57 has sufficient provision to accommodate $2,000,000.00 in additional funding for asbestos removal at the Fairbanks North Star Borough School District.

ITEM 1

Of the 31 major buildings managed by FNSBSD, 11 remain to be addressed in terms of asbestos removal. The amounts needed for each of the eleven is as follows:

$247,000	- Barnette Elementary School
160,000	- University Park Elementary School
342,000	- Hunter Elementary School
209,000	- Hutchison Career Center
37,000	- Joy Elementary School
915,000	- Lathrop High School
397,000	- Main School
229,000	- Nordale Elementary
214,000	- North Pole Elementary
257,000	- Ryan Junior High School
10,000	- West Valley High School
$3,017,000	- Total Cost
1,052,000	- LESS: Funds on hand from prior Legislative Appropriations
$1,965,000	- Additional Asbestos Removal Need. This amount takes into account total project costs, i.e. sampling, bid documents, construction award, consultants, etc.

ITEM II

With respect to a gross cost estimating guide for asbestos removal, the FNSBSD has developed the following format. It is based upon bid experience; advice from consultants and in-house technical expertise.

It can be applied, however, only in those instances where the need is to remove insulation from pipe, conduits, ducts, boilers, etc. It can not be used for costing asbestos removal associated

with its use as an acoustical control, fire protection, or any other spray application.

The format works as follows:

- Calculate the total number of linear feet of pipe insulation and the total number of square feet associated with boiler, hot water tank wrapping, etc.

- Each of these linear and square feet than is assigned the value of one unit.

- For each unit that is openly accessible, calculate $45.00/unit for total removal, replacement and all other project related costs such as bid documents, sampling, monitoring, consultant fees, contingencies, etc.

- For each unit that concealed, i.e. inaccessible without first demolishing rigid barriers such as floors, ceilings, and walls, calculate $75.00/unit. This amount covers all associated project related costs including replacement.

ITEM III

Finally, Mr. Riedlinger addressed that Fairbanks in conjunction with its consultants had developed a model set of asbestos removed technical specifications which incorporated all EPA rules and guidelines. They are attached.

ALASKA FEDERATION OF NATIVES, INC.
1984 ANNUAL CONVENTION

RESOLUTION NO. 84-32

TITLE: ASBESTOS ABATEMENT IN ALASKA SCHOOLS

WHEREAS, Believing that friable asbestos, similar to that which was discovered in schools in the Anchorage School District, exists in numerous other schools in school districts throughout the State; and

WHEREAS, Knowing that an Asbestos Technical Panel, convened in Anchorage by the Anchorage School Board, reviewed thoroughly health hazards associated with asbestos in Anchorage schools; and as a result, recommended that friable asbestos be removed from Anchorage schools as an unacceptable health hazard; and

WHEREAS, Believing that many Alaskan school children in school districts other than Anchorage may be exposed to health hazards from asbestos that are preventable,

NOW THEREFORE BE IT RESOLVED that the Alaska Federation of Natives urges the Governor to form a special task force with representatives of the Department of Health and Social Services, Department of Labor, Department of Education, Department of Transportation and Public Facilities, Department of Environmental Conservation, appropriate federal agencies, parents of school children, and teachers to implement an asbestos abatement program in all Alaska schools, including those under Bureau of Indian Affairs jurisdiction, in accordance with recognized standard for asbestos abatement and

BE IT FURTHER RESOLVED that the Alaska Federation of Natives urges implementation of an asbestos abatement program which will include the following tasks:

1. Implement and insure completion of a comprehensive survey to identify and categorize asbestos in all Alaska schools.

2. Evaluate health hazards associated with any asbestos (friable asbestos and asbestos in other forms) discovered in the survey and make recommendations for appropriate medical surveillance of students, teachers and workers exposed to asbestos.

BILL SHEFFIELD, GOVERNOR

DEPARTMENT OF LAW

OFFICE OF THE ATTORNEY GENERAL

POUCH K – STATE CAPITOL
JUNEAU, ALASKA 99811
PHONE: (907) 465-3600

January 25, 1985

Honorable Max F. Gruenberg, Jr.
Co-Chair
House Committee on Health, Education
and Social Services
Alaska State Legislature
Pouch V
Juneau, AK 99811

Dear Representative Gruenberg:

I am responding to your letter of January 23, 1985, inquiring whether inclusion of the proposed provisions of section 1 of SSHB 5 is necessary, in light of certain advice provided by this office to the Commissioner of Education last summer. A copy of that Memorandum of Advice is attached for your information.

While probably not necessary to deal with the most egregious asbestos situations, I suspect there still could be a variety of situations arising which, although not qualifying as a "emergency" under the general provisions of AS 14.03.030(2), would nonetheless fall within the scope of the proposed language in section 1 of SSHB 5. Consequently, I believe it would be advisable to include that language in the bill, both to assure that these lower-level asbestos problems are encompassed within the "emergency closure" provisions and to clarify the Commissioner of Education's authority in this regard.

Sincerely,

NORMAN C. GORSUCH
ATTORNEY GENERAL

By:
Ronald W. Lorensen
Deputy Attorney General

RWL:vrb

cc: Honorable Harold Raynolds
Commissioner
Department of Education

MEMORANDUM State of Alaska

TO: The Honorable Harold Reynolds
Commissioner
Department of Education

DATE: August 29, 1984

FILE NO: 366-017-85

TELEPHONE NO: 465-3600

FROM: Norman C. Gorsuch
Attorney General

By: Ronald W. Lorensen
Deputy Attorney General
Department of Law

SUBJECT: Emergency school closures under AS 14.03.030(2)

This confirms our conversation on Thursday, August 23, 1984.

Upon further review and analysis, I believe some clarification of my May 28, 1984, */ letter to Senator Joe Josephson regarding the scope of the "emergency school closure" provision of AS 14.03.030(2) is in order. In that letter I indicated in fairly absolute terms that planned activities such as an asbestos abatement program could never qualify as adequate grounds for an "emergency school closure."

The May 28 letter does not adequately acknowledge the discretion which AS 14.03.030(2) vests in you, as Commissioner of Education, to determine what constitutes an "emergency" justifying deviation from the normal 180-day school term. Under the law, "emergency closure days" may only be substituted for days in session with your approval. Since the legislature did not define "emergency" under AS 14.03.030(2), it is left to you to apply the appropriate standard and conditions for granting an "emergency school closure" based on the general policy and purposes underlying the school laws. See, e.g., Kenai Peninsula Fishermen's Co-op Association v. State, 628 P.2d 897, 907 (Alaska 1981).

As I indicated in my May 28 letter, pre-planned construction or maintenance activities would not normally be considered to constitute a situation covered by AS 14.03.030(2). However, that general conclusion should not be taken as implying that you may never approve a closure for a pre-planned activity when, in the exercise of your discretion in reviewing a specific case, you conclude that an emergency situation exists.

RWL:vrb

cc: Honorable Joe Josephson
Alaska State Senator

*/ Redated for printing July 1, 1984: 1984 Inf. Op. Att'y Gen. (July 1; 366-017-85).

02-001A/Rev. 10/79

U.S. ENVIRONMENTAL PROTECTION AGENCY

REGION X

1200 SIXTH AVENUE

SEATTLE, WASHINGTON 98101

MAR 14 1985

REPLY TO ATTN OF: M/S 524

Jim Robison, Commissioner
Alaska Department of Labor
P. O. Box 1149
Juneau, Alaska 99802

Dear Mr. Robison:

The U.S. Environmental Protection Agency (EPA) has been given the responsibility for implementation of the Asbestos School Hazard Abatement Act of 1984 (ASHAA). This Act addresses asbestos abatement procedures and the disbursement of financial assistance for schools performing asbestos abatement projects. It does not include identification, recordkeeping and notification requirements for friable asbestos in school buildings. These tasks are incorporated in the Asbestos-in-Schools Identification and Notification Rule promulgated in accordance with the Toxic Substance Control Act (TSCA).

The Asbestos Action Program in the EPA Office of Pesticides and Toxic Substances has been given the authority to fund cooperative agreements with some states whose projects fall within the funding limits imposed by ASHAA. The disbursement of funds under this program is contingent upon a 25% match by the respective recipient.

Projects which are eligible for funding include: 1) development of a state license/certification program for asbestos abatement contractors and maintenance personnel (EPA can provide a model abatement contract specification, and a model state contractor licensing regulation for state use), 2) asbestos abatement training for contractors and supervisory personnel, 3) voluntary technical assistance to schools in assessing hazards and deciding on abatement strategies, 4) dissemination of asbestos information to school employees, teachers, school administrators, and parents.

If the State of Alaska intends to request federal funding under this program, a pre-application proposal (Enclosure A) should be submitted to EPA as soon as possible. The project(s) identified in your pre-application will be reviewed. If the projects are approved you will be requested to submit completed application forms to EPA by April 15, 1985. The application forms can be obtained from our EPA Juneau Office (907) 586-7619.

Both the pre-application and the ensuing completed application proposals should be submitted to: Asbestos Action Program, U.S. EPA, TS-788A, 401 M Street S.W., Washington, D. C. 20460, Attn: Stephen Schanamann. Copies of the proposal should be sent to Kathryn Pazera, EPA, Alaska Operations Office, 3200 Hospital Drive, Suite 101, Juneau, Alaska 99801, and John Seitz, Office of Compliance Monitoring, U.S. EPA, 401 M Street, S.W., Washington, D.C. 20460.

If you should have any questions on this material, please contact Kathryn Pazera, 586-7619.

Sincerely,

Anita Frankel

Anita Frankel, Chief
Pesticides and Toxic Substances Branch

Enclosure

cc: Bill Ross, Department of Environmental Conservation
Rich Arab, Department of Labor

STATE OF MARYLAND

HARRY HUGHES
GOVERNOR

DOMINIC N. FORNARO
COMMISSIONER

DEPARTMENT OF LICENSING AND REGULATION
DIVISION OF LABOR AND INDUSTRY
OCCUPATIONAL SAFETY AND HEALTH
501 ST. PAUL PLACE . BALTIMORE, MARYLAND 21202-2272
301/659-4195

NANCY B. BURKHEIMER
DEPUTY COMMISSIONER

FREDERICK L. DEWBERRY
SECRETARY

RAYMOND E. LLOYD
ASSISTANT COMMISSIONER
MOSH

January 31, 1985

RECEIVED
FEB 04 1985

Mr. Richard Arab
P. O. Box 1149
Juno, Alaska 99802

Dear Mr. Arab:

As per our telephone conversation, a copy of Asbestos Licensing and Control Regulations is forwarded for your information. Please note that these regulations are enforced by the Department of Health and Mental Hygiene, 201 West Preston Street, Baltimore, Maryland, 21201 and not this Agency.

Please contact us if we can be of further service.

Sincerely,

Raymond E. Lloyd

Raymond E. Lloyd
Assistant Commissioner

REL/js

BALTIMORE METRO AREA 659-4195
OUTSIDE BALTIMORE METRO AREA
TOLL-FREE 1-800-492-6226

TTY FOR DEAF
BALTO. AREA 383-7555
D.C. METRO 565-0451

Asbestos

State of Maryland

DEPARTMENT OF HEALTH AND MENTAL HYGIENE
201 WEST PRESTON STREET • BALTIMORE, MARYLAND 21201 • Area Code 301 • 383-3245

Harry Hughes, Governor

Charles R. Buck, Jr., Sc.D. Secretary

January 24, 1983

TO: Interested Persons

SUBJECT: Asbestos Licensing and Control Regulations

I have enclosed a copy of the Asbestos Licensing and Control Regulations. Final changes were published in the Maryland Register on January 7, 1983.

The regulations were approved by Secretary Buck on December 27, 1982. The regulations will become effective on February 25, 1983. However, in order to provide time for businesses to train employees and apply for licenses, the Department is delaying the effective date of the licensing regulations until April 1, 1983.

Inquiries concerning applications for licenses to conduct asbestos projects should be directed to Mr. Frank Whitehead, Air Management Administration, 201 West Preston Street, Baltimore, Maryland 21201 (301-383-2776).

Inquiries concerning application for approval of training courses should be directed to Dr. Katherine Farrell, Division of Environmental Disease Control, 201 West Preston Street, Baltimore, Maryland 21201 (301-383-2759).

Yours Truly,

Joel H. Cooper
Air Management Administration

Enclosure

Maryland State Department of Health and Mental Hygiene
201 West Preston Street
Baltimore, Maryland 21201

(As amended through: December 27, 1982)

10.18.15 Toxic Air Pollutants
.01 Definitions
.02 Control of NESHAP Sources
.03 Control of Asbestos

.01 DEFINITIONS

A. "Asbestos project" means any activity involving the demolition, renovation, or encapsulation of friable asbestos materials.

B. "Demolition" means the wrecking or taking out of any load-supporting structural member and any related removing or stripping of friable asbestos materials.

C. "Encapsulate" means to coat, bind, or resurface walls, ceilings, pipes, or other structures to prevent friable asbestos from becoming airborne.

D. "Friable asbestos material" means any material that contains more than 1 percent asbestos by weight and that can be crumbled, pulverized, or reduced to powder, when dry, by hand pressure.

E. "National Emission Standards for Hazardous Air Pollutants source" (NESHAP source) means any source of mercury, beryllium, vinyl chloride, or asbestos (as defined in 40 CFR §61.21), which is subject to the provisions of 40 CFR Part 61, 1981 edition.

F. "Renovation" means the removal or stripping or friable asbestos materials used on any pipe, duct, boiler, tank, reactor, turbine, furnace, or structural member. Operations in which load-supporting structural members are wrecked or taken out are excluded.

G. "Structural member" means any load-supporting member, such as beams and load-supporting walls, or any non-supporting member, such as ceilings and non-load-supporting walls.

.02 CONTROL OF NESHAP SOURCES

A person may not construct, modify, or operate, or cause to be constructed, modified, or operated any NESHAP source which results or will result in violation of any provisions of 40 CFR Part 61, 1981 edition.

.03 CONTROL OF ASBESTOS

A. Applicability.

(1) This regulation applies to any person engaged in an asbestos project within Maryland.

(2) If a provision of Regulation .03 conflicts with Regulation .02, Regulation .02 takes precedence.

B. Control of Emissions from an Asbestos Project which is a NESHAP Source.

(1) Any Asbestos Project which is a NESHAP Source.

A person engaged in any asbestos project in which more than 260 feet (80 meters) of pipe covered or coated with asbestos materials are stripped or removed, or 160 square feet (15 square meters) of asbestos materials used to cover or coat any duct, boiler, tank, reactor, turbine, or structural member are stripped or removed shall comply with the following:

(a) Caution Signs.

Display 20-inch by 14-inch caution signs wherever airborne asbestos fibers may be present, in accordance with MOSH Regulation 29 CFR 1910.1001.

(b) Surfactant.

Wet asbestos materials to be stripped or removed with a solution containing one fluid ounce of surfactant mixed with five gallons of water. Surfactants containing 50 percent polyoxyethylene ester and 50 percent polyoxyethylene ether or equivalent are acceptable.

(c) Waste Disposal.

(i) Deposit all asbestos wastes, sealing tape, plastic mop heads, sponges, filters, and disposable clothing in clearly labeled containers and seal.

(ii) Wet large structural components containing asbestos material that cannot be placed in containers before loading and cover before transporting to the disposal site.

(iii) Transport and dispose of asbestos waste in a manner to prevent asbestos from becoming airborne. If disposing of asbestos waste within the State, use a landfill or site approved by the Department.

(d) Cleaning and Monitoring.

(i) For buildings or structures which are to be completely demolished: After removing any asbestos materials, clean the work area until no residue of asbestos material is visible.

(ii) For any other asbestos project which is subject to §B(1) above: After removing any asbestos materials, clean all surfaces in the work area using the water and surfactant solution prescribed in §B(1)(b). When the surface has dried, vacuum any remaining dry residue on all surfaces using a vacuum equipped with a high efficiency particulate air (HEPA) filter. Repeat the sequence of wet mopping and vacuuming in 24-hour intervals until no residue is visible and the airborne concentration of asbestos fibers longer than 5 microns is less than 0.1 fibers per cubic centimeter (8-hour time-weighted average).

(iii) For monitoring required by §B(1)(d)(ii) above, use procedures specified in the National Institute for Occupational Safety and Health (NIOSH) Analytical Method #P&CAM 239, Asbestos Fibers in Air, or equivalent.

(e) Enclosing and Sealing Materials.

Plastic sheeting shall be 6 mils thick or equivalent. Tape shall be either duct tape or equivalent waterproof tape.

(2) Demolition.

A person subject to §B(1) and engaged in demolition shall also comply with the following:

(a) Before beginning any demolition project, cover all windows, doors, and other openings with plastic sheeting and seal with tape.

(b) If a structure or building is to be partially demolished, construct a barrier of plastic sheeting sealed with tape to prevent asbestos from entering any portion of the structure or building not to be demolished, and seal ducts, including air conditioning and heat ducts, before wetting and removal.

(c) Wet all components that contain or may contain asbestos before stripping the asbestos or before removing those portions or supports which are to be removed.

(d) Wet the structure and components as necessary to assure that the asbestos materials remains wet during removal, loading, and transportation.

(3) Renovation.

A person subject to §B(1) and engaged in renovation shall also comply with the following:

(a) Before beginning any renovation project, remove all movable objects from the work area and cover all non-movable objects with plastic sheeting taped securely in place. Cover floors, other large areas such as walls, and all windows in the work area with plastic sheeting sealed with tape. Shut down all forced-air ventilation to the work area and seal exhaust and intake ducts.

(b) Construct double barriers of plastic sheeting at all entrances and exits to work area. Construct a decontamination area within the work area to be used for removal of contaminated protective clothing and for storage of contaminated items and tools. Provide a clean room where workers obtain clean protective clothing and respirators before entering the work area.

(c) Wet all areas or surfaces that contain or may contain friable asbestos. Assure that the asbestos-containing materials remain wet during the removal process.

C. Control of Asbestos from any other Asbestos Project.

(1) A person engaged in any other asbestos project not subject to Regulation .03B shall take reasonable precautions to prevent asbestos from becoming airborne.

(a) Wetting any asbestos (except asbestos to be encapsulated);

(b) Taking measures such as sealing the work area and using appropriate work practices to minimize the dispersal of particulate asbestos;

(c) Leaving no visible residue of asbestos after completing the project;

(d) Sealing asbestos waste in an appropriate container; and

(e) Disposing of the asbestos at a site or landfill approved by the Department in a manner that prevents asbestos from becoming airborne.

D. Exemptions.

(1) The Department may, on a case-by-case basis, approve an alternative procedure for control of emissions from an asbestos project provided that the person submits the alternative procedure to the Department in writing and demonstrates to the satisfaction of the Department that compliance with the prescribed procedures is not practical or not feasible, or that the proposed alternative procedure provides equivalent control of asbestos. The Department, following its review, may approve an alternative procedure if it determines that it will minimize the emissions of asbestos into the air.

(2) A person may not be exempt from the requirements of 40 CFR Part 61, 1981 edition except as provided there.

..Maryland State Department of Health and Mental Hygiene
201 West Preston Street
Baltimore, Maryland 21201

(As amended through: December 27, 1982)

10.18.23 License to Remove or Encapsulate Asbestos

.01 DEFINITIONS

A. "Asbestos project" means any activity involving the demolition, renovation, or encapsulation of friable asbestos materials.

B. "Business entity" means a partnership, firm, association, corporation, sole proprietorship, or other business concern.

C. "Demolition" means the wrecking or taking out of any load-supporting structural member and any related removing or stripping of friable asbestos materials.

D. "Encapsulate" means to coat, bind, or resurface walls, ceilings, pipes, or other structures to prevent friable asbestos from becoming airborne.

E. "Friable asbestos material" means any material that contains more than 1 percent asbestos by weight and that can be crumbled, pulverized, or reduced to powder, when dry, by hand pressure.

F. "License" means any authorization issued by the Department to encapsulate or remove asbestos.

G. "Renovation" means the removal or stripping of friable asbestos materials used on any pipe, duct, boiler, tank, reactor, turbine, furnace, or structural member. Operations in which load-supporting structural members are wrecked or taken out are excluded.

H. "Structural member" means any load-supporting member, such as beams and load-supporting walls; or any non-supporting member, such as ceilings and non-load-supporting walls.

.02 GENERAL REQUIREMENT

A business entity may not engage in any asbestos project unless it is licensed by the Department under this chapter.

.03 REQUEST FOR DETERMINATION OF APPLICABILITY

A. A business entity may request that the Department determine whether a project is an asbestos project subject to this chapter. The Department will make the determination in writing not later than 30 days after it has received a written request describing the asbestos-containing materials, the proposed project, and the business entity.

B. An erroneous determination by the Department that a project is not subject to this chapter only relieves the business entity from the requirements of this chapter to the extent that the Department was provided with the appropriate information to make a correct determination.

.04 WORKER PROTECTION REQUIREMENTS

A. Respiratory Protection Program.

A business entity, before it engages in any asbestos project, shall prepare a written respiratory protection program as defined in MOSH regulation at 29 CFR 1910.134 and make the program available to the Department and workers at the job site.

B. Physical Examination.

The business entity shall ensure that each worker who will be involved in an asbestos project has been examined within the preceding year and has been declared by a physician to be physically capable of working with [while] wearing a respirator.

C. Training.

The business entity shall ensure that each employee or agent of the business entity who will come in contact with asbestos or will be responsible for an asbestos project receives the following training:

(1) An initial course approved by the Department, completed before engaging in any asbestos projects; and

(2) An annual review course approved by the Department.

D. Protective Clothing and Equipment.

The business entity shall provide workers with protective clothing and equipment including the items listed below and ensure that workers involved in any esbestos project use the items:

(1) Disposable clothing, including hair cover, foot covers, and gloves, as appropriate; and

(2) Respirators approved by the National Institute of Occupational Safety and Health (NIOSH), and at a minimum, capable of being qualitatively fit tested using positive and negative methods.

E. No Smoking, Eating, or Drinking.

The business entity shall ensure that there is no smoking, eating or drinking in the work area.

F. Alternative Procedures.

The Department may, on a case-by-case basis, approve an alternative to a worker protection requirement in §§A-E for an asbestos project provided that the business entity submits the alternative procedure to the Department in writing and demonstrates to the satisfaction of the Department that the proposed alternative procedure provides equivalent worker protection.

.05 LICENSE APPLICATION

A. To apply for or to renew a license, a business entity shall:

(1) Submit a completed application to the Department on forms provided by the Department; and

(2) Pay the fee in §B below by certified check made payable to the Department of Health and Mental Hygiene.

B. License Fee.

Number of Employees to be Engaged in Asbestos Projects	License Fee
2 or less	$ 50
3 to 5	$200
6 or more	$300

.06 ACTION ON AN APPLICATION

A. Within 15 work days after receiving an application, the Department will acknowledge receipt of the application and notify the applicant of any deficiency in the application. Within 60 calendar days after receiving a completed application, including all additional information requested by the Department, the Department will issue a license or deny the application.

B. Denial.

(1) The Department will deny an application if it determines that the applicant has not demonstrated the ability to comply fully with applicable requirements, procedures, and standards established by the:

(a) Department in this chapter and in COMAR 10.18.15;

(b) U.S. Environmental Protection Agency in 40 CFR Part 61; and

(c) Maryland Occupational Safety and Health Program in 29 CFR Part 1910.1001 and .134

(2) If the Department denies a license, the Department will return to the applicant the application fee, less $25.

(3) The Department will send the denial of an application by certified mail. The applicant may request a hearing within 10 days after receipt of the certified mail. If it receives a timely request, the Department will hold a hearing in accordance with Article 41, §251 et seq., Annotated Code of Maryland.

C. Conditions and Generic Alternative.

(1) In granting a license, the Department may impose reasonable terms and conditions to ensure continuous compliance with the requirements of this chapter.

(2) In granting a license, the Department may approve an alternative procedure for controlling emissions from a specified type of asbestos project provided that the following conditions are satisfied:

(a) The business entity submits in writing a specific, detailed description of the type of asbestos project and the alternative procedure;

(b) The business entity demonstrates to the satisfaction of the Department that compliance with a procedure prescribed in COMAR 10.18.15.03 is not practical or not feasible or that the proposed alternative procedure provides equivalent control of asbestos; and

(c) The Department determines that compliance with the proposed alternative procedure will minimize the emission of asbestos in the air.

.07 REPRIMANDS, SUSPENSIONS, AND REVOCATION

As provided in Sections §§6-415 and 6-416 of the Health-Environmental Article, Annotated Code of Maryland, and subject to applicable hearing requirements, the Department may reprimand any licensee or revoke or suspend any license.

.08 DURATION AND RENEWAL OF A LICENSE

A. Unless the Department revokes or suspends a license, the license shall remain in effect for 1 year from the date of issuance.

B. The Department may renew a license annually if the business entity:

(1) Submits a completed application for a renewal on forms provided by the Department no sooner than 90 days and no later than 30 days before the license expires;

(2) Pays to the Department by certified check a renewal application fee as specified in Regulation .05B; and

(3) Has complied fully with all applicable requirements.

.09 NOTIFICATION

A. NESHAP Sources.

A person who intends to engage in an asbestos project which is a NESHAP source shall notify the Department in accordance with the requirements of 40 CFR Part 61, 1984 edition.

B. All Other Asbestos Projects.

After obtaining or renewing a license, a business entity shall notify the Department at least 3 days before beginning each of its first two planned asbestos projects. A business entity shall notify the Department of additional asbestos projects upon request by the Department.

.10 RECORDS

A. Eached licensed business entity shall maintain records of all asbestos projects which it performs, and shall make these records available to the Department upon request. The business entity shall retain the records for at least 6 years.

B. The business entity shall record the following information for each project:

(1) Name and address of supervisor responsible for the project;

(2) The location and description of the project, and the estimated amount of asbestos removed or estimated area encapsulated at each project;

(3) Starting and completion dates;

(4) Summary of the procedures used to comply with applicable requirements; and

(5) Name and address of the waste disposal site where the asbestos waste was deposited.

.11 HEALTH AND SAFETY TRAINING

A. Application for Approval of a Training Course.

A person may apply for approval of a course on the health and safety aspects of asbestos demolition, renovation, and encapsulation for purposes of Regulation .04C by submitting a written application on forms provided by the Department.

B. Criteria for Initial Course.

In order to obtain or retain Department approval, a person sponsoring a course shall substantially satisfy the following criteria:

(1) Provide at least 5 hours of instruction on the following topics:

(a) Recognition of asbestos, including its physical characteristics and uses;

(b) Health hazards, including the relationship between asbestos exposure, smoking, and diseases;

(c) Worker protection, including respiratory protection, protective clothing, safety equipment, air monitoring, medical surveillance, and personal hygiene;

(d) Work practices, including area preparation, decontamination, and waste disposal;

(e) A detailed description of respirators and their use and care, including the degree of protection afforded, fitting and testing procedures, and maintenance and cleaning;

(f) Requirements, procedures, and standards established by the:

(i) U.S. Environmental Protection Agency at 40 CFR Part 61, Subparts A and B,

(ii) Maryland Occupational Safety and Health Program at 29 CFR Part 1910.134, and

(iii) Department in this chapter and in COMAR 10.18.15

(2) Provide each student at least 15 minutes of individual instruction consisting of individual respirator fit tests and an opportunity to use respirators.

(3) Ensure that instruction is given or supervised by:

(a) An industrial hygienist who is at least Core certified by the American Board of Industrial Hygiene; or

(b) An individual with equivalent education and experience as determined by the Department.

(4) Maintain lists of students trained and the dates on which training occurred, and make this information available to the Department upon request.

(5) Provide an opportunity for students to complete written course evaluations.

(6) Issue to each student who completes the course a certification of attendance containing information required by the Department.

C. Criteria for Review Course.

In order to obtain or retain Departmental approval, a person sponsoring a review course shall provide at least 2 hours of instruction adequately addressing the topics in §B(1) and shall substantially satisfy the criteria in §B(2)-(6).

D. Action on an Application for Course Approval.

(1) The Department will acknowledge receipt of an application within 10 working days after receiving the application.

(2) The Department will act on an application within 90 days after it is complete.

(3) The Department will approve a course if the Department determines the course substantially satisfies or will substantially satisfy the criteria in §B or C.

.12 PENALTIES

A person who violates any provision of this chapter or any regulation in this chapter is liable to the criminal or civil penalties under the Health-Environmental Article, §6-422, Annotated Code of Maryland.

ROUTE SLIP 191

TO: NAME: Richard Arad Date:

OFFICE OR ROOM NUMBER: N.J. LABOR

To return to sender, write "TO" below, and fold back on dotted line

FROM: Wm N Van Arnum

[ ]	Take Necessary Action	[ ]	Reply For My Signature
[ ]	See Me	[ ]	For Your Signature
[ ]	Telephone Me	[ ]	For Your Approval
[ ]	Initial and Circulate	[ ]	For Your Comment
[ ]	Note and Return	[ ]	For Your Information
[ ]	Note and File	[X]	Per Your Request

REMARKS

AD-69 (R-10-84) N.J. DEPARTMENT OF LABOR

P. L. 1984, CHAPTER 173, *approved October 31, 1984*

1984 Assembly No. 1820 (*Official Copy Reprint*)

AN ACT concerning the application, removal, and encapsulation of asbestos, and making an appropriation.

BE IT ENACTED *by the Senate and General Assembly of the State of New Jersey:*

1. The Legislature finds that the application, **enclosure,** removal and encapsulation of asbestos when improperly performed creates unnecessary health and safety hazards which are detrimental to the State's interest, and that of its citizens, in terms of wage loss, insurance, medical expenses, disability compensation payments, family life, preservation of human resources and unfair competition to craftspersons, their unions and their employers.

2. The Legislature declares it to be its purpose and policy to reduce asbestos-related hazards by:

a. Encouraging contracting parties, citizens and insurance companies in their efforts to reduce disabling asbestos hazards and to stimulate initiation of new and to perfect existing programs for controlling the application, use and removal of asbestos, an extremely dangerous substance;

b. Creating a climate for developing innovative methods, techniques and approaches for dealing with life-destroying asbestos materials;

c. Encouraging competence, knowledge and reduced exposure to asbestos through the licensing of contractors and workers;

d. Providing for the adoption of standards for the application,

EXPLANATION—Matter enclosed in bold-faced brackets [thus] in the above bill is not enacted and is intended to be omitted in the law.

Matter printed in italics thus is new matter.

Matter enclosed in asterisks or stars has been adopted as follows:

*—Assembly Amendments adopted in accordance with Governor's recommendations September 20, 1984.

enclosure, removal, encapsulation, storage, sale, disposal and use of asbestos and asbestos-containing material; and

e. Establishing an enforcement program for these standards, which shall include reporting procedures.

3. As used in this act:

a. "Asbestos" means the asbestiform varieties of chrysotile (serpentine); crocidolite (riebeckite); amosite (cummingtonite-grunerite); anthophyllite; tremolite; and actinolite;

b. "Asbestos-containing material" means any material which contains more than 1% asbestos by weight;

[c. "Commissioner" means the Commissioner of Labor, or his designee;]

[d.] *c.* "Employee" means any person suffered or permitted to work by an employer;

[e.] *d.* "Employer" means a body, board, person, corporation, partnership, proprietorship, joint venture, fund, authority or similar entity employing, permitting or suffering another to work. This term shall apply to private employers and to the State, its political subdivisions and any boards, commissions, schools, institutions or authorities created or recognized thereby*[;*

f. "Journeyman" means a person who has served a four-year apprenticeship in the asbestos and frost-worker field].

4. Any private or public agency letting contracts for application, *enclosure,* removal or encapsulation of asbestos shall include in these contracts specifications that these contracts are to be performed by contractors and subcontractors licensed by the *[commissioner]* *Commissioner of Labor*.

5. No employer shall either directly or indirectly perform any of the functions of application, *enclosure,* removal, or encapsulation of asbestos without first obtaining a license from the *[commissioner]* *Commissioner of Labor*. This license shall be in writing, shall be dated when issued, shall contain an expiration date, and shall be signed by the commissioner. It shall give the name and address of the employer to whom it is issued. Licensed employers shall post a sign indicating, in letters more than four inches in height, "LICENSED BY THE STATE OF NEW JERSEY FOR ASBESTOS WORK," readily visible outdoors at the work site. The actual license shall be readily available at the work site for inspection by representatives of the *[commissioner]* *Commissioners of Labor and Health* and the contracting agency.

6. Every employee, performing functions of application, *enclosure,* removal, or encapsulation of asbestos shall first procure from the *[commissioner]* *Commissioner of Labor* a perfor-

mance permit. *No permit shall be issued unless the employee has taken a course of training in asbestos control and removal, passed an examination thereon, and demonstrated the ability to perform asbestos control and removal safely, in accordance with the current state-of-the-art technology. The Commissioner of Health shall certify the course of training necessary.* This permit shall be in writing, shall be dated when issued, shall contain an expiration date, and shall be signed by the *[commissioner]*. *Commissioner of Labor*. It shall give the name and address of the employee to whom it is issued. The permit shall be carried upon the worker's person and be readily available for inspection by representatives of the *[commissioner]* *Commissioners of Labor and Health* and the contracting agency.

7. Beginning not later than one year following the effective date of this act, licenses and permits shall be issued by the *[commissioner]* *Commissioner of Labor*, or his designee, and shall be valid for at least 12 months, in accordance with regulations promulgated under provisions of the "Administrative Procedure Act," P. L. 1968, c. 410 (C. 52:14B-1 et seq.). Fees for these licenses shall not exceed, for a 12-month period, $100.00 for a license and $25.00 for a permit, in accordance with a fee schedule contained in the regulations.

8. Not later than six months after the effective date of this act, the *[commissioner]* *Commissioners of Labor and Health jointly* shall, in consultation with the *[Commissioner of Health, and the]* Commissioner of Environmental Protection, adopt all standards and regulations which *[he deems]* *they deem* necessary for the proper administration and enforcement of this act. These standards and regulations shall include, but shall not be limited to, protective equipment specifications; application, *enclosure,* removal, and encapsulation procedures; administrative penalties; waste disposal; self-monitoring; cleanup; health checkup; license and permit issuance and revocation; fee charges; experience necessary for license or permit qualification; general subject matter of qualifying examinations; and continuing education. License and permit qualification standards shall include provision for *[asbestos and frost-worker foremen and journeymen, with at least one year in journeyman status at the effective date of this act,]* *experienced asbestos workers* to apply for and receive a permit without examination for a period not in excess of one year from the effective date of this act.

9. This act, and its standards and regulations, shall be enforced by the *[commissioner]* *Commissioners of Labor and Health*,

who *[has]* *have* the right-of-entry to all pertinent premises and records for purposes of inspection and information. In the event *[the]* *that either* commissioner believes that an imminent hazard exists, he is empowered to apply to a court of competent jurisdiction to restrain and cause to cease the activity which is the cause of the hazard.

10. Any person who hinders or delays the *[commissioner]* *Commissioner of Labor or Health*, or *[his]* *the* authorized representative *thereof*, in the performance of *[his duties in enforcing]* *the duty to enforce* this act, or fails to obtain licenses or permits required by the provisions of this act, or refuses to make these licenses or permits accessible to *[the]* *either* commissioner, or *[his]* *the* authorized representative *thereof*, or otherwise violates any provision of this act or any regulation adopted under this act, is guilty of a disorderly persons offense and liable to a fine of $1,000.00 or imprisonment not in excess of six months, or both. As an alternative, or in addition to, the fines and imprisonment specified by this section, *[the]* *either* commissioner, or *[his]* *the* designee *thereof* may impose, after granting an opportunity to be heard, an administrative penalty, not to exceed $1,000.00 for each offense, in accordance with a schedule promulgated by regulation.

11. Any employer who discriminates against or otherwise sanctions an employee who complains or cooperates with the *[commissioner]* *Commissioner of Labor or Health*, or *[his]* *the* designee *thereof*, in administering this act is a disorderly person and upon conviction is subject to the penalties specified in section 10 of this act.

12. There is appropriated *[the sum of $75,000.00]* from the General Fund *$75,000.00* to the Department of Labor *and $75,000.00 to the Department of Health* for the first-year administration of this act.

13. This act shall take effect immediately.

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 possiblility of several million)

Ketchikan (unknown, estimates the possiblity 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

ALASKA CHAPTER

ASSOCIATED GENERAL CONTRACTORS OF AMERICA, INC.

Position Statement

on legislation establishing

AN ASBESTOS HEALTH HAZARD ABATEMENT PROGRAM

CSSS HB 5 (FIN)am

APRIL 3, 1985

POSITION PAPER ON CSSS HB 5

The Alaska Chapter, Associated General Contractors of America, Inc. (A.G.C.) represents more than 900 companies, including most of the general contracting companies engaged in Alaska's commercial construction. We appreciate the opportunity to comment on CSSS HB 5 (FIN)am.

The A.G.C. agrees with the intension of this bill - the abatement of asbestos health hazards. Many A.G.C. contractors are or have been involved in this very important safety effort. There is, however, a section of the bill that unnecessarily duplicates existing safety regulations and should, therefore, be deleted.

Before continuing it may be worth noting that the term certification is semantically incorrect. The correct term for government approval or permission is license. Webster's New World Dictionary defines license as; formal permission to do something; especially authorization by law to do some specified thing.

Specifically, we draw your attention to Page 5, Section 18.28.030, Certification Programs. In this section, the Department of Labor is given authority to license contractors and employees who intend to conduct asbestos abatement.

What the bill essentially requires is a State license to do asbestos work. But is there a need for such a license? We think not.

Another serious concern that needs to be addressed is that of liability. Asbestos work is plagued with lawsuits. Through the proposed Department of Labor licensing program, the State may become party to these suits by licensing contractors, employees and labor organizations as competent to undertake this work, the State may have liability if an employer or employee is licensed improperly. We suggest an opinion from the attorney general's office be obtained prior to passage of this bill from committee.

Finally, in examining the fiscal requirements of this proposed licensing program, it appears that millions of dollars would be needed for its administration, rather than the proposed $300,000. It is virtually impossible to competently administer the proposals contained in HB 5 for $300,000. We suggest that an inadequately administered program is worse than no program at all. A realistic fiscal note must be developed so that lawmakers may assess the true costs of proposed legislation.

We believe once the true cost of this program is known, the question will arise: What does a licensing program provide that is not already enforceable under existing DOSH general safety code regulations? The answer is "nothing". Sufficient asbestos health standards already exist, including requirements for employer training and proper respirator usage.

In conclusion, we request this committee to thoroughly determine the fiscal costs of the proposed legislation, including potential State liability and to balance the cost against the benefits received. A.G.C. contends that for the licensing program, the dollar cost will be high and without significant benefits due to the existence of sufficient asbestos health standards presently exist.

We strongly urge the deletion of the licensing section of CSSS HB 5.

FISCAL NOTE

THE LEGISLATURE OF THE STATE OF ALASKA
FOURTEENTH LEGISLATURE
BILL/RESOLUTION NO: CS SS for HB 5 (House Labor and Commerce Committee)
TITLE: "An Act relating to establishing asbestos health hazard abatement"
AGENCY AFFECTED: Department of Labor

There are approximately 550 school buildings in Alaska. Of these buildings we know that 140 buildings have been surveyed for asbestos. This is based on information from the U.S. Environmental Protection Agency (EPA), that they have made on-site inspections for compliance with their regulations in the Juneau, Anchorage, Fairbanks, Ketchikan, Sitka and Kodiak school districts. These school districts contain approximately 140 buildings. We are estimating that of the pproximately 410 other school buildings, that a third have been properly surveyed or a school district will use a private consultant to survey their buildings. We estimate therefore, that the department will be required to make physical inspections of approximately 270 buildings that have either not been surveyed or have been improperly surveyed.

It is important that these school districts survey their buildings within two years to allow them time to budget and plan for the work necessary to abate the asbestos health hazards in their school districts.

It is assumed that the responsibility for training and certification outlined in AS 18.38.030 of CS SS HB 5 (L&C) will mainly be with the employer and that the department will only be responsible for establishing training guidelines and certifying training programs.

A lead industrial hygienist, a clerk typist and monies to enter into a contract for surveying and abatement evaluation will be needed for the first year. To assure that the program is implemented without delay, we would need to hire the industrial hygienist and clerk on July 1, 1985. We estimate that it will take two months to set up the schedule for surveying schools and three months to develop the regulations and guidelines for the certification program. Because of difficulties we anticipate in hiring a full-time position for only 10 months, we would enter into a contract by September with two other health specialists to perform the majority of the surveys. It is estimated that by the end of the first year, we would survey and evaluate potential health hazards in approximately 220 of the 270 school buildings yet to be surveyed. In the first year of operation the one time special costs would include:

- Sampling Pumps (3)	$6,000.00
- Training Films/Slides	$4,000.00
- Air Supplied Respirators (3)	$3,000.00
- Protective Clothing (3)	$3,000.00
- Contract for Two Health Specialists	$110,000.00
- Contract to Analyze the Bulk Asbestos Samples (5 per buildings)	$38,500.00

During the second year only the hygienist and clerk would be maintained to monitor the completion of the program and to continue the certification program. These positions will also be retained in FY 88, 89, and 90 to certify, evaluate, and monitor the training programs of contractors who work with asbestos. It is assumed in FY's 88-90 that personal services costs will increase by 3.5% per year and non-personal services will increase by 6% per year.

MEDICAL ASPECTS OF ASBESTOS EXPOSURE

MATERIAL PRESENTED IN THIS SECTION PREPARED BY:

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

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 (BE)	Observed (DC)	Ratio, Observed/Expected (BE)	Ratio, Observed/Expected (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	4.06
Pleural mesothelioma	‡	63	25	—	—
Peritoneal mesothelioma	‡	112	24	—	—
Mesothelioma, n.o.s	‡	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	257	1.40	1.91
Non-infectious pulmonary diseases, total	59.0	212	188	3.59	3.19
Asbestosis	‡	168	78	—	—
All other causes	1280.2	1064	1161	0 83	0.91

*Number of men 17,800, men-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, coll

(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

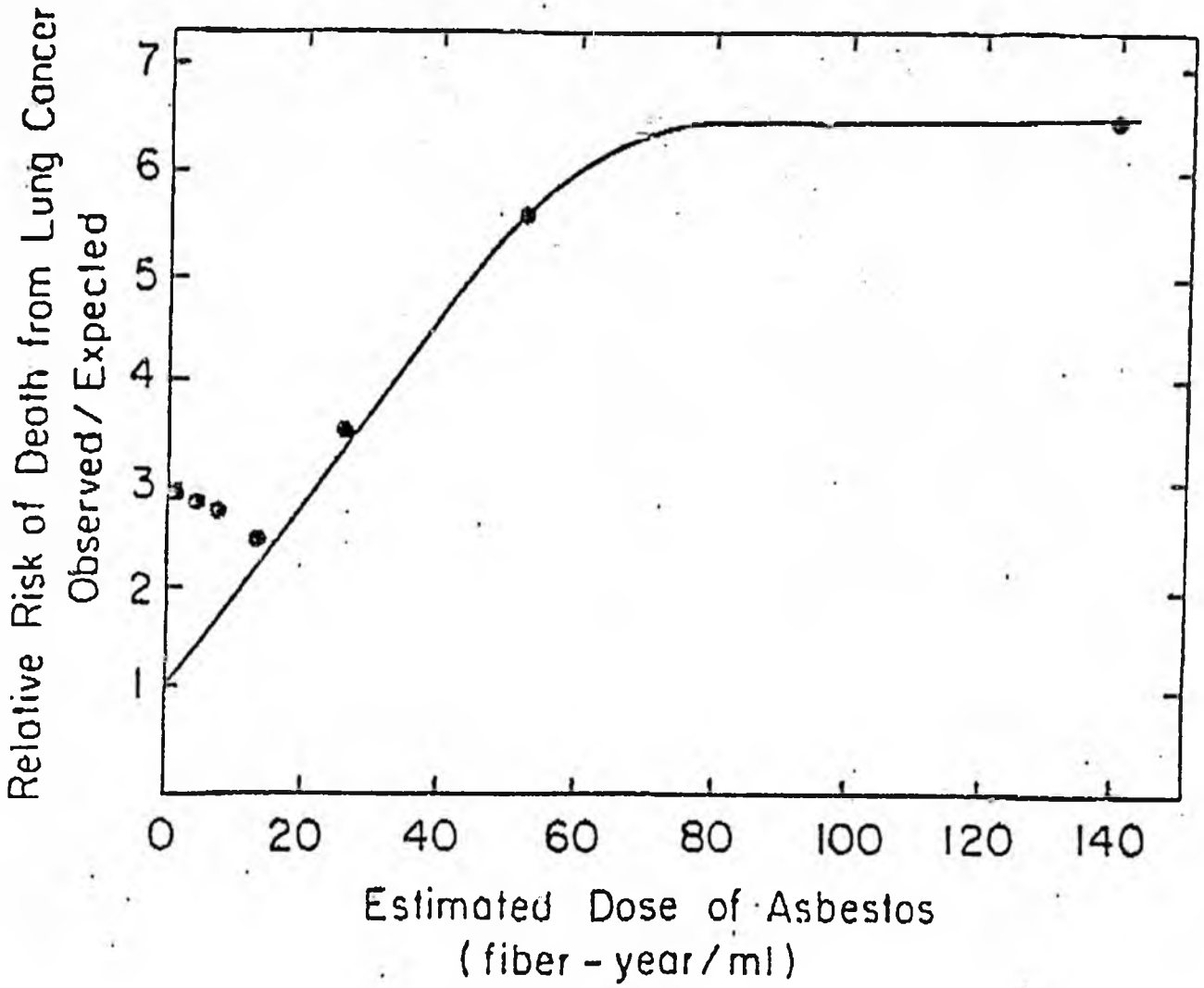
Duration from Onset (Years)	Number of Men	Person-years of Observation	Lung Cancer					Pleural Mesothelioma			Peritoneal Mesotheliom		
			Exp.*	Observed (BE)	Observed (DC)	Ratio o/e (BE)	Ratio o/e (DC)	Number (BE)	Number (DC)	No./1000 Person-years (BE)	Number (BE)	Number (DC)	No./1(Perso year (BE
<10	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	1.82	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	31,268	17.0	59	57	3.46	3.36	6	4	0.19	3	2	0.10
25-29	6,596	20,657	21.0	105	96	5.00	4.58	13	5	0.63	19	3	0.92
30-34	3,547	11,598	18.4	112	103	6.09	5.59	9	3	0.78	23	6	1.98
35-39	2,020	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	3.82	4	3	1.27	16	3	5.06
45+	1,448	5,305	17.8	69	53	3.89	2.98	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.

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2. Cochrane, JC and Webster, I. Mesothelioma in relation to asbestos fiber exposure. A review of 70 serial cases. South African Medical Journal, 54:279 (1978). A "model" study, with a good emphasis on important principles and a few useful case histories.

3. Hammond, E.C., Selikoff, I.S., Seidman, H. Asbestos exposure, cigarette smoking and death rates. Ann. N.Y. Acad. Sci. 330: 473-490 (1979). This entire issue of the Annals is devoted to asbestos disease, and is the most useful recent reference volume on the subject. The paper by Hammond et al. is detailed and difficult, but nails down the issues.

4. Selikoff, I.S., Hammond, E.C., Seidman, H. Mortality experience of insulation workers in the United States and Canada, 1943-1976. Ann. N.Y. Acad. Sci., 330: 91-116 (1979). From the same volume and also detailed, difficult and definitive.

5. Nicholson, W.J. Dose-response relationships for asbestos and inorganic fibers. February 15, 1981. This detailed monograph reviews the available world-wide literature on dose-response relationships. Difficult going, but definitely rewarding. Available from the author at the Environmental Sciences Laboratory, Mount Sinai School of Medicine, 10 E. 101st St., N.Y., N.Y. 10009.

ASBESTOS:

ITS HEALTH HAZARDS AND ITS PROBLEMS

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TABLE OF CONTENTS

I. ASBESTOS--ITS TYPES, ORIGIN, AND CHARACTERISTICS

Asbestos is a name given to a number of naturally-occurring fibrous silicates, the word asbestos being derived from the Greek word similarly spelled, meaning inextinguishable. There are two main varieties of asbestos; the serpentine form, which is characterized by long, soft, flexible, and finely-polished strands, which may be woven into a cloth, of which chrysotile is the primary representative, and the amphiboles, which occur as straight, needle-like fibers, of which crocidolite, amosite, and anthophyllite, tremolite, and actinolite are the primary examples.

Chrysotile makes up approximately 70% of the world production of asbestos and is mined primarily in Quebec, Canada, which produces 95% of the world production of chrysotile. Chrysotile is also produced in Vermont, the Union of South Africa, Russia, and to a lesser extent, in certain parts of Europe. Its unique characteristic is the fact that the long, white, silky fibers can be woven into cloth, whereas the other types of asbestos do not have this capability. All types of asbestos have the outstanding characteristics of being almost indestructible on exposure to body fluids, highly resistant to heat, and extremely resistant to acid erosion. Chrysotile is especially resistant to heat, being able to withstand 500 degrees centigrade, but is less resistant to acid erosion, and in bodily tissues, for example, the magnesium gradually tends to be leached out over many years.

Crocidolite is blue asbestos is produced primarily in the Cape of South Africa, especially since 1910, and makes up approximately 3.5% of the world production of asbestos. It is more acid resistant and hence is used often in marine insulation and aboard ship, is less resistant to heat, being able to withstand only 200 degrees Centigrade. Its needle-like morphology enable it to penetrate further and deeper than the other types of asbestos in body tissues.

Amosite is produced largely in Transvaal South Africa, primarily since 1907; and has somewhat coarser brownish fibers which have the outstanding characteristic of being more acid-resistant and hence is used primarily in marine insulation and shipbuilding. It was also widely used in pipe and boiler lagging in buildings.

Anthophyllite is mined predominatly in Finland, is the coarsest of the asbestos silicates, is less heat resistant, being able to withstand only 200 degrees Centigrade, and has an inherent tensile strength much less than crocidolite. It is not flexible, and is used primarily in the chemical industry. Its exposure is associated with greater incidence of pleural plaques and rarely, if ever, is mesothelioma seen in men exposed to this type of asbestos. Anthophyllite makes up less than 1% of world usage of asbestos. It is only rarely found in building insulation.

The other two little-used types of asbestos are tremolite and actinolite. Tremolite is a more brittle asbestos, has a fairly good heat resistance, and it, as well as actinolite make up each less than 1% of world asbestos production. Actinolite is rarely used, although it is very acid and heat resistant. Tremolite has been found in some talc mines causing asbestos contamination of certain talc products.

Table 1. Varieties of asbestos[1]

Variety	Colour	Major components (%)			Approximate formulae
		Si	Mg	Fe	
Chrysotile	white	40	38	2	$3MgO.2SiO_2.2H_2O$
Amphiboles					
Amosite	grey brown	60	2	40	$5.5FeO.1.5MgO.8SiO_2.H_2O$
Anthophyllite	white	58	29	6	$7MgO.8SiO_2.H_2O$
Crocidolite	blue	50	–	40	$Na_2O.Fe_2O_3.3FeO.8SiO_2.H_2O$
Tremolite	white	55	15	2	$2CaO.5MgO.8SiO_2.H_2O$
Actinolite	white				$2CaO.4MgO.FeO.8SiO_2.H_2O$

[1] From Hodgson, A. A. (1965) *Fibrous silicates* Lecture Series No 4. The Royal Institute of Chemistry and the Asbestos Information Committee, London

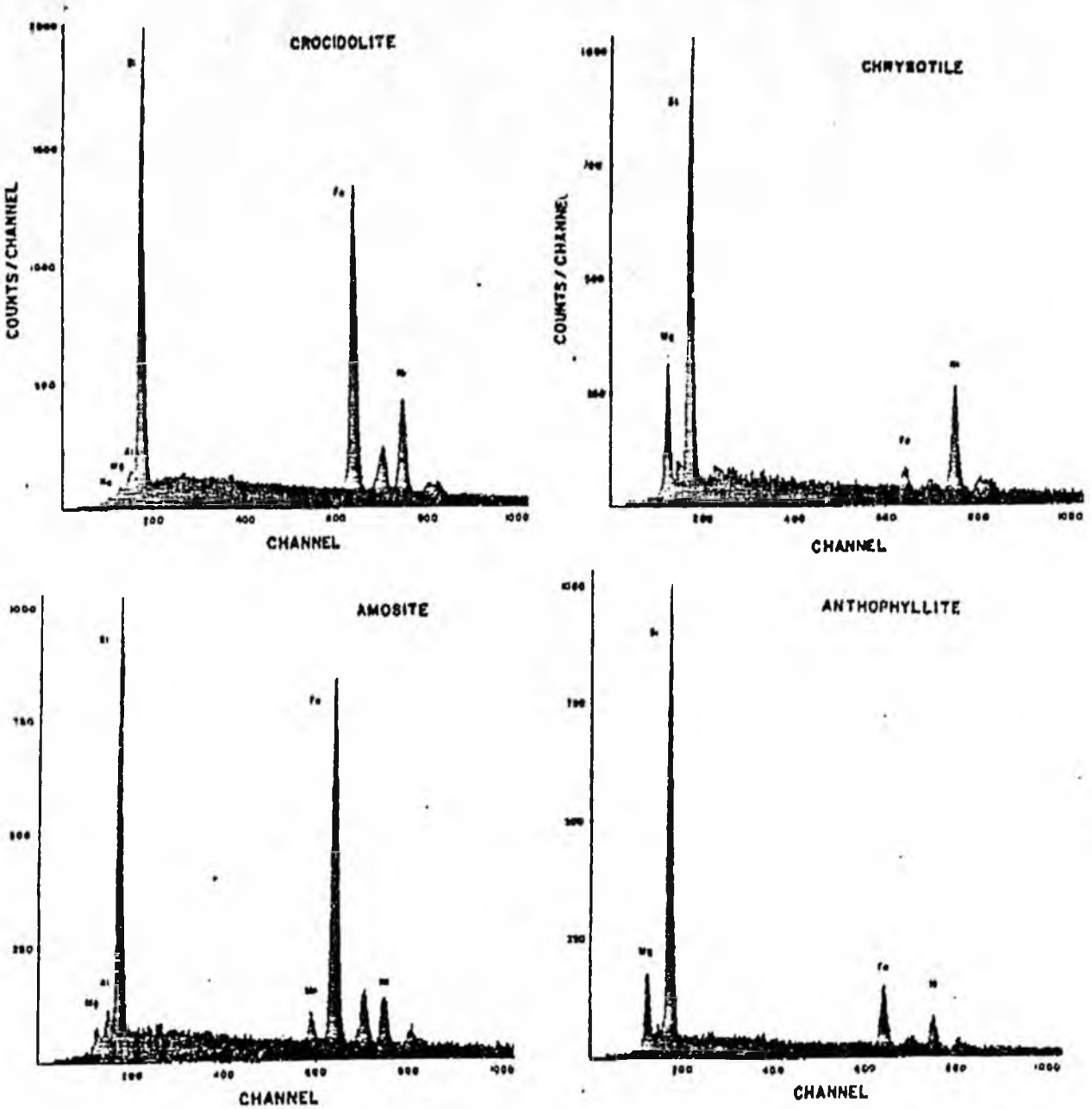

FIGURE 7. Examples of typical spectra from different types of asbestos: amosite; crocidolite; chrysotile; anthophyllite. (The nickel lines are present due to the specimen support.)

Reprinted from: Ivan B. Rubin and Carl J. Maggiore, "Elemental Analysis of Asbestos Fibers by Means of Electron Probe Techniques". Environmental Health Perspectives, Vol. 9, December 1974.

II. THE USES OF ASBESTOS

The United States used over 5 million tons of asbestos yearly in 1974, most of which came from the Quebec mines. Most was used for fire-proofing and insulating materials, especially in the construction industry where it was incorporated into cements, tiles, felts, and garments. In the textile industry, uses are fire-proof draperies and floor tiles, the former as used on theater curtains, asbestos sheets, and in the use of asbestos building boards. Plasterers applied an asbestos mix on steel foundations in order to prevent the steel from buckling in case of fire; this asbestos mix hardened within 8 hours without cracking or shrinking and without interrupting other construction activities. Boats and ships were similarly treated. Formerly, over 3 million pounds of fire-proofing mixture, which contains 30% chrysotile asbestos were used annually, and when sprayed, approximately 25% of the material goes directly into the air rather than being applied to building surfaces, and hence, workers may inhale as much as 50 million fibers in an eight-hour day. For this reason the use of a wet mixture of asbestos applied by trowelling was the preferred method of application. The practice of spraying asbestos-containing insulation in buildings was banned by the EPA in the 70s. In 1982, the United States used less than one-half million tons of asbestos, a significant decrease from the 1974 level referred to above.

Asbestos products resist heat and withstand abrasive forces. Chrysotile makes up 50% of the brake-lining material in brakes, and hence, workers exposed to this use of asbestos in repairing brake linings, are exposed to asbestos dust themselves. If not properly controlled, clouds of the asbestos dust appear in the air in this and other circumstances. Asbestos is also used in certain papers, paints, and plastics, where the positives charge of the chrysotile combines with the filler in pigment to form a more durable product. Similar friction products are used on

railroad cars, airplanes, and industrial machinery. The ship-building industry has been a major user of asbestos because the substance is good for insulating boilers, steam pipes, hot water pipes, nuclear reactors in ships, both in initial fitting and in repairs and refittings. Various sealants and patching tape compounds contain asbestos, and both floor and ceiling insulating tiles in the past often used asbestos.

It is apparent, therefore, that a large number of workers are exposed to asbestos; indeed, somewhere between 18 and 11 million U.S. workmen have been exposed to asbstos dusts during their lifetime in the past 40 years, including approximately 4½ million shipyard workers, 300,000 textile workers, 100,000 insulation workers, and perhaps another 3 to 5 million workers who handle asbestos at some course during its manufacture. It is apparent that individuals exposed include those who mine the asbestos, those who work in the mills in which asbestos is crushed, and those who manufacture the asbestos products-are all at risk in varying degrees. Those who load and truck the asbestos ore as in using it for rock filler on roads, as is the case in at least one area in Maryland are at risk, as well as the people who drive on this particular road. Carpenters are exposed when they cut asbestos board, or when they work in the presences of insulators or other workers working with the asbestos products themselves. Any worker aboard ship or working in shipyards is similarly exposed to asbestos dust, and indeed even families of workers who work in the vicinity of a shipyard or mine are at similar risk, including the families, for example, of shipyard workers, where asbestos dust may be brought home on the clothes of the workers, if proper precautions are not taken. The demolition of buildings containing old asbestos exposes such workers, as well as passers-by, to varying degrees of exposure to the asbestos dust. During the past 15 years it has become increasingly apparent that indirect family exposure, workers and family living near a mine, mill, or shipyard, represent a secondary risk not

previously appreciated. It has been demonstrated beyond a doubt that a period of time as short as one month's exposure to asbestos dust results in a significant risk to the individual from asbestos-associated diseases.

III. FATE AND BIOLOGIC EFFECTS OF INHALED ASBESTOS PARTICLES

It has been shown that the aerodynamic behavior of asbestos particles is a function primarily of the diameter of the fiber. It has been shown that fibers larger than 5 microns in diameter are precipitated out primarily in the nose and bronchi or upper parts of the bronchial tree, while fibers between 1 and 5 microns are capable of descending into the lower portions of the bronchial tree into the respiratory bronchioles. Only fibers less than 1 micron in diameter are capable of entering the air spaces or alveoli, where they may more readily penetrate the lung tissue. It is also apparent with asbestosis that gravity must play a part in the deposition of asbestos particles, as lung scarring is more prominent in the lower lung field suggesting that the weight of the particles tends to allow them to be deposited in the lower lung fields primarily. Once the asbestos fibers enter lung tissue approximately 25% of them become coated or walled off by macrophages, the scavengers of the lung, which try to wall off foreign particles to prevent tissue injury. At least 75% of the smaller fibers are not similarly walled off and remain uncoated and more difficult to see by usual light microscopy, and can only be seen with the higher magnification of electron microscopy.

The coated asbestos fibers, are called asbestos bodies, may be seen by regular light microscopy. These asbestos bodies are probably better called ferruginous bodies, as it has been demonstrated that other foreign particulates in the lung, primarily talc and probably zeolite, as found in certain towns in Turkish Anatolia, also have the capability of forming a similar-appearing coated fiber. The ferrugionous body is a long, beaded, rod-shaped particle of asbestos or talc having clubbed ends, staining darkly with iron stain and very easily picked up, when present, by the light microscope. This coating contains ferritin or iron granules

with some amorphous material of up to 5 microns in diameter, the latter apparently representing the breakdown process of macrophages and containing acid mucopolysaccharide with hemosiderin content. In most instances, however, the ferruginous body is diagnostic of asbestos exposure, while the presence of uncoated asbestos fibers can be confirmed by electron microscopy when necessary, by lung tissue obtained by either open lung biopsy, needle biopsy, or transbronchial biopsy. It is theorized that the physical characteristics of each asbestos fiber plays a distinct part in the type of disease produced in man.

IV. CELLULAR EFFECTS OF ASBESTOS

Once the asbestos fibril has penetrated lung tissue, local irritation there causes increased permeability of cellular membranes and as a result of this over a long period of time the particles are surrounded by macrophages, some chemical leaching or digestion of the magnesium, especially in chrysotile, occurs, macrophage death occurs, and fibrosis or scarring of the lung is stimulated in an effort to wall off these particles and prevent further lung damage. Chrysotile is probably the most potent in causing asbestosis than are the other types of asbestos. It is probable that the degree of the reaction is definitely related to the number of fibers inhaled into the lung as well as the individual's inherent biologic susceptibility or reactivity. It has been shown that both the total years of exposure, the dustiness of the job account for the cumulative dust exposure, and that these exposures are directly related to patient's symptoms, lung function tests, x-ray changes, the development of lung cancer, as well as mortality statistics. It is apparent, however, that mesothelioma needs much less exposure to the asbestos dust than the other diseases associated with asbestos.

In analyzing the presence of coated and uncoated fibers in the lung, it has been demonstrated that in carefully conducted studies almost 98% of all urban dwellers have asbestos fibrils or bodies in their lungs, this being in a higher percentage of men, in a greater number of older people, and in a greater percentage of individuals who work with shipping or docking areas or in industrial sites. The longer one lives in an urban area the higher the percentage and the greater the number of asbestos fibrils and ferruginous bodies have been found. Interestingly, ferruginous bodies are rarely found in the hilar lymph nodes or beyond the lung itself.

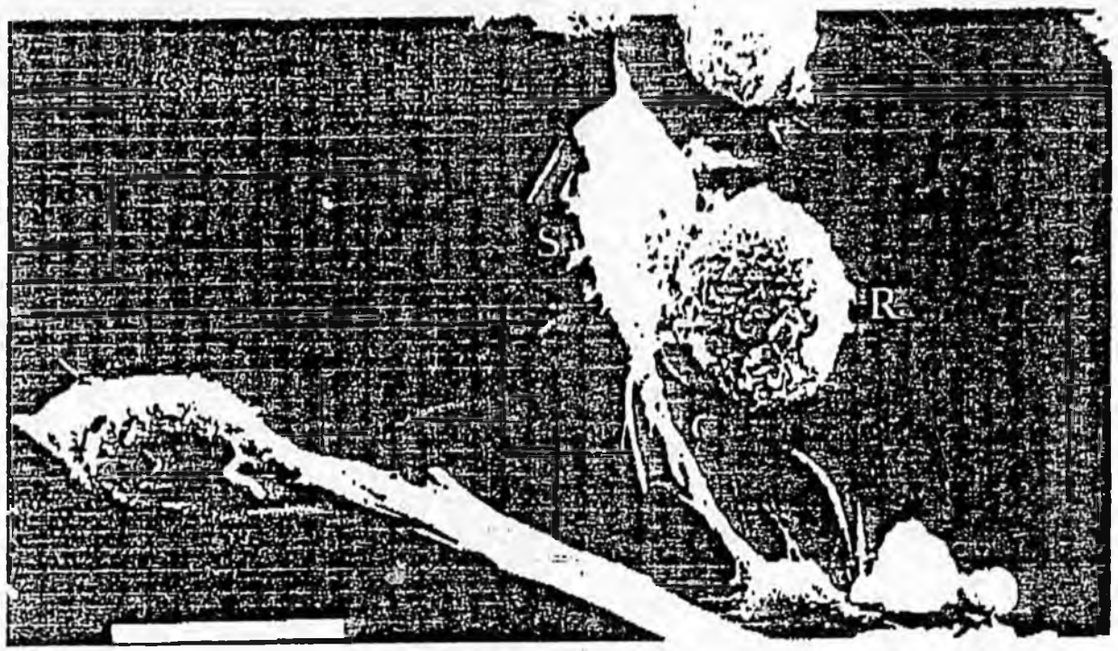

FIGURE 6. Scanning electron micrograph of untreated UICC chrysotile asbestos fibers associated with bovine alveolar macrophages: cells(S) were often observed spread along asbestos fibers with additional rounded macrophages (R) nearby (1940 x , bar = 10 μm).

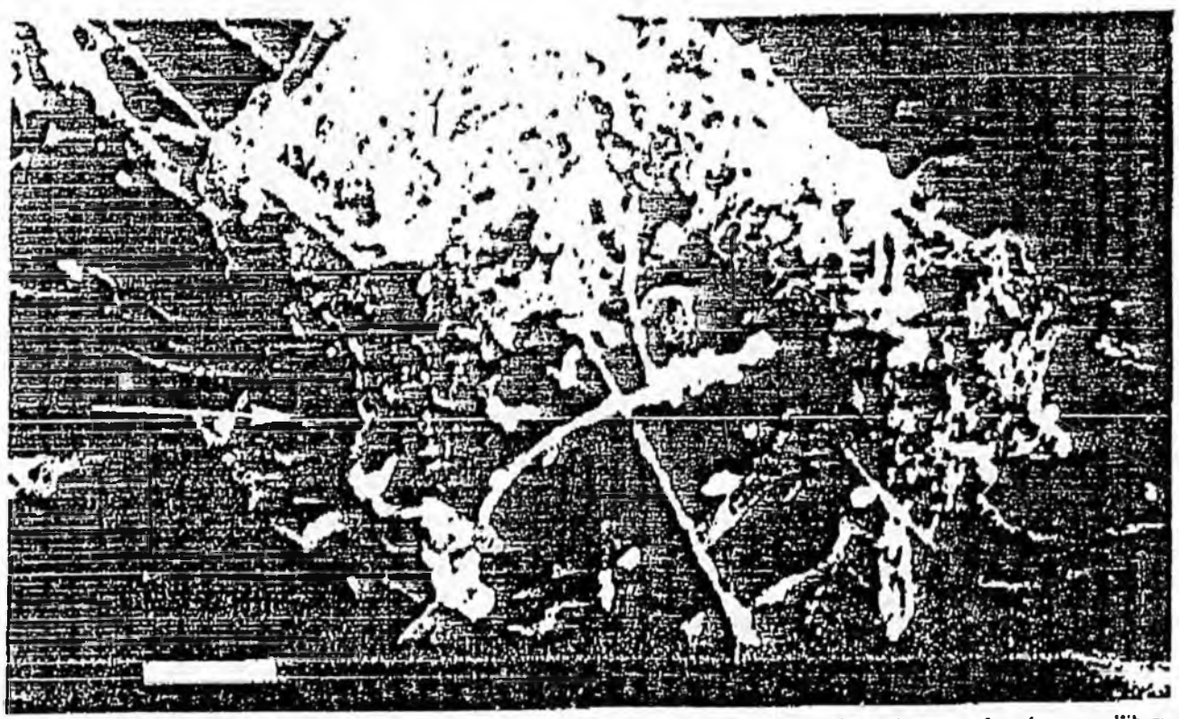

FIGURE 7. Some macrophages appeared mottled with numerous holes and a loss of typical membrane surface features. Fibers, previously X-ray irradiated, are visible (arrow) on such cells (9,700 x , bar = 1 μm).

Micrographs reprinted from: R. Valentine, et. al., "Thermal Modification of Chrysotile Asbestos: Evidence for Decreased Cytotoxicity". Environmental Health Perspectives. Vol. 51, September 1983.

V. ASBESTOS INDUCED OR ASSOCIATED DISEASES

There are six general areas of human disease caused by or at least strongly associated with exposure to asbestos dust. Most important, certainly historically, is that of diffuse interstitial pulmonary fibrosis or asbestosis. In previous years before adequate control of asbestos dust in the air was obtained, approximately 20%, or 1 out of 5 miners, would develop significant pulmonary fibrosis with the characteristic gradually progressive exertional dyspnea or shortness of breath, characteristic of this entity. With better precautions used in the handling of asbestos during more recent years, it is already noted that perhaps up to only 10% or 1 out of 10 miners have been afflicted with interstitial fibrosis of the lungs. Chest x-rays made over the years in a group of asbestos insulation workers have shown a gradually increasing number of abnormal chest x-rays with the passage of time, there being approximately 10% abnormal within 10 years, 44% abnormal within 20 years, 73% abnormal within 30 years, 87% abnormal within 40 years, and practically 94% of all chest x-rays show some abnormality secondary to asbestos dust inhalation in workers who have been exposed for over 40 years. The peak age for the development of disability in asbestos workers occurs after 20 years of exposures, in other words, after the worker has been exposed from 15-25 years. He may indeed have worked only 1-3 years in asbestos dust, and yet, 15-20 years later, full-blown asbestosis of the lung becomes apparent, indicating that the scarring in the lung progresses even after exposure to the asbestos dust per se has stopped. It is also interesting that the progression to moderate or severe pulmonary fibrosis is not related entirely to dosage, but perhaps to some genetic factors not fully understood at this time.

Examination of the lungs of the man who has died of asbestosis shows that there is diffuse fine fibrotic scarring scattered throughout primarily the lower halves of both lung fields, frequently but not usually associated with some degree of centrilobular or bullous emphysema, and with relative retraction or generalized decrease in size of the lung in the involved areas. X-ray changes of these same lungs demonstrate a ground-glass appearance of linear scarring or fibrosis with partial obliteration of the diaphragmatic and heart borders primarily in the lower lung fields. During the worker's lifetime, pulmonary function studies show what is called a restrictive defect, characterized by a decreased vital capacity, diffusing capacity, and arterial oxygen content secondary to the diffuse scarring throughout the lower lung fields. One of the earliest changes that can be discovered, in fact, is that of the decreased vital capacity which can be recognized by doing pulmonary function studies. There are occasions when more complicated pulmonary function tests such as the use of the diffusion capacity, measurement of alveolocapillary oxygen gradients and exercise blood gas tests will show an abnormality before pulmonary function studies, but this is the exception rather than the rule. The use of the chest x-ray coupled with pulmonary function studies, as is required now by OSHA, are reasonable and practical means of measuring and picking up these changes as early as they can in general be.

On occasion, it is desirable or even necessary to prove that a patient or worker has pulmonary asbestosis, and this nowadays can be done without an open lung biopsy which requires a major chest operation. The abbreviated procedure being that of transbronchial bronchoscopy with biopsy of a tiny bit of lung tissue. This tissue, if carefully examined by electron microscopy for uncoated fibers, and for coated fibers or ferruginous bodies by light microscopy can frequently give unequivocal evidence of underlying asbestosis. It must be mentioned, however,

that efficient evaluation of electron microscopy requires the full day of a trained microscopist or pathologist in order to adequately examine a single specimen. Exposure to crocidolite probably accounts for more fibrosis than chrysotile exposure. Although we do not know what the actal fiber level is insofar as the threshold for human disease, in this instance (pulmonary fibrosis) workers are currently living longer, are having less disability due to pulmonary fibrosis, and their disease entities are picked up sooner.

The second most common disease entity related to asbestos dust exposure is that of the pleural plaque. This is a hyalinized and often calcified discrete parietal pleural plaque, not located on the wall of the lung, but on the pleura lining the chest wall and never on the lung itself. These plques are extrapleural and occur most commonly in workers exposed to anthophyllite fibers. The hyaline or calcified plaque is picked up often on routine chest x-ray as an ill-defined modular density along the margin of the lung which is almost pathognomonic of asbestos exposure. Interestingly, only 15% of the plaques are found on chest x-rays that are actually identified at autopsy, illustrating that multiple chest x-rays would need to be done in order to pick up all or most of these densities.

Clinically these plaques are rarely, if ever, symptomatic, and if a plaque is found on the chest x-ray, one can anticipate that individuals with the plaque will have a higher than expected incidence of bronchogenic carcinoma, otherwise they have little significance except for that of a signpost which calls out "asbestos". Another rare and more recently recognized disease apparently induced by asbestos fibers is that of the exudative reaction or pleural effusion of which there have been approximately 70 cases described in the medical literature. These cases are diagnosed partly by exclusion, that is, by ruling out all other causes for pleurisy with effusion, and in some instances, by parietal pleural biopsy in which asbestos

bodies and fibers are found in areas of pleural thickening and associated local pneumonitis or pneumonia. The development of this benign pleural effusion in the worker may occur in as little as 1 or as long as 5 years after exposure to asbestos. There is no specific treatment for this entity.

The malignant mesothelioma of the pleura or peritoneum, which was first described in a case reported in 1946, has become increasingly more common during the past 30 years, primarily in workers exposed to asbestos to the exclusion of other people generally. It is now well accepted that malignant mesothelioma can be induced by asbestos dust inhalation for as short a period of time as 1 or 2 months primarily to crocidolite fibers, less frequently with amosite fibers and least with chrysotile fibers, while anthophyllite fibers have not been known to produce this entity. It is interesting to speculate that the size of the fibers is the most important aspect in explaining this variation, as the crocidolite fibers are the tiniest and most needle-like of all, and therefore can penetrate deep into the tissues lining the lung and the peritoneum in order to produce this cancerogenic effect. It is also interesting that more cases are produced in those workers who are the furthest along the line in the processing of the asbestos ore, the fewest cases of mesothelioma occurring in the workers with the heaviest of the ore exposure. This implies that processing breaks down the asbestos into finer particles which are better able to penetrate deep into the tissues of the lungs. Mesothelioma is more often found, therefore, in industries which use crocidolite and amosite asbestos, as in the shipyard workers, and in workers exposed to manufactured products using these types of asbestos fibers. During the past 10 years, it has become apparent that the wives, sons and daughters of asbestos workers and individuals who live in the vicinity of shipyards where asbestos dust is used, are often the ones who, though they have no direct exposure to asbestos in their work, inhale the particles brought home by their husbands in their work

clothes or breathe in the particles from the air blown from the shipyards where asbestos is being used. Among the seventeen thousand insulation workers in America at this time, approximately one worker every two weeks dies of mesothelioma. This is in contrast to the general association among people at large of only one case of mesothelioma per million persons in the United States.

The mesothelioma usually develops in the pleural or peritoneal surfaces and spreads diffusely around and into the lung or abdominal cavity with death generally occurring within 1 year after the tumor is recognized. Pulmonary fibrosis or asbestosis is usually associated with mesothelioma in varying degrees, and ferruginous bodies are generally found in the lung, although they are not generally found in the mesothelioma itself. Uncoated fibers of asbestos can usually be found by electron microscopy.

The clinical features of mesothelioma are generally insidious with weight loss, lassitude, chest or shoulder pain, abdominal swelling or obstruction of the intestine, with generally rapid progression of the disease with average survival being less than one year. Adequate treatment is not yet available but appropriate chemotherapy is currently being evaluated. The amount of asbestos fibers needed to produce mesothelioma is apparently much less than that necessary to produce asbestosis or pulmonary fibrosis.

Carcinoma of the lung has been associated with asbestos exposure since the early 1930's, definitely confirmed by 1947. During the past ten years it is anticipated that from 15 to 20% of men having significant asbestos exposure die of carcinoma of the lung. There is a greater incidence of adenocarcinoma of the lung in asbestos workers, probably related to the fact that asbestos dust pervades every part of the lung especially in the periphery where the cells which develop into the

adenocarcinoma are more plentiful. The worker's likelihood of developing carcinoma of the lung is slightly greater in the worker who has pleural plaques noted on chest x-ray. Cancer of the lung can be more effectively treated than mesothelioma of the pleura or peritoneum, and for this reason, early diagnosis by chest x-ray or in cetain instances by Pap smears of sputum may be helpful in effecting palliative relief of symptoms and indeed cures in some patients, if they are discovered early enough in their clinical course. For this reason, annual chest x-rays in every asbestos-exposed individual should be carried out for their lifetime. The longer the duration of the asbestos-exposed worker's employment the greater the risk of developing lung cancer. Even 1 month of working with asbestos was enough to increase the instance of bronchogenic carcinoma, in that the instance of cancer was twice as much in such a worker, as in one who has no asbestos exposure. After two years of exposure the instance of lung cancer increases to six times that of the normal person, and after ten years rises markedly. The smaller the dose of asbestos, it has been found, the longer the induction period before the cancer deevelops. In general, when cancer of the lung is first diagosed, 75% of them are inoperable at that time. If the lung cancer can be found as a small peripheral nodule resected by lobectomy, 40 to 50% will survive for as long as 5 years.

The final area of asbestos-associated disease, mainly where the relationship is less positive as to the etiologic agent being asbestos, includes other tumors or cancers which are found to be of greater incidence in workers or people exposed to asbestos. At this time, cancer of the esophagus, larynx, stomach, colon, and more recently the pancrease, are definitely in increased numbers as compared with the general population, and hence pose added risk to the asbestos worker. These entities are, in general, two to five times more common in asbestos workers than in the general populace.

VI. RELATIONSHIP OF SMOKING TO ASBESTOS INDUCED DISEASES

In August 1978, Johns-Manville, the biggest producer of asbestos products in the United States, not only had banned smoking entirely in the company work area, but has since established a policy that no person who smokes will be hired by the company for any operation where there is a possibility of exposure to asbestos, and that applies to the entire plant, including the officers. Even visitors to the plant are prohibited from smoking inside the plant itself. This action is to be strongly commended, and yet it was not enforced without considerable controversy. What in fact are the effects of smoking or not smoking on the health of the asbestos worker?

Insofar as pulmonary fibrosis or asbestosis of the lung, there is little or no effect on the scarring in the lung insofar as whether the worker smokes or does not smoke. There is no question, however, that smoking aggravates and causes to develop a significantly greater obstructive defect in the lung, which further increases the worker's shortness of breath, and especially his amount of cough and expectoration, as compared with the non-smoking worker who develops asbestosis. There is also no apparent statistical role in the development of mesothelioma of the pleura or of the peritoneum in asbestos workers, and the same probably applies to the development of the asymptomatic pleural plaque and the benign pleural effusion. There is, however, a greater incidence of cancer of the stomach and larynx associated with smoking, but it may not have a significant effect insofar as the asbestos worker is concerned.

Wherein, therefore, is the data for forbidding smoking in an asbestos plant? Statistically it has been shown that the non-smoking asbestos worker will develop

cancer of the lung approximately five times more commonly than the non-smoking, non-asbestos worker. This proportion, in itself is relatively mild, but significant. In the smoking asbestos worker, however, there is a multiplicative or synergistic effect in that there is a fifty-four times greater rate of cancer of the lung than in the non-smoking, non-asbestos-exposed individual, and these facts are borne out that approximately 15-20% of all asbestos-exposed workers in previous years will develop carcinoma of the lung, almost one of every five workers. This is in sharp contrast to the one or two out of each hundred to one hundred fifty workers who do not smoke. In other words, the worker's chance of developing cancer of the lung is 20 times greater if he smokes while working in an asbestos environment than if he does not smoke. Unfortunately, banning smoking on company premises does not stop the person from smoking, but an adequate educational program by management, backed up by labor, is the best approach towards reducing the high incidence of lung cancer in these individuals.

VII. DURATION OF EXPOSURE AS RELATED TO DISEASE DEVELOPMENT

TABLE I

ROENTGENOLOGIC CHANGES IN ASBESTOS INSULATION WORKERS

Years of Exposure (yr).	No.	Percent Normal	Percent Abnormal	Asbestosis 1	2	3
40+	121	5.8	94.2	35	51	28
30-39	194	12.9	87.1	102	49	18
20-29	77	27.2	72.8	35	17	4
10-19	379	55.9	44.1	158	9	0
0-9	346	89.6	10.4	36	0	0
	1,117	51.5	48.5	366	126	50

Selikoff et. al.

In general, the initial exposure of the asbestos worker to asbestos dust may be measured in decades for convenience in categorization. For example, in the fibrosis induced by asbestos dust there are few changes noted during the first ten years, but during the second ten years, mild changes occur. These changes moderate from ten to twenty-nine years after the initial exposure, and result in a greater degree of pulmonary scarring during the fourth decade. As shown in Table I, pulmonary fibrosis, as evidenced by x-ray changes, becomes increasingly more prominent the longer the time from initial onset of exposure. Practically every asbestos worker who has worked for over forty years or has had forty years from the initial exposure has some evidence by chest x-ray of lung or pleural abnormality not found in the normal individual. The same applies to the development of disability in these workers, in that the average person who develops asbestosis or pulmonary fibrosis becomes disabled somewhere between the fifteenth and the twenty-fifth year peaking at the twentieth year following initial exposure to the dust.

The same findings are similarly true with mesothelioma and lung cancer, as is shown by the accompanying Figure 2 (below).

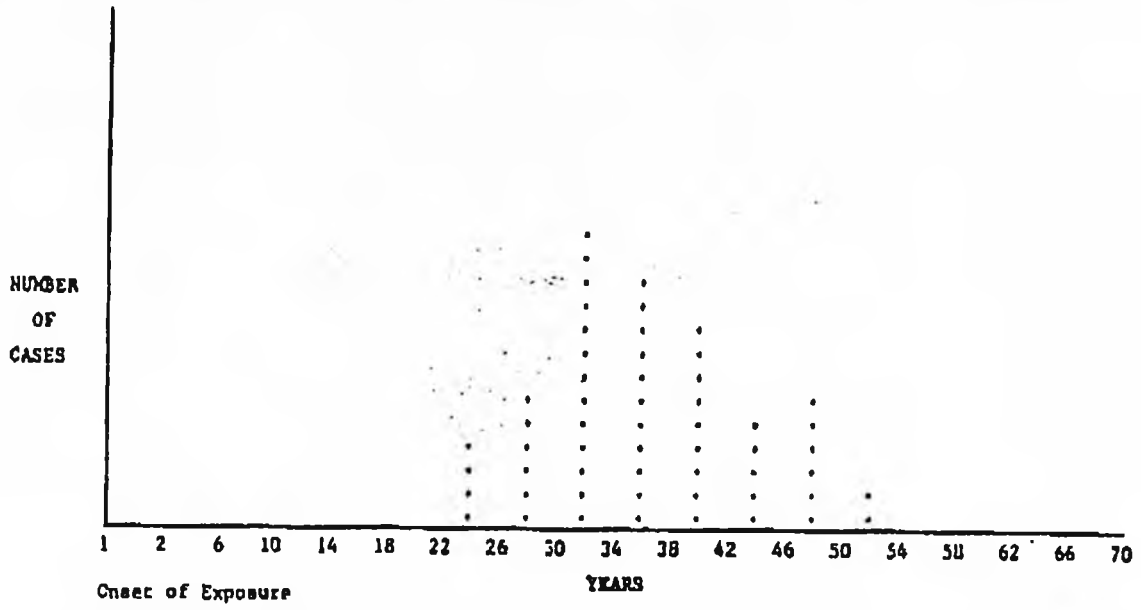

Figure II. Fifty-six cases of neoplasm of the lung or pleura (each case represented by a dot). The elapsed time from onset of exposure is shown on the base line.

The individual exposed to asbestos dust will develop cancer in approximately eight or ten out of every hundred workers rarely before twenty years from the date of initial exposure, and usually over thirty years after the initial exposure, which indeed may not be more than one or two months total exposure time for this entity to develop. The average age of development is approximately 31.8 years for mesothelioma, while for lung cancer, which rarely occurs before thirteen years after initial exposure, the average age of development from date of onset of initial exposure to asbestos dust is approximately 30.7 years. As mesothelioma and lung cancer are relatively late-developing asbestos-induced diseases, it is quite likely that an even greater percentages or workers will develop these cancers as they become older.

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The primary importance of recognizing the time lag between initial exposure and the development of the disease is many current laws concerning Workmans' Compensation, Social Security benefits, and Workers' Pension Plans, contain a statute of limitations which states that the person is not liable for a company-induced disease, if the disease is discovered or diagnosed more than two, five, or perhaps seven years from the date the worker left the company's employment. State, federal and company rules or laws need to be modified in order to accept the medical facts related above. Each of these three major disability diseases; pulmonary fibrosis, mesothelioma, and lung cancer, all may develop twenty to thirty-five years or longer after the exposure to the asbestos dust has terminated.

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TARGET VOL. 13/APRIL-MAY '84/NO. 5

Authority: "To secure adequate laws for the care and protection of children and youth." National PTA Bylaws, Article II:c

Asbestos: Still a danger in schools

by Elaine S. Knapp

For Phyllis Adams and Ann Gibbs the last year has been a frustrating one—trying to get their local school board to remove asbestos from the school their children attend.

"It's frustrating, our children are being poisoned and there's not a..ything ve can do," Mrs. Gibbs declared. What the Lexington, Kentucky, housewife has done is work through the PTA, form a group of concerned parents, go door-to-door telling parents of the danger, gather hundreds of signatures on petitions, read volumes on asbestos, call and write federal agencies and confront the school administrator and board.

After a year of parental pressure being applied and at least a decade after school authorities knew of the asbestos hazard, Mrs. Gibbs said, "We don't think anything will be done until the government makes them (the school board)." School authorities maintain the asbestos will be cleaned up if money is available for renovation next year.

Ironically, the major government effort to control asbestos lies in Mrs. Gibbs and others like her. Telling parents and teachers that their school has asbestos and relying on them to ressure local action is the heart of the U.S. Environmental rotection Agency's (EPA) strategy to rectify the nationwide problem of asbestos in schools.

No effective federal program exists to protect schoolchildren from asbestos, state efforts vary widely and local schools often ignore the danger due to the cost of cleanup.

Asbestos dangers

Any exposure to asbestos involves some health risk, according to the Congress, the EPA and the scientific community. Children are especially vulnerable, according to the EPA guidance document on asbestos sent to schools. Their remaining life expectancy provides the 20 to 40 years it takes for disabling and fatal asbestos-related diseases to develop. Large numbers of children may be exposed in a contaminated school and exposure is continuous during the school year. Children are active and breathe more frequently than adults, possibly inhaling more asbestos fibers. Smoking can increase the cancer risk due to asbestos exposure.

Most hazardous is friable asbestos that can be crumbled. It sends deadly fibers into the air which may lodge in the lungs indefinitely, according to EPA's guidance document. Asbestos workers often develop a chronic and debilitating lung disease called asbestosis. Lower and shorter exposure can result in death many years later.

Asbestos diseases include: 1) asbestosis, a disease in which asbestos clogs the lungs, 2) pleural calcification, a deposit of alcium salts in the lung lining, 3) malignant tumors of the lung, 4) mesothelioma, a rapid and fatal cancer of the lung and 5) intestinal and uterine cancers.

Hot potato

Asbestos in the schools has been a "hot potato" tossed among various levels of government and federal agencies. One reason is that removal of asbestos can be quite expensive, especially if large areas of buildings are affected. Funding is basically up to local schools as is asbestos detection and control. No federal funds are available and state aid varies.

The U.S. EPA requires schools to inspect for asbestos and notify parents and [school] employees of asbestos hazards. The EPA doesn't require removal or abatement. "The theory is that PTAs and employees would pressure local districts to take remedial action," said Terrell Hunt, assistant to EPA Deputy Administrator Alvin Alm.

However, a recent internal EPA report found that many schools did not meet EPA's June 1983 deadline for asbestos detection, record keeping and notification.

No federal funds

Federal funds of $172 million authorized by the Asbestos School Hazard Detection and Control Act of 1980 were never appropriated. Grants were promised for schools to identify asbestos hazards and loans for mitigation of asbestos hazards. But funds were never requested by the Department of Education, reported John Bennett, aide to U.S. Representative George Miller, D-Calif., who sponsored the act. In 1983, a $50 million recommendation by the House was omitted in a House-Senate conference.

The U.S. Department of Education had a task force which set standards for state grants in 1980, according to W. Stanley Kruger, deputy director for state and local programs. However, when the program wasn't funded, the department "deferred to EPA," Kruger said.

Under pressure from Congress, the department reactivated its task force in October 1983 and is gathering information on asbestos to send to chief state school officials, Kruger said. The department also reactivated its requirement that states file plans for asbestos in the schools' programs and report on their progress every six months. All but two states have filed.

EPA's program

The federal effort has largely been a requirement by the EPA that schools inspect for asbestos hazards, sample and analyze material to determine if asbestos is present, keep records of the inspection, post notices, and notify parents and employees if asbestos is found. Although schools were to comply with the rule by June 1983, the EPA doesn't know how many did. It does not require schools to report to it and must send federal inspectors to schools to check their records. EPA staff said when the EPA regulation was written that the administration op-

This is a reprint of a portion of an article appearing in State Government News, *March 1984. It is authored by and printed with permission of Elaine S. Knapp, its editor.*

posed imposing a data reporting requirement. The EPA recently doubled its field force of inspectors by adding 16 people through a contract with the American Association of Retired Persons, Hunt said. These include retired architects and engineers. Primarily, EPA staff look at school records and physically inspect some schools. However, there are not enough inspectors to cover but a small portion of the nation's schools.

In providing technical advice, EPA can help schools determine the best strategy for evaluating the risk and responding to asbestos, Hunt said. He said that anything short of removal is considered a short-term solution.

Connie Derocco, environmental protection specialist with EPA, said that out of 1,527 schools inspected in 468 districts, some 60 percent did not comply with EPA rules. Most failed to notify and warn PTAs and employees of asbestos materials [manufacturers]. Schools know they will be pressured once the word is out, and they are hesitant to deal with the asbestos problem, Derocco explained. After receiving a notice of noncompliance, schools have 30 days to act before the EPA files a civil complaint.

Labor union concern

An estimated 3.24 million schoolchildren and 648,000 school employees are potentially exposed to asbestos, according to Kitty Conlan, research analyst with the Service Employees International Union (SEIU).

The SEIU is lobbying Congress to fund the 1980 act for grants and loans to schools. Schools don't have the money to clean up on their own, Conlan said. "It's a nationwide problem which affects the health of millions of people."

SEIU is suing the EPA to require schools to clean up flaking asbestos. "Schools say if EPA thinks asbestos is so bad, then EPA would require them to get rid of it," Conlan commented.

EPA does give schools good technical advice on how to get rid of asbestos, Conlan noted. But some schools accept the lowest bid rather than follow EPA guidelines. If the cleanup is not done right, the asbestos danger can be worsened.

Conlan said SEIU doesn't think suing asbestos' manufacturers is worthwhile, citing lack of action on suits filed by asbestos workers. "We're hesitant to have our members litigate themselves to death," she said.

Conlan added that school districts can also be held responsible for asbestos. "They can face a big liability," she commented.

Lawsuits filed

A number of lawsuits on behalf of school boards and building owners in Kentucky, Mississippi, New Hampshire, Florida, South Carolina, Alabama and Tennessee have been filed by a South Carolina law firm.

Daniel Speights (a school board attorney) noted that legal theories available to school boards against manufacturers of asbestos include: contract (the products were not fit for the use intended), negligence (the manufacturers were negligent in informing users of the risks associated with the products), strict liability (manufacturers should be strictly liable for failing to warn of asbestos hazards), and restitution (manufacturers have a duty to abate the hazard).

A civil action filed on behalf of the Barnwell, South Carolina, school district notes that school districts and public officials could be held liable for failing to abate a health hazard.

A September 1981 report by the U.S. attorney general to Congress recommended that school authorities seek to recover asbestos abatement expenses from asbestos manufacturers. The report said federal litigation would be ineffective unless Congress imposed liability on asbestos manufacturers.

Asbestos manufacturers are being sued by at least 20,000 people on the grounds that the companies knew of asbestos hazards and covered them up, according to a September article in the *National Journal*.

A 1983 report from the Rand Institute says that asbestos litigation and compensation has cost an estimated $1 billion over the past decade. Only 37 cents of every dollar went for actual compensation to plaintiffs. Estimates of the number of deaths due to asbestos over the next 30 years range from 74,000 to 265,000.

What you should do about asbestos in your school

Given current asbestos rules and regulations, PTAs should check on the following:

1. Was each school in your district inspected for friable asbestos? If not, request this action immediately.
2. Was an analysis of asbestos samples, using polarized light microscopy, conducted?
3. Are records of the asbestos inspection on file in the school district?
4. Does the PTA have a copy of the report in its records?

In schools where asbestos was found, has the school complied with the following:

1. Did the school district notify the children's parents, either directly or through the PTA?
2. Were school employees notified of the location of the materials?
3. Did the school post a standard form in administrative and custodial areas?
4. Are measures being taken, if not already completed, to remove asbestos in the school?
5. Did the school district provide maintenance and custodial employees with instructions for reducing exposure to asbestos?

If asbestos was found in your school, but corrective measures are not being taken, the following steps should be pursued:

1. The PTA should work with the school to affect removal or abatement. Invite parents, teachers, employees of the building, the school principal, and the superintendent to a PTA meeting. Request information about the degree of the asbestos problem and what plans are being developed for cleanup.

2. If plans are not under way or seem unsatisfactory, contact the school board to inform it of your concern. If informal discussions do not produce results, get the issue on the agenda of the next school board meeting. Be prepared to provide the facts, including the inspection reports and the cost of abatement, to school board members.

3. Meanwhile, inform your state legislature and the U.S. Congress about the problems and the degree of difficulty there is in terms of cleanup.

4. If the school board is unable or unwilling to ameliorate the problem, one resort would be a lawsuit. Be sure that you have tried every alternative before taking this step.

Asbestos in Schools Still a Problem

The federal government and the states have taken some actions over the past year to protect school children and others from exposure to asbestos.

Due to its fire retardant and insulating qualities, asbestos is used in hundreds of products. "Friable" asbestos, the kind that easily crumbles into microscopic fibers that can be inhaled, is very hazardous according to the Environmental Protection Agency (EPA). Studies have linked exposure to asbestos to lung diseases and cancer.

Federal Activities

In 1982, the EPA issued rules requiring public and private elementary and secondary schools to identify friable asbestos-containing building materials, maintain records, and notify employees and parent-teacher organizations of the results. The deadline for inspections was June 28, 1983.

According to a recent EPA survey, 93 percent of America's school buildings have been inspected, and 35 percent of them have friable materials that contain asbestos. The survey also revealed that 67 percent of the schools have taken action to control the substance in their buildings. However, only 34 percent of the schools have complied with major requirements of the 1982 rule.

The lack of uniform federal standards, particularly for definition of hazard and worker protection, is viewed by many as a flaw in the EPA's asbestos-in-schools program.

At least one state has moved to set its own standard. The New Jersey Asbestos Policy Committee in October recommended to Gov. Thomas Kean an "action guideline" at 0.003 fibers per cubic centimeter of air, and a decision-making protocol for building owners. Rules are expected to be proposed early this year. The federal Center for Disease Control has proposed an "action level" of 0.01 fibers per cubic centimeter, or three times higher than the proposed New Jersey standard.

In 1984, Congress passed the Asbestos School Hazard Abatement Act to provide loan and grant money to school districts seeking to abate friable asbestos-containing materials in schools. The act appropriated $50 million for fiscal 1984, and authorized $50 million for fiscal 1985 and $100 million per year for five years thereafter. Conservative estimates of the price tag for school abatement actions are in the range of $1.6 billion to $2 billion. "Typical" abatement projects cost from $100,000 to $500,000 per school.

This legislation created a number of deadlines for state authorities. By Nov. 20, 1984, state governors were to submit a plan to EPA on procedures for maintaining records on the presence, detection and abatement of asbestos. States must also meet deadlines to submit priority lists of schools that are candidates for abatement, and financial assistance applications.

What States Have Done

A number of states are undertaking their own legislative and regulatory initiatives. The most common state approach has been to appoint a state asbestos coordinator. State programs have focused on school buildings and other state-owned facilities.

Most states leave asbestos removal or cleanup to local school districts. A handful of states mandate cleanup or provide funds for removal. Even when state funding is provided, the local districts often must set their own standards for asbestos management.

In 1984, seven state legislatures adopted legislation on asbestos in schools or public buildings, according to the Safe Buildings Alliance, comprised of manufacturers of asbestos (see table). Five of those seven states passed funding bills for asbestos removal or control: California, Iowa, Minnesota, Nebraska and New Jersey. Delaware created an ad hoc committee to consider a comprehensive state plan on asbestos in state-owned buildings. Louisiana authorized the state attorney general to assist local school districts in bringing suit against asbestos manufacturers, suppliers and installers. Iowa also passed an asbestos contractor licensing law.

During the 1983-84 legislative sessions, 28 states considered legislation on the issue of asbestos-containing materials in buildings, according to the Safe Buildings Alliance.

(Editor's Note: This article was condensed from a CSG Backgrounder on "Asbestos in Buildings," compiled by John F. Welch, president of the Safe Buildings Alliance in Washington, D.C., and Kevin J. Fay, of Alcalde, Henderson and O'Bannon in Rosslyn, Virginia, in cooperation with Jon Grand, a former CSG staff member. For a copy of the entire report, contact the Order Department, The Council of State Governments, Iron Works Pike, P.O. Box 11910, Lexington, KY 40578. Ask for Backgrounder No. 118402. Single copies are free to state officials.)

STATE ACTIONS ON ASBESTOS IN BUILDINGS

State	Legislation adopted	State funding	State assistance	Local funding option	Contractor certification and training	Encapsulation allowed	EPA NC citation
Alabama			★(a)				★
Alaska			★				
Arkansas							★
California	★	★				★	★
Connecticut		★	★			★	★
Delaware	★(b)						★
Georgia		★	★				★
Idaho				★			
Illinois	★		★	★			★
Indiana							★
Iowa	★			★	★	★	
Kansas							★
Kentucky	★(b)		★				★
Louisiana	★(c)						
Maine			★				
Maryland	★		★		★		
Massachusetts		★	★				★
Michigan							★
Minnesota	★	★		★		★	★
Missouri							★
Nebraska	★			★			
New Hampshire							★
New Jersey	★	★ (d,e)	★		★		★
New Mexico			★				
New York	★	★	★		★(f)	★	★
North Carolina		★ (e)					★
Ohio	★(b)						★
Oregon							★
Pennsylvania	★	★					★
Rhode Island							★
South Carolina	★(g)		★		★(h)		★
South Dakota							★
Tennessee	★(b)		★				
Vermont							★
Virginia							★
West Virginia			★			★	★
Wisconsin							★
Wyoming							★
Dist. of Columbia	★(b)						★

Definitions:

Legislation adopted—states that have specifically enacted a program, funding measure or commissioned a *study on asbestos in buildings.*

State funding—states that have established a funding program or cost sharing with local school districts.

State assistance—states that provide literature, training, inspections, certification or technical assistance to local school districts.

Local funding option—states that have authorized local school districts to raise funds for asbestos programs through local taxes.

Contractor certification and training—states that mandate certification, training or licensing of asbestos contractors.

Encapsulation allowed—states that allow encapsulation of asbestos materials as a viable control option.

EPA NC citation—states in which public or private school districts have been cited by the U.S. EPA for not complying with federal asbestos inspection regulations.

Notes:

(a) Asbestos being removed from schools under a court order obtained by the state attorney general in a suit against the state school boards.

(b) Special committee or task force created to study the problem.

(c) State attorney general is to assist local schools in bringing civil suit against asbestos manufacturers, suppliers and installers.

(d) Money available either through foundation aid programs or local funding is mandatory.

(e) Funding is available for asbestos control in government buildings.

(f) Training only.

(g) Mandatory state inspection program.

(h) Inspector certification required.

Asbestos: Still a Danger in Schools

By Elaine S. Knapp, editor

For Phyliss Adams and Ann Gibbs the last year has been a frustrating one—trying to get their local school board to remove asbestos from the school their children attend.

"It's frustrating, our children are being poisoned and there's not anything we can do," Mrs. Gibbs declared. What the Lexington, Kentucky, housewife has done is work through the PTA, form a group of concerned parents, go door-to-door telling parents of the danger, gather hundreds of signatures on petitions, read volumes on asbestos, call and write federal agencies and confront the school administrator and board.

After a year of parental pressure being applied and at least a decade after school authorities knew of the asbestos hazard, Mrs. Gibbs said, "We don't think anything will be done until the government makes them (the school board)." School authorities maintain the asbestos will be cleaned up if money is available for renovation next year.

Ironically, the major government effort to control asbestos lies in Mrs. Gibbs and others like her. Telling parents and teachers that their school has asbestos and relying on them to pressure local action is the heart of the U.S. Environmental Protection Agency's (EPA) strategy to rectify the nationwide problem of asbestos in the schools.

No effective federal program exists to protect school children from asbestos, state efforts vary widely and local schools often ignore the danger due to the cost of cleanup.

Asbestos Dangers

Any exposure to asbestos involves some health risk, according to the Congress, the EPA and the scientific community. Children are especially vulnerable, according to the EPA guidance document on asbestos sent to schools. Their remaining life expectancy provides the 20 to 40 years it takes for disabling and fatal asbestos-related diseases to develop. Large numbers of children may be exposed in a contaminated school and exposure is continuous during the school year. Children are active and breathe more frequently than adults possibly inhaling more asbestos fibers. Smoking can increase the cancer risk due to asbestos exposure.

Most hazardous is friable asbestos that can be crumbled. It sends deadly fibers into the air which may lodge in the lungs indefinitely, according to EPA's guidance document. Asbestos workers often develop a chronic and debilitating lung disease called asbestosis. Lower and shorter exposures are linked to lung and other cancers. Even brief exposure can result in death many years later.

Asbestos diseases include: 1) asbestosis, a disease in which asbestos clogs the lungs, 2) pleural calcification, a deposit of calcium salts in the lung lining, 3) malignant tumors of the lung, 4) mesothelioma, a rapid and fatal cancer of the lung, and 5) intestinal and uterine cancers.

Where It Is, What to Do

Use of asbestos materials was common in schools and other buildings from the mid-1940s until EPA banned sprayed asbestos in 1973. Friable (or soft) asbestos-containing material was used for fireproofing,

insulation or decoration. It was usually sprayed on overhead surfaces, steel beams, ceilings, walls and pipes.

As friable asbestos material ages, it breaks down and releases fibers into the air. School activities can damage or disturb asbestos, such as a ball hitting a gym ceiling. Asbestos material can be disturbed by maintenance activities, vandalism, water damage or vibration from people or machinery and release fibers into the air.

Many experts believe removal of asbestos is the only final and satisfactory solution to asbestos exposure. However, removal may cost more initially and be more complicated. Temporary measures include encapsulation by spraying asbestos with a sealant or enclosing the asbestos. EPA and other experts warn that such temporary measures make removal more difficult and dangerous later on, and must be constantly monitored.

The EPA guidelines call for asbestos work only after construction of sealed containment barriers and worker protection as mandated by OSHA. All but asbestos workers should be kept out of the sealed area and worker change rooms are required.

Hot Potato

Asbestos in the schools has been a "hot potato" tossed among various levels of government and federal agencies. One reason is that removal of asbestos can be quite expensive, especially if large areas of buildings are affected. Funding is basically up to local schools as is asbestos detection and control. No federal funds are available and state aid varies.

The U.S. EPA requires schools to inspect for asbestos and notify parents and employees of asbestos hazards. The EPA doesn't require removal or abatement. "The theory is that PTAs and employees would pressure local districts to take remedial action," said Terrell Hunt, assistant to EPA Deputy Administrator Alvin Alm.

However, a recent internal EPA report found that many schools did not meet EPA's June 1983 deadline for asbestos detection, record keeping and notification.

No Federal Fund

Federal funds of $172 million authorized by the Asbestos School Hazard Detection and Control Act of 1980 were never appropriated. Grants were promised for schools to identify asbestos hazards and loans for mitigation of asbestos hazards. But funds were never requested by the Department of Education, reported John Bennett, aide to U.S. Rep. George Miller, D-California, who sponsored the act. In 1983, a $50 million recommendation by the House was omitted in a House-Senate conference.

The U.S. Department of Education had a task force which set standards for state grants in 1980, according to W. Stanley Kruger, deputy director for state and local education programs. However, when the program wasn't funded, the department "deferred to EPA," Kruger said.

Under pressure from Congress, the department reactivated its task force in October 1983 and is gathering information on asbestos to send to chief state school officials, Kruger said. The department also reactivated its requirement that states file plans for asbestos in the schools' programs and report on their progress every six months. All but two states have filed.

EPA's Program

The federal effort has largely been a requirement by the EPA that schools inspect for asbestos hazards, sample and analyze material to determine if asbestos is present, keep records of the inspection, post notices, and notify parents and employees if asbestos is found. Although schools were to comply with the rule by June 1983, the EPA doesn't know how many did. It does not require schools to report to it and must send federal inspectors to schools to check their records. EPA staff said when the EPA regulation was written that the administration opposed imposing a data reporting requirement. The EPA recently doubled its field force of inspectors by adding 16 people through a contract with the American Association of Retired Persons, Hunt said. These include retired architects and engineers. Primarily, EPA staff look at school records and physically inspect some schools. However, there's not enough inspectors to cover but a small portion of the nation's schools.

In providing technical advice, EPA can help schools determine the best strategy for evaluating the risk and responding to asbestos, Hunt said. He said that anything short of removal is considered a short-term solution.

Connie Derocco, environmental protection specialist with EPA, said that out of 1,527 schools inspected in 468 districts, some 60 percent did not comply with EPA rules. Most failed

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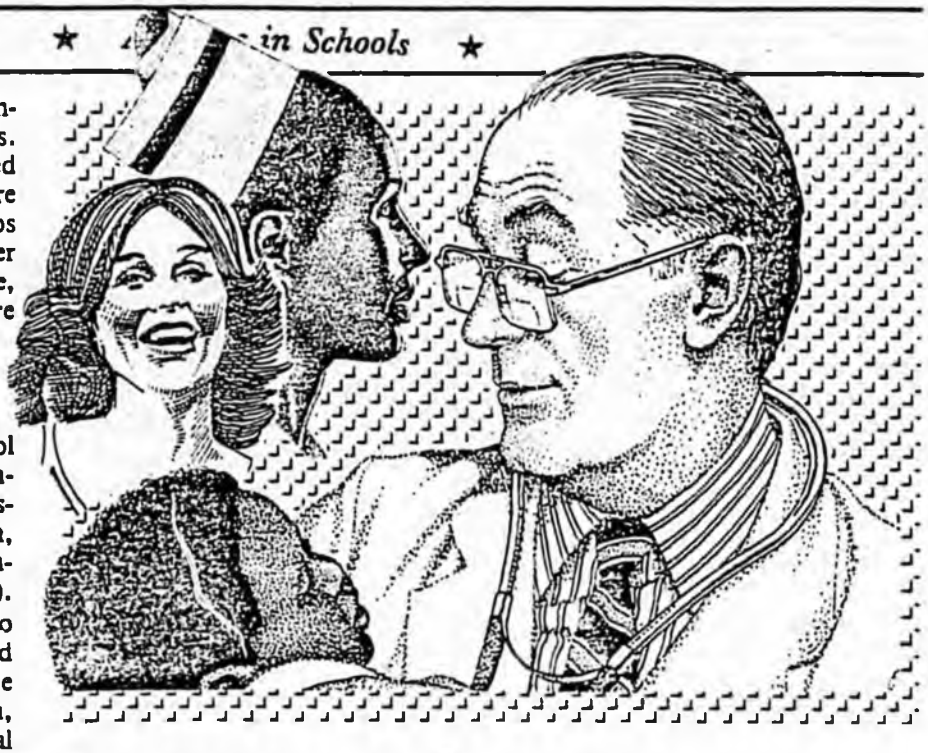


to notify and warn PTAs and employees of asbestos materials. Schools know they will be pressured once the word is out, and they are hesitant to deal with the asbestos problem, Derocco explained. After receiving a notice of noncompliance, schools have 30 days to act before the EPA files a civil complaint.

Labor Union Concern

An estimated 3.24 million school children and 648,000 school employees are potentially exposed to asbestos, according to Kitty Conlan, research analyst with the Service Employees International Union (SEIU).

The SEIU is lobbying Congress to fund the 1980 act for grants and loans to schools. Schools don't have the money to cleanup on their own, Conlan said. "It's definitely a federal responsibility," Conlan said. "It's a nationwide problem which affects the health of millions of people."

SEIU is suing the EPA to require schools to cleanup flaking asbestos. "Schools say if EPA thinks asbestos is so bad, then EPA would require them to get rid of it," Conlan commented.

EPA does give schools good technical advice on how to get rid of asbestos, Conlan noted. But some schools accept the lowest bid rather than follow EPA guidelines. If the cleanup is not done right, the asbestos danger can be worsened.

Conlan said SEIU doesn't think suing asbestos' manufacturers is worthwhile, citing lack of action on suits filed by asbestos workers. "We're hesitant to have our members litigate themselves to death," she said.

Conlan added that school districts can also be held responsible for asbestos. "They can face a big liability," she commented.

Lawsuits Filed

A number of lawsuits on behalf of school boards and building owners in Kentucky, Mississippi, New Hampshire, Florida, South Carolina, Alabama and Tennessee, have been filed by a South Carolina law firm.

Daniel Speights noted that legal theories available to school boards against manufacturers of asbestos include: contract (the products were not fit for the uses intended), negligence (the manufacturers were negligent in informing users of the risks associated with the products), strict liability (manufacturers should be strictly liable for failing to warn of asbestos hazards), and restitution (manufacturers have a duty to abate the hazard).

A civil action filed on behalf of the Barnwell, South Carolina, school district notes that school districts and public officials could be held liable for failing to abate a health hazard.

A September 1981 report by the U.S. attorney general to Congress recommended that school authorities seek to recover asbestos abatement expenses from asbestos manufacturers. The report said federal litigation would be inefficient unless Congress imposed liability on asbestos manufacturers.

Asbestos manufacturers are being sued by at least 20,000 people on the grounds that the companies knew of asbestos hazards and covered them up, according to a September article in the *National Journal.*

A 1983 report from the Rand Institute says that asbestos litigation and compensation has cost an estimated $1 billion over the past decade. Only 37 cents of every dollar went for actual compensation to plaintiffs. Estimates of the number of deaths due to asbestos over the next 30 years range from 74,000 to 265,000.

Future Problems

Generally, 15-40 years can elapse between asbestos exposure and manifestation of certain diseases. For instance, shipyard workers exposed during World War II may only now be filing claims, according to the Rand study. Despite this knowledge, no attempt is being made to monitor school children exposed to asbestos.

An internal EPA memo written in November 1978 called for long-term surveillance of children who are exposed. The memo noted that when they reach adulthood these children could then be informed and notified of their childhood exposure. They could be medically examined more frequently for respiratory diseases and cancer.

EPA Regions, States

Because no one tracks data on asbestos in the schools on a national basis, *State Government News* interviewed asbestos coordinators in five of the 10 EPA regions and several state asbestos coordinators.

Generally, the federal regional EPAs have switched their emphasis from providing technical assistance on identifying and dealing with asbestos in the schools to checking school records on asbestos inspections. Most found a high percentage of schools either had not inspected or had not notified parents and employees of asbestos in the schools as required by the EPA.

State programs differ widely in scope and authority. While a few states fund asbestos removal and cleanup, most simply help schools identify asbestos or provide other technical assistance.

Region I

"Compliance is terrible," said Paul Heffernan, asbestos coordinator for EPA Region I covering Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont.

Five full-time EPA inspectors have visited 160 districts covering 400 schools and issued 58 notices of noncompliance. Of the EPA violations, 37 percent had not even inspected and 53 percent had not notified parents or employees of asbestos found. Many school administrators didn't want to be "bothered," others had not read the regulation and others simply refused to post a warning in the building.

Oddly enough, schools in states which had asbestos programs in the late 1970s were most difficult to convince they needed to inspect for asbestos in ways not done in earlier years. For instance, the latest regulations require inspection of pipes and boiler rooms.

With 3,300 school districts in the region, there is no way EPA can inspect them all, Heffernan said. However, press releases announce schools found in violation, so the hope is that other schools will inspect rather than see themselves in the headlines.

Asbestos abatement efforts vary widely even in the same school district and among neighboring school districts, Heffernan said. He said West Haven, Connecticut, had an effective program while North Haven, next door, had none. While Hartford, Connecticut, spent $6 million on big problems in five schools, it had not tackled "mini-disasters" in 37 others. The same situation existed in Boston.

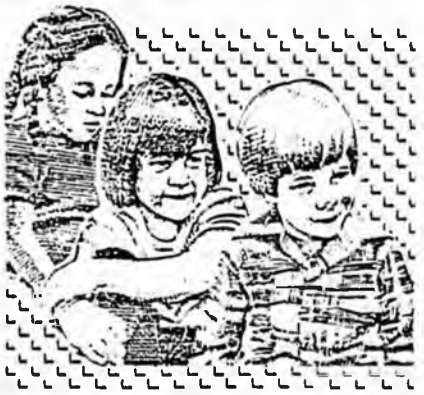
In the region, New Hampshire sent a checklist of EPA requirements plus abatement actions to help schools comply with the EPA.

Connecticut has granted $6.5 million since 1976 to localities for asbestos control in schools, reported Richard Krissinger, coordinator of school facilities, state Department of Education. State grants range from 40 to 80 percent of cost, depending on the aid formula the town qualifies for. If asbestos is found, the "chances are good it will be removed," Krissinger said. "We treat it as a health violation."

The state "accepts encapsulation" as an abatement measure, but doesn't encourage it. Krissinger said, "We believe removal is the only answer."

Al Siniscalchi, acting chief of the toxic hazard section of the Connecticut Department of Health Services and Education, noted that the state also provides technical assistance to schools. Schools were sent EPA guidelines and seminars were co-hosted by the state and EPA Region I.

A job freeze has reduced a former staff of nine to four and most inspec-



tions are now done by local health departments. Connecticut does follow-up inspections after asbestos removal to make sure the school is safe. Safe disposal of large amounts of asbestos is supervised by the state Department of Environmental Protection.

Maine is in good shape, according to Roy Nisbett, director of the Division of School Facilities. Most of the asbestos found was confined to pipe wrapping and boiler rooms. The state notified schools of the EPA rule and 90 percent complied with inspection requirements, Nisbett said. The Division of Industrial Safety trained school personnel to conduct asbestos inspections.

A proposed bill in Maine would authorize a bond issue to reimburse local schools for the cost of asbestos removal and repair.

In spite of the fiscal contraints caused by Proposition 2 1/2, public pressure has spurred asbestos abatement in Massachusetts, said Mike Malchik, assistant engineer, Division of Occupational Hygiene. "Parents and teachers are adamant about getting it (asbestos) down," Malchik said. The legislature allocated $2 million in 1983-84 to repay part of school removal costs if removal is recommended by the state.

Massachusetts inspects public buildings and schools, samples, analyzes samples and recommends abatement measures. There are at least five engineers and a project engineer available. The schools are being re-surveyed based on new guidelines, as inspections in 1978 only covered sprayed-on asbestos in public areas.

Region II

EPA Region II asbestos coordinator, Arnold Freiberger, has seven inspectors to check some 3,000 schools in New York and New Jersey. Out of 108 districts inspected, only 13 were in compliance with EPA rules, 32 had minor violations and 63 had either failed to inspect or identify asbestos or to post notices and notify parents and teachers.

New York has provided funds for asbestos control, reported Henry Binzer, associate in school business management, state Department of Education. In addition to state grants of $1.75 million annually for the past four years, school districts may tap state building aid for asbestos control.

An annual state survey of schools revealed 509,000 square feet of potentially hazardous asbestos.

The New York State School Asbestos Safety Act of 1979 required schools to identify asbestos and, if it is hazardous, take control measures. Encapsulation is most popular with schools. "The problem is that still has to be watched," Binzer noted. Removal is permanent, but expensive.

The state does not give advice on specific jobs, but provides an educational program for contractors and information to schools.

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New Jersey doesn't provide specific aid for asbestos removal, but schools can get assistance through the foundation aid program, said Dr. Irving M. Peterson, manager, Facility Planning Services, state Department of Education.

In 1979, a governor's Task Force on Asbestos set minimum specifications for removal of friable asbestos. The specifications, which contractors must follow, require notification of state and federal agencies prior to the start of a project, require documentation of the contractor's qualifications, and require the contractor to follow stringent procedures for removal. The standards do not permit encapsulation (by coating the asbestos-containing layer) in New Jersey.

The state must approve all construction projects, plans, make field inspections to assure the work area is set up properly so contamination doesn't spread and check at the end of the project. Contractors, agents and workers must all attend a one-day state-EPA seminar and carry certification cards on the job.

Out of 2,400 public schools in New Jersey, asbestos removal projects have been approved in 350. Costs have totaled $46 million, for an average of $131,000 per school. It's up to local districts to remove the asbestos and as many as 100 more may not have acted yet.

Region IV

EPA doesn't have the resources to inspect school compliance with asbestos regulations, declared Dwight Brown, asbestos coordinator for Region IV covering Alabama, Georgia, Kentucky, Mississippi, North Carolina, South Carolina and Tennessee.

Most commonly, schools have either failed to inspect or to notify parents, Brown noted. He added that common law requires building owners to identify and notify occupants of hazards, and to provide medical surveillence if there is evidence of exposure.

Region IV also provides technical assistance and its intensive seminars on asbestos are attended by many from outside the region.

Most of the asbestos found in Georgia schools was in boiler rooms or pipe wrapping and has been corrected, said Lovett Fletcher, asbestos coordinator. State environmental, health and education departments worked with the U.S. EPA to provide information and hold seminars for superintendents. In addition, 70 environmental health specialists were trained to assist local systems. Schools with acute problems could get matching state aid through the state capital outlay, Fletcher said.

Kentucky helps schools comply with EPA inspection requirements, but has no money to aid them, said Jim Judge, unit director of property insurance, Department of Education. Asbestos cleanup was estimated to cost $26 million last year, but a survey now underway could change that estimate. Judge noted that the EPA doesn't require removal and many schools "are hesitant to post a warning." Asbestos problems in the state's 180 districts range from major ones with ceilings to boiler rooms.

Affected schools mostly include those built from World War II to the early 1970s. Judge said certain architects used lots of asbestos while others didn't.

South Carolina selected the critical points of EPA's regulations in requiring public and private schools to inspect, sample and analyze for asbestos, said Lee Bacot, asbestos coordinator, Department of Health and Environment. Results of the school surveys and health hazard assessments were required to be publicized in meetings and by notifying parents.

Out of 1,200 public schools, 1,080 or 90 percent complied with EPA's rule and 270 found friable asbestos. Only about 30 percent of the 450 private schools complied.

Asbestos inspectors must be certified by the state and must send survey results to the state. A one-day course is offered by the state to consultants and state and local staff. Schools are provided information, but the state does not provide specific advice or any funds.

Tennessee had a governor's task force on asbestos in 1978, according to Robert Foster, chief, technical services, Division of Air Pollution Control, Bureau of the Environment.

Out of 1,773 schools, 150 reported potentially hazardous asbestos.

The state provides free analysis of suspected asbestos materials, provides information to schools, and conducts training sessions. Because there is a shortage of EPA inspectors, Tennessee Gov. Lamar Alexander wrote the EPA offering to help enforce the inspections. However, EPA has not responded. The state plans to proceed to develop the data anyway, Foster said.

"We're convinced asbestos in the schools is one of the more important health problems," Foster declared. "It's an absolute human carcinogen. It causes serious irreversible health effects. Even brief exposure can cause painful disease. Children are

EPA's new rule requiring parental notice "triggered a lot of work," Peterson said. As many projects were approved last year as in the previous four years.

even at more risk."

The goal should be to eliminate the hazard, Foster continued, while the EPA only requires inspections and warnings which can lead to panic and make schools vulnerable to unscrupulous contractors. People need to be educated on how to abate the hazard, he said. He added that although "most want to do the best, it's hard to convince them that a little dust out of the ceiling will kill them."

"I've gone in schools where the material (asbestos) was hanging off chairs," Foster said. In that case the superintendent closed the schools upon the state's recommendation. More troublesome are marginal situations, Foster noted, where schools don't understand the potential hazard. "They look to the state or federal government," he said. "But hope for federal or state aid is a loser."

Region V

"There's quite a few violations of EPA's rule," said Anthony Restaino, asbestos coordinator for Region V covering Illinois, Indiana, Michigan, Minnesota, Ohio and Wisconsin.

Many school officials thought asbestos "was a low priority, didn't take time to inspect, didn't touch asbestos-materials to see if it crumbled or didn't notify parents or employees," Restaino said. Out of 43 school districts inspected, 29 were in violation. The Region V inspection staff was recently doubled to eight.

Illinois treats asbestos as a health and public safety issue, said Ralph Morrisette, architect, school facilities and organization section, State Board of Education.

Under Illinois law, school boards can hire an architect to determine if school building conditions endanger lives. After a survey of the cost to remove the asbestos, the local district can levy a tax for the amount without a referendum. Because schools are able to raise the funds, most of those with asbestos are having it removed, Morrisette said.

Most Wisconsin schools have inspected for asbestos, reported Nori Roden, school asbestos program coordinator, Department of Health and Social Services.

Out of 3,027 schools, 3,006 inspected and 1,089 found friable asbestos. Corrective action was taken by 583: 395 rewrapped pipes, 94 removed asbestos, 33 enclosed it and 61 encapsulated it.

Wisconsin has had an asbestos program since 1980. The Department of Industrial Labor and Human Relations conducted asbestos inspections when it conducted fire and other safety inspections. Samples were analyzed by the state lab. The Department of Public Institutions targeted schools for the free inspections, helped with record keeping, and provided technical assistance and consultation services. The health department computerized and coordinated the data and consults on health effects of asbestos.

A position paper being developed by the health department will most likely recommend removal of all friable asbestos, Roden said. "We're cautious of encapsulation and enclosure," she said. Advantages of the temporary measures include less cost and time, but the disadvantage is the "asbestos is still in the building," Roden said.

Minnesota in 1983 authorized a $25 per pupil unit capital expenditure levy and aid for asbestos removal or encapsulation and PCB cleanup with Department of Education approval.

Region VIII

The major violation found in Region VIII is that schools "aren't willing to put up notices," said Steve Farrow, EPA asbestos coordinator for Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming. Instead, schools are trying to remove or encapsulate the asbestos first, he said.

Of the states, Farrow said that Utah's problems were with pipes and boiler rooms, North Dakota was making progress and Wyoming had few major problems.

Chuck Johanningmeier, technical advisor for the region, said, "Many people hoped it would go away. Medically, it is just getting worse." A Fargo teacher had contacted the EPA after discovering asbestos debris left in a school storeroom. Not long afterwards, the lawyer for the teacher's estate reported the man had died of mesothelioma (a rare cancer associated with asbestos exposure).

Unqualified contractors can do more damage than if the asbestos was left alone, Johanningmeier said. A proposed measure before the Colorado Legislature will require contractors to be certified to work on asbestos.

In another case, a contractor left asbestos which students and teachers dusted up. As a result the EPA is helping write specifications in a contract for cleanup which will be available to others as well.

There are some bright spots as well. Johanningmeier praised the work of Gill Johnson, the asbestos coordinator for a Jefferson County, Colorado, district. Johnson overcame school resistance and succeeded in cleaning up the asbestos in the district's schools.

No Cavalry in Sight

Although asbestos was recognized as a nationwide health problem by the Congress in 1980, there's no real federal effort to protect the health of exposed school children. Even though most states have asbestos coordinators, few states mandate cleanup or provide funds for removal. Essentially, asbestos removal or cleanup is left up to local school districts. Local school officials may not be willing or understand how to inspect for asbestos. Some may not understand the health dangers or legal liability they incur by allowing asbestos to remain. Apparently, many refuse to adequately notify parents or teachers if asbestos is found. Even then, students have no choice but to attend the school and teachers may be fearful of retribution if they take action. Many schools don't have or don't want to spend the money it takes to remove or cleanup asbestos.

Alvin L. Alm, deputy administrator of the EPA, recently acknowledged that the agency was reconsidering its approach to asbestos in the schools.

* * *

Leonard P. Stavisky

State Responsibility for the Control of Asbestos in the Schools

Asbestos, widely used in construction, is hazardous to human health. Schools represent the most pressing concern for public policymakers who are faced with the asbestos issue. With few exceptions, compulsory attendance laws exist throughout the United States. Typically, state statutes prescribe that minors from six to 16 years old attend school for approximately 180 days a year. Parents and guardians have no discretion in this matter and those who refuse may be charged with neglect. As a result of these laws, government's legal and ethical responsibilities may be greater in this area than in others where one's presence is voluntary or where minors are not involved.[1]

On the school asbestos issue, the educational and public health mandates of existing state constitutions come into conflict. In the language of one state constitution: "The legislature shall provide for the maintenance and support of a system of free common schools, wherein all of the children of the state may be educated." The same constitution further stipulates that "the protection and promotion of the health of the inhabitants of the state are matters of public concern and provision therefore shall be made by the state and by such of its subdivisions (including school districts) and in such manner, and by such means as the legislature shall from time to time determine." Obviously, though teaching and learning cannot be suspended, the public deserves ironclad guarantees that the instruction will be offered in a safe environment.[2]

Such guarantees come in implied warranties of quality — the presumption that a product is free from substantial, latent defects which are not obvious through inspection; these appeared in Roman edicts as early as 150 B.C. In modern commercial practice, the term warranty has always meant that the conditions are exactly as they have been stated, that standards of quality exist, and that those in positions of responsibility recognize their obligation to repair or replace defective parts. Implied warranty of quality exist even in cases in which there is no sale. Thus, nonprofit institutions have been named as defendants under breach of warranty.[3]

Statutory law has extended the boundaries. In real property law, states have enacted warranties of habitability which presume that a dwelling is suitable for human habitation and that the occupants will not be subjected to conditions which are "dangerous, hazardous or detrimental to their life, health or safety." Similar language appears in occupational safety codes, public health laws and environmental protection legislation.[4] In recent decades, government has become a landlord — involved in the ownership and management of public housing. Formerly private buildings have been acquired through "in rem" proceedings resulting from non-payment of taxes. Does the warranty of habitability therefore apply to the public sector?[5] Does it extend to other physical settings such as schools? Presumably, when a child is enrolled in a public school, for which

taxes are paid in lieu of tuition, there is an implied warranty that professional services will be rendered in a building that is free from conditions and substances which are hazardous to health.[6]

Asbestos, a hydrated mineral silicate which was widely used for fireproofing, soundproofing and decorating during the post-World War II construction boom, was introduced in Great Britain in 1932 and in the United States three years later. Between 1946 and 1972, sprayed-on asbestos was used in school auditoriums, gymnasiums, classrooms, hallways and libraries. Of the one million tons consumed in the United States in a single year, the material was applied to insulation, ceilings, floor tiles, cement, roofing and shingles. Homes, offices, factories, government buildings, private institutions and places of public accommodation were laden with this ubiquitous substance. More than 3,000 known asbestos products came into use.[7]

Concern over the impact on human health arose as a result of the inordinately high rates of disease discovered among employees handling asbestos in mining, manufacturing and construction. During the 1950's and 1960's, clinicians and researchers reviewed the medical records of asbestos workers and established positive correlations between persons who had been exposed to extraordinarily high asbestos air concentrations and specific diseases such as: 1) asbestiosis, a non-malignant scarring of the lungs; 2) bronchogenic carcinoma, a malignancy of the lungs; 3) mesothelioma, a malignancy of the lining of the abdomen or chest cavity, and 4) cancer of the gastrointestinal tract (esophagus, stomach, colon or rectum). By the early 1970's, medical researchers at the National Cancer Institute demonstrated in laboratory experimentation that malignancies "comparable to those resulting from asbestos exposure in man, can be induced rapidly in the rat and hamster by direct intrapleural application of asbestos. Such experiments attest to the carcinogenity of asbestos and offer an excellent means of investigating those carcinogenic mechanisms involved," these studies concluded.[8]

Government has responded in various ways. Since 1970, the Occupational Safety and Health Administration (OSHA) has regulated working conditions in the asbestos industry. In 1973, the United States Environmental Protection Agency prohibited the spraying of asbestos materials for fireproofing and insulation. Five years later, the ban was extended to all forms of sprayed asbestos, including decorative applications. Agencies of government promulgated regulations to control the industrial discharge of asbestos materials into the air and water. The sale of spackling compounds containing asbestos and the use of asbestos in insulation fireplaces was halted. Placing asbestos on the list of hazardous materials is under consideration. In all sections of the country, monitoring and informational programs have been initiated by federal, state and local authorities.[9]

Efforts have also been made to verify the effects of asbestos in non-occupational settings, but here the information has been imprecise. Abnormally-high disease rates have been linked to people who live near asbestos mines and factories. Among the families of asbestos workers, diseases have been traced to the minute particles brought into homes of the workers' clothing, Nevertheless, attempts to define standards that would be applicable outside of industrial settings have been opposed by an unexpected source. Scientists who have worked in this field appear unwilling or unable to provide definitive answers to the question of what represents a "safe" level of exposure to asbestos over a given period of time. Researchers are currently unprepared to support publicly or privately an accepted standard such as nanograms of asbestos per cubic meter of air nor are they willing to risk their reputations or the health of the public by categorically stating that the presence of asbestos below certain levels is tolerable. In the opinion of many reputable scientists, there is no way to compromise with a carcinogenic substance.[10]

Asbestos fibers, which are neither chemically nor biologically degradable, are virtually indestructable. Once the particles have been released into the environment, the slightest turbulence disturbs those that have already settled. People are constantly exposed to asbestos in the air they breathe, in the water they drink and in the food they eat. Processed asbestos fibers are more hazardous than the natural mineral. The thin strands which are by-products of the manufacturing process are easily inhaled or ingested. Asbestos fills the urban environment as a result of incessant braking of motor vehicles, building construction and demolition projects, and the incineration of certain plastic products. In suburban and rural areas, asbestos exposure is most likely to stem from mines, mills, manufacturing plants and waste disposal sites.[11]

Although asbestos permeates the environment in various settings, outdoors the moving air currents disperse the particles to reduce the levels of concentration. Indoors, the presence of asbestos poses a special hazard. Architects have designed many structures with inoperable windows. At one time, planners even specified windowless schools for blighted urban neighborhoods. Within such enclosed ventilation systems, asbestos particles are continually recycled throughout these buildings.[12]

Most educational officials have not kept adequate records to deal with asbestos in their schools. State and local authorities never examined the building specifica-

tions to check for the presence of asbestos. Even when plans were reviewed by state agencies in order to determine eligibility for building aid, officials simply looked at the adequacy of the space in relation to the educational program. After a few years, those plans that had been filed by the school districts were routinely discarded in some states in order to "save space." As a result of a new wave of concern about asbestos in the schools, state and local educational authorities may be compelled to reassemble information which was once available to them when the schools were originally constructed or remodeled."[13]

Progress in this field has been painfully slow. By the late 1970's, only 27 states and the District of Columbia were known to have conducted any asbestos inspections. Approximately 15 states had looked at more than a few schools. Of these, New Jersey, Massachusetts and New York had each inspected more than 1,000 school facilities, while Indiana, Rhode Island, Michigan and Vermont had each examined more than 100 buildings. California and New Mexico had simply reported "many" inspections. Rhode Island, the only state which had presumably inspected all of its buildings identified asbestos in 19 locations. Seventeen states, primarily in the South, the Middle West and the Far West, had not reported any school asbestos inspections. In other states, the extent of the testing remained uncertain. Individual school districts undertook limited inquiries, but approximately forty per cent of the states in the nation had no asbestos programs at all. Nationally, no agency of the United States Government could provide reliable information as to how many schools had asbestos problems."[14]

Two principal methods exist for determining whether asbestos is present in a school — visual inspection and laboratory testing. The most common method of detecting asbestos in a friable or crumbling condition involves direct observation. Unfortunately, visual inspections can be quite subjective and deceptive. What appears to be asbestos to the naked eye may prove under a microscope to be some other material. On the other hand, asbestos may be concealed in unconventional forms. Laboratory analysis of air samples offers more reliable identification. However, the levels of asbestos may fluctuate dramatically from place to place within the same facility and vary from day to day, depending on how much activity preceded the collection of the sample."[15]

Funding poses another problem. Optical laboratory tests may cost $30 to $50 per air sample. To be accurate, multiple tests may be necessary; different locations within a building may have to be sampled at different times. Electron microscopic analysis may cost ten times as much as optical testing and finding competent laboratories is sometimes difficult. A Connecticut laboratory incorrectly labelled cellulose as asbestos. The error was not detected until the ceiling had been removed, at considerable cost to the local school district."[16]

Policymakers, the educational community and the public are caught in a cruel dilemma. There should be no danger to the life, health or safety of any child or adult in any school. On the other hand, the educational process cannot grind to a halt. Creating a sense of public panic or uncertainty is not the answer. Neither is indifference to the problem. What is needed is an immediate, responsible nationwide plan for school asbestos indentification and control. The commitment to act must involve lawmakers, boards of education and school administrators throughout the United States.

First, those entrusted with responsibility for the schools must become familiar with the fact that asbestos materials appear in various forms under different names such as chrysotile, amosite, crocidolite, tremolite, anthrophyllite and actinolite. Often, more than one form of asbestos is present and the fibers are frequently combined with other products.

While it would be desirable to deal with all types of asbestos at once, fiscal constraints dictate a strategy that focuses on those forms and conditions which knowledgeable scientists agree are hazardous to human health. Accordingly, many authorities have suggested that school officials concentrate on asbestos which has been sprayed on structures or applied in the form of plaster or textured paints. In addition, the physical condition of the asbestos should be considered. As a general guideline, an imminent hazard is likely to exist where the asbestos material is flaking, dusting, or shows similar evidence of damage, deterioration or disturbance because of abuse, abrasion, water leakage or forced air circulation which results in dispersing asbestos fibers and particles in the school."[17]

School-by-school surveys can be mandated by state statute or by the rules and regulations promulgated by the chief state school officer or the state board of education. With scientific and technical information provided by the state, preferably the superintendent of public instruction or commissioner of education after consultation with the department of health or the environmental protection agency, the school districts can proceed with the inspections. In most instances, the custodian who works in the school building daily is in a position to know where asbestos may be present. Regional training programs may be desirable to enhance the skills of those who conduct the preliminary surveys. Materials suspected of containing asbestos can be sent to approved

public or private laboratories for analysis."[18]

Once the asbestos has been identified and corrective action is required, there are three methods of dealing with the problem: 1) encapsulation, involving the use of a sealant which covers the original asbestos material and prevents further flaking; 2) structural containment, in which a permanent partition is installed between the asbestos area and the public and 3) removal of the asbestos."[19]

Each control method poses certain problems. A chemical sealant may be the easiest to apply and the least expensive technique, but it may not hold up for a long period of time. The very act of applying a chemical covering may damage some of the asbestos. Furthermore, in these days of mercurial changes in scientific data, there is no guarantee that a particular sealant itself may not subsequently stand accused as a hazard to health.

Structural containment is predicated upon the assumption that the area will not have to be accessible at a later date. Many school buildings have been designed to utilize the space between a ceiling and the floor above for electrical, plumbing, heating and ventilation installations. If a permanent partition is installed rather than a suspended ceiling made up of removable tiles, workmen may not be able to check faulty wiring, water leakage or a breakdown in the air circulation system. Also, although the asbestos will no longer be visible to the pupils and staff, asbestos particles may continue to be recycled through ventilation ducts after a new structural separation has been built.

Total removal is obviously the most comprehensive method. Nevertheless, substantial skill is required. The act of extricating the asbestos may pose a hazard for the occupants of the building and the workmen. Consequently, removal may have to take place during vacation periods. In most cases, work areas have to be sealed off from other sections of the building and care exercised to guarantee that asbestos particles do not become lodged in the air circulation system. Removal is also the most expensive program.[20]

Although not as dramatic, asbestos poses the same type of public health menace as the Three Mile Island nuclear reactor accident in Pennsylvania, the radiation near the desert testing sites of Utah and Nevada or seepage of toxic wastes from the Hooker Chemical Company in the Love Canal area of western New York. Public policymakers cannot risk having a whole generation of young adults discover 20 or 30 years from now that they have contracted lung cancer and other malignancies as a result of prolonged exposure to asbestos in the schools.

The United States Environmental Protection Agency is considering a plan for long-term surveillance of children exposed to asbestos in seriously contaminated schools. Unfortunately, the effort is fraught with complications. In an unpublished, in-house report, EPA acknowledges that the effects of asbestos exposure will not be evident for many years to come. "Medical examination of children now, whether to document exposure or to detect clinical disease, would be fruitless," the staff report concludes. "The psychological and monetary costs would be considerable. If a means were available to identify exposed school children so that they could be located years later, positive steps could be taken. As adults these persons could be informed of their childhood exposure and advised of the proper measures they personally could take." In the next breath, however, the agency has acknowledged the superficial, conscience-soothing nature of this recommendation, by admitting that "although no cures are currently known for asbestos-induced diseases, therapeutic research continues; it may be possible by then to apply *palliative* (emphasis added) measures. Without a means of identifying these children now almost nothing can be done to help them in the future." As a temporary expediency, some EPA officials have suggested issuing Social Security numbers to these children so that at a later date someone could open the sealed files and advise these people of their fates."[21]

The federal government, the states and local school districts should obviously pursue immediate programs of prevention and abatement instead of waiting to notify potential cancer victims that they have been needlessly exposed to an incurable disease. In the absence of an adequately-funded federal policy which would require appropriate corrective action throughout the country, the most promising approach seems to fall within the realm of the states. State legislation could establish goals and procedures which would:

1. Develop precise, scientific definitions of asbestos materials.
2. Identify the circumstances under which certain forms of asbestos pose hazards to human health.
3. Require the state commissioner of education — in consultation with state health or environmental officials — to: a) inform school authorities of the asbestos hazards; b) advise school districts of the methods of identifying, sampling and testing materials suspected of containing asbestos and constituting a health hazard; c) direct the school districts to undertake surveys of school buildings throughout the state; d) maintain current records regarding the condition of asbestos in the schools based upon periodic surveys by local school officials or inspections by the state education agency; e) provide scientific and technical assistance to the

school districts; f) require the districts to prepare and submit abatement plans; g) promulgate standards under which the containment or removal of asbestos shall proceed; h) establish regional training programs for contractors and supervisors engaged in eliminating asbestos hazards and i) monitor the implementation of these programs.

4. Establish timetables for abatement programs within state school asbestos legislation and create advisory councils of representatives from state education agencies; local school districts; medical, public health, architectural and engineering professionals; employers and employees in the construction industry; parents and the general public.[22]

Implementing such a state plan will inevitably be influenced by considerations of cost. New York City school officials estimated that the price of containing or removing all of the asbestos found in nearly 300 schools could easily range between $35 and $50 million. While construction costs are not uniform throughout the nation, an effective program in any state is certain to be expensive. In several New Jersey schools, expenditures for sealing ranged from $1 to $2 per square foot, while removal and replacement of asbestos ceilings varied between $2 and $5 per square foot. Without additional funding from federal or state government, real danger that school districts facing fiscal constraints, taxpayer revolt and declining enrollment may delay the implementation of asbestos identification and abatement.[23]

Asbestos control is not an ordinary building need. Surely in a health emergency, an overriding state or national obligation might be invoked. However, certain guarantees are required. A building treated for asbestos should not be one which is likely to be closed within the foreseeable future because of age or declining enrollment. The state must expect, and receive, adequate assurances that there are no other facilities available to accommodate the students and that the building utilization rate is above a minimum percentage. The anticipated life of the structure should also be considered before asbestos funding is provided. School officials must be prepared to justify the continued occupancy of any building for which major asbestos abatement is ordered.

What is the federal role in the detection, containment or removal of asbestos? In 1980, a year after the enactment of the New York State Asbestos Safety Control Act, parallel legislation was approved by Congress and signed into law by President Carter. However, there is no certainty that the United States Asbestos School Hazard Detection and Control Act will provide immediate and adequate relief for school systems that are concerned with asbestos problems. Although the legislation set up a fund for testing and evaluating potential hazards and ostensibly created a loan program to assist in the containment or removal of asbestos, the program is presently unfunded. The future of this program is further complicated by the results of the 1980 presidential election and the apparent unwillingness of the Reagan administration to implement new federal regulations for school asbestos control.[24]

There are public policy lessons to be derived from the school asbestos experience. Initially, lay decision makers feel unqualified to judge public health issues. Eventually, they may recognize that there is uncertainty even within the scientific community, that potential victims have not been warned of imminent life-threatening hazards and that a chasm exists between research and public policy. Practitioners in medicine and public health, producers and distributors of asbestos as well as the construction industry neglected to subject the mineral to ample, long-range testing before using it. Tragic and unforeseen mistakes were made by architects and engineers who specified the incorporation of asbestos in building plans and by the educational authorities who approved and then destroyed the working drawings which would have illuminated its use and the extent of the present predicament. Finally, state and local governments nationwide incorporated the use of asbestos in building codes and issued certificates of occupancy attesting to the safety of the structures.

Nevertheless, the search for villains is pointless. Decisions do not wait for convenient time or circumstances, nor pause for optimum technical nor fiscal resources. Policy makers who are presently confronted with urgent crises may not have created the original conditions which they are called upon to correct. Furthermore, some problems defy government's best available solutions.

The decision making process has been compared to a multiple choice examination. In approaching the school asbestos issue, public officials could adopt a wait and see attitude or appoint a study commission. In this situation, such a choice would be deadly, for it would endanger the lives of a whole generation of students and educators who would be needlessly exposed to a known carcinogenic substance.

A second alternative would be to raise the level of public consciousness, to alert the teachers and parents of school-age children that asbestos, in various forms, pervades the educational system. In so doing, the alarmists would create a climate of fear, making it impossible for instructional programs to continue until all questions have been answered. However, a third more realistic option is to undertake an immediate

investigation of the scope and nature of the problem and use every available federal, state and local resource to finance corrective action.

Sensing the complexity of the total picture, reviewing the available scientific data, assessing the impact of each option, accepting responsibility and, ultimately, deciding upon the most propitious policy are essential ingredients for dealing intelligently with the school asbestos issue. However, any course of action may establish new conditions for which the ramifications are unknown or unanticipated. Beyond the schools, there are libraries and museums, community centers and civic auditoriums, as well as other public buildings and quasi-public facilities which contain asbestos. The legal and ethical principles inherent in the doctrine of implied warranty will not stop at the schoolhouse door. Future legislation and litigation will expand the boundaries.[23]

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6. Existing provisions of state education laws contain broad safety requirements in relation to school building construction. Thus, the plans must "provide for heating, ventilation, lighting, sanitation and health, fire and accident protection adequate to maintain healthful, safe and comfortable conditions therein." *McKinney's Laws, Education Law*, §408, 408-a, 409. Responsibility is generally vested in the state education commissioner and in municipal building officials.

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9. Environmental Protection Agency, Office of Toxic Substances, "Draft Phase I Report," pp. 1, 9, 22-26; *Environ Defense Fund Newsletter*, November/December 1978.

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16. Levin, "Asbestos in Schools," p. 31; New York City, Board of Education, "Investigation and Testing of Various Methods," passim; Nicholson, "Control," pp. 18-22; New Jersey, "Guidance Document," pp. 6-7.

17. New York State Assembly Education Committee Conference, February 6, 1979, Albany; Nicholson, "Control," pp. 15-17; New Jersey, "Revised Guidance Document," October 20, 1978. United States Environmental Protection Agency, *Asbestos-Containing Materials in School Buildings: A Guidance Document* (Washington, 1979), Part 1, pp. 2-4. For a precise definition in statute law, consult the "New York State School Asbestos Safety Act." Chapter 581 of the Laws of 1979.

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23. New York City, Board of Education, "News Release on School Asbestos Inspections," December 12, 1978; Environmental Defense Fund, "Petition," p. 37.

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ASBESTOS

The clock is ticking in your schools, and inaction could prove to be devastating

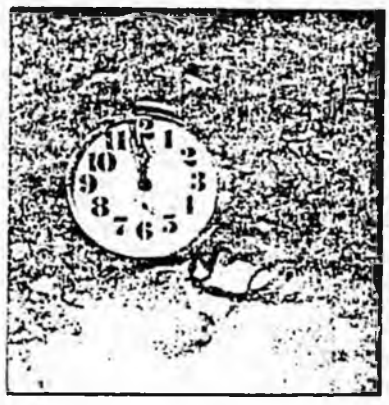
By Kathleen McCormick

ALL TALK AND no action: That's the way the asbestos-in-schools game has been played in the past several years by the federal government and thousands of U.S. school systems. It's time—past time—to respond to the potentially fatal hazards of asbestos in our schools. The ante has been raised in recent months, and from the look of things, school boards that haven't complied yet with federal regulations concerning inspection, notification, and record keeping could be in for a rough time. And even if you *have* made the inspections, posted the required notices, and notified parents and staff of potential health risks in your schools, you still might be the target of a lawsuit should a student or staff member become ill or die because of an asbestos-related disease.

That's not exactly reassuring news, but you can take some steps to meet federal regulations and protect your students and staff. Prudent school leaders would do well to consider carefully some of the recent developments in medical research, federal enforcement, and legal actions. Read on:

The medical risks

As far back as the 1930s, manufacturers of asbestos knew the substance was a killer. But the American public first became aware of the hazard when the Environmental Protection Agency (E.P.A.) banned some uses of sprayed-on asbestos in 1973, after research concluded that thousands of shipyard workers who had handled the substance during World War II were dying (or had died) of asbestos-related diseases. Five years later, an award-winning article in this magazine broke the disconcerting news to school leaders that U.S. schoolchildren faced imminent danger from asbestos: In schools built between 1946 and 1973, tens of thousands of tons of asbestos products were used for fireproofing, soundproofing, and insulating ceilings, walls, pipes, and boilers. As friable (loose or flaking) asbestos materials age, they release tiny particles into the air; if enough particles are inhaled, they can cause cancer and a variety of respiratory ailments. And if these materials get wet (say, from a roof that leaks) or are disturbed (perhaps by maintenance workers who fix electrical wiring in the ceiling), countless particles are dispersed, presenting an even greater health hazard.



The asbestos ante has been raised in recent months, and boards that don't respond could be in for trouble

What are the risks? Cancer, for starters: The most common form of asbestos-related cancer is lung cancer. Next is mesothelioma, a rare and fatal tumor of the membrane linings in the chest or abdominal cavities; its only known cause is asbestos. Exposure to the deadly mineral filaments released by asbestos also has been proved to cause cancers of the colon, rectum, stomach, esophagus, kidney, larynx, and pharynx. An associated disease is asbestosis, a scarring of the lungs that progressively robs the victim of breath and sometimes of life. The effects of asbestos are pervasive even among people who don't work directly with the stuff: Research has shown that among the immediate families of asbestos workers, 1 percent of the family members died from an asbestos-related cancer, and one-third were afflicted with asbestosis.

The number of airborne asbestos particles in your schools, of course, is considerably smaller than what asbestos workers once were exposed to on a daily basis. But that doesn't reduce the overall risk—nor does it absolve you from the responsibility of dealing with the problem. Dr. Edwin C. Holstein, clinical assistant professor at the Environmental Science Laboratories of Mount Sinai School of Medicine in New York, explains: "All scientific evidence suggests there is no safe dose of asbestos. Any exposure, no matter how small, will increase the risk of cancer." Dr. Holstein and his colleagues at Mt. Sinai, the preeminent U.S. institution for medical research on asbestos, have concluded the substance is a public health problem that must be remedied as soon as possible.

"For any one person, the risk is low," says Dr. Holstein. "But for a school system, sheer numbers tell you that you have a problem. It's like the half-full/half-empty glass of water," he notes. "The optimists say the health risks of asbestos are tiny; the pessimists—including public health authorities—know some people are going to die from exposure to asbestos."

Kathleen McCormick is assistant editor of the JOURNAL.

And they'd like to see schools help prevent those deaths—no matter how few—by removing the risk.

It could be many years before we're able to draw conclusions on the effects of asbestos exposure in schools. The risks vary, of course, depending on individual people, the condition and location of asbestos materials in school buildings, and the amount and duration of exposure. The appalling truth, according to Dr. Holstein: "It's false reassurance if no one is sick [now], because they might be sick by 1990 and dead by 1992." But despite the tendency for people to personalize this kind of highly emotional, life-and-death issue, he says, school board members and administrators should assure concerned parents that "there's no need to get hysterical; it's a problem that can be remedied."

The remedy

At the very least, you already should have complied with all federal regulations pertaining to asbestos in schools. Three sets of regulations have been issued. First, Department of Education (ED) regulations specify *how* states must distribute information on asbestos to schools, according to the Asbestos School Hazard Detection and Control Act of 1980. Second, Occupational Safety and Health Administration regulations detail procedures for the protection and decontamination of asbestos abatement workers and for measuring airborne asbestos. Schools engaged in containing and removing the friable fibers must comply with these procedures. Third—and more to the point—are the E.P.A. regulations: As of June 1983, you're responsible for having met the requirements of Section 6(a) of the Toxic Substances Control Act (T.S.C.A.), which were specified in "Friable Asbestos-Containing Materials in Schools; Identification and Notification Rule" (47 *Federal Register* 23360, May 27, 1982).

E.P.A. issued this rule because its Technical Assistance Program (TAP), launched in 1978, had limited success in getting schools to comply voluntarily with previous E.P.A. inspection and record-keeping guidelines. The T.S.C.A. rule applies to all elementary and secondary schools, except those built after December 31, 1978, and those that can document they already have checked buildings and either found no friable asbestos or satisfactorily dealt with the material. Schools were given one year to comply with the requirements.

(1) *Inspection.* You must inspect each building for friable materials.

(2) *Sampling.* If you find friable materials, you must take samples, following E.P.A. instructions.

(3) *Analysis.* A qualified laboratory must perform an analysis using polarized light microscopy, a sophisticated (and expensive) technique for measuring the amount of asbestos fibers in asbestos-containing materials.

(4) *Warnings and notifications.* You must post warning signs wherever you find friable asbestos-containing materials in schools—and send written notification to the staff and the P.T.O. of each school involved, specifying where the hazardous materials are located.

Note that the T.S.C.A. rule does *not* require you to remove, cover, or encapsulate the asbestos; it's up to individual school systems to decide how to dispense with the offending material. The rule also doesn't require you to report your findings to E.P.A., although you *do* need to keep complete and detailed records documenting your compliance with the T.S.C.A. rule.

Once you've found asbestos in your schools, you have a choice of four acceptable ways to resolve the problem: (1) removing the material altogether; (2) enclosing the areas containing asbestos to prevent fibers from escaping; (3) encapsulating completely the area that contains or is coated with asbestos; and (4) observing and maintaining the affected surfaces to avoid any damage that could cause the release of more fibers. Experts say removal is the only surefire way to rid your schools finally and completely of asbestos hazards. But the removal process itself is an extremely dangerous undertaking; a faulty or incomplete removal job could present even greater health hazards to your students and staff, as well as to asbestos abatement workers. So before you contract for any asbestos containment or removal work, refer to the technical advice presented in the E.P.A. document, "Guidance for Controlling Friable Asbestos-Containing Materials in Buildings," published in March 1983. And even though other measures might work in some schools, many school systems have found that public pressure is brought to bear on the school board to remove asbestos completely—regardless of expense.

The cost

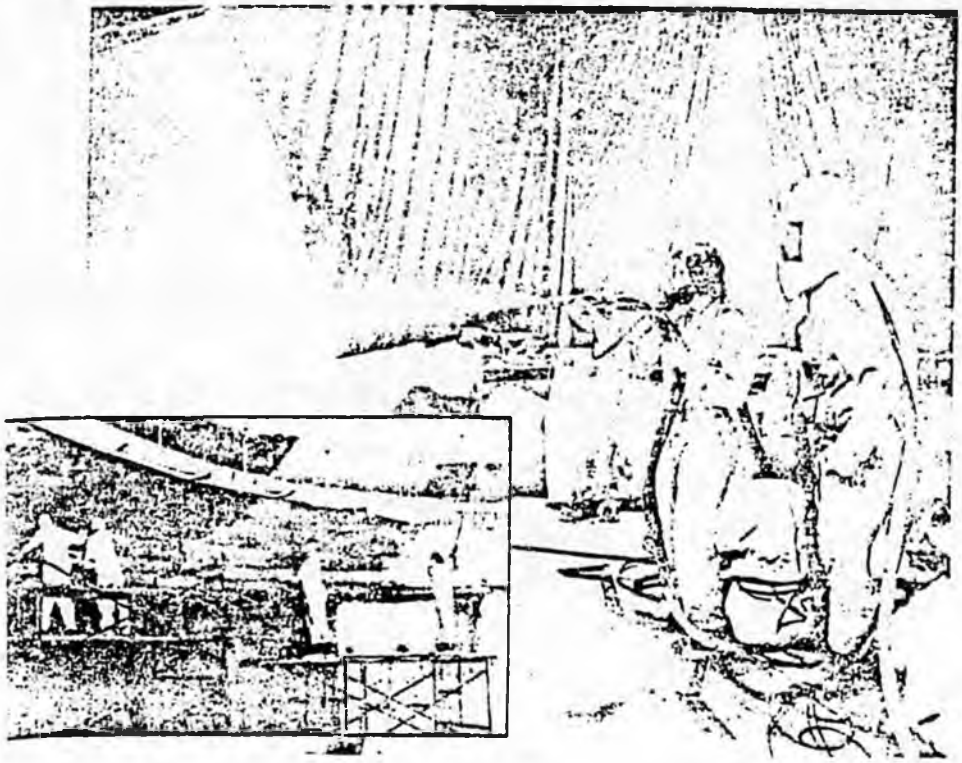
E.P.A. estimates that as many as 14,000 U.S. schools might contain dangerous friable material composed of more than 1 percent asbestos—which means more than 3 million students and 250,000 staff members are at risk right now. The agency estimates the total cost of asbestos abatement at $1.4 billion nationwide, or $100,000 per school building. Some school systems already have spent millions. According to Dwight Brown, formerly asbestos coordinator for E.P.A. Region IV in Atlanta, schools can expect to pay between $3 and $10 per square foot for asbestos removal—and the price can go as high as $28 per square foot. What drives the cost so high is the need for sophisticated analysis equipment and clothing to protect workers, Brown explains. Analysis of asbestos samples using an electron microscope goes for between $200 and $500 per sample—and you might need scores of samples to determine the hazard level in only one school.

Without a doubt, asbestos is a financial burden for school systems. At President Reagan's behest, Congress repeatedly has refused to provide funds to accompany the federal regulations it requires schools to obey. Part of the Asbestos School Hazard Detection and Control Act of 1980, for example, called for $700 million in grants and interest-free loans to help state and local education agencies identify and correct asbestos hazards in schools; no appropriations were made. Don't count on E.P.A. for changes in the funding situation, either: Officials there say they have no plans to request or provide money for school systems to deal with asbestos problems.

School systems in several states are fortunate to be reimbursed for expenses they incur in removing asbestos. In the past four years, for example, New York has given more than $12 million in grants and state building aid to help local asbestos removal programs. And in the same period, Florida has appropriated $10.5 million for asbestos removal. These are notable exceptions, however. Most school leaders have to dig into general operating budgets to come up with the funds. Such cost considerations, along with federal regulations that are at once technical and vague, have caused many school leaders to avoid the issue of asbestos altogether. But ducking the issue can only bring harm to your schools.

The consequences

Forewarned is forearmed: E.P.A. is stepping up its monitoring of schools' compliance. Although the agency has no conclusive statistics, E.P.A. officials say the rate of noncompliance by schools is high. Proferred proof: An E.P.A. staff



Space-age procedures are needed to eliminate asbestos from schools. Here, abatement workers wet down and remove the substance from a school gymnasium.

memorandum in August 1983 indicated that 80 percent of a sample of 167 schools were in violation of the E.P.A. inspection rule. And, according to E.P.A.'s compliance monitoring office, inspections conducted in 275 school systems since June 1983 show that 190—nearly 70 percent—had not complied with E.P.A. regulations on obtaining asbestos samples, notifying parents, keeping records, and so forth. The 275 school systems inspected include approximately 80 of the 100 largest school systems in the U.S.

Now something is being done about that kind of slackness: In fact, E.P.A. inspectors could come knocking on your door any day, asking to see your records. You could be cited for violations of T.S.C.A. on these grounds: failure to inspect schools; failure to sample friable materials; failure to analyze asbestos samples; failure to notify parents and staff; and failure to keep records.

Depending on the number and type of violations, your schools could be fined as much as *$25,000 per day per violation*—an amount that quickly could snowball into an outrageous sum. Here's how the fine system works: If E.P.A. finds you haven't complied with T.S.C.A., your central office will be given 30 days to certify compliance in writing. If certification isn't received within 30 days, E.P.A. files a civil complaint against your schools. Agency officials then will ask to see a compliance schedule as a demonstration of your good intentions. If these negotiations fail—if you don't cooperate—E.P.A. will attempt to collect the fines it has levied against your schools.

If you think the E.P.A. is making idle threats, think again: Under the direction of old/new Director William Ruckleshaus, E.P.A. has become more vigilant [illegible] is going after asbestos in schools as one [illegible]s Top Ten priority items. E.P.A.'s design in these aggressive actions is to force schools into compliance through pressure from the community, according to Connie DeRocco, a specialist in E.P.A.'s asbestos enforcement program. It stands to reason that school board members and administrators would tend to choose compliance over the chance that a concerned parent might blow the whistle on the schools' negligence.

Other signs that E.P.A. means business: The agency is doubling its monitoring staff for fiscal year 1985. And then there's the Philadelphia case: E.P.A. has threatened to set a precedent by filing a civil complaint for noncompliance against the Philadelphia schools, to the tune of $378,000 in fines ($6,000 for each of 63 nursery and day care centers housed in buildings leased by the school system that weren't inspected for asbestos). School officials are trying to head off the complaint by inspecting the buildings; E.P.A. officials say they are willing to negotiate as long as the Philadelphia schools can show they mean to comply fully with E.P.A. regulations.

But public pressure also is mounting on E.P.A. itself to issue more stringent and specific regulations on asbestos in schools. In response to a petition filed last November by the Service Employees International Union—prompted by the asbestos-related death of a school custodian—E.P.A.'s Ruckleshaus announced in late February that the agency will set formal standards for schools to remove or seal crumbling asbestos materials.

The legal ramifications

Before you make any decisions about asbestos in your schools, consult your school attorney. Advice from Dwight Brown, who has conducted seminars on asbestos in schools for the past five years: Devise a three-part legal action plan with your attorney concerning cost recovery, tort claim defense, and the process of administering contracts for removing and disposing of asbestos.

One legal question on everyone's mind: Can you recover costs of removing asbestos from the manufacturers of the material? "The Attorney General's Asbestos Liability Report to the Congress," published in September 1981, says schools should have a good chance of recovery in court. The bankruptcy last year of a major asbestos producer, Johns Manville Co., cast a pallor over what some school attorneys had held were excellent chances to recover costs. But in February, Lexington County School District No. 5 in South Carolina brought suit against U.S. Gypsum Co. to recover approximately $300,000—the cost of removing asbestos from Irmo High School. (The potentially precedent-setting case was about to come to trial as the JOURNAL went to press.) The school system is being represented by Daniel A. Speights of Hampton, S.C. Speights anticipates having filed as many as 30 asbestos-related lawsuits against U.S. Gypsum Co., National Gypsum Co., and W.R. Grace & Co. by July on behalf of school systems in Florida, Alabama, Mississippi, New Hampshire, and other states. He says these cases stand a "good chance" of winning. The Lexington suit, then, could open the floodgates for thousands of lawsuits against asbestos manufacturers.

Other legal issues you should be aware

Asbestos-control funds sought from legislatures

The Environmental Protection Agency is threatening to require schools to eliminate asbestos or face closure.

In autumn 1982, the U.S. House of Representatives voted to appropriate $50 million to provide school districts with interest-free loans to help defray the cost of removing or controlling asbestos in school buildings. But the measure, authorized under the Asbestos School Hazard Detection and Control Act that was passed in 1980 but never funded, failed to win the support of the Senate. When a conference committee also decided against asbestos-control funds, the chances that Washington would provide money for removal became remote.

The defeat of the funding measure is likely to mean that state legislatures will feel increased pressure from school officials to come up with asbestos-control funds. Some states — New York and Alabama, for example — already have provided such funds. Alabama uses a $75-million fund drawn from oil and gas revenues. In Mississippi, state education officials planned to go to the Legislature to ask for funds to offset the estimated $20 million it will cost to remove asbestos from schools, schools.

The continued absence of federal funding comes at a time when public pressure to deal with asbestos in the schools is increasing in many areas, in part because the Environmental Protection Agency may now issue a press release announcing which schools have not met the requirements of its regulation. Under the EPA regulation, all public and private schools were required to inspect for friable (crumbling) asbestos by June 28, 1983. If they found asbestos but took no action, the schools were required to notify parents and staff members. Although there is no federal requirement that asbestos be removed from the schools, the belief was that knowledge of its presence would generate enough public pressure to force action.

What this strategy of the EPA did not take into account, however, is that many school districts lack the money to pay for the often costly abatement procedures, and would instead simply fail to notify anyone of the presence of crumbling asbestos. As of last fall, an EPA survey outlined in an internal memorandum found that about 66 percent of all schools had not complied with some component of the regulation. The most common violation, the survey found, was failure to notify.

Although more school districts are belatedly complying with the regulation, according to EPA officials, the problem of funding remains serious for some. A report prepared for the Senate Appropriations Committee by the U.S. Department of Education estimated the cost of removing asbestos from schools nationwide at $1.4 billion. Under the loan program authorized in the 1980 legislation, the federal share of this would be $700 million. Acknowledging that there are no firm data to support this estimate, the report places the number of schools with an asbestos problem at 14,000. The estimated cost of removal is $100,000 per school, according to the draft report. That figure is dramatically higher in some areas: Jackson, Miss., faces a $6-million bill, and in Philadelphia school officials estimated the cost at $17 million. Others, of course, will require much less money because their asbestos situation is less dire.

A growing concern that they will be held liable for any asbestos-related illness — cancer, for example — contracted by students or staff is also prompting some school officials to step up the removal process and accelerate their quest for outside funding. Lawyers who handle asbestos litigation argue that, although no school suit of this type has been filed, school officials who do not remove a substance known to be hazardous will indeed be legally liable.

Some school districts — about 35 as of last fall — have filed suits of their own against asbestos manufacturers. Should one of these cases be decided in favor of a school district, more suits may follow, and favorable rulings would allow districts to recoup the cost of removal. Until then — barring the possibility of federal funding — districts have few places to turn and state legislators may find themselves the recipients of pleas from school officials.

— Susan Walton

States help employees buy out failing firms

Since the mid-1970s, more than 6,000 businesses across the nation have become, wholly or in part, owned by their employees. In most cases, employees have simply purchased stock through Employee Stock Ownership Plans (ESOPs), and there has been little state involvement.

When the number of plant shutdowns and relocations rose during the recent recession, however, legislators in several states sought ways to encourage "buyouts" of ailing firms by employees to save their jobs.

At least 12 states — California, Delaware, Illinois, Maryland, Massachusetts, Michigan, Minnesota, New Jersey, New York, Ohio, Oregon, and West Virginia -- have laws concerning worker ownership. Although some of these laws simply direct that state agencies study the issue, others, such as in California, Illinois, Michigan, and New York, have broader provisions that provide venture capital, technical assistance, and other help to workers attempting a buyout.

Maryland and Wisconsin also have strong legislation pending, while an attempt to add to New Jersey's law was vetoed last year by Governor Thomas H. Kean.

Essentially, there are two types of employee buyouts. The first is the most widely publicized — but least frequent — when, in a last-ditch attempt, employees try to save their jobs by buying a failing or unprofitable plant in danger of being closed. Weirton Steel in West Virginia is a recent example. This kind of buyout, however, constitutes "only about 1 percent of the total," according to Corey Rosen, director of the Center for Employee Ownership in Washington, D.C.

Far more common are ESOPs. In a typical plan, workers are simply offered company stock at market value rates.

Workers of firms that offer ESOPs typically own from 15 to 30 percent of the stock, although often the stock offered is nonvoting. ESOPs are encouraged by various federal tax incentives, and little state legislation has been enacted.

Instead, some state lawmakers have designed their efforts specifically to help employees purchase failing firms, particularly in already hard-hit urban areas. For example, in Illinois, Democratic state Representative Wyvetter H. Younge, hoping to "subsidize employment rather than unemployment," sponsored a bill that passed and was sign-

TARGET VOL. 13/APRIL-MAY '84/NO. 5

Authority. "To secure adequate laws for the care and protection of children and youth." National PTA Bylaws, Article II.c

Asbestos: Still a danger in schools

by Elaine S. Knapp

For Phyllis Adams and Ann Gibbs the last year has been a frustrating one—trying to get their local school board to remove asbestos from the school their children attend.

"It's frustrating, our children are being poisoned and there's not anything we can do," Mrs. Gibbs declared. What the Lexington, Kentucky, housewife has done is work through the PTA, form a group of concerned parents, go door-to-door telling parents of the danger, gather hundreds of signatures on petitions, read volumes on asbestos, call and write federal agencies and confront the school administrator and board.

After a year of parental pressure being applied and at least a decade after school authorities knew of the asbestos hazard, Mrs. Gibbs said, "We don't think anything will be done until the government makes them (the school board)." School authorities maintain the asbestos will be cleaned up if money is available for renovation next year.

Ironically, the major government effort to control asbestos lies in Mrs. Gibbs and others like her. Telling parents and teachers that their school has asbestos and relying on them to pressure local action is the heart of the U.S. Environmental Protection Agency's (EPA) strategy to rectify the nationwide problem of asbestos in schools.

No effective federal program exists to protect schoolchildren from asbestos, state efforts vary widely and local schools often ignore the danger due to the cost of cleanup.

Asbestos dangers

Any exposure to asbestos involves some health risk, according to the Congress, the EPA and the scientific community. Children are especially vulnerable, according to the EPA guidance document on asbestos sent to schools. Their remaining life expectancy provides the 20 to 40 years it takes for disabling and fatal asbestos-related diseases to develop. Large numbers of children may be exposed in a contaminated school and exposure is continuous during the school year. Children are active and breathe more frequently than adults, possibly inhaling more asbestos fibers. Smoking can increase the cancer risk due to asbestos exposure.

Most hazardous is friable asbestos that can be crumbled. It sends deadly fibers into the air which may lodge in the lungs indefinitely, according to EPA's guidance document. Asbestos workers often develop a chronic and debilitating lung disease called asbestosis. Lower and shorter exposure can result in death many years later.

Asbestos diseases include: 1) asbestosis, a disease in which asbestos clogs the lungs, 2) pleural calcification, a deposit of calcium salts in the lung lining, 3) malignant tumors of the lung, 4) mesothelioma, a rapid and fatal cancer of the lung and 5) intestinal and uterine cancers.

Hot potato

Asbestos in the schools has been a "hot potato" tossed among various levels of government and federal agencies. One reason is that removal of asbestos can be quite expensive, especially if large areas of buildings are affected. Funding is basically up to local schools as is asbestos detection and control. No federal funds are available and state aid varies.

The U.S. EPA requires schools to inspect for asbestos and notify parents and [school] employees of asbestos hazards. The EPA doesn't require removal or abatement. "The theory is that PTAs and employees would pressure local districts to take remedial action," said Terrell Hunt, assistant to EPA Deputy Administrator Alvin Alm.

However, a recent internal EPA report found that many schools did not meet EPA's June 1983 deadline for asbestos detection, record keeping and notification.

No federal funds

Federal funds of $172 million authorized by the Asbestos School Hazard Detection and Control Act of 1980 were never appropriated. Grants were promised for schools to identify asbestos hazards and loans for mitigation of asbestos hazards. But funds were never requested by the Department of Education, reported John Bennett, aide to U.S. Representative George Miller, D-Calif., who sponsored the act. In 1983, a $50 million recommendation by the House was omitted in a House-Senate conference.

The U.S. Department of Education had a task force which set standards for state grants in 1980, according to W. Stanley Kruger, deputy director for state and local programs. However, when the program wasn't funded, the department "deferred to EPA," Kruger said.

Under pressure from Congress, the department reactivated its task force in October 1983 and is gathering information on asbestos to send to chief state school officials, Kruger said. The department also reactivated its requirement that states file plans for asbestos in the schools' programs and report on their progress every six months. All but two states have filed.

EPA's program

The federal effort has largely been a requirement by the EPA that schools inspect for asbestos hazards, sample and analyze material to determine if asbestos is present, keep records of the inspection, post notices, and notify parents and employees if asbestos is found. Although schools were to comply with the rule by June 1983, the EPA doesn't know how many did. It does not require schools to report to it and must send federal inspectors to schools to check their records. EPA staff said when the EPA regulation was written that the administration op-

This is a reprint of a portion of an article appearing in State Government News, *March 1984. It is authored by and printed with permission of Elaine S. Knapp, its editor.*

posed imposing a data reporting requirement. The EPA recently doubled its field force of inspectors by adding 16 people through a contract with the American Association of Retired Persons, Hunt said. These include retired architects and engineers. Primarily, EPA staff look at school records and physically inspect some schools. However, there are not enough inspectors to cover but a small portion of the nation's schools.

In providing technical advice, EPA can help schools determine the best strategy for evaluating the risk and responding to asbestos, Hunt said. He said that anything short of removal is considered a short-term solution.

Connie Derocco, environmental protection specialist with EPA, said that out of 1,527 schools inspected in 468 districts, some 60 percent did not comply with EPA rules. Most failed to notify and warn PTAs and employees of asbestos materials [manufacturers]. Schools know they will be pressured once the word is out, and they are hesitant to deal with the asbestos problem, Derocco explained. After receiving a notice of noncompliance, schools have 30 days to act before the EPA files a civil complaint.

Labor union concern

An estimated 3.24 million schoolchildren and 648,000 school employees are potentially exposed to asbestos, according to Kitty Conlan, research analyst with the Service Employees International Union (SEIU).

The SEIU is lobbying Congress to fund the 1980 act for grants and loans to schools. Schools don't have the money to clean up on their own, Conlan said. "It's a nationwide problem which affects the health of millions of people."

SEIU is suing the EPA to require schools to clean up flaking asbestos. "Schools say if EPA thinks asbestos is so bad, then EPA would require them to get rid of it," Conlan commented.

EPA does give schools good technical advice on how to get rid of asbestos, Conlan noted. But some schools accept the lowest bid rather than follow EPA guidelines. If the cleanup is not done right, the asbestos danger can be worsened.

Conlan said SEIU doesn't think suing asbestos' manufacturers is worthwhile, citing lack of action on suits filed by asbestos workers. "We're hesitant to have our members litigate themselves to death," she said.

Conlan added that school districts can also be held responsible for asbestos. "They can face a big liability," she commented.

Lawsuits filed

A number of lawsuits on behalf of school boards and building owners in Kentucky, Mississippi, New Hampshire, Florida, South Carolina, Alabama and Tennessee have been filed by a South Carolina law firm.

Daniel Speights (a school board attorney) noted that legal theories available to school boards against manufacturers of asbestos include: contract (the products were not fit for the use intended), negligence (the manufacturers were negligent in informing users of the risks associated with the products), strict liability (manufacturers should be strictly liable for failing to warn of asbestos hazards), and restitution (manufacturers have a duty to abate the hazard).

A civil action filed on behalf of the Barnwell, South Carolina, school district notes that school districts and public officials could be held liable for failing to abate a health hazard.

A September 1981 report by the U.S. attorney general to Congress recommended that school authorities seek to recover asbestos abatement expenses from asbestos manufacturers. The report said federal litigation would be ineffective unless Congress imposed liability on asbestos manufacturers.

Asbestos manufacturers are being sued by at least 20,000 people on the grounds that the companies knew of asbestos hazards and covered them up, according to a September article in the *National Journal*.

A 1983 report from the Rand Institute says that asbestos litigation and compensation has cost an estimated $1 billion over the past decade. Only 37 cents of every dollar went for actual compensation to plaintiffs. Estimates of the number of deaths due to asbestos over the next 30 years range from 74,000 to 265,000.

What you should do about asbestos in your school

Given current asbestos rules and regulations, PTAs should check on the following:

1. Was each school in your district inspected for friable asbestos? If not, request this action immediately.
2. Was an analysis of asbestos samples, using polarized light microscopy, conducted?
3. Are records of the asbestos inspection on file in the school district?
4. Does the PTA have a copy of the report in its records?

In schools where asbestos was found, has the school complied with the following:

1. Did the school district notify the children's parents, either directly or through the PTA?
2. Were school employees notified of the location of the materials?
3. Did the school post a standard form in administrative and custodial areas?
4. Are measures being taken, if not already completed, to remove asbestos in the school?
5. Did the school district provide maintenance and custodial employees with instructions for reducing exposure to asbestos?

If asbestos was found in your school, but corrective measures are not being taken, the following steps should be pursued:

1. The PTA should work with the school to affect removal or abatement. Invite parents, teachers, employees of the building, the school principal, and the superintendent to a PTA meeting. Request information about the degree of the asbestos problem and what plans are being developed for cleanup.

2. If plans are not under way or seem unsatisfactory, contact the school board to inform it of your concern. If informal discussions do not produce results, get the issue on the agenda of the next school board meeting. Be prepared to provide the facts, including the inspection reports and the cost of abatement, to school board members.

3. Meanwhile, inform your state legislature and the U.S. Congress about the problems and the degree of difficulty there is in terms of cleanup.

4. If the school board is unable or unwilling to ameliorate the problem, one resort would be a lawsuit. Be sure that you have tried every alternative before taking this step.

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 employees 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 superintendant 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

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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 superintendant, 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 schoolchildren.

"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 finding 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 microscopic 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.

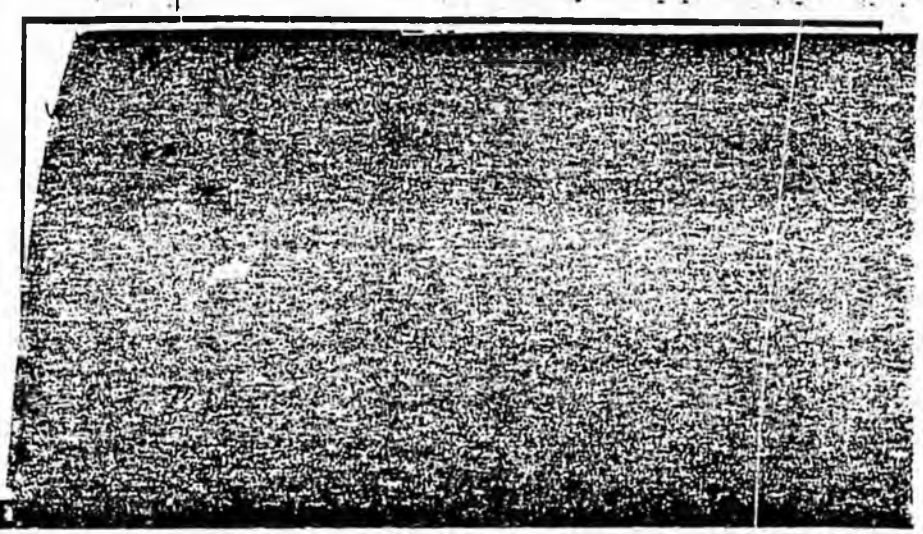
The EPA study did not blame school officials alone. It also found that the agency itself needed to devote more money and people to the program, including more than doubling the EPA inspection program.

"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.



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.

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Federal funds to help remove asbestos

by Stephen J. Downes 2/9/87
Times Writer

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 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 cancer 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 $8.7 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 $230,000 project at nine schools in Fairbanks.

5/8/84

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.

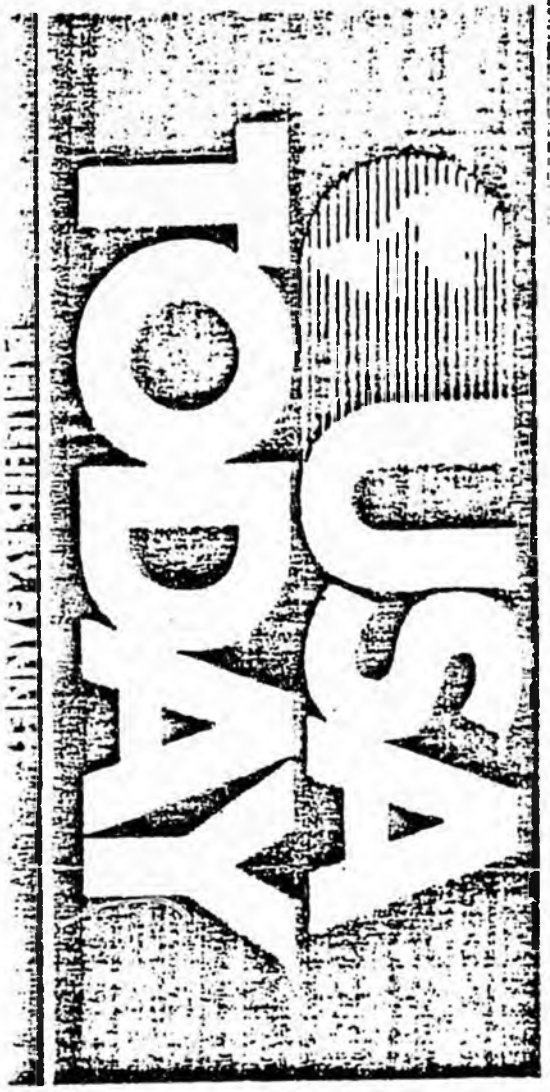
White House rejects suggestion to cut Social Security benefits

The Associated Press

WASHINGTON — Democrats in Congress criticized Treasury Secretary Donald

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

untary item," said House Speaker Thomas O'Neill



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 fireproofing 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