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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

Exposure to asbestos in 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. Remaining life expectancy provides the 20 to 30 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 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. 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.

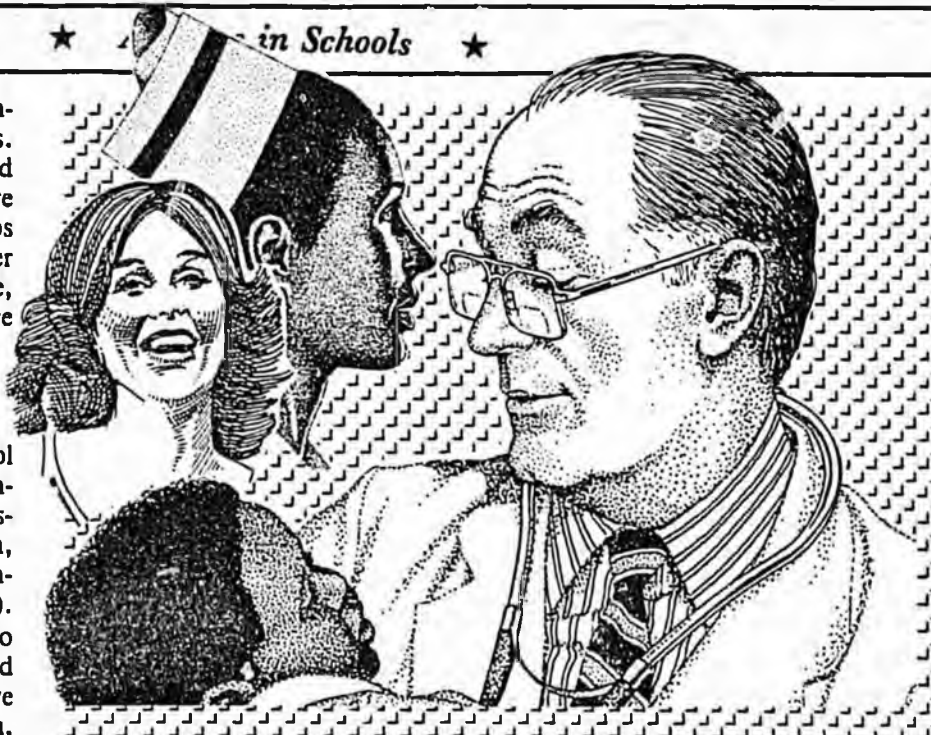
Conlan said SEIU doesn't think suing asbestos' manufacturers is worthwhile, citing lack of action on suits filed by asbestos workers. "We're hesitant to have our members litigate themselves to death," she said.

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 non-compliance. 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 constraints 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 surveillance 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 Levett 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

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.

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

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 Johannigmeier, 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, Johannigmeier 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. Johannigmeier 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 clean up asbestos.

Alvin L. Alm, deputy administrator of the EPA, recently acknowledged that the agency was reconsidering its approach to asbestos in the schools.

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May 22, 1984

Speaker Joe Hayes
Representative Ramona Barnes
Representative Mae Tischer
House of Representatives
Pouch V
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Juneau, Alaska 99811



Re: Asbestos Abatement

Dear Colleagues:

1. Today, I informed Tom Freeman of the Anchorage School District (ASD) of the status of SB 373, amended, relating to the asbestos abatement program and the issue of a shortened school term temporarily for Bartlett High School.

2. ASD, through Peter Partnow, its lawyer, and a Washington, D.C. law firm, is preparing to join in a suit brought by school districts against asbestos manufacturers (see enclosed newspaper article). SB 373 could be amended in the House to include a provision that any school district getting state financial aid would reimburse the state, to the extent of litigation proceeds, out of any proceeds of such litigation. Thus the state would be subrogated to the interests of the school district where proceeds are collected to the extent of the state's aid for asbestos abatement. This seems to be a fair proposition which ASD, according to Mr. Freeman, would be willing to support, and which would perhaps make it easier to move appropriations through this legislature. I have already discussed this proposal with Senator Sackett.

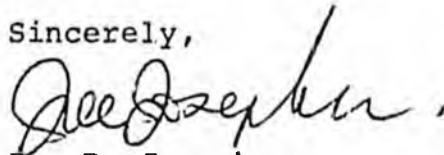
3. Senator Sackett asks that SB 373, as amended by the House, also direct the Department of Labor and/or the Department of Law to survey all public facilities of the state regarding asbestos problems, and to report to the next

Speaker Joe Hayes
Representative Ramona Barnes
Representative Mae Tischer
May 22, 1984
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legislature with regard to its findings regarding the asbestos hazards in all facilities, not just schools; the issue of public liability if the hazards are not abated; the probable cost of abatement; a timetable for abatement; and the possibility of the state recouping some of the abatement costs through litigation like that described in paragraph 1 above and the enclosed news article. I strongly concur. I would be glad to assist either with additional information or in drafting amendments.

With best wishes, I am

Sincerely,



Joe P. Josephson
State Senator

JPJ:rak
Enclosure

cc: Senator John Sackett

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 18 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 28 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 fire-proofing insulation between World War II and the late 1970's. It has since been found to pose a threat of a variety of serious diseases, including mesothelioma, a cancer of the lining of the lungs that is often fatal.

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

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

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

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

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

The Syracuse public schools complied with New York state regulations before the Federal environmental inspectors arrived. Ernest Rooker, 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 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 \$1 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 th

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HEALTH, EDUCATION & SOCIAL SERVICES (CHAIR)
JUDICIARY (VICE-CHAIR)
FINANCE
MAJORITY CAUCUS (CHAIR)

22 May 1984



Honorable Mae Tischer
Chair
Committee on Health, Education and Social Services
House of Representatives
Alaska State Legislature
Juneau, Alaska

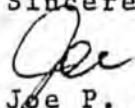
Dear Mae:

Re: SB 346; SB 373

In the light of our common interest in the problems of the mentally ill, and all of the work our committees have done on this subject, I am hopeful that your committee will soon submit its report on SB 346. I believe the bill will pass the House if the House has the opportunity. In addition, I do not object to your amendment, if I understand it rightly, about nutritional testing and programs, and I would urge the Senate to concur if the House passes SB 346 with that amendment.

On another subject, the Senate has passed SB 373 relating to asbestos abatement. An amendment I offered on the Senate floor is designed to avoid double-shifting of Bartlett High School students, by giving the Commissioner of Education the authority to ease the 180-day school term requirement if the school district submits a plan for a shorter term (not less than 150 days) which will give approximately equal education, e.g., by lengthening the school day. This would permit work to be done at Bartlett High School during interims between the spring and fall terms, so that double-shifting will not be necessary. Superintendent Gene Davis has asked for this. I am hopeful, again, that the House of Representatives will have an opportunity to consider SB 373 as amended. If you need additional information, please advise.

Sincerely,


Joe P. Josephson

*Mae -
As per our
chat this a.m.
Thanks.
JPG*

Alaska State Legislature

REP. MAE TISCHER
CHAIRMAN



POUCH V
STATE CAPITAL
JUNEAU, ALASKA 99811
(907) 465-3777

House of Representatives
HEALTH, EDUCATION AND SOCIAL SERVICES COMMITTEE

M E M O R A N D U M

May 24, 1984

TO: Members of the House HESS Committee
FROM: Representative Mae Tischer, Chairman, House HESS *MT*
RE: Proposed House CS for CS for Senate Bill 373 (HESS)

Attached please find a copy of the proposed House CS for CS for Senate Bill 373 (HESS), "An Act establishing an asbestos health hazard abatement program; and providing for an effective date."

The proposed amendments to the bill, indicated on the attached draft, are found on the pages and lines indicated below. Please note that, for the ease of the members, page and line references are to CS for Senate Bill 373 (Finance), amended, offered May 3, 1984. A brief explanation of the effect of each amendment is provided.

1. Page 1, line 9: The catch line for Section 1 of the bill is amended by deleting "FINDINGS AND" in order to reflect changes made to this section in amendment 2.
2. Page 1, lines 9 - 25: This amendment deletes the "Findings" portion of Section 1 of the bill, leaving only the "Purpose" portion. Legal counsel has advised that this amendment will have no legal effect on the bill.
3. Page 3, line 24: In conformity with amendment 4, this amendment deletes paragraph 9 of the new AS 18.28.020 and renumbers the remaining paragraphs accordingly.
4. Page 4, line 4 - Page 5, line 5: This amendment deletes establishment of the proposed Department of Labor Certification Programs, and renumbers remaining sections of the Act accordingly.

Proposed House CS for CS for Senate Bill 346 (HESS)
May 24, 1984
Page 2

5. Page 6, line 15: This amendment inserts new language to read:

"Sec. 18.28.080. RIGHT TO SUBROGATION.
When the state has expended funds to abate asbestos health hazards under AS 18.28.030, the state shall be subrogated to all of the rights of a municipality or borough to recover damages for asbestos health hazards in a school building. The right to subrogation is limited to the amount of funds the state has expended to abate asbestos health hazards in a school building that is the subject of a legal action by a municipality or borough seeking to recover damages. A municipality or borough shall deposit in the general fund, to the extent of the related state expenditures on its behalf, damages awarded in a legal action under this section."

The amendment, suggested by Senator Josephson, would require school districts which successfully sue for costs associated with abatement and which get state financial aid to reimburse the state, to the extent of litigation proceeds, out of any proceeds of such litigation; thereby "subrogating the state to the interests of the school district where proceeds are collected, to the extent of the state's aid for asbestos abatement."

/wtl

BACKGROUND ON ASBESTOS HEALTH HAZARDS

FOLLOWING WORLD WAR II, ASBESTOS WAS RECOGNIZED AS THE "MIRACLE" MATERIAL - NOT ONLY AN EXCELLENT INSULATOR BUT ALSO FIREPROOF. THEREFORE, IT WAS WIDELY USED IN ALL CONSTRUCTION PROJECTS.

ASBESTOS WAS KNOWN TO BE DANGEROUS LONG BEFORE IT CAME TO THE NOTICE OF THE PUBLIC IN THE EARLY SEVENTIES. CONGRESS HAD NUMEROUS HEARINGS ON THE HEALTH ASPECTS OF ASBESTOS, AND PASSED IN 1980, LEGISLATION TO REMOVE ASBESTOS FROM SCHOOLS BECAUSE IT WAS RECOGNIZED ~~TO~~ THAT CHILDREN ARE MORE SUSEPTIBLE TO THE INGESTION OF ASBESTOS FIBERS THAN THE GENERAL PUBLIC. CASES WERE DOCUMENTED WHERE ASBESTOSIS WAS CONTRACTED BY PEOPLE LIVING IN PROXIMITY TO FACTORIES AND SHIPYARDS WHERE ASBESTOS WAS IN HEAVY USE, AND BY FAMILY MEMBERS OF ASBESTOS WORKERS. HEALTH RELATED DISEASE DOES NOT APPEAR FOR 20 - 40 YEARS AND IS ALWAYS TERMINAL. THE FEDERAL LAW REQUIRING ASBESTOS IDENTIFICATION AND REMOVAL IN SCHOOL BUILDINGS, UNFORTUNATELY, WAS NOT ACCOMPANIED BY ANY APPROPRIATION TO AID SCHOOLS IN CARRYING OUT THE MANDATE. THE E.P.A. PUT OUT REGULATIONS REQUIRING IDENTIFICATION AND TESTING OF ASBESTOS BY SCHOOLS BY JUNE 30, 1983. DWIGHT BROWN, DIRECTOR OF THE E.P.A.'S ASBESTOS IN SCHOOLS PROJECT APPEARED ON CNN TWO WEEKS AGO, STATING THAT THE E.P.A. HAS DONE VERY LITTLE, AND WHAT HAS BEEN DONE IS INEFFECTIVE.

SCHOOLS CONTACTING OUR OFFICE ABOUT THESE BILLS, AND PARTICULARLY THOSE IN RURAL AREAS, STATED THAT THEY HAD DIFFICULTY GETTING ASSISTANCE FROM THE E.P.A. AND ATTEMPTED TO CARRY OUT THE REGULATIONS AS BEST AS POSSIBLE WITH VERY LITTLE INFORMATION. THE E.P.A. HAS .1 PERSON WORKING ON ASBESTOS IN ALASKA.

THE LAW ALSO REQUIRED SCHOOLS TO NOTIFY PARENTS AND EMPLOYEES OF ASBESTOS LOCATED IN BUILDINGS - PLACING THE SCHOOLS IN A PRECARIOUS POSITION BY RAISING PUBLIC CONCERN ABOUT AN OBVIOUS HAZARD THAT, FINANCIALLY, THEY WERE IN NO POSITION TO ADDRESS.

THESE BILLS ARE AN ATTEMPT TO PROVIDE FUNDING FOR ASBESTOS REMOVAL IN SCHOOLS IN A SAFE, ORDERLY FASHION THAT WILL GUARANTEE THE PROTECTION OF THOSE EMPLOYED TO REMOVE THE MATERIAL.

THE SUPERINTENDENT FROM KODIAK CONTACTED ME WITH AN ISSUE NOT ADDRESSFD IN THE BILL, AND THAT IS THE DIFFICULTY OF FINDING A PLACE TO DUMP THE ASBESTOS AFTER REMOVAL. HE STATED THAT THEY HAD RENOVATED THEIR JUNIOR HIGH SCHOOL AND DUMPED THE MATERIAL IN A COAST GUARD AREA WHICH HAS NOW BEEN CLOSED. PERHAPS THE DEPARTMENT OF LABOR WOULD BE ABLE TO ADVISE SCHOOLS ON THIS MATTER.

MEMORANDUM

TO: JOE JOSEPHSON
FROM: NANCY DEITRICK
RE: SB 374 - ASBESTOS ABATEMENT APPROPRIATION BILL

E.P.A. REQUIREMENTS

The E.P.A. regulations mandated: (47 FR 23360-23389)

1. Testing for asbestos in every school district by June 30, 198
2. Notification of parents and school board about asbestos health hazards discovered.
3. Notification of school employees of hazards with instructions on how to minimize exposure to asbestos.
4. Maintenance of records on asbestos testing and notification.

Since 1979, the EPA has put forth technical assistance to districts concerning asbestos hazards and abatement. This has consisted of manuals and workshops for school officials in the major areas of the state. Kathy Pazera, of the Juneau EPA office, told me that the EPA has so far applied sanctions in two states for non-compliance with these regulations, and that there is heavy public pressure concerning a more aggressive stance on asbestos in schools. The EPA has just rewritten regulations for demolition and renovations of asbestos containing materials.

Although the \$172 million authorized for the Asbestos School Hazard Detection and Control Act of 1980 was never appropriated, there is speculation that the regulations requiring public knowledge of asbestos hazards were designed to bring pressure on states for funding asbestos removal.

A civil suit filed on behalf of a South Carolina school district notes that school districts and public officials could be held liable for failure to abate a health hazard.

Tues. 5-15-84

JOHN:

re: Asbestos Health Hazard problem (SB-373, SB-374)

Per your request, I have talked with Alison Elgee in Dept. of Education.

In general the problem is a recent one in terms of public awareness of the potential hazards of asbestos materials used in construction of school and public buildings.

In Alaska only Anchorage and to some degree Fairbanks have been able to identify asbestos hazards in their schools. Anchorage has done the most extensive survey of hazards.

In Anchorage, for example, their first estimate of removal of asbestos from Bartlett High School was roughly \$6 million. TODAY, the business manager for the school district reports the estimate has now shot up to somewhere between \$13 and \$22 million. Bartlett's problems are that when the school was constructed asbestos was sprayed on the walls as a fire safety/prevention measure. This type of asbestos is called "friable" and means that the substance releases fibers in the air which are breathable by humans and subsequently can cause health hazards (cancer, lung problems, etc.). The Bartlett case is a little unique in that apparently the federal government would provide for some funds necessary to remove the hazardous asbestos, but there is a question as to how much the feds would put up.

Other school districts HAVE NOT identified their asbestos hazards either because they lack the necessary funding, expertise and/or personnel to do the job...or simply have not been made aware of the serious nature of the problem and as a result have felt no (or little) pressure to act on the matter.

DOE received \$2.5 million in HB-691, passed earlier this year, to survey the asbestos hazard problems throughout the public school system (i.e., the more rural school districts).

Getting a handle on the overall costs to remove hazardous asbestos in schools is not easy because it is a new problem, there is insufficient data from all school districts and estimates seem to vary from week-to-week, as in the case of Bartlett school in Anchorage.

MORE DETAILED INFORMATION could possibly be provided from D.O.E if they were permitted to use the \$2.5 million they already have to identify the problem areas and report back to the legislature with funding requests for next year.

DOE says that their cost estimates to remove hazardous asbestos would far exceed the \$17 million currently proposed in SB-374, which is a companion to SB-373, creating an asbestos health hazard program to remove hazards... but they cannot give a relatively accurate figure until they've had time to assess the problems throughout Alaska.

MG

ASBESTOS IN SCHOOLS

The following needs have been identified from the Senate HESS Committee's request for information:

Kodiak	\$1,138,507	
Petersburg	107,000	
Delta Greely	99,700	
Cordova	120,000	(In progress)
Nenana	15,000	(\$5,000 already spent)
Anchorage	14 - 16.6 million	(\$6,101,300 in SB 403)
Fairbanks	1,385,000	(\$1,385,000 in SB 403)
Skagway	25,000	
Kuspuk	5,296	
Mat-Su	105,959	(expended)
Ketchikan	5,000,000	(estimate)
Juneau	300,000	(expended, estimate several million)

**There is \$2,500,000 in HB 691 for statewide asbestos removal

The Department of Labor has estimated that there are 220 schools that remain to be tested. They estimate the cost for sampling and testing to be \$296,100 for those schools, this amount has been included in SB 374.

Mick Coltran, of the Laborers Union, has requested more stringent sanctions for violations. A memo from Vic Fischer was sent to Senator Ferguson, but I don't know if these recommendations are to be included in a Finance CS. They are:

Insert page 4, line 14:

(e) A contractor who violates (b) of this section is guilty of a class A misdemeanor.

(f) A contractor who violates (c) of this section is guilty of a class B misdemeanor.

*5/2 4:45 pm.
Mike Scott
said they
will do a
Finance CS
with these
amendments.*

STATE OF ALASKA
THE LEGISLATURE

POUCH Y - STATE CAPITOL
JUNEAU, ALASKA 99811
907-465-3800

LEGISLATIVE AFFAIRS AGENCY

MEMORANDUM

May 28, 1984

SUBJECT: Emergency closure days (AS 14.03.030(2))

TO: Representative Mae Tischer
Chairman, House HESS Committee

FROM: Keith B. Levy *KBL*
Legislative Counsel

You have asked whether AS 14.03.030(2) permits a school district to use an "emergency closure day" to conduct an asbestos abatement program. AS 14.03.030 provides that the school term is at least 180 days in session, except that, subject to the approval of the Commissioner of Education,

...an "emergency closure day" may be substituted for a day in session because of conditions posing a threat to the health or safety of students.

The answer to your question turns on whether the condition sought to be remedied by the asbestos abatement program poses a threat to the health or safety of students.

I have reviewed the memo you received from Ron Lorenson of the Department of Law as well as the memo from William Thompson of the Department of Education. The Department of Education memo concludes that if an inspector certifies that a building should not be occupied because the asbestos poses a threat to the health or safety of the children, an emergency closure day is authorized. The Department of Law disagrees to the extent that it believes an emergency closure day is authorized only if it is the result of "bona fide emergency situations which school officials could not reasonably anticipate in advance." In other words, under the Department of Law's interpretation, emergency closure days are not authorized for a planned abatement program, even if the program presents a threat to the health or safety of students.

Representative Mae Tischer
Page 2
May 28, 1984

Although the Department of Law's interpretation of AS 14.03.030(2) is not unreasonable, I disagree that the statute does not authorize emergency closure days for asbestos abatement programs. Although the statute uses the word "emergency," the plain language of the definition does not require anything but a threat to the health or safety of the students. If an abatement program is used to remedy conditions posing such a threat, it would appear to authorize an emergency closure under AS 14.03.030(2).

It should be noted, however, that under AS 14.03.030(2), all emergency closure days are "subject to the approval of the commissioner." Therefore, even if an emergency closure is authorized under AS 14.03.030(2), the Commissioner of Education has the power to veto a school district's determination that an emergency closure day is called for.

If I may be of further assistance, please contact me.

KBL:ojb
J8/009

MEMORANDUM

State of Alaska

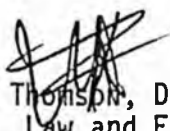


TO: The Honorable Representative Mae Tischer
Alaska State Legislature
House of Representatives

DATE: May 25, 1984

FILE NO: 4203M

TELEPHONE NO: 465-2865

FROM: 
William D. Thomson, Director
Management, Law and Finance
Department of Education

SUBJECT: Emergency Closure/
Shortened School Year

Per our telephone conversation this morning, the 1983 Legislature amended AS 14.03.030. School Term by adding a section where an emergency closure day may be substituted for a day in session because of conditions posing a threat to the health or safety of students.

If an inspector certifies that because of friable asbestos a threat to the health of children occupying a school exists, therefore, the building should not be occupied, this would constitute an "emergency closure day" until the condition could be corrected, if alternate arrangements for the childrens' education could not be accomodated.

If you have further questions, please feel free to call.

of concern your legal liability as "owner" of your school buildings. Following federal regulations scrupulously won't protect your schools against a potential lawsuit if an asbestos removal worker should die from cancer, so you should be very careful in hiring a contractor, says attorney Luis Nido, of Brace and Patterson, a Washington, D.C., law firm that does asbestos work. Hire a highly specialized firm whose technicians are able to testify in court, adds attorney James B. Bedingfield of Coos Bay, Ore., who represents several school systems involved in asbestos abatement. And keep careful daily records to document your efforts to ensure the safety of workers, as well as students and staff, while asbestos abatement work is being done in your schools. On

these and other issues related to asbestos, "Uncovering the Asbestos Hazard," published by the National School Boards Association's Council of School Attorneys, provides comprehensive legal, legislative, and medical background on asbestos in the schools. (It's available for \$100 by writing to the council at 1055 Thomas Jefferson St. N.W., Washington, D.C. 20007.)

And, perhaps most important, know what you're getting into before you launch a program of asbestos containment or removal. George Harris, assistant superintendent in Montgomery, Ala., advises setting up an interdisciplinary team composed of board members, administrators, your school attorney, perhaps parents or other community members, and

the architect and engineer you select to help do the job. (See article below.) Asbestos expert Dwight Brown suggests that this interdisciplinary team (or at least one member of it) should attend one of the seminars on asbestos in the schools conducted by E.P.A. and private consulting groups. These seminars have as speakers doctors, engineers, architects, attorneys, contractors, and others knowledgeable about asbestos. (For more information, contact Brown at A.H.P. Research, Inc., 3763 Vineyard Way, Marietta, Ga. 30062; 404/973-8689.)

Asbestos in schools is a wrenching, emotional issue—and it no longer is lying dormant. School board member and school administrators need to take action and take action *now*. □

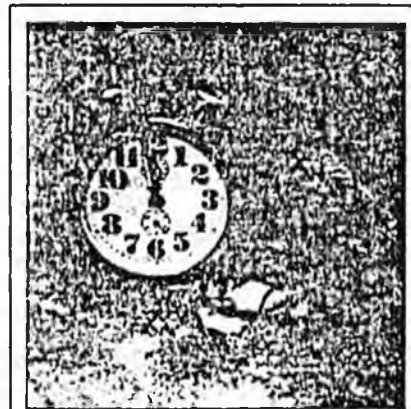
Sidestep asbestos hysteria: Explain the risk (and your response) to the public

By George Harris

WE ALL WANT safe schools, but when it comes to the risky business of removing asbestos, school board members and school administrators sometimes bear the brunt of community criticism. At least, that's what happened in the Montgomery County (Alabama) Public Schools (K-12; enr.: 35,000) when we were faced with the difficult task of removing asbestos from about half of our 52 schools. Perhaps there's a lesson for you in the way we handled this emotional issue.

We knew little about asbestos until we read *Asbestos in schools: Walls and halls of trouble*, in the November 1978 issue of the *JOURNAL*. We knew even less about potential asbestos hazards in our own schools, other than that asbestos-containing materials had been required by the architects who designed many of our buildings. Consultation with those architects revealed that Yes, the ceilings in most of the classrooms were coated with cementitious, sprayed-on asbestos products. Materials used in the walls and halls of the schools we were so proud of when they were built in the 1950s and '60s were

George Harris is assistant superintendent in Montgomery, Ala.



'Our slide show and public talks about asbestos set the stage for a calm resolution of the problem'

fireproof, attractive, and acoustically satisfactory. They also were potential causes of cancer and other life-threatening diseases.

We immediately began to gather samples from some of our buildings with sprayed-on ceilings. Laboratory tests con-

firmed what we had not wanted to believe: We had asbestos in our buildings—in far greater amounts than we had suspected. By January 1979, we knew we had more than 300,000 square feet of the stuff only a few feet above the heads of approximately 15,000 students. By this time, other school systems in Alabama were becoming aware of the problem, and the state superintendent of education called for a statewide report on asbestos in schools.

Publicity was widespread, and within months, we began to feel the uncomfortable effects of public awareness. The state PTA president wrote to local PTA officials, urging their support of federal legislation to provide funding to help school systems inspect buildings for asbestos-containing materials. With our local PTAs alerted to the danger of asbestos, we soon were receiving letters from legislators and from worried parents who wanted to know what the Montgomery schools were doing to protect their children. Public criticism peaked when a local newspaper published an editorial entitled "Silent Death." Next to the editorial was a cartoon showing a distressed mother sending her children off to school with gas masks on their faces. From then on, I knew the asbestos problem had to be Number One on my agenda. We had been waiting to see if any state agencies would



Schools are required to post warnings wherever friable asbestos exists. When asbestos is removed, areas are quarantined and workers wear protective suits.

recommend a course of action, but now we knew we were on our own.

In January 1982, the Montgomery school board passed a resolution making asbestos cleanup a matter of top priority and directing the staff to develop an asbestos control program immediately. We formed a committee composed of the superintendent, the board attorney, two board members, and me. Here, briefly, is how our committee confronted the issue:

Our first step was to request proposals from architectural firms. After carefully interviewing all the applicants, we chose an architectural/engineering firm that had proven experience in asbestos abatement and removal. We then presented our selection to the board, which approved our recommendation.

Before we could begin actually solving our problem, though, we needed more background on the hazards of asbestos and the medical and legal risks of removing it from our buildings. So we attended a seminar on asbestos in schools held in Atlanta. The seminar was conducted by, among others, the regional asbestos coordinator for the Environmental Protection Agency (E.P.A.). Seminars like the one we attended are a good source of comprehensive, accurate information on such matters as how to approach specific asbestos problems, how to hire a competent lab to test samples, and how to inspect and monitor the asbestos contractor's work to ensure a safe and thorough job.

Not long after we returned from the Atlanta seminar, the situation heated up

at home. Several PTA members at one school began distributing leaflets urging parents to call and find out when asbestos abatement contracts would be awarded and when the asbestos-containing materials would be removed from their schools. The group broadcast their concerns over local radio stations, intensifying the pressure on us to speed up the process.

By early summer 1982, the surveys confirmed that a total of 24 school sites (some with more than one building) contained more than 500,000 square feet of dangerous, friable (or loose, crumbling) asbestos-containing materials. The boiler coverings, water heater jackets, and pipe coverings in these schools and 16 others were coated with asbestos that would have to be removed. We had hoped to award cleanup contracts for a number of the schools that summer; unfortunately, although a bond issue for school construction already had been approved by the state legislature, the funds were not made available to local school systems because of the state's tight economic situation. It became clear we couldn't complete the work by the opening of the 1982-83 school year. The local news media incited a public outcry with charges that the schools were moving too slowly, suggesting we somehow were negligent in solving the crisis.

The board and administration decided positive public relations measures were in order, so I put together a slide presentation illustrating how the Montgomery schools had responded to the asbestos hazard since we first became aware of it.

The 40-minute, narrated presentation explained why asbestos posed health risks, where it had been found in our schools, how the press and community had reacted to the discovery of hazardous materials, and what we were doing to make the schools safe. One of our board members presented the slide show, along with a speech on the school board's responsibility in removing asbestos, at a regional school board association meeting. The presentation was such a success that we used the slide show at subsequent PTA and community group meetings. These discussions have gone a long way in garnering support for our efforts and reassuring parents, staff, and community members that we are, indeed, on top of the problem—and moving as quickly as possible to make schools safe.

Community support is important, but it takes money to get the job done, so we continued to fight for funding from the state. Finally, in January 1983, we received more than \$1 million from the state for asbestos abatement. We immediately awarded contracts for asbestos removal in four schools, to be completed during the spring recess. Soon after, we received an additional \$2.4 million in state bond money; that amount should allow us to complete the project. By the end of last summer, we successfully had removed 360,000 square feet of asbestos-containing material from 17 schools. We currently are advertising for bids on the abatement jobs yet to be done, and we anticipate that the Montgomery schools will be completely free of asbestos-containing materials and their accompanying hazards by this summer.

Our slide presentation, meanwhile, has traveled many miles. In the past year, I've shown it at seminars conducted at several universities and at a National School Boards Association Council of School Attorneys' asbestos seminar held last summer.

If your schools haven't yet dealt with the asbestos problem, it's time you did. It's an emotional issue, and it requires delicate handling if you want to avoid hysterical accusations from the community. We've found that our slide show and discussions with the community have helped set the stage for a calm and constructive resolution of the problem.

If you'd like more information on how to put together a presentation for parents and community members on asbestos abatement, write to me at the Montgomery Public Schools, P.O. Box 1991, Montgomery, Ala. 36197. □

HB 246

CS FOR HOUSE BILL NO. 246 (L&C) by the Labor and Commerce Committee, entitled:

"An Act relating to the deregulation of interest rates; and providing for an effective date."

was read the first time and referred to the Labor and Commerce Committee and the Judiciary Committee.

STANDING COMMITTEE REPORTS

SB 79

The Resources Committee considered SENATE BILL NO. 79 (toxic and hazardous substances in the workplace) and recommended it be replaced with

CS FOR SENATE BILL NO. 79 (RES)

with a majority do pass. The report was signed by Senator Fahrenkamp, Chairman and concurred in by Senators Vic Fischer, Eliason, Ziegler, Paul Fischer and Sturgulewski. Senator Mulcahy signed "no recommendation".

The committee attached:

SENATE RESOURCES COMMITTEE
LETTER OF INTENT, SB 79

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





ADEC NEWS

PRESS RELEASE FROM THE PUBLIC INFORMATION OFFICE
ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
JUNEAU, ALASKA 99811 (907) 465-2606

Bill Sheffield, Governor

Richard A. Neve, Commissioner

Joe Ferguson, Information Officer

FOR IMMEDIATE RELEASE

April 20, 1983

ASBESTOS IN ALASKA
by Jana Baumann, Information Officer
Department of Environmental Conservation

JUNEAU--Twenty years ago the word "asbestos" meant progress, indestructibility; a nearly perfect component for building materials to insulate and to fireproof.

Today the mention of asbestos may bring a grim response and thoughts of cancer and lung diseases. What was once thought of as a miracle material is now known to be extremely harmful, especially when it is dispersed into the air and inhaled.

What is asbestos?

Asbestos is a naturally occurring mineral that can be separated into fibers. It is very lightweight and nearly indestructible. Before the early 1970s, asbestos was widely used as a component in thermal, electrical, and acoustical insulation, fireproofing, ceiling tiles, and decoration. These applications were most cost effective in large buildings like schools, factories and office buildings.

What are the harmful effects of asbestos?

The danger to human health from asbestos occurs when minute fibers are breathed and become lodged in the lungs. Asbestos containing materials are often friable which means the fibers can be readily separated from the material in which it is

-MORE-

used and become airborne. Fireproofing or insulation which is damaged and crumbling can release invisible asbestos fibers into the air.

Cancers of the chest and lungs and other organs have been positively associated with asbestos exposure. There is no known "safe" exposure. Even brief contact could result in irreversible damage that may not be detected until many years after exposure.

When the health effects of asbestos exposure were documented, many corrective programs were initiated for workers who handle it and for the public who may be unknowingly exposed at their school or workplace. In Alaska, several state and federal agencies regulate asbestos exposure, handling and disposal. Following is a brief summary of agency responsibilities.

Schools and Public Buildings

The U.S. Environmental Protection Agency regulates inspection of schools for identifying asbestos containing materials. The superintendent of each school district in Alaska has been instructed to inspect all school buildings in the district for friable asbestos by June 23, 1983. Each type of friable material located in the school buildings must be tested for asbestos content. Samples must be tested using Polarized Light Microscopy.

School districts are required to keep a record of all the inspections and results from each school building. If asbestos containing material is found in a school, additional information on the location and quantity of this material must be kept on file at the administrative office of the school and at the school district office. The school district must notify employees and the parent-teacher association about the presence of asbestos containing materials.

ADD 2-2-2-2

Instruction is available on how to inspect public buildings and schools which may contain friable asbestos. Booklets and video tapes may be borrowed from the Alaska Operations Office of the U.S. Environmental Protection Agency in Juneau or from the Alaska State Library.

Asbestos emissions to the air inside the work place

The Alaska Department of Labor, Division of Occupational Safety and Health, regulates exposure of workers to airborne asbestos fibers inside the work place. The regulations also govern asbestos exposure during demolition and renovation work.

The regulations set standards for exposure levels of asbestos fibers in the air, and specify work practices such as ventilation and clothing and engineering controls for most workers in the state. Exposure criteria for federal employees and workers on offshore oil rigs or seafood processors are regulated by the U.S. Department of Labor, Occupational Safety and Health.

Questions regarding asbestos exposure or work practices in the work place should be directed to Alaska Department of Labor, Division of Occupation Safety and Health. Sampling of our materials in the work place is also done by this agency.

Asbestos emissions to the outside air

The U.S. EPA has established standards to limit emissions of asbestos to the outside air. These rules govern manufacturing plants which produce cement, fireproofing materials, insulation, and other materials which include asbestos as a component. The rules also govern materials used in roadway surfacing and emissions from asbestos milling operations. These regulations also limit release of asbestos to the air during renovation and demolition activity and fabricating operations that utilize commercial asbestos.

Asbestos Disposal

The U.S. EPA has regulations which regulate handling and disposal of asbestos. Materials containing friable asbestos must be specially contained and wetted. Landfills or disposal sites must meet certain specifications in order to accept the material. Operators of the disposal site must cover it and post warning signs.

Following is a list of agencies which regulate some aspect of asbestos in Alaska, the situations for which they are responsible, and the person to contact.

ADD 4-4-4-4

Responsible Agency

Asbestos Situation

U.S. Environmental Protection Agency
Alaska Operatoins Office
3200 Hospital Drive, Suite 101
Juneau, Alaska 99801
Phone: 586-7619
Contact: Kathy Pazera or
Steve Torok

Emission to the outside air
Disposal of materials containing
friable asbestos
Ruies for landfill or disposal
site handling
Exposure in public buildings and
schools

U.S. Department of Labor
Occupational Safety and Health Administration
Federal Building and U.S. Courthouse
701 C Street
Box 29
Anchorage, Alaska 99513
Phone: 271-5125
Contact: Leonardo Limitiaco

Federal employees
Offshore oil rig or floating
seafood processor employees

Alaska Department of Labor
Division of Occupational Health and Safety
3301 Eagle Street, Suite 303
Pouch 7-022
Anchorage, Alaska 99510
Phone: 264-2597
Contact: Stan Godsoe

Asbestos in the air at the work
place
Work practices for handling asbestos

PRIVATE LABORATORIES WHO TEST SAMPLES FOR FRIABLE ASBESTOS

NHS Incorporated
Environmental Health Sciences Lab
805 Goethals Avenue
Richland, Washington 99352
Phone: (509) 376-6980

Chemical & Geological Labs of Alaska
5633 B Street
Anchorage, Alaska 99502
Phone: (509) 562-2343

Microlab Northwest
.7609 140th Place, N.E.
Redmond, Washington 98502
Phone: (206) 885-9419



U.S. ENVIRONMENTAL PROTECTION AGENCY

REGION X
ALASKA OPERATIONS OFFICE
3200 HOSPITAL DRIVE
SUITE 101
JUNEAU, ALASKA 99801

REPLY TO
ATTN: OF:

February 1, 1984

Joe Cladouhos, Director
Division of Environmental Quality Management
Alaska Department of Environmental Conservation
Pouch 0
Juneau, Alaska 99811

RE: Senate Bill No.'s 373 and 374 introduced on 1/25/84

Dear Mr. Cladouhos:

As a result of a request by your staff, we have provided a review of the current asbestos regulations and our comments on Senate Bills 373 and 374. We strongly support the concept of both these Bills. The EPA Alaska Operations Office (A00) has been actively involved in 1) providing guidance to schools on school regulation 40 CFR Part 763, 2) providing information to contractors conducting demolition/renovation of friable asbestos, 3) inspecting asbestos demolition/renovation projects and 4) responding to all complaints in this area. The A00 also notifies the State Department of Labor (SDoL) on each demolition/renovation asbestos project for which we receive a notification.

Our staff in Alaska is limited to .1 of a person year for asbestos activities; therefore, we strongly support efforts from state agencies which supplement our efforts. We feel that Senate Bill 373 in conjunction with the present EPA, U. S. Department of Labor (DoL), and SDoL regulation would provide for a more complete asbestos program for Alaska; however, appropriations in Bill 374 may not be adequate to fulfill all the designated tasks for the asbestos program.

Background:

At the present time the U. S. Environmental Protection Agency (EPA) requires the identification of friable asbestos in schools in accordance with regulations (40 CFR Part 763) promulgated under the Toxic Substance Control Act (TSCA). In addition, all projects involving the demolition and/or renovation of friable asbestos in buildings are regulated by EPA in accordance with 40 CFR Part 61, Subpart B. These regulations were promulgated under the authority provided to EPA in the Clean Air Act (CAA). The U. S. Department of Labor and the SDoL also have regulations addressing removal and demolition of asbestos from structures (29 CFR 1910.1001 and OH&EC 04.0102 respectively).

Unlike regulations promulgated under the CAA, the school regulations promulgated in accordance with TSCA cannot be delegated to state or local governing agencies. This does not prevent a state or local governing agency from developing its own asbestos program for schools. For the most part Senate Bill 373 would supplement the present EPA school regulations; however, some overlap occurs in the requirement to establish guidelines for schools to identify asbestos health hazards [18.28.050 (5)]

Detailed Comments:

According to Section (1) (b) of Senate Bill 373 there are three main purposes for the Act. Our comments on each of these is discussed in the following text:

1) We support the testing and analysis of friable materials for asbestos content. According to the Bill, the Alaska Department of Environmental Conservation (ADEC) would provide this service. In accordance with EPA regulations (40 CFR Part 763) all local education agencies were to complete the following tasks by June 28, 1983:

- conduct inspections of schools for friable materials
- collect samples of all materials identified as friable.
- have each sample analyzed by Polarized Light Microscopy (PLM) for asbestos content.

During 1984 the EPA will be conducting inspections of three major school districts in Alaska; however, there have been no inspections of Alaska schools conducted to date. As a result it is not known which schools in Alaska are in compliance with the EPA regulation and therefore some schools may require sampling.

There are approximately 550 schools in Alaska. Each specific friable material type is required to be sampled in three separate areas. Assuming only one type of asbestos is present in each school, 1,650 samples would be representative of the total schools. The information that schools have voluntarily supplied to EPA on their compliance status indicates that schools have more than one type of friable material. Depending on the laboratory, sample analysis costs range from \$25.00 to \$45.00 per sample. Based on this information the appropriation of \$75,000.00 to ADEC may not be adequate to accomplish the analysis of samples from schools and public facilities in Alaska if commercial laboratories are utilized.

2) We support the dissemination of information pertaining to friable asbestos material. Both U. S. Department of Labor and EPA have information and videotapes available that pertain to identification and removal of friable asbestos. The U. S. Department of Health and Human Services has information available on the health effects resulting from asbestos exposure. There is a need for coordinating the distribution of the current and newly generated asbestos publications to the public. Again, the present Bill assigns this responsibility to ADEC but the \$75,000.00 allocation may be inadequate.

3) Section 18.28.050 (5) of Senate Bill 373 requires ADEC to establish guidelines for determining asbestos health hazards. These guidelines would be used by school officials to establish a sampling plan for friable asbestos. This overlaps with EPA regulations 40 CFR 763.105 and 763.107 on the inspection and sampling of friable material.

We support the correction of identified asbestos health hazards in schools and public facilities. Senate Bill 373 goes one step beyond the EPA school regulations by requiring schools that have the potential to release asbestos fibers, to eliminate friable asbestos material. (It is our understanding that elimination includes an action which would correct the asbestos hazard, but does not necessarily require removal).

We strongly support the appropriations to the Department of Community and Regional Affairs (CRA) for correcting identified asbestos hazards in schools and public facilities. The EPA has not been successful in acquiring an appropriation from Congress for schools requesting financial support for abatement of friable asbestos.

If you should have any questions on our comments please contact Kathryn Pazera of my staff.

Sincerely,



Ronald A. Kreizenbeck, Director
Alaska Operations Office

cc: S. Hungerford ✓

Asbestos fibers temporarily halt work at Baranof

By CHRISTOPHER JARVIS

The Juneau Empire

Repair work at Juneau's historic Baranof Hotel was halted May 11 so state inspectors could be sure no hazardous amounts of asbestos fibers were floating in the air.

Work resumed last week after tests on air samples taken from the hotel revealed the amount of asbestos was far below minimum state safety standards, said state Department of Labor Safety Consultant Douglas Wahto.

In fact, Wahto said the amount of asbestos fiber floating in the air in Los Angeles probably far exceeds the amount found at the Baranof.

The Division of Labor Standards and

Safety of the state Department of Labor was asked to evaluate the amount of asbestos by Wick Construction, the firm hired to repair damage caused in an April 27 fire that gutted most of the hotel's main floor.

Minimal safety levels for airborne asbestos fibers is .2 percent per square centimeter, Wahto said, and air samples taken from the basement of the hotel resulted in levels of .005 percent of asbestos, "which is absolutely nothing, minimal," Wahto said. The basement had the highest level of airborne fibers, Wahto said.

Asbestos in building materials was banned by the federal Environmental Protection Agency in 1978, said

Richard Arab, deputy director of the Division of Occupational Safety and Health.

Construction materials made in part with asbestos is common in buildings constructed or remodeled prior to 1978, Arab said.

The Baranof work stoppage was "a precaution you have to take in any of these old buildings," Wahto said. Asbestos is frequently found when doing any renovation or demolition work in older buildings, Wahto said, and materials containing asbestos are either disposed of by following federal guidelines or are "encapsulated" using a sealer "that's indestructible, practically," Wahto said.

RESOLUTION No. 84 - 10:

SUBJECT: ASBESTOS ABATEMENT IN ALASKA SCHOOLS

WHEREAS, 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, 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 hazard¹; and

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

BE IT RESOLVED, that the Anchorage Medical Society urges passage of Senate Bills 373 and 374; and

BE IT FURTHER RESOLVED, that the Anchorage Medical Society urges the Governor to form a special task force with representatives of Department of Health and Social Services, Department of Labor, Department of Education, Department of Transportation and Public Facilities, Department of Environmental Conservation, parents of school children, and teachers to implement an asbestos abatement program in all Alaskan schools in accordance with recognized standards for asbestos abatement²; and

BE IT FURTHER RESOLVED, that the Anchorage Medical Society 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 Alaskan 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.
3. Insure notification of teachers, parents, and students of the presence of friable asbestos identified in Alaskan schools in accordance with guidelines established by the EPA.
4. Recommend a plan for removal of friable asbestos, where necessary, and develop appropriate bid specifications and guidelines so that school districts can be assured that asbestos will be removed according to established standards which protect workers, students, parents and teachers during the removal process as well as insure that asbestos is removed totally and is adequately disposed of in approved sites.
5. Increase awareness of the health hazards associated with asbestos and protect against future problems by making sure that asbestos containing materials are not used in new construction.

-
1. Asbestos Technical Advisory Panel Recommendations, ASD Memorandum #534(82-83), Anchorage School District, Anchorage, Alaska, May 23, 1983.
 2. Asbestos-Containing Materials in School Buildings: A Guidance Document, Part 1 and 2. U.S. EPA, Office of Toxic Substances, Washington, D.C., March 1979.

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

Kathleen McCormick is assistant editor of the JOURNAL.



The asbestos ante has been raised in recent months, and boards that don't respond could be in for trouble

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.

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."

OPINIONS EXPRESSED BY THE JOURNAL OR ANY OF ITS AUTHORS DO NOT NECESSARILY REFLECT POSITIONS OF THE NATIONAL SCHOOL BOARDS ASSOCIATION

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

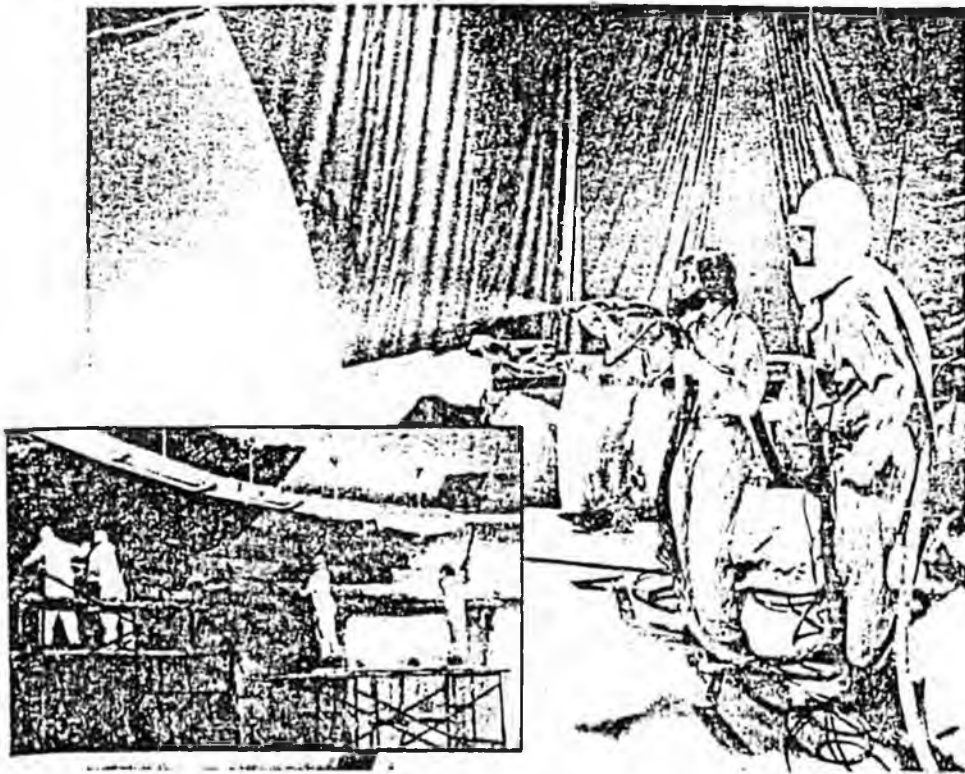
than 3 million students and 250,000 staff members are at risk right now. The agency estimates the total cost of asbestos abatement at \$1.4 billion nationwide, or \$100,000 per school building. Some school systems already have spent millions. According to Dwight Brown, formerly asbestos coordinator for 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. There 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. Preferred 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 Ruckelshaus, E.P.A. has become more vigilant and is going after asbestos in schools as one of its 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 a 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 Ruckelshaus 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, too, could open the floodgates for thousands of lawsuits against asbestos manufacturers.

Other legal issues you should be aware

(2) Requiring the owner or operator of a stationary source, other than a stationary source owned or operated in the United States, to obtain permits, licenses, or approvals prior to initiating construction, modification, or operation of such source.

16. 116. Clean Air Act as amended (42 S.C. 7415)

17. FR 8826, Apr. 6, 1973, as amended at 43 FR 8900, Mar. 3, 1978

61.17 Circumvention.

No owner or operator subject to the provisions of this part shall build, erect, install, or use any article, machine, equipment, process, or method, the use of which conceals an emission which would otherwise constitute a violation of an applicable standard. Such concealment includes, but is not limited to, the use of gaseous dilutants to achieve compliance with a visible emissions standard, and the piecemeal chipping out of an operation to avoid coverage by a standard that applies only to operations larger than a specified size.

18. FR 43299, Oct. 14, 1975

Subpart B—National Emission Standard for Asbestos

61.20 Applicability.

The provisions of this subpart are applicable to those sources specified in 61.22.

61.21 Definitions.

Terms used in this subpart are defined in the act, in Subpart A of this part, or in this section as follows:

(a) "Asbestos" means actinolite, amosite, anthophyllite, chrysotile, crocidolite, tremolite.

(b) "Asbestos material" means asbestos or any material containing asbestos.

(c) "Particulate asbestos material" means finely divided particles of asbestos material.

(d) "Asbestos tailings" means any solid waste product of asbestos mining or milling operations which contains asbestos.

(e) "Outside air" means the air out-

(f) "Visible emissions" means any emissions which are visually detectable without the aid of instruments and which contain particulate asbestos material.

(g) "Asbestos mill" means any facility engaged in the conversion of any intermediate step in the conversion of asbestos or into commercial asbestos. Outside storage of asbestos materials is not considered a part of such facility.

(h) "Commercial asbestos" means any variety of asbestos which is produced by extracting asbestos from asbestos ore.

(i) "Manufacturing" means the combining of commercial asbestos, or in the case of woven friction products the combining of textiles containing commercial asbestos, with any other material(s), including commercial asbestos, and the processing of this combination into a product as specified in § 61.22(c).

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

(k) "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.

(l) "Control device asbestos waste" means any asbestos-containing waste material that is collected in a pollution control device.

(m) "Renovation" means the removing or stripping of friable asbestos material 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.

(n) "Planned renovation" means a renovation operation, or a number of such operations, in which the amount of friable asbestos material that will be removed or stripped within a given period of time can be predicted. Operations that are individually non-scheduled are included, provided a number of such operations can be predicted to occur during a given period of time

(o) "Emergency renovation" means a renovation operation that results from a sudden, unexpected event, and is not a planned renovation. Operations necessitated by non-routine failures of equipment are included.

(p) "Adequately wetted" means sufficiently mixed or coated with water or an aqueous solution to prevent dust emissions.

(q) "Removing" means taking out friable asbestos materials used on any pipe, duct, boiler, tank, reactor, turbine, furnace, or structural member from any building, structure, facility, or installation.

(r) "Stripping" means taking off friable asbestos materials from any pipe, duct, boiler, tank, reactor, turbine, furnace, or structural member.

(s) "Fabricating" means any processing of a manufactured product containing commercial asbestos, with the exception of processing at temporary sites for the construction or restoration of buildings, structures, facilities or installations.

(t) "Inactive waste disposal site" means any disposal site or portion thereof where additional asbestos-containing waste material will not be deposited and where the surface is not disturbed by vehicular traffic.

(u) "Active waste disposal site" means any disposal site other than an inactive site.

(v) "Roadways" means surfaces on which motor vehicles travel including, but not limited to, highways, roads, streets, parking areas, and driveways.

(w) "Asbestos-containing waste material" means any waste which contains commercial asbestos and is generated by a source subject to the provisions of this subpart, including asbestos mill tailings, control device asbestos waste, friable asbestos waste material, and bags or containers that previously contained commercial asbestos.

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

19. FR 8826, Apr. 6, 1973, as amended at 39 FR 15398, May 3, 1974; 40 FR 48299, Oct. 14, 1975; 42 FR 12127, Jan. 11, 1977

§ 61.22 Emission standard.

(a) Asbestos mills: There shall be no visible emissions to the outside air from any asbestos mill except as provided in paragraph (f) of this section.

(b) Roadways: The surfacing of roadways with asbestos tailings or with asbestos-containing waste that is generated by any source subject to paragraphs (c), (d), (e) or (h) of this section is prohibited, except for temporary roadways on an area of asbestos ore deposits. The deposition of asbestos tailings or asbestos-containing waste on roadways covered with snow or ice is considered "surfacing."

(c) Manufacturing: There shall be no visible emissions to the outside air, except as provided in paragraph (f) of this section, from any of the following operations if they use commercial asbestos or from any building or structure in which such operations are conducted:

(1) The manufacture of cloth, cord, wicks, tubing, tape, twine, rope, thread, yarn, roving, lap, or other textile materials.

(2) The manufacture of cement products.

(3) The manufacture of fireproofing and insulating materials.

(4) The manufacture of friction products.

(5) The manufacture of paper, millboard, and felt.

(6) The manufacture of floor tile.

(7) The manufacture of paints, coatings, caulks, adhesives, sealants.

(8) The manufacture of plastics and rubber materials.

(9) The manufacture of chlorine.

(10) The manufacture of shotgun shells.

(11) The manufacture of asphalt concrete.

(d) Demolition and renovation: The requirements of this paragraph shall apply to any owner or operator of a demolition or renovation operation who intends to demolish any institutional, commercial, or industrial building (including apartment buildings having more than four dwelling units), structure, facility, installation, or portion thereof, which contains any pipe,

or coated with friable asbestos material, except as provided in paragraph (d)(1) of this section; or who intends to renovate any institutional, commercial, or industrial building, structure, facility, installation, or portion thereof where more than 80 meters (ca. 260 feet) of pipe covered or coated with friable asbestos material is stripped or removed, or more than 160 square meters (ca. 160 square feet) of friable asbestos material used to wrap or coat any duct, boiler, tank, reactor, turbine, furnace, or structural member are stripped or removed.

(1) The owner or operator of a demolition operation is exempted from the requirements of this paragraph provided, (A) the amount of friable asbestos material in the building or portion thereof to be demolished is less than 60 meters (ca. 260 feet) used to insulate pipes, and less than 15 square meters (ca. 160 square feet) used to insulate or fireproof any duct, boiler, tank, reactor, turbine, furnace, or structural member, and (B) the notification requirements of paragraph (d)(1)(ii) are met.

(2) Written notification shall be prepared and delivered to the Administrator at least 20 days prior to commencement of demolition and shall include the information required by paragraph (d)(2) of this section, with the exception of the information required by paragraphs (d)(2)(iii), (vi), (vii), (viii), and (ix), and shall state the measured or estimated amount of friable asbestos materials which is present. Techniques of estimation shall be planned.

(3) Written notice of intention to demolish or renovate shall be provided to the Administrator by the owner or operator of the demolition or renovation operation. Such notice shall be prepared and delivered to the Administrator at least 10 days prior to commencement of demolition, or as early as possible prior to commencement of emergency demolition subject to paragraph (d)(6) of this section, and as early as possible prior to commencement of renovation. Such notice shall include the following information:

(i) Name of owner or operator

(iii) Description of the building, structure, facility, or installation to be demolished or renovated, including the size, age, and prior use of the structure, and the approximate amount of friable asbestos materials present.

(iv) Address or location of the building, structure, facility, or installation.

(v) Scheduled starting and completion dates of demolition or renovation.

(vi) Nature of planned demolition or renovation and method(s) to be employed.

(vii) Procedures to be employed to meet the requirements of this paragraph and paragraph (j) of this section.

(viii) The name and address or location of the waste disposal site where the friable asbestos waste will be deposited.

(ix) Name, title, and authority of the State or local governmental representative who has ordered a demolition which is subject to paragraph (d)(6) of this section.

(3)(i) For purposes of determining whether a planned renovating operation constitutes a renovation within the meaning of this paragraph, the amount of friable asbestos material to be removed or stripped shall be:

(A) For planned renovating operations involving individually non-scheduled operations, the additive amount of friable asbestos material that can be predicted will be removed or stripped at a source over the maximum period of time for which a prediction can be made. The period shall be not less than 30 days and not longer than one year.

(B) For each planned renovating operation not covered by paragraph (d)(3)(i)(A), the total amount of friable asbestos material that can be predicted will be removed or stripped at a source.

(ii) For purposes of determining whether an emergency renovating operation constitutes a renovation within the meaning of this paragraph, the amount of friable asbestos material to be removed or stripped shall be the total amount of friable asbestos material that will be removed or stripped as

event that necessitated the renovation.

(4) The following procedures shall be used to prevent emissions of particulate asbestos material to outside air:

(i) Friable asbestos materials, used on any pipe, duct, boiler, tank, reactor, turbine, furnace, or structural member, shall be removed from any building, structure, facility or installation subject to this paragraph. Such removal shall occur before wrecking or dismantling of any portion of such building, structure, facility, or installation that would break up the friable asbestos materials and before wrecking or dismantling of any other portion of such building, structure, facility, or installation that would preclude access to such materials for subsequent removal. Removal of friable asbestos materials used on any pipe, duct, or structural member which are encased in concrete or other similar structural material is not required prior to demolition, but such material shall be adequately wetted whenever exposed during demolition.

(ii) Friable asbestos materials used on pipes, ducts, boilers, tanks, reactors, turbines, furnaces, or structural members shall be adequately wetted during stripping, except as provided in paragraphs (d)(4)(iv), (d)(4)(v) or (d)(4)(vii) of this section.

(iii) Pipes, ducts, boilers, tanks, reactors, turbines, furnaces, or structural members that are covered or coated with friable asbestos materials may be taken out of any building, structure, facility, or installation subject to this paragraph as units or in sections provided the friable asbestos materials exposed during cutting or disjoints are adequately wetted during the cutting or disjoints operation. Such units shall not be dropped or thrown to the ground, but shall be carefully lowered to ground level.

(iv) The stripping of friable asbestos materials used on any pipe, duct, boiler, tank, reactor, turbine, furnace, or structural member that has been removed as a unit or in sections as provided in paragraph (d)(4)(iii) of this section shall be performed in accordance with paragraph (d)(4)(ii) of this section. Rather than comply with the

ventilation and collection system may be used to prevent emissions to the outside air. Such local exhaust ventilation systems shall be designed and operated to capture the asbestos particulate matter produced by the stripping of friable asbestos material. There shall be no visible emissions to the outside air from such local exhaust ventilation and collection systems except as provided in paragraph (f) of this section.

(v) All friable asbestos materials that have been removed or stripped shall be adequately wetted to ensure that such materials remain wet during all remaining stages of demolition or renovation and related handling operations. Such materials shall not be dropped or thrown to the ground or a lower floor. Such materials that have been removed or stripped more than 50 feet above ground level, except those materials removed as units or in sections, shall be transported to the ground via dust-tight chutes or containers.

(vi) Except as specified below, the wetting requirements of this paragraph are suspended when the temperature at the point of wetting is below 0°C (32°F). When friable asbestos materials are not wetted due to freezing temperatures, such materials on pipes, ducts, boilers, tanks, reactors, turbines, furnaces, or structural members shall, to the maximum extent possible, be removed as units or in sections prior to wrecking. In no case shall the requirements of paragraphs (d)(4)(iv) or (d)(4)(v) be suspended due to freezing temperatures.

(vii) For renovation operations, local exhaust ventilation and collection systems may be used, instead of wetting as specified in paragraph (d)(4)(ii), to prevent emissions of particulate asbestos material to outside air when damage to equipment resulting from the wetting would be unavoidable. Upon request and supply of adequate information, the Administrator will determine whether damage to equipment resulting from wetting to comply with the provisions of this paragraph would be unavoidable. Such local exhaust ventilation systems shall be designed and operated to capture the as-

stripping and removal of friable asbestos material. There shall be no visible emissions to the outside air from such local exhaust ventilation or collection systems, except as provided in paragraph (f) of this section.

(5) Sources subject to this paragraph are exempt from the requirements of 61.05(a), 61.07, and 61.09.

(6) The demolition of a building, structure, facility, or installation, pursuant to an order of an authorized representative of a State or local governmental agency, issued because that building is structurally unsound and in danger of imminent collapse is exempt from all but the following requirements of paragraph (d) of this section:

(i) The notification requirements specified by paragraph (d)(2) of this section;

(ii) The requirements on stripping of friable asbestos materials from previously removed units or sections as specified in paragraph (d)(4)(iv) of this section;

(iii) The wetting, as specified by paragraph (d)(4)(v) of this section, of friable asbestos materials that have been removed or stripped;

(iv) The portion of the structure being demolished that contains friable asbestos materials shall be adequately wetted during the wrecking operation.

(e) Spraying: There shall be no visible emissions to the outside air from a spray-on application of materials containing more than 1 percent asbestos, on a dry weight basis, used on equipment and machinery, except as provided in paragraph (f) of this section. Materials sprayed on buildings, structures, pipes, and conduits shall contain less than 1 percent asbestos on a dry weight basis.

(1) Sources subject to this paragraph are exempt from the requirements of 61.05(a), 61.07, and 61.09.

(2) Any owner or operator who intends to spray asbestos materials which contain more than 1 percent asbestos on a dry weight basis to insulate or fireproof equipment and machinery shall report such intention to the Administrator at least 20 days prior to the commencement of the spraying operation. Such report shall include the following information:

(ii) Address of owner or operator.

(iii) Location of spraying operation.

(iv) Procedures to be followed to meet the requirements of this paragraph.

(3) The spray-on application of materials in which the asbestos fibers are encapsulated with a bituminous or resinous binder during spraying and which are not friable after drying is exempted from the requirements of paragraphs (e) and (e)(2) of this section.

(f) Rather than meet the no-visible-emission requirements as specified by paragraphs (a), (c), (d), (e), (h), (j), and (k) of this section, an owner or operator may elect to use the methods specified by § 61.23 to clean emissions containing particulate asbestos material before such emissions escape to, or are vented to, the outside air.

(g) Where the presence of uncombined water is the sole reason for failure to meet the no-visible-emission requirement of paragraphs (a), (c), (d), (e), (h), (j), or (k) of this section, such failure shall not be a violation of such emission requirements.

(h) Fabricating: There shall be no visible emissions to the outside air, except as provided in paragraph (f) of this section, from any of the following operations if they use commercial asbestos or from any building or structure in which such operations are conducted.

(1) The fabrication of cement building products.

(2) The fabrication of friction products, except those operations that primarily install asbestos friction materials on motor vehicles.

(3) The fabrication of cement or silicate board for ventilation hoods; ovens; electrical panels; laboratory furniture; bulkheads, partitions and ceilings for marine construction; and flow control devices for the molten metal industry.

(i) Insulating: Molded insulating materials which are friable and wet-applied insulating materials which are friable after drying, installed after the effective date of these regulations, shall contain no commercial asbestos. The provisions of this paragraph do not apply to heat-shielding materials

which are spray applied; such materials are regulated under § 61.22(e).

(j) Waste disposal for manufacturing, fabricating, demolition, renovation and spraying operations: The owner or operator of any source covered under the provisions of paragraphs (c), (d), (e), or (h) of this section shall meet the following standards:

(1) There shall be no visible emissions to the outside air, except as provided in paragraph (j)(3) of this section, during the collection; processing, including incineration; packaging; transporting; or deposition of any asbestos-containing waste material which is generated by such source.

(2) All asbestos-containing waste material shall be deposited at waste disposal sites which are operated in accordance with the provisions of § 61.25.

(3) Rather than meet the requirement of paragraph (j)(1) of this section, an owner or operator may elect to use either of the disposal methods specified under (j)(3) (i) and (ii) of this section, or an alternative disposal method which has received prior approval by the Administrator:

(i) Treatment of asbestos-containing waste material with water:

(A) Control device asbestos waste shall be thoroughly mixed with water into a slurry and other asbestos-containing waste material shall be adequately wetted. There shall be no visible emissions to the outside air from the collection, mixing and wetting operations, except as provided in paragraph (f) of this section.

(B) After wetting, all asbestos-containing waste material shall be sealed into leak-tight containers while wet, and such containers shall be deposited at waste disposal sites which are operated in accordance with the provisions of § 61.25.

(C) The containers specified under paragraph (j)(3)(i)(B) of this section shall be labeled with a warning label that states:

CAUTION

Contains Asbestos

Avoid Opening or

Breaking Container

Breathing Asbestos is Hazardous

to Your Health

Alternatively, warning labels specified by Occupational Safety and Health Standards of the Department of Labor, Occupational Safety and Health Administration (OSHA) under 29 CFR 1910.93a(g)(2)(ii) may be used.

(ii) Processing of asbestos-containing waste material into non-friable forms:

(A) All asbestos-containing waste material shall be formed into non-friable pellets or other shapes and deposited at waste disposal sites which are operated in accordance with the provisions of § 61.25.

(B) There shall be no visible emissions to the outside air from the collection and processing of asbestos-containing waste material, except as specified in paragraph (f) of this section.

(4) For the purposes of this paragraph (j), the term all asbestos-containing waste material as applied to demolition and renovation operations covered by paragraph (d) of this section includes only friable asbestos waste and control device asbestos waste.

(k) Waste disposal for asbestos mills: The owner or operator of any source covered under the provisions of paragraph (a) of this section shall meet the following standard:

(1) There shall be no visible emissions to the outside air, except as provided in paragraph (k)(3) of this section, during the collection, processing, packaging, transporting or deposition of any asbestos-containing waste material which is generated by such source.

(2) All asbestos-containing waste material shall be deposited at waste disposal sites which are operated in accordance with the provisions of § 61.25.

(3) Rather than meet the requirement of paragraph (k)(1) of this section, an owner or operator may elect to meet the following requirements in paragraphs (k)(2) (i) and (ii):

received prior approval by the Administrator:

(f) There shall be no visible emissions to the outside air from the transfer of control device asbestos waste to a tailings conveyor, except as provided in paragraph (f) of this section. Such waste shall be subsequently processed either as specified in paragraph (k)(3)(ii) of this section or as specified in paragraph (j)(3) of this section.

(g) All asbestos-containing waste material shall be adequately mixed, with wetting agent recommended by the manufacturer of the agent, to effectively wet dust and tailings, prior to disposition at a waste disposal site. Such agent shall be used as recommended for the particular dust by the manufacturer of the agent. There shall be no discharge of visible emissions to the outside air from the wetting operation except as specified in paragraph (f) of this section. Wetting shall be suspended when the ambient temperature at the waste disposal site is less than -9.5°C (ca. 15°F). The ambient air temperature shall be determined by an appropriate measurement method with an accuracy of $\pm 1^{\circ}$ ($\pm 2^{\circ}\text{F}$) and recorded at least at hourly intervals during the period of the operation of the wetting. Records of such temperature measurements shall be maintained at the source for a minimum of 2 years and made available for inspection by the Administrator.

(h) The owner of any inactive waste disposal site, which was operated by sources covered under § 61.22(a), (c) or (d) and where asbestos-containing waste material produced by such sources was deposited, shall meet the following standards:

(1) There shall be no visible emissions to the outside air from an inactive waste disposal site subject to this paragraph, except as provided in paragraph (f)(5) of this section.

(2) Warning signs shall be displayed at all entrances, and along the perimeter of the site or along the perimeter of the sections of the site where asbestos-containing waste material was deposited, at intervals of 100 m (ca. 300 ft) or less, except as specified in

shall be posted in such a manner and location that a person may easily read the legend. The warning signs required by this paragraph shall conform to the requirements of 20" x 14" upright format signs specified in 29 CFR 1910.145(d)(4) and this paragraph. The signs shall display the following legend in the lower panel, with letter sizes and styles of a visibility at least equal to those specified in this paragraph.

LEGEND

ASBESTOS WASTE DISPOSAL SITE

DO NOT CREATE DUST

Breathing Asbestos Is Hazardous to Your Health

Notation

1" Sans Serif, Gothic or Block

3/4" Sans Serif, Gothic or Block

14 Point Gothic

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

(3) The perimeter of the site shall be fenced in a manner adequate to deter access by the general public, except as specified in paragraph (i)(4) of this section.

(4) Warning signs and fencing are not required where the requirements of paragraphs (i)(5) (i) or (ii) of this section are met, or where a natural barrier adequately deters access by the general public. Upon request and supply of appropriate information, the Administrator will determine whether a fence or a natural barrier adequately deters access to the general public.

(5) Rather than meet the requirement of paragraph (i)(i) of this section, an owner may elect to meet the requirements of this paragraph or may use an alternative control method for emissions from inactive waste disposal sites which has received prior approval by the Administrator.

(b) The asbestos-containing waste material shall be covered with at least 15 centimeters (ca. 6 inches) of compacted non-asbestos-containing material, and a cover of vegetation shall be

adequate to prevent exposure of the asbestos-containing waste material; or

(ii) The asbestos-containing waste material shall be covered with at least 60 centimeters (ca. 2 feet) of compacted non-asbestos-containing material and maintained to prevent exposure of the asbestos-containing waste; or

(iii) For inactive waste disposal sites for asbestos tailings, a resinous or petroleum-based dust suppression agent which effectively binds dust and controls wind erosion shall be applied. Such agent shall be used as recommended for the particular asbestos tailings by the dust suppression agent manufacturer. Other equally effective dust suppression agents may be used upon prior approval by the Administrator. For purposes of this paragraph, waste crankcase oil is not considered a dust suppression agent.

[38 FR 3826, Apr. 6, 1973, as amended at 39 FR 15398, May 3, 1974; 40 FR 48292, Oct. 14, 1975; 43 FR 26374, June 19, 1978]

§ 61.23 Air-cleaning.

If air-cleaning is elected, as permitted by §§ 61.22(f) and 61.22(d)(4)(iv), the requirements of this section must be met.

(a) Fabric filter collection devices must be used, except as noted in paragraphs (b) and (c) of this section. Such devices must be operated at a pressure drop of no more than 4 inches water gage, as measured across the filter fabric. The airflow permeability, as determined by ASTM method D737-69, must not exceed 30 ft³/min/ft² for woven fabrics or 35 ft³/min/ft² for felted fabrics, except that 40 ft³/min/ft² for woven and 45 ft³/min/ft² for felted fabrics is allowed for filtering air from asbestos ore dryers. Each square yard of felted fabric must weigh at least 14 ounces and be at least one-sixteenth inch thick throughout. Synthetic fabrics must not contain fill yarn other than that which is spun.

(b) If the use of fabric filters creates a fire or explosion hazard, the administrator may authorize the use of wet collectors designed to operate with a unit contacting energy of at least 40 inches water gage pressure.

(c) The administrator may authorize

than that described in paragraphs (a) and (b) of this section if the owner or operator demonstrates to the satisfaction of the administrator that the filtering of particulate asbestos material is equivalent to that of the described equipment.

(d) All air-cleaning equipment authorized by this section must be properly installed, used, operated, and maintained. Bypass devices may be used only during upset or emergency conditions and then only for so long as it takes to shut down the operation generating the particulate asbestos material.

[38 FR 3826, Apr. 6, 1973, as amended at 40 FR 48302, Oct. 14, 1975]

§ 61.24 Reporting.

The owner or operator of any existing source to which this subpart is applicable shall, within 90 days after the effective date, provide the following information to the administrator:

(a) A description of the emission control equipment used for each process;

(b) If a fabric filter device is used to control emissions, the pressure drop across the fabric filter in inches water gage.

(1) If the fabric filter device utilizes a woven fabric, the airflow permeability in ft³/min/ft² and, if the fabric is synthetic, indicate whether the fill yarn is spun or not spun.

(2) If the fabric filter device utilizes a felted fabric, the density in oz/yd², the minimum thickness in inches, and the airflow permeability in ft³/min/ft².

(c) For sources subject to §§ 61.22(j) and 61.22(k):

(1) A brief description of each process that generates asbestos-containing waste material.

(2) The average weight of asbestos-containing waste material disposed of, measured in kg/day.

(3) The emission control methods used in all stages of waste disposal.

(4) The type of disposal site or incineration site used for ultimate disposal, the name of the site operator, and the name and location of the disposal site.

(d) For sources subject to § 61.22(i):

(2) The method or methods used to comply with the standard, or alternative procedures to be used.

(e) Such information shall accompany the information required by § 61.10. The information described in this section shall be reported using the format of Appendix A of this part.

114. Clean Air Act as amended (42 USC 7414)

88 FR 8826, Apr. 6, 1973, as amended at 40 FR 48302, Oct. 14, 1975; 43 FR 8800, Mar. 3, 1978

61.25 Waste disposal sites.

In order to be an acceptable site for disposal of asbestos-containing waste material under § 61.22(j) and (k), an active waste disposal site shall meet the requirements of this section.

(a) There shall be no visible emissions to the outside air from any active waste disposal site where asbestos-containing waste material has been deposited, except as provided in paragraph (e) of this section.

(b) Warning signs shall be displayed at all entrances, and along the property line of the site or along the perimeter of the sections of the site where asbestos-containing waste material is deposited, at intervals of 100 m (ca. 328 ft) or less except as specified in paragraph (d) of this section. Signs shall be posted in such a manner and location that a person may easily read the legend. The warning signs required by this paragraph shall conform to the requirements of 20" x 14" upright format signs specified in 29 CFR 1910.145(d)(4) and this paragraph. The signs shall display the following legend in the lower panel, with letter sizes and styles of a visibility at least equal to those specified in this paragraph.

LEGEND	
ASBESTOS WASTE DISPOSAL SITE	
Do Not Create Dust	
Breathing Asbestos Is Hazardous to Your Health	
Notation	
1" Sans Serif, Gothic or Block	
½" Sans Serif, Gothic or Block	
14 Point Gothic	

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

(c) The perimeter of the disposal site shall be fenced in order to adequately deter access to the general public except as specified in paragraph (d) of this section.

(d) Warning signs and fencing are not required where the requirements of paragraph (c)(1) of this section are met, or where a natural barrier adequately deters access to the general public. Upon request and supply of appropriate information, the Administrator will determine whether a fence or a natural barrier adequately deters access to the general public.

(e) Rather than meet the requirement of paragraph (a) of this section, an owner or operator may elect to meet the requirements of paragraph (c)(1) or (c)(2) of this section, or may use an alternative control method for emissions from active waste disposal sites which has received prior approval by the Administrator.

(1) At the end of each operating day, or at least once every 24-hour period while the site is in continuous operation, the asbestos-containing waste material which was deposited at the site during the operating day or previous 24-hour period shall be covered with at least 15 centimeters (ca. 6 inches) of compacted non-asbestos-containing material.

(2) At the end of each operating day, or at least once every 24-hour period while the disposal site is in continuous operation, the asbestos-containing waste material which was deposited at the site during the operating day or previous 24-hour period shall be cov-

ered dust suppression agent which effectively binds dust and controls wind erosion. Such agent shall be used as recommended for the particular dust by the dust suppression agent manufacturer. Other equally effective dust suppression agents may be used upon prior approval by the Administrator. For purposes of this paragraph, waste crankcase oil is not considered a dust suppression agent.

(40 FR 48302, Oct. 14, 1975)

Subpart C—National Emission Standard for Beryllium

§ 61.30 Applicability.

The provisions of this subpart are applicable to the following stationary sources:

(a) Extraction plants, ceramic plants, foundries, incinerators, and propellant plants which process beryllium ore, beryllium, beryllium oxide, beryllium alloys, or beryllium-containing waste.

(b) Machine shops which process beryllium, beryllium oxides, or any alloy when such alloy contains more than 5 percent beryllium by weight.

§ 61.31 Definitions.

Terms used in this subpart are defined in the act, in subpart A of this part, or in this section as follows:

(a) "Beryllium" means the element beryllium. Where weights or concentrations are specified, such weights or concentrations apply to beryllium only, excluding the weight or concentration of any associated elements.

(b) "Extraction plant" means a facility chemically processing beryllium ore to beryllium metal, alloy, or oxide, or performing any of the intermediate steps in these processes.

(c) "Beryllium ore" means any naturally occurring material mined or gathered for its beryllium content.

(d) "Machine shop" means a facility performing cutting, grinding, turning, honing, milling, deburring, lapping, electrochemical machining, etching, or other similar operations.

(e) "Ceramic plant" means a manufacturing plant producing ceramic items.

(f) "Foundry" means a facility engaged in the melting or casting of beryllium metal or alloy.

(g) "Beryllium-containing waste" means material contaminated with beryllium and/or beryllium compounds used or generated during any process or operation performed by a source subject to this subpart.

(h) "Incinerator" means any furnace used in the process of burning waste for the primary purpose of reducing the volume of the waste by removing combustible matter.

(i) "Propellant" means a fuel and oxidizer physically or chemically combined which undergoes combustion to provide rocket propulsion.

(j) "Beryllium alloy" means any metal to which beryllium has been added in order to increase its beryllium content and which contains more than 0.1 percent beryllium by weight.

(k) "Propellant plant" means any facility engaged in the mixing, casting, or machining of propellant.

§ 61.32 Emission standard.

(a) Emissions to the atmosphere from stationary sources subject to the provisions of this subpart shall not exceed 10 grams of beryllium over a 24-hour period, except as provided in paragraph (b) of this section.

(b) Rather than meet the requirement of paragraph (a) of this section, an owner or operator may request approval from the Administrator to meet an ambient concentration limit on beryllium in the vicinity of the stationary source of 0.01 $\mu\text{g}/\text{m}^3$, averaged over a 30-day period.

(1) Approval of such requests may be granted by the Administrator provided that:

(i) At least 3 years of data is available which in the judgment of the Administrator demonstrates that the future ambient concentrations of beryllium in the vicinity of the stationary source will not exceed 0.01 $\mu\text{g}/\text{m}^3$, averaged over a 30 day period. Such 3-year period shall be the 3 years ending 30 days before the effective date of this standard.

(ii) The owner or operator requests

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ASBESTOS CONTAMINATION IN UNITED STATES
SCHOOLS FROM USE OF ASBESTOS
SURFACING MATERIALS*

William J. Nicholson, Edward J. Swoszowski, Jr. Arthur N. Rohl,
James D. Todaro, and Antoinette Adams

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Until recently there was only limited awareness of the extent of asbestos use in public school buildings. Reports existed of damaged asbestos surfaces in a grade school in Wyoming,¹ a university dormitory in California,² and in the Yale School of Arts and Architecture in New Haven, Connecticut.³ In each case, public concern led to the removal of the asbestos material. In both the Wyoming school and the Yale Library, air measurements by optical microscopy showed asbestos concentrations that in some circumstances exceeded 5 f/ml, the time-weighted-average occupational standard in effect at the time. In the fall of 1976, flaking of sprayed-on asbestos was reported in a school in Howell Township, New Jersey, leading to its removal and to further concern about the presence of deteriorating asbestos in other school buildings in New Jersey. As a consequence, the New Jersey Department of Education requested that the school administrators report the presence and condition of asbestos surfaces in all school buildings within the state. Responses revealed that 265 (of approximately 2400) schools in all 142 districts in the State had nearly three million square feet of what they considered to be asbestos material in classrooms, auditoriums, hallways and other rooms accessible to pupils.

ASBESTOS SURFACING MATERIALS IN NEW JERSEY SCHOOLS

In cooperation with the Department of Education of New Jersey, the Environmental Sciences Laboratory of Mount Sinai School of Medicine undertook an investigation of the asbestos use in New Jersey schools.⁴ All of the schools with asbestos surfacing material in twenty-one districts were selected for study. The selection was accomplished using random numbers, but also employed a weighting factor to include more of those school districts which had reported greater use of asbestos. In all, forty-eight schools were visited and samples were taken of the material thought to be asbestos. These were analyzed for their asbestos content and for the presence of other mineral materials. Areas such as classrooms, hallways, auditoriums, cafeterias and locker rooms were priority locations for sampling, since they are used by large numbers of students as well as by faculty. In general the suspect materials were on ceilings, although they might also have been applied to walls. Of 64 samples collected, 50 were in such areas, the remainder being from custodial or boiler rooms.

During visual inspection of these schools and the analysis of collected samples, three general types of asbestos containing material were found. One was a friable,

*This research was supported by Contract N01-ES-7-2113 of the National Institute of Environmental Health Sciences.

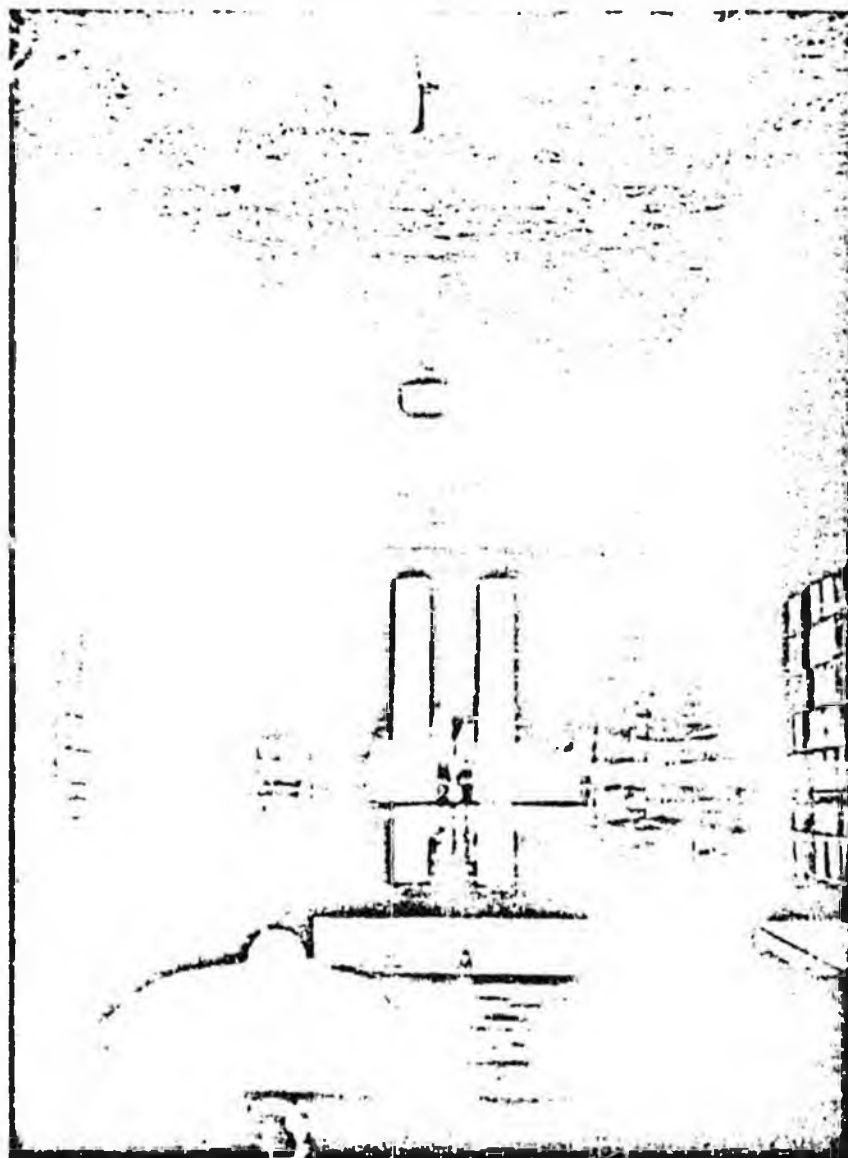


FIGURE 1. Damage to asbestos materials sprayed on a hallway ceiling. This was easily reached by students and extensive damage was present throughout the length of the hallway.

loosely bonded, fibrous mat approximately one-half inch thick. The mat had been applied by blowing a mixture of asbestos, mineral (rock) wool, clay binders (as, bentonite), adhesives, synthetic resins and other proprietary agents through a two- to four-inch diameter hose. Upon leaving the hose, the material passed through a water spray which activated the adhesives and binders. The applied material would then

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have been tamped and often sprayed with emulsion type sealers—latex or acrylic paints. Most material of this type observed in this survey was readily damageable and could also break loose from the underlying surface because of the inadequacy of the binders. In the schools visited, the most troublesome problems were those seen with this type of material and its application. FIGURES 1 and 2 illustrate extreme examples of damaged and deteriorating sprayed-on asbestos ceilings. Approximately one-third of the schools visited had this type of material applied. Its use in boiler rooms and custodial areas was more frequent, however.

A second type of coating material was a dense, compactible mixture of asbestos and other products, such as vermiculite. This would have been applied in the wet state to walls and ceilings, compacted and formed into a relatively smooth matrix. This material would also usually be over-painted, either shortly following application or subsequently. In the schools we visited, spontaneous disintegration of such materials was not seen. However, in areas accessible to students, various degrees of abuse were observed. Severe damage of such material is shown in FIGURES 3 and 4.

Thirdly, asbestos was found incorporated in cementitious or plaster-like matrices. These were applied as slurries to walls and ceilings, forming a textured surface of considerable hardness which would usually be over-painted. Such plasters or textured paints have considerable stability and are unlikely to allow the release of asbestos fibers through erosion. Although damage to these surfaces can occur from physical abuse or abrasion, this was infrequently seen.

In each school visited the asbestos material was categorized as above and an estimate made of damage or deterioration. The results are outlined in TABLE I.



ceiling. This was easily reached from the hallway.

thick. The mat had been made of wool, clay binders (asbestos), and other agents through a two-to-three inch hole. Material would then



FIGURE 2. Disintegration of fibrous spray material in a building storage area. The conditions seen occurred spontaneously, with no evidence of external abuse.



FIGURE 3. Damage to cementitious asbestos spray in a school hallway. Some of the indentations occurred from flagpoles inadvertently striking the ceiling during color guard practice.

Overall, two-thirds of schools with asbestos surfaces had some visible evidence of damage to the material.

The x-ray analysis of materials, by and large, confirmed the presence of asbestos in those schools that had reported its use. Such was the case in 97% of the schools that believed their sprayed-on material contained asbestos. In only two schools was the reported presence of asbestos not confirmed by x-ray diffraction analysis of the sampled material. On the other hand, this survey did not provide information on the number of schools that may have been mistaken in their belief that they had no asbestos in surfacing material, and, as a result, did not report its presence. That this possibility exists is exemplified by one instance in which a school official stated that his administration had been told by its architect that the sprayed-on plaster material in their school was asbestos free. An analysis of the material, however, revealed that it contained about 2% chrysotile. Further, many schools did not report the presence of asbestos in school areas not used by pupils, such as boiler rooms where extensive use of asbestos occurs. While not accessible to students, the possibility exists that such asbestos could be dislodged and transported into student use areas.

Similar data from other areas indicate the use in New Jersey is fairly typical. New York City has reported asbestos surfaces to be present in 351 of approximately 1100 schools in the city.⁵ Massachusetts found asbestos in student areas of 138 of 1200 schools surveyed.⁶ Widespread use of asbestos has also been reported in schools in Indiana, Kentucky and other states.⁷ If the estimates from those states surveyed are applicable to the entire nation, two to six million pupils may be attending schools with asbestos surfaces in pupil areas.⁷ An additional 100,000 to 300,000 teachers would also be exposed.

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ASBESTOS CONCENTRATIONS IN SCHOOLS AND IN THE AMBIENT AIR

Air samples have been taken in ten schools in which asbestos materials were used as surface coatings in halls, cafeterias, libraries and other pupil-use areas. Three of the schools were located in suburban areas of New Jersey and Massachusetts, and seven



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FIGURE 4. Further damage to cementitious ceiling material. Here evidence exists that some students wished to be remembered beyond their stay at the school.

TABLE I
CONDITION OF ASBESTOS SURFACES IN 64 NEW JERSEY SCHOOLS

Type of Asbestos Material	Intact Undamaged	Minimum Damage, No Deterioration	Localized Damage or Deterioration	Severe Damage or Deterioration	Totals
Loose, friable fibrous asbestos spray material	4 (18%)	10 (45%)	5 (23%)	3 (14%)	22
Moderately dense asbestos spray material, often in association with vermiculite or perlite	15 (42%)	13 (36%)	4 (11%)	4 (11%)	36
Plaster or textured paint material with asbestos binder	4 (67%)	1 (17%)	1 (17%)	0 (0%)	6
Totals	23 (36%)	24 (38%)	10 (16%)	7 (11%)	64

in urban centers of New York and New Jersey. The schools were selected for air sampling because of visible damage in some of the asbestos surfaces. The samples were collected on 0.8 μ m pore size membrane filters and analyzed using electron microscopic techniques that determined the amount of chrysotile asbestos in each specimen. This variety of asbestos was quantitated because it could easily be identified on the basis of its unique tubular structure. Amphibole asbestos (either amosite or crocidolite) could also be present in the air of schools or in the ambient air, but is much less commonly found. For example, only seven of 64 bulk material samples in schools contained either of these minerals. However, if present in the air sampled, such asbestos would add to those concentrations measured.

To prepare a sample for analysis, a portion of the sample, mounted on a microscope slide, was ashed in a low temperature-activated oxygen furnace for approximately four hours. This served to remove the membrane filter material, all organic material in the collected sample, soot and other carbonaceous material. The residue, consisting mostly of fly ash and mineral matter, was dispersed on microscope slides in a solution of 1% nitrocellulose in amyl acetate. Upon evaporation of amyl

TABLE 2
DISTRIBUTION OF CHRYSOTILE ASBESTOS CONCENTRATIONS IN 4- TO 8-HOUR SAMPLES TAKEN IN PUBLIC SCHOOLS WITH DAMAGED ASBESTOS SURFACES

Electron Microscopic Analysis		
Asbestos Concentration (ng/m ³)	Number of Samples	Percentage of Samples
Less than		
20	1	3.7
50	6	22.2
100	12	44.4
200	19	70.4
500	25	92.6
1000	26	96.3
2000	27	100.0

NEW JERSEY SCHOOLS

Sampled Area or Location	Severe Damage or Deterioration	Totals
(23%)	3 (14%)	22
(11%)	4 (11%)	36
(17%)	0 (0%)	6
(16%)	7 (11%)	64

acetate, the dispersal was scanned for uniformity and representative areas were chosen for transfer to electron microscope grids for scanning. The samples thus prepared were scanned at magnification of 20,000X. Typically, four to eight 100 μ m squares of separate grids from each sample were scanned, and the mass of chrysotile fibers was determined by sizing each individual fiber. Control blank filters were processed with each set of four samples and background levels of chrysotile determined from them subtracted from that found on sample filters.

TABLE 2 lists the distribution of chrysotile concentrations found in samples taken over four to eight hours in these ten schools. Chrysotile asbestos concentrations ranged from 9 nanograms/cubic meter of sampled air (ng/m^3) to 1950 ng/m^3 with an average of 217 ng/m^3 . Outside air samples at three of the schools varied from 3 ng/m^3 to 30 ng/m^3 with an average of 14 ng/m^3 . In all samples but two (which measured 320 ng/m^3 and 260 ng/m^3) no asbestos was visible on the floor of the area sampled although surface damage was generally present near the area sampled. The highest value (1950 ng/m^3) was in a sample following routine sweeping of a hallway in a school with water damage to the asbestos surface. However, no asbestos was visible on the floor prior to sweeping.

Schools were selected for air samples on surfaces. The samples were analyzed using electron microscope for chrysotile asbestos in each case so it could easily be identified as asbestos (either amosite or chrysotile) in the ambient air, but is much more material samples in schools where no asbestos was found in the air sampled, such as in the sample, mounted on a activated oxygen furnace for membrane filter material, all carbonaceous material. The asbestos was dispersed on microscope upon evaporation of the amyl

TABLE 3
DISTRIBUTION OF 24-HOUR CHRYSOTILE ASBESTOS CONCENTRATIONS IN THE AMBIENT AIR OF UNITED STATES CITIES⁸

Electron Microscopic Analysis		
Asbestos Concentration (ng/m^3) Less than	Number of Samples	Percentage of Samples
1.0	61	32.6
2.0	119	63.6
5.0	164	87.7
10.0	176	94.2
20.0	184	98.5
50.0	185	99.0
100.0	187	100.0

PERCENTAGE IN 4- TO 8-HOUR SAMPLES FROM DAMAGED ASBESTOS SURFACES

Percentage of Samples

- 17
- 22.2
- 44.4
- 70.4
- 92.6
- 96.1
- 100.0

These concentrations in schools with damaged asbestos surfaces can be compared with those found in other circumstances. Asbestos of the chrysotile variety has been found to be a ubiquitous contaminant of ambient air. A study of 187 quarterly composite samples collected in 48 United States cities during 1969 to 1970 showed chrysotile asbestos to be present in virtually all metropolitan areas.⁸ TABLE 3 lists the distribution of values obtained in that study. Each value is from a composite of five to seven 24-hour samples and thus averages over possible peak concentrations which could occur periodically or randomly. It is noteworthy that 98.5% of these ambient air samples had concentrations less than 20 ng/m^3 , a value exceeded by 96% of the school samples.

In a study of the ambient air of New York City, in which samples were taken only during daytime working hours, higher values than those mentioned above were obtained.⁹ These were six- to eight-hour samples collected between 8:00 A.M. and 5:00 P.M., and reflect what could be intermittently higher concentrations during those hours compared to night time periods, for example. TABLE 4 records the chrysotile

content of 22 samples collected in the five boroughs of New York. It should be noted that the samples analyzed in all of the studies discussed above were taken during a period when fireproofing highrise buildings by spraying asbestos-containing material was permitted. The practice was especially common in New York City. While no sampling station was known to be located adjacent to an active construction site, unusually high levels could nevertheless have resulted from the procedure. The highest concentration measured in these samples, 65 ng/m³, was exceeded by 70% of the school samples and the average of all 26 school samples (217 ng/m³) was more than 10 times the average of the New York City samples (17 ng/m³).

Of particular relevance to the current study are the analyses for chrysotile of 116 samples of indoor and outdoor air collected in or near 19 buildings in five United States cities.¹⁰ The buildings sampled included those in which various asbestos minerals had been applied as fireproofing material to the steelwork or for acoustic or decorative purposes. Average values for the air inside buildings ranged from 2.5 ng/m³ to 200 ng/m³, with individual measurements ranging from 0 to 800 ng/m³.

For outside air the variation for the average concentration at a given site extended from 0 to 48 ng/m³. Little contamination was found in buildings utilizing cementitious

TABLE 4
CHRYSTOLE CONTENT OF AMBIENT AIR IN NEW YORK CITY BY BOROUGH
(6- TO 8-HOUR DAYTIME SAMPLES)^a

Sampling Locations	Number of Samples	Asbestos Concentration (ng/m ³)	
		Range	Average
Manhattan	7	8-65	30
Brooklyn	3	6-39	19
Bronx	4	2-25	12
Queens	4	3-18	9
Statens Island	4	5-14	8

material but 47% of buildings with friable asbestos materials, either on room surfaces or in return air plenums, had air concentrations in excess of 20 ng/m³ versus 14% of all outside control samples. Twenty-four samples were taken in buildings with asbestos applied to wall and ceiling surfaces for decorative or acoustic purposes. Of these, three showed concentrations exceeding 100 ng/m³ in areas where the asbestos was damaged. However, in the absence of damage, air concentrations similar to background were observed.

The majority of the data on asbestos concentrations in schools were obtained in circumstances in which damage had occurred to friable, noncementitious asbestos-containing sprayed material with consequent dislodgement of asbestos fibers. In general, when significant levels were found, physical deterioration of the surface of the material was evident. While fewer data exist regarding air concentrations associated with damage to cementitious asbestos-containing sprayed material, the finding of higher chrysotile concentrations in one school with such material raises the same question here as well. Thus, the conclusions that can be drawn from these data include the following.

1. If visible damage to or erosion of any asbestos-containing sprayed material is evident, increased asbestos air concentrations would have existed at the time of damage and may still persist.

New York. It should be noted that the samples taken during a survey of asbestos-containing material in New York City. While no samples were taken from an active construction site, the procedure followed from the procedure. The highest concentration was exceeded by 70% of the samples (217 ng/m³) was more than 10 times the background level (21.7 ng/m³). The analyses for chrysotile of 116 samples from 19 buildings in five United States in which various asbestos uses were identified, including the steelwork or for acoustic or decorative buildings ranged from 2.5 ng/m³ to 800 ng/m³. The concentration at a given site extended to buildings utilizing cementitious

2. As such damage is likely to recur or to continue, asbestos air concentrations in excess of background (50 ng/m³) may be expected in the future.
3. Where visible damage or erosion is not evident, asbestos air concentrations are likely to be little different from background, but the possibility of later damage and future asbestos fiber release with concomitant increased air concentrations cannot be excluded.

ENVIRONMENTAL ASBESTOS HEALTH EFFECTS

Serious asbestos disease associated with direct¹¹⁻¹³ or indirect¹⁴ occupational exposure to asbestos has been extensively documented. Of increasing importance, are the findings of asbestos disease in other than occupational circumstances. In 1960 Wagner reviewed 47 cases of mesothelioma found in the Northwest Cape Province, South Africa in the previous five years.¹⁵ Of this number, roughly half were in people who had worked with asbestos. Virtually all of the rest were in individuals who had, decades before, simply lived or worked in an area of asbestos mining (one lived along a roadway in which asbestos fibers were shipped). This germinal observation demonstrated that asbestos exposure of limited intensity, often intermittent, could cause mesothelioma. The hazard was further pointed out by the findings of Newhouse,¹⁶ who showed that mesothelioma could occur among people whose potential asbestos exposure consisted of their having resided near an asbestos factory or in the households of asbestos workers. Twenty of 76 cases from the files of the London Hospital were the result of such exposure, 31 were occupational in origin and asbestos exposure was not identified for 25.

A recent extensive study of the effects of household exposure has been conducted by Dr. Henry Anderson and his colleagues of the Mount Sinai School of Medicine.¹⁷ In a clinical survey of 679 family contacts of former asbestos factory workers, it was found that the x-rays of 35% of these individuals showed abnormalities characteristic of asbestos exposure. It did not matter greatly what the relationship to the worker was; the asbestos dust in the household could effect any resident—wife, sons, daughters, parents. While almost all were currently asymptomatic, and while most would perhaps suffer no impairment from their past exposure, others may be stricken with an asbestos-related cancer as a result of past household asbestos exposure. (During this continuing survey, five deaths of mesothelioma have already been identified in this group of family contacts.)

Unfortunately, no exposure data exist on the concentrations of asbestos dust to which these various populations were exposed 20, 30, or 40 years ago. Thus, direct dose-response data on asbestos health effects in environmental circumstances do not exist. However, recent measurements of asbestos concentrations in the homes of workers, around sites where asbestos materials were sprayed as fireproofing or in the neighborhood surrounding uncontrolled asbestos-processing facilities, usually yield values in the hundreds of ng/m³, with concentrations only rarely exceeding 1000 ng/m³.¹⁸ This suggests that the long-term exposure of many children to concentrations above 100 ng/m³ may not be without later risk of asbestos disease.

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LAWS OF ALASKA

1983

Source

GSSB 79 (Rea)

Chapter No.

93

AN ACT

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

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

THE ACT FOLLOWS ON PAGE 1, LINE 9

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

Chapter 93

AN ACT

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

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

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

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

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

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

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

Chapter 93

1 of this section.

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

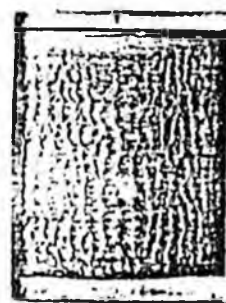
4 (A) the location, properties, and known or suspected
5 acute and chronic health effects of the hazardous or toxic sub-
6 stances to which the employee is exposed in the workplace;

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

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

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

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



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

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

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

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

(A) under normal conditions of work; or

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

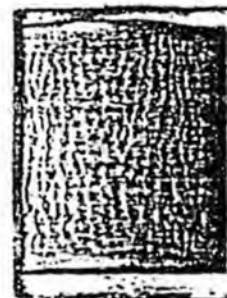
(c) Instead of posting the information required under (b)(2) of this section, an employer may post a list of the chemical name and product name of each toxic or hazardous substance to which an employee may be exposed in the workplace, together with an identification of a location, in or near the workplace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

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

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

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

(8) "toxic or hazardous substance" includes



Chapter 93

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

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

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

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

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

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

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

23 (C) substances in transit;

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

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

27 (b) In AS 18.60.030(14), 18.60.065 - 18.60.068, and 18.60.105-
28 (a)(9)

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

Chapter 93

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

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

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

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

* Sec. 5. Sections 1, 3, and 4 of this Act take effect immediately in accordance with AS 01.070(c).

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

News Miner
2/1/84

EPA: schools ignore law about asbestos warnings

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

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

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

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

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

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

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

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

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

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

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

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

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

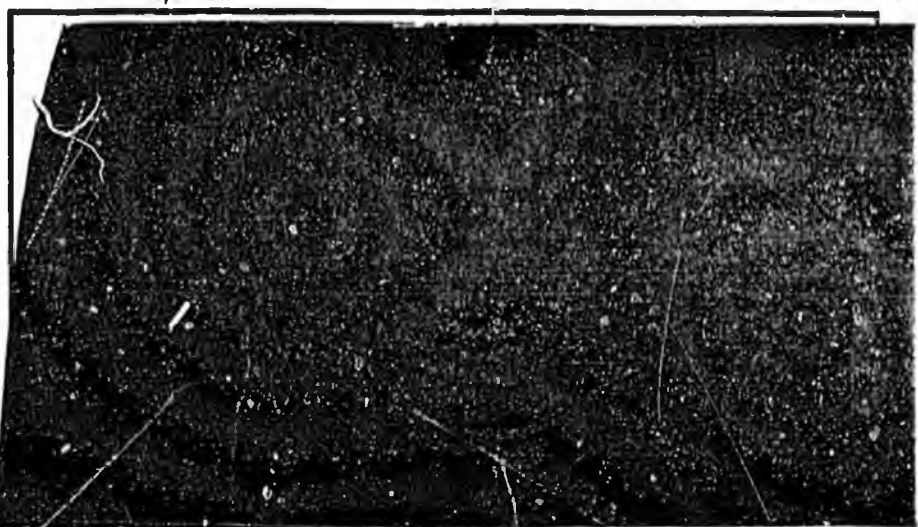
"The agency has not issued a high-

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

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

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

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



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

Funding limits asbestos removal

Associated Press

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

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

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

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

to spend if forced to clean up the asbestos hazard.

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 findings are included in an internal program review requested by EPA Deputy Administrator Al Alm and completed in Decem-

ber. 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.

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

Federal funds to help remove asbestos

by Stephen J. Downes
Times Writer

2/11/81

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

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

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

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

—About 35 acres of Bartlett is on federal land and technically belongs to the federal government, Freeman said. The other 113 acres have been deeded to the municipality, he said. The district operates the whole school.

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

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

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

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

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

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

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

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

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

Anchorage lawmakers have already proposed \$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 \$250,000 project at nine schools in Fair-

Office copy
Sent to all school districts and private schools

NOTE: Under TAP, in 1979 all schools were sent copies of Guidance Document 1 & 2



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. • 20460

JUN 10 1982

THE ADMINISTRATOR

Dear School Administrator:

On May 27, 1982, the Environmental Protection Agency (EPA) published a rule in the Federal Register (47 FR 23360-23399) requiring all public and private elementary and secondary schools in the United States to identify friable asbestos-containing materials, maintain records, and notify employees of the location of the friable materials which contain asbestos. When friable asbestos-containing materials are found, schools must provide the employees with instructions on reducing exposure to asbestos, and notify the school's parent-teacher association.

Since 1979, EPA has operated a Technical Assistance Program (TAP) to help schools identify and correct potential hazards due to asbestos in schools. However, many schools did not respond to EPA's effort under the TAP. EPA is now requiring all schools to identify friable asbestos-containing materials and notify employees and parent-teacher organizations of their presence. These actions must be completed by June 28, 1983.

To assist schools in complying with the rule, we are enclosing a copy of the rule along with copies of "Asbestos-Containing Materials in School Buildings: A Guidance Document, Parts 1 and 2." Should you need a copy of any forms for this rule or other general information, please contact the Industry Assistance Office (TS-799), Office of Toxic Substances, Environmental Protection Agency, Rm. E-511, 401 M Streets, S.W., Washington, D.C. 20460. Phone: Toll free, 800-424-9065. In Washington, D.C., call 544-1404. Outside the Continental U.S., call Operator-202-554-1404. If you need technical assistance, please contact the appropriate Regional Asbestos Coordinator listed in the rule on page 23361.

RECEIVED
AUG 1 1982

COMPLIANCE BRANCH
EPA - REGION 4

Sincerely,

Handwritten signature of Douglas G. Bannerman in cursive.

Douglas G. Bannerman
Acting Director,
Industry Assistance Office

ROUTING AND TRANSMITTAL SLIP

Date

TO: (Name, office symbol, room number, building, Agency/Post)	Initials	Date
1. Jim Smith		
2. Andy Christensen		
3.		
4.		
5.		

Action	File	Note and Return
Approval	For Clearance	For Conversation
As Requested	For Correction	Prepare Reply
Circulate	For Your Information	See Me
Comment	Investigate	Signature
Coordination	Justify	

REMARKS

Attached are schools in Alaska which were sent to the schools rule package. Also, attached is an address change.

RECEIVED
SEP 13 1982

DO NOT use this form as a RECORD of approvals, concurrences, disposals, clearances, and similar actions.

FROM: (Name, org. symbol, Agency/Post)	EPA	Room No.—Bldg.
<i>Dave Mayer</i>		
		Phone No.

5041-102

Dave Mayer, EPA

OPTIONAL FORM 41 (Rev. 7-76)
Prescribed by GSA
FPMR (41 CFR) 101-11.206

WASH. D.C.

Acting Team leader for Asbestos

SUPERINTENDENT
ADAK REGION SCHOOLS
FPO SEATTLE AK 95791

SUPERINTENDENT
BRISTOL BAY BOROUGH SCH D
NANKNEK AK 99633

SUPERINTENDENT
ALASKA GATEWAY SCH DIST
TOK AK 99780

SUPERINTENDENT
CRAIG CITY SCH DIST
CRAIG AK 99921

SUPERINTENDENT
DELTA GREELY SCH DIST
DELTA JUNCT AK 99737

SUPERINTENDENT
GATEWAY BOROUGH SCH DIST
KETCHIKAN AK 99901

SUPERINTENDENT
ANCHORAGE SCH DIST
ANCHORAGE AK 99502

SUPERINTENDENT
HAINES BOROUGH SCH DIST
HAINES AK 99627

SUPERINTENDENT
HOONAH CITY SCH DIST
HOONAH AK 99829

SUPERINTENDENT
KENAI PENINSULA BOROUGH S
SLODQINA AK 99669

SUPERINTENDENT
KING COVE CITY SCH DIST
KING COVE AK 99612

SUPERINTENDENT
LAKE AND PENINSULA SCH DI
NANKNEK AK 99633

SUPERINTENDENT
LOWER KUSKOKWIM SCH DIST
BETHEL AK 99559

SUPERINTENDENT
EDITAROD FELA SCH DIST
MCGRATH AK 99627

SUPERINTENDENT
ANNETTE ISLAND SCH DIST
METLAKATLA AK 99926

SUPERINTENDENT
NORTH STAR BOROUGH SCH DI
FAIRBANKS AK 99701

SUPERINTENDENT
NORTH SLOPE BOROUGH SCH D
BARROW AK 99723

SUPERINTENDENT
PETERSBURG CITY SCH DIST
PETERSBURG AK 99833

SUPERINTENDENT
PRIBILOF ISLAND SCH DIST
ST PAUL AK 99860

SUPERINTENDENT
ALEUTIAN REGION SCH DIST
ANCHORAGE AK 99503

SUPERINTENDENT
BERING STRAIT SCH DIST
NOME AK 99752

SUPERINTENDENT
CORCOVA CITY SCH DIST
CORCOVA AK 99574

SUPERINTENDENT
COPPER RIVER REAR SCH DIST
GLENNALLEN AK 99588

SUPERINTENDENT
DILLINGHAM CITY SCH DIST
DILLINGHAM AK 99576

SUPERINTENDENT
GALENA CITY SCH DIST
GALENA AK 99741

SUPERINTENDENT
JUNEAU BOROUGH SCHOOLS
DOUGLAS AK 99824

SUPERINTENDENT
SITKA BOROUGH SCH DIST
SITKA AK 99825

SUPERINTENDENT
HYDABURG CITY SCH DIST
HYDABURG AK 99922

SUPERINTENDENT
KAKE CITY SCH DIST
KAKE AK 99830

SUPERINTENDENT
KLANCK CITY SCH DIST
KLANCK AK 99925

SUPERINTENDENT
KODIAK ISLAND BOROUGH SCH DIST
KODIAK AK 99615

SUPERINTENDENT
LOWER YUKON SCH DIST
MT VILLAGE AK 99632

SUPERINTENDENT
MATANUSKA-SUSITNA BOR SCH DIST
PALMER AK 99645

SUPERINTENDENT
NENANA CITY SCH DIST
NENANA AK 99750

SUPERINTENDENT
NOME CITY SCH DIST
NOME AK 99750

SUPERINTENDENT
NORTHWEST ARCTIC SCH DIST
COTZEPUE AK 99752

SUPERINTENDENT
PELICAN CITY SCH DIST
PELICAN AK 9983

SUPERINTENDENT
SAINT MARYS CITY SCH DIST
ST MARYS AK 99658

SUPERINTENDENT
SAND POINT SCHOOLS
SAND POINT AK 99661

SUPERINTENDENT
SOUTHWEST REGION SCH DIST
DILLINGHAM AK 99576

SUPERINTENDENT
UNALASKA CITY SCH DIST
UNALASKA AK 99685

SUPERINTENDENT
RAIL BELT SCHOOL DISTRICT
CLEAR AK 99704

SUPERINTENDENT
YUKON FLATS SCH DIST
FORT YUKON AK 99740

SUPERINTENDENT
WRANGELL CITY SCH DIST
WRANGELL AK 99929

SUPERINTENDENT
YAKUTAT CITY SCH DIST
YAKUTAT AK 99689

SUPERINTENDENT
SKAGWAY CITY SCH DIST
SKAGWAY AK 99840

SUPERINTENDENT
SOUTHEAST ISLAND SC
KETCHIKAN AK
99901

SUPERINTENDENT
CHATHAM REGION SCHOOLS
ANGOOK AK 99820

SUPERINTENDENT
KUSPUK SCHOOL DIST
ANIAK AK
99557

SUPERINTENDENT
VALDEZ CITY SCH DIST
VALDEZ AK 99686

SUPERINTENDENT
CHUGACH SCH DIST
WHITTIER AK
99502

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Private schools
for requests

DATE: 2 August, 1982

SUBJECT: Identification and Notification requirements for Friable Asbestos-Containing Materials in Schools

FROM: A. B. Christensen, Asbestos Technical Advisor, Region V

Office copy
A. B. Christensen

TO:

Each public school district has been mailed a separate package containing copies of "Asbestos-Containing Materials in School Buildings: A Guidance Document", Parts I & II (the orange colored booklets) and the new Regulation dated Thursday May 27, 1982, "Friable Asbestos-Containing Materials in Schools: Identification and Notification" (which requires inspection of all public and private schools for the presence of friable asbestos-containing material).

The responsibility for compiling and maintaining records in each school district (Local Education Agency) is placed on the individual districts. This mailing is designed to assist you to fulfill the requirements. You may find much of the work was already accomplished under the "Voluntary Asbestos Survey Program".

To assist each district and school have in their file the required information, we have made up some "check-off" lists for your use. One blank copy for the district and blank copies for the individual schools in the district are attached. For those districts and schools that are not complicated by the presence of any friable materials it will be a simple matter to fill in the blanks which apply. Those districts and schools which have friable materials are, obviously, required to complete inspections and analysis and to comply with the additional requirements of the rule as outlined on the "check-off" list and spelled out in the regulation. Please retain a copy of the "check-off" list with your file.

The check lists are made out to try to cover every situation so please bear with the seeming duplication on the second page of each list.

Should you require copies of any of the following reference materials:

- (1) Guidance Documents, Parts I & II,
- (2) Mathematical formula referred to in Part I, Chapter 7, page 14 (The Algorithm),
- (3) Polarized Light Microscopy (PLM) laboratory listing,
- (4) Any other pertinent information, please call or write direct to:

Environmental Protection Agency
School Asbestos Program M/S 524
1200 Sixth Avenue
Seattle, WA 98101 / (206) 442-1255

3200 Hospital DR
Suite 101
Juneau, AK 99801

586-7619

Your assistance to complete the identification of friable asbestos-containing materials in your school district is appreciated.

Recordkeeping required by Chapter 1 of Title 40, Code of Federal Regulations, Part 763 - ASBESTOS Subpart F - Friable Asbestos-Containing Materials in Schools; Identification and Notification

Cover Sheet

LOCAL EDUCATION AGENCY
INSPECTION FOR FRIABLE ASBESTOS-CONTAINING MATERIALS

Cover Sheet

Name and Address of the Agency (School District)

Local Education Agencies shall inspect each school building which they lease, own, or otherwise use as a school building, to locate all friable material. Inspection shall consist of looking for and touching all suspect material, including surfaces behind suspended ceilings or other non-permanent structures which may be entered during normal building maintenance or repairs.

Listing of All Schools Under Agency Authority	Inspected for Friable Materials		Contains Friable Materials	
	Yes	No	Yes	No
1.				
2.				
3.				
4.				
5.				
6.				

(Attach additional listing to include all schools in agency)

Record of Friable Materials in schools which were sampled and analyzed

School	Sampled	Analysis Results	Total Area Analyzed Material
	Yes or No Analyzed		
1.			
2.			
3.			
4.			
5.			
6.			

(Attach additional listing to include all schools in Agency which contain Friable Asbestos-Containing Materials)

For each school which contains friable asbestos-containing materials, the total number of school employees who regularly work in that school

Administrative	Faculty	Custodial
----------------	---------	-----------

Warnings and Notifications

(a) Local Education Agencies shall post in the primary administrative and custodial offices and in the faculty common rooms of each school under their authority a completed copy of the Notice to School Employees unless no friable asbestos-containing material is present in the school. The Notice shall remain posted indefinitely in any school which has friable asbestos-containing material.

Date Posted _____ Copies Attached - Yes _____ No _____

(b) Local Education Agencies shall provide to all persons employed in school buildings under their authority which contain friable asbestos-containing materials a written Notice of the location, by room or building area, of all friable asbestos-containing materials in the school

Date Notice Provided _____ Copies Attached - Yes _____ No _____

(c) "A Guide for Reducing Asbestos Exposure", shall be provided to all custodial or maintenance employees.

Date Guide Provided _____

(d) Local Education Agencies shall provide notice of the results of inspections and analysis in each school in which friable asbestos materials are found to the appropriate parent-teacher association of that school. If there is no parent-teacher association for the school, the Local Education Agency shall notify directly the parents of the pupils.

Date Notice Provided to: PTA _____ Parents _____

(e) Each Local Education Agency shall complete and retain in the administrative office of the Local Education Agency the form "Inspections for Friable Asbestos-Containing Materials".

Copy Completed - Yes _____ No _____

CERTIFICATION:

I hereby certify that this Agency has complied with the EPA Regulation 40 CFR, 763.100 through 763.117, "Asbestos-Containing Materials in Schools; Identification and Notification", and that the information on this form is, to the best of my knowledge, true and complete.

Signature	Typed or Printed Name
Typed or Printed Title	Date

Please send copies of this form completed to:

- (1) State Department of Education, Pouch F, Juneau, AK 99811, ATTN: Facilities
- (2) EPA M/S 524 EPA-900
1200 6th Ave. 3200 Hospital Dr.
Seattle, WN 98101 Suite 101
Juneau, AK 99801

Recordkeeping required by Chapter 1 of Title 40, Code of Federal Regulations, Part, 763-
 ASBESTOS Subpart F - Friable Asbestos-Containing Materials in Schools; Identification
 and Notification

Cover
 Sheet

INDIVIDUAL SCHOOL INSPECTION
 FOR FRIABLE ASBESTOS-CONTAINING MATERIALS

Cover
 Sheet

Name and Address of the School

Local Education Agencies shall inspect each school building which they lease, own, or otherwise use as a school building, to locate all friable material. Inspection shall consist of looking for and touching all suspect material, including surfaces behind suspended ceilings or other non-permanent structures which may be entered during normal building maintenance or repairs.

Listing of All Buildings Used by School	Inspected For Friable Materials	Friable Materials Present/ Not Present
1.		
2.		
3.		
4.		
5.		
6.		

(Attach additional listing to include all buildings - (§763.103 (h))

FOR EACH SCHOOL BUILDING WHICH CONTAINS FRIABLE MATERIALS, THE FOLLOWING INFORMATION MUST BE MAINTAINED IN THAT SCHOOL'S ASBESTOS FILE:

1. A blueprint, diagram, or written description of the building which identifies clearly the location(s) and approximate area(s) in square feet of each sampling area of such material(s), the locations at which samples were taken, and the identification number of each sample, and which shows clearly whether each sampling area of friable material contains asbestos, including an estimate of its percent asbestos content as determined by calculating the average of the percent asbestos content of all samples taken in the area.
2. A copy of all laboratory reports and all correspondence with laboratories concerning the analysis of samples taken.
3. For each school, copies of the "Guide for Reducing Asbestos Exposure", and one copy of "Asbestos-Containing Materials in School Buildings: A Guidance Document, Parts 1 & 2.

Warnings and Notifications

(a) Local Education Agencies shall post in the primary administrative and custodial offices and in the faculty common rooms of each school under their authority a completed copy of the Notice to School Employees unless no friable asbestos-containing material is present in the school. The Notice shall remain posted indefinitely in any school which has friable asbestos-containing material.

Date Posted _____ Copies Attached - Yes _____ No _____

(b) Local Education Agencies shall provide to all persons employed in school buildings under their authority which contain friable asbestos-containing materials a written Notice of the location, by room or building area, of all friable asbestos-containing materials in the school.

Date Notice Provided _____ Copies Attached - Yes _____ No _____

(c) "A Guide for Reducing Asbestos Exposure", shall be provided to all custodial or maintenance employees.

Date "Guide" Provided _____

(d) Local Education Agencies shall provide notice of the results of inspections and analysis in each school in which friable asbestos-containing materials are found to the appropriate parent-teacher association of that school. If there is no parent-teacher association for the school, the Local Education Agency shall notify directly the parents of the pupils.

Date Notice Provided To: PTA _____ Parents _____

CERTIFICATION:

I hereby certify that this school has complied with the EPA Regulation 40 CFR 763.100 through 763.117, "Asbestos-Containing Materials in Schools; Identification and Notification", and that the information on this form is, to the best of my knowledge, true and complete.

Signature

Typed or Printed Name

Typed or Printed Title

Date

copy of the friable-asbestos results of any Alaska school that complies with the present regulation.

5) List of those schools represented at your presentation in Anchorage and Fairbanks.

Thank you for your time and effort.

September 17, 1982

Sincerely,

Chris Christensen, Asbestos Technical Advisor
EPA/Region X
1200 Sixth Avenue
Seattle, Washington 98101

Dear Chris:

A. Smith

The EPA-A00, Juneau would like to express their appreciation for your presentation on the May 27, 1982 Regulation on Friable Asbestos-Containing Materials in Schools conducted in Juneau (9/13), Anchorage (9/14), and Fairbanks (9/15) for all Alaska school district representatives. I think this explanation, and clarification of the relatively new rule will help to promote Alaska schools to comply with the regulation.

As we discussed, you are planning to distribute a letter explaining the new friable-asbestos regulation to each Alaska school district and private school. Hopefully, this will clarify the regulation for those school representatives who were unable to attend your presentation and encourage each school to comply with the regulation in a timely manner. If we can be of any assistance to you in notifying Alaska schools of their responsibility in identifying friable-asbestos materials in their schools, please contact us.

In order to complete our records concerning this project would you please send us a copy of the following material:

- 1) The 1982 cover letter that accompanied the new regulation and Guidance Document distributed to all school districts and private schools.
- 2) The follow-up letter (yellow) and attachments you will be distributing to school districts and private schools.
- 3) Copy of the friable-asbestos results of all Alaska schools that complied with the volunteer program.

- 4) Copy of the friable-asbestos results of any Alaska school that complies with the present regulation.
- 5) List of those schools represented at your presentation in Anchorage and Fairbanks.

Thank you for your time and effort.

Sincerely,

Kathy Pazera
Environmental Scientist

cc: **J. Halterman**

A. Smith

As we discussed, you are planning to distribute the new friable-asbestos regulation to all school districts and private schools. I hope you will find the information for these school representatives very useful in their planning and implementation of school programs. The regulation is a very important document and I hope you will find it helpful in their planning and implementation.

In order to complete our program successfully, we need your help. Please send us a copy of the following:

- 1) The 1981 Asbestos Letter that addresses the new regulation and related documents distributed to all school districts and private schools.
- 2) The follow-up letter (yellow) that addresses the new regulation and related documents distributed to all school districts and private schools.
- 3) Copy of the friable-asbestos results of any school that complies with the present regulation.

ATTENDANCE TO CHRISTENSEN'S
PRESENTATION in Anchorage 9/14/82

TOM Gibbels Busk Manager Anchorage School Dist.

Bob Thornton MAINT DEPT. ANCHORAGE School DIST.

BOB ELLISON MAINT + OPERATIONS DIR. KODIAK SCHOOL DIST.

DAN R. SHERK PLANT MANAGER NORTH Slope Borough Sch DIST.

LUDWIG C. OSOWIECKI DEPUTY SUPERVISOR MAIN KENAI PENINSULA BORO.

JAMES WM. ELLIOTT DOE (SEA) ANCHORAGE

PATRICK A. DAY DIR. FACILITIES VALDEZ CITY SCHOOLS VALDEZ

James C. Hunsicker DIR. OPERATION & MAINTENANCE MATSU School DIST.

JAN D. AFFINITO, ASST CONTRACT ADMINISTRATOR, MITANUSKA-SUSITNA BOROUGH

STEVE ZRAKE AK DEPT. OF ENV. CONSERV. ~~AK~~ AK

437 E ST. SUITE 200

ANCH., AK 99501

PLEASE SEND 10 COPIES OF MATERIAL LISTED ON

2 AUG. 1982 MEMORANDUM. THANK YOU.

Need copy of model specifications for
development of asbestos removal contracts.

ATTN: JAN AFFINITO

MATANUSKA - SUSITNA BOROUGH

P.O. Box B

PALMER, AK

99645

Please send set of specs to and PCM Lab.

Tom Bibean Asst Manager

Anchorage School Dist.

Phone 6-614

Anchorage, AK 99503

Attendance to Christensen's
presentation in Fairbanks 9/15/82.

List

+ * Donna Higdon - S.D. Warehouse
1300 Munnie St.
FBKS. } P.O. Box. 1250
 } FBKS. AK 99707

+ * Michael D. Piron FAIRBANK NSBSD
Dir. Maint + OPS.

+ Nancy P. Napoli
Dept. of Environmental Conservation
Pouch 1601
Fairbanks, AK 99707

+ Bid B. IRVIN
ALASKA GATEWAY SCHOOL DISTRICT
PO Box 226 TOK ALASKA 99780

+ Ray L. Huntley
DELTA / GREELY SCHOOL DIST.
PO Box 527 DELTA Jct, AK 99737

+ JIM ELLIOTT
DOE 650 W. INTNL AIRPT RD
ANCH 99502

+ Harry Purdy
Alaska Dept. of Education

* James Howard

Maint Foreman.

FBKS No. 344 Borough School Dist.

PO Box 1250 - 29201

ANCHORAGE SCHOOL DISTRICT
PRELIMINARY CAPITAL IMPROVEMENT SUMMARY SHEET

CATEGORY 1

ESSENTIAL FOR THE HOUSING OF STUDENTS

<u>PRIORITY</u>	<u>PROJECT</u>	<u>ESTIMATED COST</u>
1	Asbestos removal.	10,000,000
2	Eagle River - Four-room addition, site improvements, lands purchase.	4,918,020
3	Fire Lake Elementary School.	10,114,700
4	Section 16 Elementary School.	10,402,600
5	Chugiak High - 22-classroom and library addition.	13,304,600
6	School Site Acquisition Program - Phase II.	6,200,000
7	Maintenance Requests - Roofing repairs.	7,901,301
8	Microcomputer Project.	1,500,000
9	Food Education and Service Center.	3,541,800
10	Emergency communication system.	385,000
11	Denali Fundamental - Heating system renovation.	550,000
	SUBTOTAL (CATEGORY 1)	\$ 68,913,521



ANCHORAGE
SCHOOL DISTRICT

4600 DeBarr Avenue
Pouch 6-614
Anchorage, Alaska 99502

[907] 333-9561

RECEIVED

MAY 17 1984

May 14, 1984

Josephson,

SCHOOL BOARD

Jean Buchanan
President

Brent Wedsworth
Vice-President

Vi Schellenberg
Clerk

Carlye Davis
Clark Pro Tem

Alyce Hanley
Treasurer

Jim Robinson
Assistant Treasurer
Past President

Lee Gorsuch
Parliamentarian
Immediate Past President

SUPERINTENDENT

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

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 fibrous 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.

Page 2
May 14, 1984

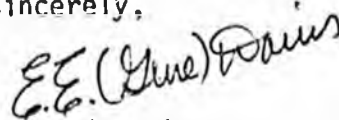
The low bid, if accepted, is \$14,543,540. This bid indicates that Bartlett would have to be closed for at least one semester. The District is analyzing some of the options for Bartlett's 2,000 students which would not impact on the educational program.

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, Ed.D.
SUPERINTENDENT

cl
CIP.3

cc Bill Miles

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

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 ressure 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 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 non-compliance, 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' manufac-

urers 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.

Fairbanks North Star Borough - Program for Progress

Project Title

Fairbanks Schools Asbestos
Identification and Removal Project

- Equipment Road
 Structure Utility
 Service

Capital Request

\$1,385,000

**Estimated Annual
M & O Cost**

No Increase in Annual M & O Costs.

**Description, Objectives
and Public Benefit**

During November 1983, sixteen school facilities of the Fairbanks North Star Borough were surveyed by a professional consultant for the presence and extent of asbestos. Asbestos was found in thirteen of the sixteen schools surveyed. This asbestos is "friable" or in a condition to release small fibers into the air. Non-friable asbestos was also found in these schools, usually in a cement-like compound on pipe elbows and fittings.

Friable asbestos is associated with a number of serious illnesses; consequently, the Federal government has issued strict regulations governing the use of asbestos and occupational exposure to airborne asbestos fibers.

The objective of this project is to protect the health of all Borough school building users by the removal or encapsulization of the asbestos materials.

The asbestos hazards were assessed and prioritized in order of the most serious potential risks of exposure. These priorities are:

- | | |
|---------------|---|
| URGENT: | Requires immediate attention to eliminate or reduce the risk of severe exposure to asbestos fibers. |
| PRIORITY ONE: | The facility contains friable asbestos which is accessible to all building occupants. |
| PRIORITY TWO: | The facility contains asbestos which is accessible to maintenance and custodial personnel. |

A summary of asbestos findings and cost estimates for removal are given in Table 1.

Project Schedule

Encapsulization began December 1983 with local fund appropriation.
Removal scheduled for summer 1984.

Project Contact

Larry Crouder, FNSB, Department of Public Works
Borough Engineer

TABLE I

SUMMARY OF ASBESTOS FINDINGS AND COST ESTIMATES

<u>SCHOOL</u>	<u>EXPOSURE</u>	<u>CONDITION</u>	<u>PRIORITY</u>	<u>REMOVAL COST</u>
Barnette Elementary	Maintenance	Friable	P-TWO	\$134,390
Denali Elementary	Public	Friable	URGENT	118,512
Hunter Elementary	Maintenance	Friable	P-TWO	137,455
Hutchison Career Center	Public	Friable	URGENT	21,474
Joy Elementary	Public	Friable	URGENT	35,264
Lathrop High School	Public	Friable	URGENT	309,954
Nordale Elementary	Public	Friable	P-ONE	158,502
North Pole Elementary	Public	Friable	URGENT	37,245
North Pole Jr/Sr High	None	NO ASBESTOS FOUND		-0-
Ryan Jr. High	Maintenance	Friable	P-TWO	86,704
Salcha Elementary	Maintenance	Friable	P-TWO	2,741
Tanana Jr. High	None	NO ASBESTOS FOUND		-0-
University Park Elementary	Maintenance	Friable	P-TWO	22,531
West Valley High School	Public	Friable	P-ONE	4,675
Woodriver Elementary	NONE	NO ASBESTOS FOUND		-0-
		SUBTOTAL		1,069,447
		CONTINGENCY		128,333
		DESIGN		117,637
		ADMINISTRATION, DP, ACCOUNTING		<u>69,514</u>
		TOTAL		\$1,384,931



Asbestos hazards have been identified in thirteen Borough schools

HA/WK

Attachment I

A JOINT VENTURE OF
HOLDEN & ASSOCIATES AND
WILLIAM J KING &
ASSOCIATES

January 31, 1984

Mr. Harry Rogers, Superintendent
Petersburg City Schools
P.O. Box 329
Petersburg, Alaska 99833

RE: Petersburg High School
Asbestos Removal

Per your request we have evaluated the quantity and cost of removal of the asbestos pipe insulation in the 1951 portion of the Petersburg High School.

Per your testing information, the known area of asbestos is confined to the heating supply and return mains, and the insulation of the old boiler. We assume that vertical piping in walls or classes would not be removed. The cost of removing the horizontal runs and the boiler insulation is \$107,000.

We have assumed that pieces would be removed in 5' to 10' lengths and properly disposed of according to State and Federal law.

Sincerely,



W. Keith Gerken

cc: Twyla Coughlin, Southeast Regional Resource Center (SERRC)
John Danielsen, City Engineer

PLEASE RESPOND TO:

JUNEAU: MERCHANT'S WHARF, SUITE 225
14 MARINE WAY
JUNEAU, ALASKA 99801

ANCHORAGE: SUITE 211
750 W. 2ND AVENUE
ANCHORAGE, ALASKA 99501

FAIRBANKS: BOX 80667
FAIRBANKS, ALASKA 99708
907-479-6474



CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, I

P.O. BOX 4-1276
Anchorage, Alaska 99509

TELEPHONE (907) 562-2343 ANCHORAGE INDUSTRIAL CE
5633 B Street

ANALYTICAL REPORT

From Petersburg Public Schools Product Bulk Insulation Samples

Address Petersburg, Alaska Date August 6, 1983

Other Pertinent Data ANALYSIS BY POLARIZING LIGHT MICROSCOPY.

Analyzed by DB Date August 22, 1983 Lab No. 3080

REPORT OF ANALYSIS BULK INSULATION SAMPLES PETERSBURG, ALASKA

Samples received August 6, 1983

FINDINGS:

ASBESTOS PRESENT:

OTHER FIBROUS MATERIAL:

NON-FIBROUS MATERIAL:

.....BOILER ROOM.....

PIPE - OLD
BOILER

OLD BOILER

CHRYBOTILE-15%

CHRYBOTILE-15%

AMOSITE -15%

AMOSITE -15%

NONE SEEN

NONE SEEN

CALCIUM CARBONATE-70%

CALCIUM CARBONATE
70%

CONCLUSION:

THE U.S. ENVIRONMENTAL PROTECTION AGENCY HAS DETERMINED THAT A SAMPLE WITH AN ASBESTOS CONTENT GREATER THAN ONE PERCENT BY WEIGHT, IS POSITIVE.



CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, I.

P.O. BOX 4-1276
Anchorage, Alaska 99509

TELEPHONE (907) 562-2343 ANCHORAGE INDUSTRIAL CE:
5633 B Street

ANALYTICAL REPORT

From Petersburg Public Schools Product Bulk Insulation Samples
Address Petersburg, Alaska Date August 6, 1983
Other Pertinent Data ANALYSIS BY POLARIZING LIGHT MICROSCOPY
Analyzed by DB Date August 22, 1983 Lab No. 3080

REPORT OF ANALYSIS BULK INSULATION SAMPLES PETERSBURG, ALASKA

Samples received August 6, 1983

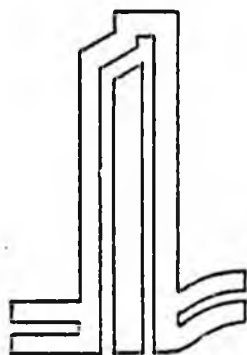
FINDINGS:	<u>OLD HIGH SCHOOL PIPE CRAWL WAY</u>	<u>OLD GYM HOT WATER TANK</u>
ASBESTOS PRESENT:	CHRYBOTILE-45%	CHRYBOTILE-60%
OTHER FIBROUS MATERIAL:	CELLULOSE -45%	NONE SEEN
NON-FIBROUS MATERIAL:	SILICATES -10%	SILICATES - 5% UNKNOWN BINDER-3

CONCLUSION: THE U.S. ENVIRONMENTAL PROTECTION AGENCY HAS DETERMINED THAT A SAMPLE WITH AN ASBESTOS CONTENT GREATER THAN ONE PER CENT BY WEIGHT, IS POSITIVE.

KODIAK ISLAND BOROUGH SCHOOL DISTRICT

ASBESTOS ABATEMENT COST ESTIMATE

January 13, 1984



Kodiak Island Borough
School District
RECEIVED

JAN 19 1984

P M

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

ARCHITECTS ENGINEERS PLANNERS
GOBBELL HAYS PICKERING

821 S. Barksdale, Memphis, Tennessee 38114 (901) 726-0810

GOBBELL HAYS PICKERING

Jan. 16, 1984

Mr. Ray Camardella
Kodiak Island Borough School District
P.O. Box 886
Kodiak, Alaska 99615

Dear Mr. Camardella:

Enclosed is the cost estimate for the asbestos abatement of the spray-applied material in Kodiak High School. We have included our recommendation for abatement, approximate cost and time figures, and phasing possibilities to allow for portions of the building to remain in use during the abatement.

If you have any questions concerning this report or would like to continue on with plans and specifications, please feel free to contact me.

We look forward to working with you on your asbestos abatement problems.

Sincerely,

GOBBELL HAYS PICKERING

William L. Wagner

William L. Wagner

WLW/cr

Enclosures

KODIAK ISLAND BOROUGH SCHOOL DISTRICT

INTRODUCTION

This report was prepared in response to the Kodiak Island Borough School District's request for the proper selection of appropriate abatement measures and cost estimates. Enclosed are Gobbell-Hays-Pickering's recommendations for abatement and approximate construction cost.

VIEWING THE PROBLEM

Asbestos abatement selection is a highly subjective and often difficult process. There are no standards, governmental or otherwise, which provide for clear-cut choices. Abatement costs must be balanced against present and future building use, building life, health considerations, and legal liability; abatement solutions must take into account that balance.

GOBBELL-HAYS-PICKERING feels it is necessary for all concerned to evaluate the level of existing exposure and chance for potential exposure prior to choosing an abatement method. We consider it our professional responsibility in dealing with this problem to provide recommendations toward establishing a safe environment which functions as originally intended or better. The Attorney General's Asbestos Liability Report to the Congress contains the statement that there is no known safe lower limit of exposure to asbestos fibers. We feel that exposure should be eliminated if at all practical for health reasons and legal ramifications to the owner. Here, too, cost is a factor. For example, one lawsuit in the future could cost the owner more than a more expensive, but possibly better, original abatement choice.

SELECTION OF A CORRECTIVE ACTION

The following is the United States Environmental Protection Agency's comparison of asbestos abatement alternatives for encapsulation and removal, which we feel are the only two appropriate abatement measures for this application. Outlined with each method are their opinions as to some of the advantages and disadvantages and their thoughts as to when the methods are appropriate or inappropriate. Our abatement recommendation is made with these considerations in mind, and also with practical, health and legal considerations tempered with architectural and engineering experience in asbestos abatement projects.

Method: REMOVAL

Advantages of Method

- Eliminates asbestos source

- Eliminates need for special operations and maintenance program

Disadvantages of Method

- Replacement with substitute material may be necessary

- Porous surface also may require encapsulation

- Improper removal may raise fiber levels

Appropriate Applications

- Always

Inappropriate Applications

- Never

General Comments

- Containment barriers needed

- Worker protection required

- Wet removal is required for all types of asbestos

- Disposal may be a problem in some areas

Unusual circumstances, complex surfaces, and the presence of utilities may require special removal techniques

Method: ENCAPSULATION

Advantages of Method

Reduces asbestos fiber release from material

Initial cost may be lower than removal

Does not require replacement of material

Disadvantages

Asbestos source remains and must be removed later

If material is not in good condition, sealant may cause material to delaminate

Periodic reinspection required to check for damage or deterioration

Repair of damaged or deteriorated encapsulated surfaces required

Encapsulated surface is difficult to remove and may require dry techniques for eventual removal

Long-term cost may be higher than removal

Appropriate Applications

Material still retains bonding integrity

Damage to material not likely

Material not highly accessible

Material granular cementitious

Inappropriate Applications

Material does not adhere well to substrate

Material is deteriorating or damaged, or damage is likely

Water damage is evident

Material is fibrous, fluffy

General Comments

Containment barriers needed

Worker protection needed

Airless sprayers should be used

Damaged pipe insulation may be taped but not sprayed

Previously encapsulated materials may have to be re-encapsulated

With our previous experience and the United States Environmental Protection Agency's opinions in mind, we have selected removal of all asbestos-containing spray-applied material in the high school. With encapsulation cost exceeding 70% of removal cost and still requiring a costly maintenance program because the material and owner liability still exist, we feel removal is the optimum solution.

PHASING

We have divided the school into two areas we feel can be done in phases to help keep part of the building open during abatement. Phase I includes the major portion of the affected areas, including the multi-purpose entry, library and classrooms of both levels. Phase II would include the corridor outside the gym and pool and two fan rooms on either side of the gym. The first and second floors were not separated due to complications in access to the stairwell during abatement and with the height of the ceiling in the multi-purpose entry.

KODIAK ISLAND BOROUGH SCHOOL DISTRICT
KODIAK HIGH SCHOOL

TABLE A

Removal/Replacement Cost - Phase I

<u>Item</u>	<u>Quantity</u>	<u>Cost/Item</u>	<u>Total</u>
Demolition			
Dropped Ceiling Removal	24,855 S.F.	2.10	\$ 52,195.50
Asbestos Removal			
Decon Set Up	1 S-up	3,500.00	3,500.00
Fireproofing Removal	42,785 S.F.	13.00	556,205.00
Waste Transportation & Disposal	372 BLS	30.00	11,160.00
Post Removal Encapsulant	42,785 S.F.	0.70	29,949.50
			\$ 600,814.50
Replacement			
New Fireproofing	42,785 S.F.	6.15	263,127.75
Dropped Ceiling Replacemt.	24,855 S.F.	4.38	108,864.90
			\$ 371,992.65
		Phase I Construction Cost	\$1,025,002.65
		Estimated Time for Completion	60 Days
		Air Monitoring Cost	
		50 days @ \$650/day	\$ 32,500.00
		Phase I Total Cost*	\$1,057,502.65

Estimated costs are excluding A/E fees

KODIAK ISLAND BOROUGH SCHOOL DISTRICT
KODIAK HIGH SCHOOL

TABLE B

Removal/Replacement Cost - Phase II

<u>Item</u>	<u>Quantity</u>	<u>Cost/Item</u>	<u>Total</u>
Demolition			
Dropped Ceiling Removal	1,730 S.F.	2.10	\$ 3,633.00
Asbestos Removal			
Decon Set Up	1 S-up	3,500.00	3,500.00
Fireproofing Removal	2,970 S.F.	13.00	38,610.00
Waste Transportation & Disposal	28 BLS	30.00	840.00
Post Removal Encapsulant	2,970 S.F.	0.70	<u>2,079.00</u>
			\$ 45,029.00
Replacement			
New Fireproofing	2,970 S.F.	6.15	18,265.50
Dropped Ceiling Replacemt.	1,730 S.F.	4.38	<u>7,577.40</u>
			\$ 25,842.90
		Phase I Construction Cost	\$ 74,504.90
		Estimated Time for Completion	14 Days
		Air Monitoring Cost	
		10 days @ \$650/day	\$ 6,500.00
		Phase II Total Cost*	\$ 81,004.90

Estimated costs are excluding A/E fees

KODIAK ISLAND BOROUGH SCHOOL DISTRICT
KODIAK HIGH SCHOOL

Cost Summary

Demolition

Phase I	\$ 52,195.50
Phase II	3,633.00
	<u>\$ 55,828.50</u>

Asbestos Removal

Phase I	\$ 600,814.50
Phase II	45,029.00
	<u>\$ 645,843.50</u>

Replacement

Phase I	\$ 371,992.65
Phase II	25,342.90
	<u>\$ 397,335.55</u>

Construction Total	\$1,099,507.55
Air Monitoring Total	39,000.00

Total Project Cost*	\$1,133,507.55
---------------------	----------------

*Estimated costs are excluding A/E fees

NOTE 1: The asbestos removal figures have been developed using wage rates for asbestos workers instead of general laborers. Prices could be reduced if the Department of Labor approves the use of general laborers and does not require asbestos workers for the removal of the fireproofing.

SECTION 1

EXECUTIVE SUMMARY

Swearingen Associates surveyed two school facilities at Delta Junction and Fort Greely which are operated by the Delta/Greely School District, REAA #15. These schools were surveyed for the presence and extent of asbestos. On December 20 and December 21, 1983, the following facilities were evaluated:

Delta Junction

Fort Greely

- | | |
|-------------------------------|------------------|
| 1. Delta Junction School | 1. Greely School |
| 2. Univ. of Alaska Bldg. | |
| 3. Metals and Ag. Shop | |
| 4. Class Module 1, 2, 3, 4, 5 | |
| 5. Support Module A, B, C | |

Asbestos was found in the Delta Junction and Greely schools and in the five (5) class modules. No asbestos-containing materials were identified in the University Building, the Shop Building, or in the three Support Modules.

The asbestos found in these facilities was generally in a sound, cement-like compound used as thermal insulation. In several locations, however, "friable" asbestos was identified: asbestos which is in a condition to release microscopic particles into the air. (Examples of friable asbestos include sprayed-on materials and materials which have been physically damaged.)

Friable asbestos, when inhaled or ingested, is associated with a number of serious illnesses; consequently, the Federal government, mainly the Environmental Protection Agency and the Occupational Safety and Health Administration, have issued strict and comprehensive regulations governing the use of asbestos and the limits of occupational exposure to airborne asbestos fibers.

We have prioritized our findings in order of the most serious potential risks of exposure. These priorities are:

PRIORITY ONE: The facility contains friable asbestos which is accessible to all building occupants.

PRIORITY TWO: The facility contains friable asbestos which is accessible to maintenance and custodial personnel only.

PRIORITY THREE: The facility contains only non-friable asbestos which is accessible to all building occupants.

DEPT

PRIORITY FOUR: The facility contains only non-friable asbestos accessible to maintenance personnel only.

The facilities which have a Priority One asbestos hazard are:

The five Classroom Modules at the Delta Junction School

The facilities which have a Priority Two asbestos hazard are:

Delta Junction School
Fort Greely School

No facilities were identified with only a Priority Three asbestos hazard.

No facilities were identified with only a Priority Four asbestos hazard.

The five Classroom Modules have sprayed-on acoustical ceilings which had been previously sampled and found to contain approximately five percent (5%) asbestos. Air monitoring in each of these modules conducted as part of this survey established that air borne fiber count was less than four percent (4%) of the allowable limit. (Note that the EPA standard test for air borne fibers includes all fibers--lint, dust, asbestos, and animal--not just asbestos.)

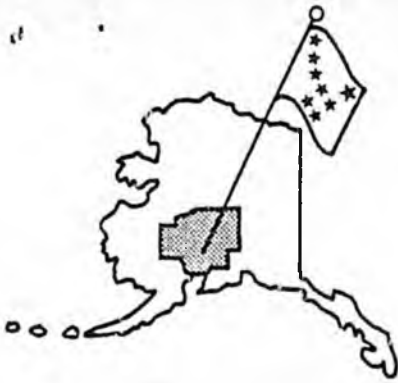
There are several techniques which are used to reduce the risks of exposure to asbestos fibers. These include removal of the asbestos containing material, sealing or encapsulating the asbestos-containing material to prevent fiber release, enclosing or barricading the asbestos-containing material so that contact with it is unlikely, and administrative controls and procedures. The latter three, encapsulation, enclosing and administrative controls, all require extensive record keeping and periodic re-inspection. They also will seriously impact future facility modifications as well as retaining a potential hazard in the event of a fire or earthquake. Asbestos removal is generally considered to be the most desirable abatement procedure for schools. The initial costs are higher than the alternatives; however, the potential for future damages are gone as are the administrative requirements for record maintenance.

Swearingen Associates developed a cost estimate for the asbestos removal in the facilities schools identified above: The estimated cost of \$99,700 includes asbestos removal and disposal, surface refinishing or insulating, preparation of removal specifications and contract, and, performance verification and certification.

TABLE I
SUMMARY OF ASBESTOS FINDINGS AND COST ESTIMATES

FACILITY	EXPOSURE	CONDITION	PRIORITY	ABATEMENT COST*
DELTA JUNCTION SCHOOL	MAINTENANCE	FRIABLE	P - TWO	\$ 8,910
UNIVERSITY OF ALASKA BLDG./	NONE	N/A	N/A	NONE
METALS & AG. SHOP	NONE	N/A	N/A	\$ NONE
CLASS MODULES 1, 2, 3, 4, 5	PUBLIC	FRIABLE	P-ONE	\$ 70,920
SUPPORT MODULES A, B, C	NONE	N/A	N/A	\$ NONE
FORT GREELY SCHOOL	MAINTENANCE	FRIABLE	P-TWO	\$ 19,870
			TOTAL	\$ 99,700

*Abatement costs include asbestos removal and disposal, surface refinishing or new insulation, removal specifications and contract preparation, and final project acceptance and certification.



MATANUSKA-SUSITNA BOROUGH SCHOOL DISTRICT

BOX AB • PALMER, ALASKA 99645-1646 • PHONE 745-4822

GORDON C. TOPE
SUPERINTENDENT OF SCHOOLS

March 19, 1984

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

Senator Josephson:

Attached you will find a copy of the amount of money expended on asbestos removal in the Matanuska-Susitna Borough School District, as requested by your office.

If you have any further questions please contact my office.

Sincerely,

Norm Palenske
Director of Planning & Facilities

fc

Enc: Memorandum from Borough

RECEIVED

MAR 21 1984

Josephson.



Matanuska-Susitna Borough

BOX B, PALMER, ALASKA 99645 • PHONE 745-4801

DEPARTMENT OF PUBLIC WORKS

MEMORANDUM

March 14, 1984

TO: Norm Palenske, Director of Planning and Facilities

FROM: Jan Affinito, Contract Administrator *JA*

SUBJECT: ASBESTOS ABATEMENT-
Financial Record as of March 13, 1984

ENCUMBERANCES:

Sampling and analysis by testing lab =	\$5,000
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EXPENDED:

Contractor payments = (Remove and replace asbestos containing insulation at 3 schools)	94,302
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Testing Laboratory = (Air quality monitoring)	3,967
--	-------

Film and Development =	78
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Mat-Su Borough Engineering Department Labor =	2,285
--	-------

Courier Service =	168
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Special Equipment =	159
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TOTAL	\$105,959
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MATANUSKA-SUSITNA BOROUGH
ALASKA

MAR 14 1983

Valdez City Schools

Office of the Superintendent

Box 398
Valdez, Alaska 99586
Phone: (907) 835-4357

RECEIVED

MAR 2 1984

Josephson.

March 20, 1984

Joe P. Josephson
State Senator
State Capitol
Pouch V
Juneau, AK 99811

Dear Senator Josephson:

The Valdez City Schools has been inspected and does not contain an airborne asbestos condition. Any asbestos is encapsulated and does not contain a condition which is hazardous to students and/or employees or public as caused by asbestos fibers.

I appreciate your efforts in providing financial support to eliminate any hazard which may be caused by airborne asbestos. My only recommendation would be to develop criteria which would assist school districts in applying for the monies. I feel that the costs involved may be tremendously varied pending individual districts' plans for removing asbestos; particularly in the case of demolition and rebuilding.

Thank you for the opportunity to provide input.

Sincerely,


GEORGE MAYKOWSKY
Superintendent

ASSOCIATION OF ALASKA SCHOOL BOARDS

326 Fourth St., Suite 510 • Juneau, Alaska 99801 • (907) 586-1083

ASBESTOS SURVEY

<u>School District</u>	<u>Information Gathered</u>
Adak	Removal project will be under way this summer through H.H.S. at a total cost of \$120,000 which included capsulating the pipes earlier this school year.
Alaska Gateway	No asbestos problem
Aleutian Region	No asbestos problem
Anchorage	Approximately \$10 million dollars. Asbestos expert, Wayne Tenzel, will be available for testimony January 24 and 25 as well as the first part of February. (Written report will be mailed to AASB.)
Chatham	No asbestos problem
Copper River	No asbestos problem
Cordova	Cost estimates range from \$34,000-\$38,000 bid (direct contact with contractors) to \$80,000 estimates from engineers who will set up removal plans. Usual engineering costs 10-15% of the contract price. Additional factor replacement of material removed - \$20,000-\$40,000.
Fairbanks	Total cost for all 21 schools in the Fairbanks area is \$1,568,045.00. (Written report will follow via mail.)
Galena	No asbestos problem
Haines	No asbestos problem
Kenai	No asbestos problem
King Cove	No asbestos problem
Lake and Peninsula	No asbestos problem
Nenana	No dollar amount has been determined to date.
Nome	No asbestos problem
North Slope	No asbestos problem

ASBESTOS SURVEY
Page two

<u>School District</u>	<u>Information Gathered</u>
Pribilof Islands	Entire outer skin of school is made of asbestos, but no cost estimates yet. In process of building new school, so hopefully it won't be a problem anyway.
Railbelt	No asbestos problem
Sitka	Only in boiler room of Etohin High School. (Sitka did not report cost estimates)
Skagway	No asbestos problem
Southeast Islands	No asbestos problem
Valdez	No asbestos problem
Yukon Koyukuk	No asbestos problem

NO RESPONSE TO DATE FROM:

Annette Island
Bering Strait
Bristol Bay
Chugach
Craig
Delta/Greely
Dillingham
Hoonah
Hydaburg
Iditarod
Juneau
Kake
Ketchikan
Klawock
Kodiak
Kuspuk
Lower Kuskokwim
Lower Yukon
Mat Su
Northwest Arctic
Pelican
Petersburg
St. Marys

Sand Point
Southwest Region
Tanana
Unalaska
Wrangell
Yakutat
Yukon Flats

ASBESTOS
SAFETY AND HEALTH WORK PRACTICES GUIDE



A Safety Service of the:

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

In conjunction with:

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

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Milwaukee Construction Industry Safety Council
2733 W. Wisconsin Avenue
P.O. Box 08374
Milwaukee, WI 53208
(414) 933-7661

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

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

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

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

APPLICATION OF STANDARDS

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

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

ASBESTOS POLICY AND SAFE WORKING PRACTICES

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

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

EMPLOYEE TRAINING

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

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

DATA BASE CONCEPT

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

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

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

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

THE FOLLOWING DOCUMENT(S) MAY NOT FILM
LEGIBLY BECAUSE OF POOR QUALITY OF THE
ORIGINAL.

ASBESTOS
SAFETY AND HEALTH WORK PRACTICES GUIDE



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04.0102 — ASBESTOS

(a) Definitions.

For the purpose of this section.

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

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

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

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

(2) Standard effective July 1, 1978. 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.

(ii) 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;

(2a) Laundering:

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

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

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

(a) Method of measurement.

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

(f) Monitoring.

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

(2) Personal monitoring.

(i) Samples shall be collected from within the breathing zone of the employee, on membrane filters of 0.8 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 pattern.** After the initial determinations required by subparagraph (1) of this paragraph, samples shall be of such frequency and pattern as to represent with reasonable accuracy

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

(3) Environmental monitoring.

(i) Samples shall be collected from areas of a work environment which are representative of the airborne concentrations of asbestos fibers which may reach the breathing zone of employees. Samples shall be collected on a membrane filter of 0.8 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 pattern.** After the initial determinations required by subparagraph (1) of this paragraph, samples shall be of such frequency and pattern as to represent with reasonable accuracy the levels of exposure of the employees. In no case shall sampling be at intervals greater than 6 months for employees whose exposures to asbestos may reasonably be foreseen to exceed the exposure limits prescribed in paragraph (b) of this section.

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

(g) Caution signs and labels.

(1) Caution signs.

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

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

THE NEW OSH STANDARD

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

On Friday November 4, 1983 OSHA Issued an Emergency Temporary Standard (ETS) on asbestos. These emergency requirements will remain in effect for six months under the rules governing the issuance of Emergency Temporary Standards. This means that it will be in effect until May 4, 1984.

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

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

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

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

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

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

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

Appendix B

RESPIRATOR PROGRAM FOR USE IN CONJUNCTION WITH POSSIBLE ASBESTOS EXPOSURE

Because of the possibility of asbestos exposure during repair, remodeling and emergency work, we recommend that the following items be part of the equipment furnished crews involved in these projects:

1. Respirators
2. Disposal Bags and Decals
3. 20" x 14" Caution Sign
4. Protective Clothing

The most important part of this entire program is the immediate use of respiratory protection by personnel contacting possible asbestos containing materials.

Steps to be followed in respirator use:

1. Select a respirator designed for use in asbestos atmospheres and carrying a NIOSH-MSHA approved number.
2. Instruct and train employees in:
 - a. The asbestos health hazard
 - b. The use of respirator stressing the importance of a tight fit.
 - c. Respirator maintenance and cleaning.
3. Set up a procedure for Respirator Use and Work Area Surveillance. These duties can best be assigned to the crew foreman on most construction activities.

OSHA requires a written respiratory protection plan whenever respirators are in use. Your company can establish such a program by reviewing the requirements of OSHA code 304.0102.

A publication of the Milwaukee Construction Industry Safety Council entitled "Contractors Guide to Respirator Use and Written Respirator Programs" will be useful in your firm's efforts.

Appendix C

SIGNS AND PROTECTIVE CLOTHING

Areas where work with possible asbestos containing materials must be marked by 20" x 14" Caution Signs (yellow, with black letters) containing the exact wording called for in the standards. Contact us or your trade association for help in obtaining these signs.

A label must be attached to all bags containing asbestos material before disposal. Help in obtaining these labels is available from many trade associations.

Protective clothing can also be of the disposable type and offer several advantages:

1. Low initial cost
2. Ease of storage
3. No laundering costs
4. No danger of contamination during laundry operations
5. Ease of disposal

For more information contact:

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CONTRACTORS GUIDE TO RESPIRATOR USE
AND
WRITTEN RESPIRATOR PROGRAMS



A Safety Service of the:

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With co-operation and
technical assistance from:

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Innovative Safety for an Innovative Industry

I-RESPIRATOR TYPES

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

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

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

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

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

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

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

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

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

IV TESTING EQUIPMENT AND METHODS

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

V ENGINEERING vs ADMINISTRATIVE CONTROL

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

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

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

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

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

VIII SAMPLE RESPIRATORY PROGRAM

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

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

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

President (etc.)

USING THE MODEL PROGRAM

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

THE PRECEDING DOCUMENT(S) MAY NOT FILM
LEGIBLY BECAUSE OF POOR QUALITY OF THE
ORIGINAL.



MATERIAL SAFETY DATA SHEET

SUBSTANCE

(Chemical Name)

NO.

PRODUCT NAME, NUMBER, SYNONYM

COMMON OR TRADE NAME

MANUFACTURER'S NAME AND ADDRESS

TELEPHONE NUMBER

HEALTH HAZARDS

HAZARD RATING DANGER WARNING CAUTION

TYPE OF HAZARD

SYMPTOMS OF EXPOSURE

EFFECTS OF EXPOSURE

EMERGENCY FIRST AID

FIRE, EXPLOSION, AND REACTIVITY DATA

EXTINGUISHING AGENTS AND FIRE FIGHTING METHODS

FLASH POINT

FLAMMABLE OR EXPLOSIVE LIMIT

OPEN CUP	° C CLOSED CUP	° C	LOWER	% UPPER	%

IGNITION TEMPERATURE	° C	AUTO-IGNITION TEMPERATURE	° C

PRODUCTS FORMED BY FIRE OR EXCESSIVE HEAT

CONDITIONS TO AVOID

STABILITY Stable Unstable -- Explain Conditions

INCOMPATIBLE MATERIALS AND REACTIONS

PRODUCTS OF DECOMPOSITION

HAZARDOUS POLYMERIZATION Will not occur May occur -- Explain Reaction and Products

PROTECTION EQUIPMENT

PERSONAL PROTECTION

VENTILATION

ADDITIONAL PROTECTIVE EQUIPMENT

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved
OMB No. 44-R1387

MATERIAL SAFETY DATA SHEET

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

SECTION I

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

SECTION II - HAZARDOUS INGREDIENTS

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

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H ₂ O=1)	
VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			
APPEARANCE AND ODOR			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LFL	UFL
EXTINGUISHING MEDIA			
SPECIAL FIRE FIGHTING PROCEDURES			
UNUSUAL FIRE AND EXPLOSION HAZARDS			

SAMPLE P.O. CLAUSES

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

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

04.0101(a) TABLE 1-1

1910.1001	Asbestos.
1910.1002	Coal tar pitch volatiles; interpretation of term.
1910.1003	4-Nitrobiphenyl.
1910.1004	alpha-Naphthylamine.
1910.1005	4, 4'-Methylene bis(2-chloroaniline).
1910.1006	Methyl chloromethyl ether
1910.1007	3, 3'-Dichlorobenzene (and its salts)
1910.1008	bis-Chloromethyl ether.
1910.1009	beta-Naphthylamine.
1910.1010	Benzidine.
1910.1011	4-Aminodiphenyl.
1910.1012	Ethyleneimine.
1910.1013	beta-Propiolactone.
1910.1014	2-Acetylaminofluorene.
1910.1015	4-Dimethylaminoazobenzene.
1910.1016	N-Nitrosodimethylamine.
1910.1017	Vinyl Chloride.
1910.1018	Inorganic arsenic.
1910.1028	Benzene.
1910.1029	Coke Oven Emissions
1910.1043	Cotton dust.
1910.1044	1,2 - dibromo - 3 - chloropropane.
1910.1045	Acrylonitrile.
1910.1048	Exposure to cotton dust in cotton gins.

Substance (Note 1)	ppm	mg/M ³ (Note 2)
Coal tar nitch volatiles, Ba ²⁺		
phenanthrene, acridine, chrysene		
Cobalt, metal fume & dust	0.1	
Copper fume	0.1	
Dusts and Mists	1	
Corundum Al ₂ O ₃ (Note 4)		
Cotton dust, raw - See §1910.1043 and (Note 7)	1	
Crag herbicide	15	
Cresol (all isomers)-Skin	5	22
Crotonaldehyde	3	8
Cumene-Skin	50	245
Cyanide (as CN)-Skin		5
Cyanogen	10	
Cyclodextran	300	1,050
Cyclohexanol	50	200
Cyclohexanone	50	200
Cyclohexene	500	1,015
Cycloheptadiene	75	200
2,4-D		10
DDT-Skin		1
DDVP, see Dichlorvos		
Dibromane-Skin	0.05	0.3
Demeton-Skin		0.1
Diacetone alcohol (4-hydroxy-4-methyl-2-pentanone)	50	240
1,2-Diaminoethane, see Ethylene-diamine		
Diazomethane	0.2	0.4
Diborane	0.1	0.1
C 1,2-Dibromoethane (ethylene dibromide)-Skin	25	190
Dibutyl phosphate	1	5
Dibutylphthalate		9
C Dichloroacetylene	0.1	0.4
C o-Dichlorobenzene	50	300
p-Dichlorobenzene	75	450
Dichlorodifluoromethane	1,000	4,950
1,3-Dichloro-5,6-dimethyl hydantoin		0.2
1,1-Dichloroethane	100	400
1,2-Dichloroethane	50	200
1,2-Dichloroethylene	200	790
C Dichloroethyl ether-Skin	15	90
Dichloromethane, see Methylene-chloride		
Dichloromonofluoromethane	1,000	4,200
C 1,1-dichloro-1,1-trifluoroethane	10	60
1,2-Dichloropropane, see Propylenedichloride		
Dichlorotetrafluoroethane	1,000	7,000
Dichlorvos (DDVP)-Skin		1
Dieldrin-Skin		0.25
Diethylamine	25	75
Diethylaminoethanol-Skin	10	50
C Diethylene triamine-Skin	10	42
Diethylether, see Ethyl ether		
Difluorodibromomethane	100	850
C Diglycidyl ether (DGE)	0.5	2.5
Dihydroxybenzene, see Hydroquinone		
Diisobutyl ketone	50	290
Dilaopropylamine-Skin	5	20
Dimethylmethane, see Methylal		
Dimethyl acetamide-Skin	10	35
Dimethylamide	10	15
Dimethylaminobenzene, see Xylidene		
Dimethylaniline (N-dimethylaniline)-Skin	5	25
Dimethylbenzene, see Xylene		
Dimethy. 1,2-dibromo-2,2-dichloroethyl phosphate, (Dibrom)		5
Dimethylformamide-Skin	10	50
2,6-Dimethylheptanone, see Diisobutyl ketone		
1,1-Dimethylhydrazine-Skin	0.5	1
Dimethylphthalate		5
Dimethylsulfate-Skin	1	5
2-Nitrobenzene (all isomers)-Skin		1
2-Nitro-cresol-Skin		0.2
Dibutyltoluene-Skin		1.5
Dioxane (Dioxylene dioxide)-Skin	100	350
Diphenyl	0.2	1

Substance (Note 1)	ppm	mg/M ³ (Note 2)
Diphenylamine		10
Diphenylmethane diisocyanate (see Methylene bisphenyl isocyanate MDI)		
Dipropylene glycol methyl ether-Skin	100	500
Di-sec. octyl phthalate (Di-2-ethylhexylphthalate)		5
Emery (Note 4)		
Endosulfan (Thiodan)-Skin		0.1
Edrin-Skin		0.1
Epichlorohydrin-Skin	5	19
EPN-Skin		0.5
1,2-Epoxypropane, see Propylene-oxide		
2,3-Epoxy-1-propanol, see Glycidol		
Ethane (Note 3)		
Ethanthiol, see Ethylmercaptan		
Ethandiamine	3	8
2-Ethoxyethanol-Skin	200	740
2-Ethoxyethyl acetate (Cellosolve acetate)-Skin	100	540
Ethyl acetate	400	1,400
Ethyl acrylate-Skin	25	100
Ethyl alcohol (ethanol)	1,000	1,900
Ethylamine	10	18
Ethyl sec-amiyl ketone (3-methyl-3-heptanone)	25	130
Ethyl benzene	100	435
Ethyl bromide	200	890
Ethyl butyl ketone (3-Heptanone)	50	230
Ethyl chloride	1,000	2,500
Ethyl ether	400	1,200
Ethyl formate	100	300
Ethyl mercaptan	0.5	1
Ethyl silicate	100	850
Ethylene (Note 3)		
Ethylene chlorohydrin-Skin	5	16
Ethylenediamine	10	25
Ethylene dibromide, see 1,2-Dibromoethane		
Ethylene dichloride, see 1,2-Dichloroethane		
C Ethylene glycol dinitrate and/or Nitroglycerine-Skin (Note 6)	0.2	
Ethylene glycol monomethyl ether acetate, see Methyl cellosolve acetate		
Ethylene imine-Skin	0.5	1
Ethylene oxide	50	90
Ethylidene chloride, see 1,1-Dichloroethane		
N-Ethylmorpholine-Skin	2	0
94		
Ferbam		15
Ferrovandium dust		1
Fibrous glass (Note 4)		
Fluoride (as F)		2.5
Fluorine	0.1	0.2
Fluorotrichloromethane	1,000	5,500
C Formaldehyde	5	6
Formic acid	5	9
Furfural-Skin	5	20
Furfuryl alcohol	50	200
Gasoline (Note 9)		
Glycerine mist (Note 4)		
Glycidol (2,3-Epoxy-1-propanol)	50	150
Glycol monoethyl ether, see 2-Ethoxyethanol		
Graphite, (Synthetic) (Note 4)		
Guthion, see Azinphosmethyl		
Gypsum (Note 4)		
Halnium		0.5
Helium (Note 3)		
Heptachlor-Skin		0.5
Heptane (n-heptane)	500	2,000
Hexachloroethane-Skin	1	10
Hexachloronaphthalene-Skin		0.2

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ment shall be cleaned and disinfected immediately after each use.

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

§ 1910.94 Ventilation.

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

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

(5) Personal protective equipment. (1) Only respiratory protective equipment approved by the Bureau of Mines, U.S. Department of the Interior (see 30 CFR Part 11) shall be used for protection of personnel against dusts produced during abrasive-blasting operations.

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

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

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

§ 1910.134 Respiratory protection.

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

respirators shall be used pursuant to the following requirements.

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

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

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

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

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

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

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

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

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

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

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

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

(11) Approved or accepted respirators shall be used when they are available. The respirator furnished shall provide adequate respiratory protection against the particular hazard for which it is designed in accordance with standards established by competent authorities. The U.S. Department of the 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.

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

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

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

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

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

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

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

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

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

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

(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 this section shall see that all gas mask canisters purchased or used by them are properly labeled and colored in accordance with these requirements before they are placed in service and that the labels and 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:

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

or

Type N Gas Mask Canister

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

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

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

(5) Each canister shall have a label warning that gas masks should be used only in atmospheres containing sufficient oxygen to support life (at least 16 percent by volume), since gas mask canisters are only designed to neutralize or remove contaminants from the air.

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

TABLE I-1

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

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

Federal Regulations Affecting Asbestos

U.S. Dept. of Labor
OSHA

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

EPA

Toxic Substances Control Act (TSCA)
Asbestos in Schools Rule

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

EPA

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

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

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

Definitions - CFR 40 Part 61 Section 61.141

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

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

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

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

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

Facility Component - pipe, duct, boiler, tank, reactor, turbine, furnace or structural member

Demolition / Renovation of Friable Asbestos

Applicability Categories Section 61.145

61.145(a)

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

Notification Req. Section 61.146

Written notification to EPA required.

Postmark/Deliver 10 days prior to demolit.

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

Emission Control Proceed. Section 61.147

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

61145 of 61146

Notification Req. Section 61.146

Emission Control Proced. Section 61.147

SEND NOTIFICATIONS TO:

EPA

Alaska Operations Office

3200 Hospital Dr.

Suite 101

Juneau, AK 99801

ATTN: KATHRYN PAZERA

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

Demolition / Renovation of Friable Asbestos

- Applicability Categories Section 61.145

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

Notification Req. Section 61.146

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

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

Emission Control Proced. Section 61.147

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

Demolition/Renovation of Friable Asbestos

Applicability Categories Section 61.145

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

Notification Req. Section 61.146

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

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

Emission Control Proced. Section 61.147

Modification Pro. Section 61.146

- ④ Name, title and authority of State/local gov't. rep. ordering demolition.

SEND NOTIFICATIONS TO:

EPA

Alaska Operations Office

3200 Hospital DR.

Suite 101

Juneau, AK 99801

ATTEN: KATHRYN PAZERA

507-7611

Emission Control Proced. Section 61.147

- ① After removing facility component w/ash.
- Wet during stripping - OR -
 - Use local exhaust vent. & collection (NO V.E. or designed & oper. 61.154)
- ② All asbestos removed or stripped
- Asb. must remain wet until contained for disposal
 - Do not drop - lower material to ground
 - Dust-tight chutes or containers 17' > 50 feet above ground - Exception: 61.147 (b)
- ③ Temp. at wetting point < 32°F
- Comply w/(d) and (e) - no other wetting requirements
 - Remove facility components in 1...

Demolition / Renovation of Friable Asbestos
- Applicability Categories Section 61.145

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

Notification Req. Section 61.146

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

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

Emission Control Proced. Section 61.147

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

Notification Req. Section 61.146

SEND NOTIFICATIONS TO:
EPA
ALASKA Operations Office
3200 Hospital Dr.
Suite 101
Juneau, AK 99801
Attn: KATHRYN Pazera

Emission Control Proced. Section 61.147

Exception: Unavoidable damage to equipment

- Request EPA to make determination

- If damage unavoidable, must use exhaust ventilation & collection sys. (No V.E. or designed for oper. 61.154)

(d) After removing facility component w/ asb.

- Wet during stripping - OR -

- Use local exhaust vent. & collection (NO V.E. or designed for oper. 61.154)

(e) All asbestos removed or stripped

- Asb. must remain wet until contained for disposal

- Do not drop - lower material to ground

- Dust-tight chutes or containers if > 50 feet above ground - Exception: 61.147 (b)

(f) Temp. at wetting point < 32°F

- Comply w/ (d) and (e) - no other wetting requirements

- Remove facility components

Demolition / Renovation Projects
Standards for Waste Disposal of Friable Asbestos *
61.152

- (a) Deposit all asbestos waste (friable & control equip) at waste disposal site operated by 61.153
(b) No visible emissions (collection, process, packaging, transport, deposit)

-OR-

1) Treat ash waste with water (No V.E. or use Air cleaning 61.154)

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

- Label containers (61.152(b)(1) iii OR 29CFR 1910.1001(g)(1)(iv))

-OR-

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

-OR-

3) Submit alternative disposal to EPA for approval

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

Demolition / Renovation Projects
Active Waste Disposal
61.156

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

MEMORANDUM

State of Alaska

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

DATE: October 12, 1983

FILE NO:

TELEPHONE NO:

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

SUBJECT: Waste Asbestos
Disposal
Responsibilities

SWH

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

I. ASBESTOS IS NOT A HAZARDOUS WASTE UNDER RCRA.

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

II. ASBESTOS IS A HAZARDOUS AIR POLLUTANT UNDER NESHAPS.

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

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

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

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

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

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

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

V. ASBESTOS DISPOSAL REQUIRES AN ADEC WASTE DISPOSAL PERMIT.

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

Asbestos is also "hazardous" and requires "specific approval" from the department according to 18 AAC 60.087.(a).

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

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

V. ASBESTOS DISPOSAL PROCEDURES.

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

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

CAUTION

CONTAINS ASBESTOS

AVOID OPENING OR BREAKING CONTAINER

BREATHING ASBESTOS IS HAZARDOUS
TO YOUR HEALTH

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

ASBESTOS WASTE DISPOSAL SITE

DO NOT CREATE DUST

BREATHING ASBESTOS IS
HAZARDOUS TO YOUR HEALTH

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

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

Conclusion:

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

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

cc : Keith Kelton

RTW:SH:tz



ALASKA CHAPTER A.G.C.
EDUCATION COMMITTEE

presents a

CONSTRUCTION INDUSTRY SEMINAR
"ASBESTOS REMOVAL"

A timely safety seminar for:

- *GENERAL CONTRACTORS
- *SAFETY PROFESSIONALS
- *SUBCONTRACTORS
- *INSURANCE BROKERS
- *PUBLIC ADMINISTRATORS
- *BUILDING OWNERS

*NOTE: Date change
Anchorage only



HOTEL CAPTAIN COOK
ANCHORAGE, ALASKA
APRIL 18, 1984



FAIRBANKS INN
FAIRBANKS, ALASKA
APRIL 20, 1984



SEMINAR OBJECTIVE:

THIS SEMINAR IS PRESENTED FOR GENERAL CONTRACTORS, SUBCONTRACTORS, SAFETY PROFESSIONALS, PUBLIC ADMINISTRATORS, BUILDING OWNERS AND OTHERS INVOLVED IN OR CONSIDERING ASBESTOS REMOVAL WORK. PARTICIPANTS WILL LEARN ASBESTOS HEALTH HAZARDS, ASBESTOS REGULATIONS, ABATEMENT PROCEDURES, PROTECTIVE EQUIPMENT, MONITORING, EMPLOYEE TRAINING, SIGNING AND WASTE DISPOSAL PROCEDURES.

MATERIALS:

COPY OF THE ASBESTOS REGULATIONS, SAMPLE PERMIT FORMS AND RESPIRATOR USAGE CHART, BIDDER PREQUALIFICATION FORMS. REQUIRED BY SOME OWNERS, EPA SCHOOL ASBESTOS REMOVAL PROGRAM.

REGISTRATION FORM

We will attend the Asbestos Abatement Procedures Seminar in _____ Anchorage - April 18
_____ Fairbanks - April 20

The following people will be attending from our company:

Registration Fee: \$25 per person
(Includes Lunch)

Check enclosed in the amount of \$ _____ for _____ registrations.

Signature: _____

Company: _____

RETURN TO:
Alaska Chapter, A.G.C.
P. O. Box 4-2500
Anchorage, Alaska 99509
Attn: Eddie

Or call Eddie at the A.G.C. office - 561-5354

AGENDA:

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

COORDINATOR:

William E. Schneider, Assistant Manager, Alaska Chapter, A.G.C.

SPEAKERS:

Wayne Tansil
Project Manager
Gobbell, Hays, Pickering
Memphis, Tennessee

J. Lauinger
Training Director
Alaska Laborers Training School
Anchorage, Alaska

Steve Zrake
Environmental Field Officer
Alaska State Department
of Environmental Conservation

Max Andrews
Environmental Consultant
Department of Occupational Safety
and Health
Alaska State Department of Labor

Kathy Pazera
Environmental Protection Specialist
U. S. Environmental Protection Agency
Juneau, Alaska

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

(1) "Asbestos" includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, 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 11.137 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 04.0102.

(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 sign 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, AOSHA, 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).

<u>Legend</u>	<u>Notation</u>
Asbestos	1 in Sans Serif, Gothic or Black
Dust hazard	3/4 in Sans Serif, Gothic or Black
Avoid breathing dust	1/2 in. Gothic
Wear assigned protective equipment	1/2 in. Gothic
Do not remain in area unless your work requires it	1/2 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 impervious 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(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 (FEV₁).

(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 (FEV₁).

(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 (FEV₁).

(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.

(k) 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.