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File Asbestos

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federal register

Friday
April 25, 1986

Part II

Environmental Protection Agency

40 CFR Part 763
Toxic Substances; Asbestos Abatement Projects; Final Rule

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 763

[OPTS-62044A; FRL 2965-7]

Toxic Substances; Asbestos Abatement Projects

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: EPA is issuing a rule under section 6(a) of the Toxic Substances Control Act (TSCA). The rule will apply to asbestos abatement projects using employees not protected by regulations of the Occupational Safety and Health Administration (OSHA), by regulations of State plans adopted under the Occupational Safety and Health Act (OSHAct), or by State regulations in Idaho, Kansas, Oklahoma, and Wisconsin that EPA has determined are comparable to or more stringent than this rule.

DATE: This rule will be promulgated for purposes of judicial review at 1 p.m. eastern time on May 9, 1986. This rule is effective June 9, 1986.

FOR FURTHER INFORMATION CONTACT: Edward A. Klein, Director, Office of TSCA Assistance (TS-799), Office of Toxic Substances, Environmental Protection Agency, Rm. E-543, 401 M St., SW., Washington, D.C. 20460, Toll free: (800-424-9065). In Washington, D.C.: (554-1404). Outside the USA: (Operator-202-554-1404).

SUPPLEMENTARY INFORMATION:

I. Authority

Section 6(a) of TSCA authorizes EPA to impose a number of regulatory requirements concerning a chemical substance or mixture if EPA finds that there is a reasonable basis to conclude that the manufacture, processing, distribution in commerce, use, or disposal of the chemical substance, or any combination of such activities, presents or will present an unreasonable risk of injury to health or the environment. Among the requirements that EPA may impose are those listed in sections 6(a)(5) and 6(a)(6). Section 6(a)(5) of TSCA authorizes EPA to prohibit or otherwise regulate any manner or method of commercial use of a chemical substance or mixture. Section 6(a)(6) of TSCA authorizes EPA to prohibit or otherwise regulate any manner or method of disposal of a chemical substance or mixture or any article containing that substance or mixture, by any person who uses or disposes of it for commercial purposes.

These sections provide authority for EPA to issue this rule, which establishes requirements to protect State and local public employees conducting asbestos abatement activities. The asbestos in buildings where State and local public employees may be involved in abatement has been sold as a commercial product. Therefore, regulation of abatement activities affecting asbestos use in these buildings, such as encapsulation or enclosure, is considered regulation of commercial use. The removal of asbestos, a disposal activity, will affect a number of commercial activities that take place in the public buildings and, therefore, is considered disposal for commercial purposes.

II. Background

EPA proposed a rule under section 6(a) of TSCA to protect State and local public employees who take part in asbestos abatement projects, but who are not covered by the OSHA Asbestos Standard or by regulations of State plans adopted under the OSHAct, as published in the **Federal Register** of July 12, 1985 (50 FR 28530). The proposed rule was effective immediately under section 6(d) of TSCA and will remain in effect until this final rule becomes effective on June 9, 1986.

EPA received over 20 comments from the public on the proposed rule and the final rule that EPA is issuing today includes changes in response to the public comments. Those changes are discussed in Unit IV below.

This rule is part of an EPA program to address the risks associated with asbestos in schools. As part of that program, EPA has established regional information centers to provide information concerning the identification and abatement of asbestos hazards and to train people in proper abatement techniques. To ensure that asbestos abatement is performed safely and correctly, EPA is helping States establish certification programs for asbestos abatement contractors. EPA is giving grants to several States to help them set up contractor certification programs and is advising States on ways to implement such programs. Through its technical assistance program, EPA provides guidance on asbestos matters to school officials and local health and education departments. Finally, EPA has updated existing guidance material and prepared new material.

III. Provisions of the Rule

This rule applies to asbestos abatement projects using State and local government employees not covered by either (1) the OSHA Asbestos Standard, 29 CFR 1910.1001, (2) an Asbestos Standard adopted by a State as part of a State plan approved by OSHA under section 18 of the OSHAct, or (3) a State asbestos regulation in Idaho, Kansas, Oklahoma, or Wisconsin. EPA has determined that these four State regulations are comparable to or more stringent than this rule. The rule defines asbestos abatement project as "any activity involving the removal, enclosure, or encapsulation of friable asbestos material, except removal, enclosure, or encapsulation during sampling or routine repair of less than either 3 linear feet or 3 square feet of friable asbestos material." The rule defines friable asbestos material as "any material containing more than 1 percent asbestos by weight which, when dry, may be crumbled, pulverized, or reduced to powder by hand pressure." Thus, the sampling of friable asbestos material and the routing repair or less than either 3 linear feet or 3 square feet of friable asbestos material are not covered by this rule at all.

The rule with certain exceptions, requires employers to report to EPA at least 10 days before they begin an asbestos abatement project covered by this rule. The first exception is for asbestos abatement projects involving the removal, enclosure, or encapsulation of less than either 3 linear feet or 3 square feet of friable asbestos material. These projects do not have to be reported at all. The second exception is for emergency projects, which EPA defines as "a project involving the removal, enclosure, or encapsulation of friable asbestos material that was not planned but results from a sudden unexpected event." Examples of emergency projects are repairs necessitated by serious vandalism, flooding, fire, boiler failure, and ruptured water pipes. Emergency projects do not have to be reported to EPA 10 days in advance. Instead, they must be reported "as soon as possible, but in no case more than 48 hours after the project begins." The third exception is for employers who submit a notice to EPA under the National Emission Standard for Asbestos, 40 CFR 61.146, at least 10 days before they begin the asbestos abatement project and the notice clearly indicates that employees covered by this rule will perform some or all of the asbestos abatement work.

Reports under this rule must include the employer's name and address; the location, including street address, of the project; and the scheduled starting and completion dates for the project.

The regulatory requirements of the rule are very close to the current OSHA Asbestos Standard, with the same PEL and work practice requirements.

This rule, like the proposal, does not include the part of the current OSHA Asbestos Standard which states that personnel rotation is preferred over use of respirators to meet the permissible exposure requirements. OSHA has announced its intention to revoke that provision (Ref. 12). EPA agrees with OSHA's statement that personnel rotation merely increases the population at risk and would not reduce the absolute number of excess deaths attributable to asbestos according to mathematical models.

This rule, like the proposal and the current OSHA Asbestos Standard, requires that employers initially monitor each workplace to determine whether employees' exposure to asbestos is below the limits set in the rule. After the initial determination, employers must collect samples of air levels "of such frequency and pattern as to represent with reasonable accuracy the levels of exposure of employees." EPA encourages persons to monitor asbestos levels daily during abatement projects.

Because of OSHA's extensive experience in administering and enforcing its Asbestos Standard, EPA generally intends to follow OSHA's administrative interpretations of identical provisions in the Asbestos Standard. This includes the OSHA interpretation that the medical surveillance requirements are triggered by an action level of 0.1 fiber per cubic centimeter (f/cc) as a 7- or 8-hour time weighted average. Employers must conduct personal and environmental monitoring as required by the rule to see if that level is exceeded.

EPA will also follow OSHA's administrative interpretations concerning respirator requirements during demolition or removal of asbestos. As stated by OSHA, employees about to engage in the removal of demolition of pipes, structures, or equipment covered or insulated with asbestos, or in the removal or demolition of asbestos insulation or coverings, must use a type "C" continuous flow or pressure-demand, supplied-air respirator regardless of the concentrations of asbestos to which they may be exposed. However, if the employer has conclusively established the upper concentration of airborne asbestos that employees could be exposed to during demolition or removal, and the concentration does not exceed 100 times either the 8-hour time-weight average or ceiling limits, then any of the respirators permitted by the rule that affords adequate protection at such upper concentrations of airborne asbestos may be used. The establishment of the upper concentrations of airborne asbestos fibers may require considerable effort if there are variations from operation to operation. Proof that the average airborne concentrations of asbestos fibers that an employee may be exposed to will not exceed 100 times the 8-hour, time-weighted average or ceiling concentrations must be determined by the employer applying sound scientific or engineering principles.

EPA also wishes to clarify two provisons of the rule, which are identical to provisions of the current OSHA rule. First, the rule states that "insofar as practicable, asbestos shall be . . . removed . . . in a wet state sufficient to prevent the emission of airborne fibers in excess of the exposure limits . . ." EPA believes that it is practical to wet asbestos before removal in almost every situation.

Second, the rule states that "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." EPA believes that visible accumulations of asbestos-containing debris could lead to excessive concentrations and should not be left after the conclusion of an asbestos abatement project.

IV. Future Revisions to This Rule

As noted above, EPA is adopting most provisions of the current OSHA Asbestos Standard in this final rule. As pointed out by comments, OSHA has recognized that employees exposed to asbestos at levels permitted by its current standard face a significant risk to health (Ref. 12). As also noted in comments, OSHA has proposed amending the current Asbestos Standard to lower the PEL to either 0.2 f/cc or 0.5 f/cc and to adopt an Asbestos Standard for the Construction Sector. EPA will amend this rule to be consistent with OSHA proposal after OSHA isues a final standard. This will ensure that all public and private sector employees who participate in asbestos abatement projects enjoy similar levels of protection. When EPA amends this rule to be consistent with the final OSHA standard, EPA will give the States of Idaho, Kansas, Oklahoma, and Wisconsin an appropriate amount of time (at least 6 months) to make conforming changes to their regulations.

Because of the extensive comment already received on the OSHA Standard, EPA will issue this amendment without further solicitation of public comment. Therefore, EPA suggests that any additional comments on this approach be submitted to EPA at this time. Comments should be submitted to the address provided above.

In its proposed rule, OSHA included a provision requiring the employer to institute a training program for employees exposed to airborne concentrations of asbestos in excess of either 0.2 or 0.5 f/cc without regard to the use of respirators. EPA is considering a related provision requiring State and local governments covered by this rule to have any employees who participate in asbestos abatement trained in an asbestos abatement course. Such a provision could involve setting training course criteria. Persons who wish to comment on this possible provision should submit their comments at this time. Whether or not EPA adopts a training requirement through rulemaking, EPA would like to point out that the FY 1986 Asbestos School Hazard Abatement Act (ASHAA) appropriation requires schools who receive ASHAA funds to select contractors for their abatement projects who are either State-certified or have attended an EPA approved training course.

V. Response to Comments

EPA received and has analyzed over 20 comments from the public on the proposed rule. The following summarizes the major comments and discusses the changes in the final rule in response to those comments. A more extensive response to comments document appears in the rulemaking record.

There were comments that coverage of the rule was unclear. In response to these comments, EPA clarified the rule to indicate clearly that the rule applies to project performed to abate asbestos hazards and to other asbestos abatement projects performed as part of a renovation or repair project.

There were also comments concerning the persons intended to be protected by the rule. In response to those comments, EPA revised the rule to make clear that the rule applies to persons who take part in asbestos abatement projects and not to other persons who may incidentally come into contact with asbestos. Asbestos abatement workers face a greater likelihood of significant exposure to asbestos than other persons who only incidentally come into contact with asbestos.

The proposed rule applied to all asbestos abatement projects, with no exclusion for small projects. There were comments that the rule as applied to

small projects was unduly burdensome and would discourage necessary repair operations. In response to these comments, EPA decided to exclude routine repair of less than 3 linear or 3 square feet of friable asbestos material from the final rule. Thus minor, routine repairs of pipe insulation by sealing or taping would not be covered by the rule.

This change will allow persons to make these minor, routine repairs without using type "C" respirators or conducting air sampling. Applying these requirements would unnecessarily discourage needed repairs of damaged asbestos materials. As noted above, this exclusion applies only to repair of less than 3 linear or 3 square feet of friable asbestos material. EPA considered the alternative of excluding "small" repair projects without setting a numerical limit. However, EPA decided that this approach would create enforcement difficulties since "small" is a very subjective term.

One comment noted that the proposed rule could be interpreted as covering the removal of friable asbestos material during sampling. This could discourage persons from sampling to identify potential asbestos hazards, thus delaying the abatement of some hazards. In response to this comment, EPA decided to clarify the rule to exclude any removal, enclosure, or encapsulation during sampling from coverage.

In the proposal, EPA requested comment on whether this rule should apply in States that do not have an OSHA-approved State plan but have comparable or more stringent regulations protection public employees who perform asbestos abatement work. EPA encouraged States with such regulations to inform EPA about the regulations during the comment period. Idaho, Kansas, Oklahoma, and Wisconsin brought their regulations to EPA's attention. EPA has decided that these regulations are comparable or more stringent that this rule and decided to exclude those States from coverage under this rule. A document which summarizes how EPA determined that these State regulations are comparable or more stringent appears in the record for this rule.

If any other State has a comparable or more stringent regulation now or adopts one in the future and wishes to be excluded from this rule, that State should send a copy of the regulation to EPA's Office of Toxic Substances (TS-792), 401 M Street St., SW., Washington, D.C. 20460 and request to be excluded from the rule. EPA will review the regulation and tentatively determine whether the regulation is comparable or more stringent that this rule. If EPA makes this tentative determination, EPA will propose an amendment to this rule, excluding that State from coverage. Interested persons could comment on the proposed exclusion during a period for public comment. After considering any comments, EPA could promulgate the final rule amendment.

In the proposal, EPA requested comment on the appropriate definition of asbestos. The definition in the proposal differs from OSHA's in that the EPA definition excludes non-asbestiform tremolite. EPA received one comment that it should adopt the OSHA definition and other comments that the EPA definition should be modified somewhat to make it more mineralogically correct. EPA has decided to retain the proposed definition in the final rule. This definition has been used by EPA in the past and is understood by the regulated community.

EPA also received comment on the definition of asbestos fibers. In the proposal, EPA defined the term as "asbestos fibers longer than 5 micrometers. EPA is adopting the same definition in this rule to be consistent with OSHA. OSHA adopted the definition because of practical difficulties in measuring concentrations of smaller fibers. EPA believes that smaller fibers present a health risk but agrees with OSHA that it is difficult to monitor for smaller fibers.

EPA received four comments questioning the proposed requirement of annual chest roentgenograms (X-rays) for persons exposed to asbestos at a level greater than 0.1 f/cc for a 7- or 8-hour TWA. Some comments stated that the diagnostic value of annual chest roentgenograms are outweighted by the risk associated with X-ray exposure. In response to these comments, EPA has modified the rule to make clear that chest roentgenograms are required only at the discretion of the physician.

EPA received comments concerning the reference in the proposed rule to respirators approved by the Bureau of Mines (BOM). The comment pointed out that while there may be respirators still in use which were originally approved by BOM, the Mine Safety and Health Administration (MSHA) has replaced BOM in this task. The final rule has been changed to make clear that respirators approved by the National Institute for Occupational Safety and Health, BOM, or MSHA may be worn.

EPA received one comment concerning a typographical error in the rule. The proposal incorrectly stated that "the employee shall provide two separate lockers. . . ." The final rule corrects this error and provides that "the employer shall provide two separate lockers. . . ."

EPA received comments that a PEL of 2.0 f/cc does not provide sufficient protection. As explained above, EPA is adopting the PEL in this rule to be consistent with OSHA, but expects to amend this rule to adopt a lower PEL in accordance with OSHA in the future. To ensure greater protection of abatement workers and building occupants during asbestos abatement than that now required by this rule, EPA strongly encourages all persons to follow EPA guidance materials and take additional steps to control exposure to asbestos. EPA encourages persons to contact a Regional Asbestos Coordinator or the TSCA Assistance Office to obtain EPA guidance documents and other technical assistance information. EPA also notes that many asbestos abatement projects subject to this rule are subject to the requirements of the National Emission Standard for Asbestos, 40 CFR 61.146, issued by EPA under the Clean Air Act.

VI. Regulatory Assessment

Under section 6(c)(1) of TSCA, EPA must consider the following factors when determining whether a chemical substance or mixture presents an unreasonable risk:

1. The effects of such substance or mixture on health and the magnitude of the exposure of human beings to such a substance or mixture.

2. The effects of such substance or mixture on the environment and the magnitude of the exposure of the environment to such substance or mixture.

3. The benefits of such substance or mixture for various uses and the availability of substitutes for such uses.

4. The reasonably ascertainable economic consequences of the rule, after consideration of the effect on the national economy, small business, technological innovation, the environment, and public health.

After considering the above factors, EPA makes the following findings concerning the unregulated removal, enclosure, or encapsulation of friable asbestos material.

A. Health Effects and Magnitude of Exposure to Asbestos

1. *Health effects.* The following summarizes the health effects of asbestos. They are similar to those in the preamble to the proposed rule. EPA received no comments disagreeing with EPA's assessment of the health effects of asbestos. Detailed discussion and assessment of the health effects of asbestos may be found in the "Report to

the United States Consumer Product Safety Commission (CPSC), by the Chronic Hazard Advisory Panel on Asbestos" (CHAP) (Ref. 1), "Health Effects and Magnitude of Exposure" in EPA's "Support Document for Final Rule of Friable Asbestos-Containing Materials in School Buildings," (Ref. 4) and the "Report of the (National Research Council) Committee on Nonoccupational Health Risks of Asbestiform Fibers" (Ref. 6).

EPA finds that the adverse human health effects from exposure to asbestos are extremely serious. Asbestos is a known human carcinogen that also causes other lung diseases.

Asbestos has been thoroughly examined in numerous epidemiology studies. The life-threatening diseases that have been repeatedly identified are asbestosis, lung cancer, and mesothelioma. Also associated with asbestos exposure in some studies are cancers of the larynx, pharynx, gastrointestinal tract, kidney, and ovary and respiratory diseases such as pneumonia. Major health effects are discussed below.

Asbestosis, which involves fibrosis of lung and pleural tissue, is a serious chronic disease associated with exposure to asbestos. There is no effective treatment for asbestosis and it is often disabling or fatal. Asbestosis is diagnosed from findings which may include radiographic changes, breathlessness, and abnormal lung function. Since some clinical symptoms of asbestosis are similar to those of other fibrosing lung diseases, a history of occupational exposure to asbestos is often a key feature of its diagnosis. Asbestosis can appear and progress decades after exposure to asbestos fibers. This is partly true because some inhaled asbestos fibers remain in the body for the lifetime of a victim. Under working conditions where average fiber concentrations in the air were high (more than 10 fibers per cubic centimeter) asbestosis has accounted for more than 17 percent of observed deaths (Ref. 11). It is apparently less common than lung cancer or mesothelioma at exposures lower than the current OSHA workplace standard of 2.0 f/cc. Some recent data on the incidence of asbestosis appear compatible with a linear exposure-response relationship with no threshold (Ref. 12).

Lung cancer is currently responsible for the largest number of deaths from exposure to asbestos. It has been associated with exposure to all the principal commercial asbestos fiber types. Excess lung cancer has been documented in groups involved with the mining and milling of asbestos and the manufacture and use of asbestos products. Studies in which the extent of exposure can be approximated provide evidence that lung cancer increases linearly with both level and duration of exposure. Cigarette smoking and asbestos have a strong synergistic interaction in development of lung cancer. Asbestos exposure appears to multiply the underlying risk of lung cancer. Consequently, when exposed to asbestos, the risk of lung cancer for smokers (for whom the risk of lung cancer is already high) is much higher than that for nonsmokers exposed to asbestos.

Many human studies have also shown that exposures to asbestos produce mesotheliomas, which are cancers that occur as thick diffuse masses in the serous membranes (mesothelia) that line body cavities. Mesotheliomas occur in the pleura (the membrane that surrounds the lungs and lines the lung cavity) and the peritoneum (which surrounds the abdominal organs and lines the abdominal cavity). Both forms of mesothelioma are nearly always fatal within the first 2 years after diagnosis. Epidemiology studies suggest that the incidence of mesothelioma is related to dose and time from first exposure. Association of mesothelioma with smoking is weak or nonexistent. Asbestos fibers appear, by far, to be the most common cause of mesotheliomas.

In occupational studies where the primary route of exposure is through inhalation, lung cancer and mesotheliomas usually account for about 90 percent of the excess cancers seen among workers. However, as noted in the CHAP report (Ref. 1), a number of other cancers, principally of the gastrointestinal tract, have been associated with asbestos exposure. These are cancers of the larynx, pharynx, oral cavity, esophagus, stomach, colon, and rectum. Statistically significant excesses of cancers of the kidney and ovary have also been shown in some studies. In addition, the excess of cancers at all other sites combined is statistically significant in some studies.

The conclusions from epidemiology studies concerning the health effects of asbestos are also supported by results of laboratory studies. Animals treated with asbestos have shown increased incidence of fibrosis, lung cancer, and mesotheliomas. All commercial forms and several other types of asbestos are implicated from a variety of modes of exposure. Animal studies, however, have not shown an increased incidence of gastrointestinal or other cancers.

Most occupational studies have been conducted on populations exposed to high airborne concentrations of asbestos for long periods of time. However, short-term occupational exposures, have also been shown to increase the risk of lung cancer and mesothelioma (Ref. 9). In addition, there are many documented cases of mesothelioma linked to extremely brief exposure to high concentrations of asbestos or long-term exposure to low concentrations (Ref. 4).

Direct evidence of adverse health effects from nonoccupational asbestos exposure also exists. Persons who lived in the household of asbestos workers have developed pleural mesothelioma and signs of asbestosis (Ref. 10). A number of mesotheliomas have also been documented among populations whose only identified exposure was from living near asbestos mining areas, asbestos product factories, or shipyards where asbestos use had been very heavy (Ref. 4).

In addition to exposure to asbestos fibers in the air, the general population is also exposed through various oral sources, including drinking water containing asbestos. Because of the potential for oral exposure as well as the excess of gastrointestinal tract cancers that has frequently been found in occupational groups exposed to asbestos in the air, there has been much study of the possible health effects of ingestion of asbestos fibers. Despite those efforts, evidence showing health effects from ingestion is still ambiguous (Ref. 5).

2. *Cancer risk extrapolation.* As discussed above, numerous human studies have demonstrated that exposure to asbestos has increased the risk of cancer and asbestosis. This unit presents EPA's approach in estimating the cancer risk attributable to exposures during the removal, enclosure, or encapsulation of friable asbestos.

Since a number of epidemiology studies indicate a positive relationship between asbestos exposure and the risk of lung cancer, several models may be used to extrapolate from risk at high exposure to risk at lower exposure. The model that EPA believes is most consistent with available human and animal data is the linear nonthreshold dose/response model. This model assumes that: (1) Any exposure increases risk, and (2) the increase in risk is proportional to the background risk in the nonexposed population and to the level of exposure, defined as duration of exposure times concentration of asbestos fibers to which populations may be exposed.

The choice of the linear model appears reasonable since there is no evidence for a threshold level of asbestos exposure below which there is

no increased risk. It is further supported by evidence of cancers among populations whose asbestos exposure is believed to have been lower than levels reported in the epidemiology studies of asbestos workers mentioned above.

The model adopted by EPA to estimate excess mesothelioma incidence due to asbestos exposure relates disease incidence to dose and the time from first exposure (minus 10 years) raised to the third power. This model reflects a delay (or minimum latency period) of 10 years between first exposure and the likely earliest possible appearance of the disease. Both the lung cancer and mesothelioma models have also been adopted by OSHA (Ref. 12). The National Research Council Committee on Nonoccupational Health Risks of Asbestiform Fibers also adopted a similar linear nonthreshold model to estimate risk to nonoccupational populations from exposure to asbestos (Ref. 6). The derivation and validation of the models is discussed in detail in the CHAP report (Ref. 1) and in EPA's "Regulatory Impact Analysis of Controls on Asbestos and Asbestos Products" (Ref. 3).

Although EPA believes that excess mortality from asbestosis and cancers other than lung cancer and mesothelioma could occur from exposure to asbestos released during asbestos abatement operations, EPA has not attempted to quantify that excess mortality since lung cancer and mesothelioma appear to present the greatest threats to human health at current exposure levels. Thus, the model could understate the risk to humans from asbestos exposure.

The risk of asbestos-induced disease may be modified by several factors. As mentioned in the earlier discussion on lung cancer, smoking drastically increases the risk of developing lung cancer from exposure to asbestos. Because of their lower underlying risk, the absolute increase of incidence of lung cancer in nonsmokers is about one-tenth of that in smokers. However, complete control of the smoking factor (if possible) would leave a substantial health risk since the risk of mesothelioma (which is apparently unaffected by smoking) and the risk of lung cancer to nonsmokers would still remain.

Another factor that may affect the risk of asbestos-induced disease is the possible differences in biological potency among the different fiber types. The National Research Council (Ref. 6) studied this issue and concluded:

> Results of studies of various groups of workers indicate that it is extremely difficult to assess the role of fiber type (e.g., chrysotile or crocidolite) in determining the risk for developing either lung cancer or mesothelioma. Analysis of the epidemiological studies is complicated because of variations in type of industry, the diverse fiber characteristics within an industry, and the usual inadequacy of exposure data. Some scientists have interpreted the available epidemiological data to indicate that chrysotile asbestos, the asbestos type most commonly used in the United States, is less hazardous than the other types of asbestos, especially crocidolite. Such arguments have been used in the United Kingdom and other countries to rationalize different regulatory controls for crocidolite and chrysotile. However, in view of the laboratory evidence and great uncertainty about the nature of the fibers of asbestos to be found in nonoccupational exposure situations, the committee decided not to differentiate among them in the quantitative risk assessment. Furthermore, some of the apparent discrepancies may be explained by differences in physical properties of the fibers, their concentrations, and their characteristics in the different environments. These possibilities need further testing.

In view of this uncertainty about the relative potency of the various asbestos types and in view of the well-documented health hazard of the most common commercial form of asbestos, EPA has concluded that it is prudent to treat all asbestos fiber types as having equivalent biological activity.

Fiber morphology has also been suggested as a factor that may affect incidence of asbestos-induced disease. Animal studies in which asbestos fibers were applied by injection or implantation suggest that longer and finer fibers are more carcinogenic than shorter and coarser fibers. This has not, however, been confirmed by inhalation studies. EPA has not differentiated among fiber sizes in its assessment of the potential risk of asbestos. First, asbestos fibers released during asbestos abatement projects consist of a great range of dimensions, including those suggested as most dangerous. Second, it has not been clearly shown that short fibers pose a significantly smaller risk. No dimensional threshold for potency has been established.

3. *Magnitude of human exposure.* Persons can be exposed to high levels of airborne asbestos in or near the work area during asbestos abatement projects. Peak exposure during the removal of asbestos insulation have been measured at levels ranging from 4.5 f/cc to 82.2 f/cc. Mean exposure levels during the dry removal of an asbestos-containing ceiling have been measured at 42.2 f/cc. Mean exposure levels during the wet removal of an asbestos-containing ceiling have been measured at 23.1 f/cc. Mean exposure levels during removal of an asbestos-containing ceiling using water and a surfactant have been measured at 8.1 f/cc (Refs. 2 and 13). OSHA has estimated that average airborne concentrations in the dry wall removal, renovation, and demolition industry are 20 f/cc (Ref. 12).

There may also be much exposure to asbestos during the encapsulation and enclosure of friable asbestos material. Using an electron microscope, levels of 40, 380, 390, and 8,740 nanograms per cubic meter were found in samples taken in the work area with a mobile pump during painting with an encapsulant. Samples taken by personal pumps worn by two painters during encapsulation showed very low levels in one case and levels of 1,000, 1,700, 2,300, and 13,000 nanograms per cubic meter in the other case (Ref. 14). EPA has received anecdotal evidence that there may be much exposure to asbestos during enclosure of friable asbestos material.

Based on available exposure information, EPA estimated in the proposal that unregulated dry removal of asbestos results in exposure levels of 24.0 f/cc in the work area during abatement, 1.6 f/cc outside the work area during abatement and 0.8 f/cc outside the work area post abatement. EPA estimated that unregulated wet removal of asbestos results in exposure levels of 18.0 f/cc in the work area during abatement, 0.9 f/cc outside the work area during abatement, and 0.5 f/cc in the building post abatement (Ref. 13). Many of the estimates were based on data reported in studies, while others were essentially assumed due to a lack of data (Ref. 13). EPA received no comments on these estimates.

EPA estimated in the proposal that this rule would reduce the concentrations of airborne asbestos to 11.9 f/cc in the work area during abatement, 0.3 f/cc outside the work area during abatement, and 0.5 f/cc in the building post abatement (Ref. 13). These figures are estimated averages for all abatement projects. Individual projects are likely to have different concentrations. EPA received no comments on these estimates.

EPA estimated in the proposal that about 450 abatement workers per year would be covered by this rule. This was based on an estimate of the number of abatement projects each year and an estimate of the percentage of those projects in which State and local employees are used. The number of employees covered by the rule during repair and maintenance work involving the removal, enclosure or encapsulation

of friable asbestos material was not estimated. One comment asserted that as many as 75,000 State and local workers could be covered during these activities. EPA believes that this estimate is high.

In the proposal, EPA estimated that asbestos abatement workers would be exposed to asbestos during abatement for 3 to 6 days a year. In addition, other persons would be exposed to asbestos as a result of asbestos abatement activities. EPA estimated that about 1,250 other State and local public employees, such as public school teachers, other public school personnel, public hospital staff, and State and local government office workers, would be exposed during abatement and about 3,700 employees would be exposed post abatement. EPA also estimated that about 400 other building occupants such as school children and hospital patients and visitors would be exposed during abatement and about 38,600 other occupants and visitors would be exposed post abatement (Ref. 13). EPA received comments that it underestimated the number of asbestos abatement projects covered by this rule. If these comments are accurate, then this rule will potentially protect even more persons.

B. Environmental Effects

Section 6(c) of TSCA requires that EPA state the relevant environmental factors and key considerations which form the basis for regulatory action under section 6(a). The unreasonable risk finding of this rule is based solely on risks to human health since these risks are by far the most serious consequence of unregulated removal, enclosure, or encapsulation of friable asbestos material and are sufficient to support this rule. EPA received no comments on this point.

C. Benefits of Asbestos Products and Availability of Substitutes

EPA finds that the benefits of the asbestos-containing products affected by this rule are minimal. This rule applies only when persons have already decided to remove, enclose, or encapsulate friable asbestos material. These people presumably will have already determined that there are no benefits in using the asbestos-containing material in its present condition. In addition, there are adequate substitutes for the asbestos products that are being removed from buildings. EPA received no comments on this point.

D. Economic Effects of the Rule

This portion of the preamble presents EPA's determination of the "reasonably ascertainable economic consequences of the rule, after consideration of the effect on the national economy, small business, technological innovation, the environment, and public health" as required by section 6(c)(1)(D) of TSCA.

EPA estimates that this rule will increase the cost of asbestos abatement to some extent. In the proposal, EPA estimated that the rule would increase the cost of typical abatements as follows:

Project	Without rule	With rule	Increase	Percent increase
School	$12,900	$15,300	$2,400	18
Office building	18,800	22,000	3,200	17
Hospital	58,500	65,800	7,300	12
Boiler room	3,700	4,900	1,200	32
Boiler pipes	1,700	2,600	900	54

In the proposal, EPA estimated that the rule would increase the costs of asbestos abatement a total of about $730,000. This figure represents the present value of costs incurred over the next 15 years, assuming that all friable asbestos is abated. EPA also estimated that this rule would avoid about 200 cancer cases. This is about $3,650 per cancer case avoided.

EPA received comments indicating that the total costs of the rule were understated because EPA underestimated the number of asbestos abatement projects covered by this rule. EPA acknowledges that the estimate of asbestos abatement projects may have been low because it did not take into account many maintenance and repair operations. However, EPA has excluded some of these small projects from coverage in the final rule. In addition, even if the number of asbestos abatement projects is higher than estimated by EPA, both the costs of the rule and the number of cancer cases avoided would have been underestimated in roughly the same proportion in the proposal. Thus, this possible underestimate would not change the cost per cancer case avoided by the rule.

This rule will not have a direct impact on small business since it applies only to those public employees not covered by the OSHA Asbestos Standard. However, by establishing regulatory requirements for public employees similar to those of private employees under OSHA jurisdiction, the rule will eliminate cost advantages that may encourage the use of public employees rather than private contractors for asbestos abatement. This rule may, therefore, bring about increased use of private contractors, some of which are small businesses. This rule could have an impact on small government entities because it would increase the cost of performing asbestos abatement activities using public employees. However, the rule will not increase the cost of using contractors to perform asbestos abatement and would not require any government entity to undertake asbestos abatement activities.

EPA does not believe that this rule will restrict technological innovation. The rule allows sufficient flexibility for the development of new technology concerning asbestos abatement.

E. Other EPA Statutes

Section 6(c) of TSCA requires that if EPA determines that a risk of injury to health or the environment could be eliminated or reduced to a sufficient extent by actions taken under another statute administered by EPA, EPA may not promulgate a rule under section 6(a) of TSCA unless EPA finds it is in the public interest to protect against the risk by action under TSCA. EPA finds that no other law administered by EPA will eliminate or reduce the risks to the workers associated with the removal, renovation, or encapsulation of asbestos to a sufficient extent.

Several EPA statutes have been used to limit asbestos exposure. In 1973, EPA used the authority of the Clean Air Act (CAA) to list asbestos as a hazardous air pollutant, establish a "no visible" emission standard for manufacturers, and ban the use of spray-applied asbestos-containing material as insulation in buildings. The regulation was published in the **Federal Register** of April 6, 1973 (38 FR 8826). EPA amended this regulation in 1975 to ban asbestos-containing pipe lagging, by a rule published in the **Federal Register** of October 12, 1975 (40 FR 48292); and in 1978 extended the ban to all uses of sprayed-on asbestos by a rule published in the **Federal Register** of June 19, 1978 (43 FR 26372). The CAA rule also regulates operations involving the demolition or renovation of buildings containing friable asbestos and the disposal of wastes generated by such operations.

However, the CAA has limitations. The CAA does not apply directly to the protection of workers exposed to indoor air. Consequently, any possible additional use of that statute could leave many workers exposed to indoor situations of inadequate protection.

An additional EPA statute that could be used to limit asbestos exposure is the Resource Conservation and Recovery Act (RCRA). Under RCRA, EPA could list asbestos as a hazardous waste and

subject asbestos waste to general RCRA requirements designed to reduce exposure. However, such action under RCRA would reduce exposure only when the wastes from asbestos removal are ultimately placed in disposal facilities. It would not reduce exposure during the actual removal, enclosure, or encapsulation of asbestos products. Therefore, EPA finds that the risk from asbestos abatement projects cannot be eliminated or reduced to a sufficient extent by actions taken under another statute administered by EPA.

F. Other Options Considered

Section 6 of TSCA requires that EPA apply the least burdensome requirements to reduce an unreasonable risk. EPA considered the following options for reducing the risks associated with the removal, enclosure, or encapsulation of asbestos without any regulatory controls beyond those required by the National Emission Standard for Asbestos.

1. *Take no regulatory action under TSCA; instead provide the public with information and technical assistance.* Under this option, EPA would take no regulatory action, beyond that already taken as part of the National Emission Standard for Asbestos; but would instead provide the public with information and technical assistance. EPA is already increasing the information and technical assistance it provides the public. Persons could use that information to reduce the risk to public employees who perform asbestos abatement work during the removal, enclosure, or encapsulation of asbestos.

This approach would minimize the burden caused by regulatory action. However, this option is an inadequate response given the high risk to abatement workers associated with the removal, enclosure, or encapsulation of asbestos following only the requirements of the National Emission Standard for Asbestos. The National Emission Standard for Asbestos was designed to limit the release of asbestos to the ambient air and only incidentally protects abatement workers inside a building.

2. *Take no regulatory action under TSCA; instead defer to the States.* Under this option, EPA would take no regulatory action beyond that already taken as part of the National Emission Standard for Asbestos but would instead provide the States with information and technical assistance so that States can adopt regulations to protect public employees who perform asbestos abatement work.

This approach would minimize the burden caused by Federal regulatory action. However, this option is an inadequate response since a number of States have not taken action in this area in the past and may not take action in the future. Still, EPA encourages States to take action to protect such public employees with requirements more stringent than those in this rule. As stated earlier, employees exposed to asbestos at the level permitted by this rule still face a risk to health.

3. *Propose a rule which provides greater protection than the current OSHA Asbestos Standard.* OSHA has recognized that its current Asbestos Standard is inadequate and has begun rulemaking to adopt a new standard. EPA could issue a rule closer to the proposed OSHA standard or closer to the recommendations for worker protection in EPA's technical guidance documents. As stated earlier, EPA decided to follow the current OSHA Asbestos Standard closely to maintain consistency among Federal agencies. However, EPA expects to adopt a rule very similar to the final OSHA Asbestos Standard after OSHA issues that rule. This will ensure that all public and private sector employees who take part in asbestos abatement work enjoy similar levels of protection.

G. Analysis Under Section 9(a) of TSCA

Section 9(a) of TSCA requires EPA to review other Federal authorities not administered by EPA to determine whether action under those authorities may prevent or reduce to a sufficient extent such risks. EPA has reviewed other Federal authorities. The only statute not administered by EPA that could reduce such risks is the OSH Act. However, this rule covers only persons not covered by the OSHA Asbestos Standard. OSHA currently has no statutory authority to cover public employees in a State without an OSHA-approved State plan and 27 States do not have an approved plan. Thus, EPA cannot determine that there is a statute administered by another Federal agency that can prevent or reduce the risk presented to persons not covered by the OSHA Asbestos Standard during the removal, enclosure, or encapsulation of friable asbestos.

VII. Finding of Unreasonable Risk

EPA has weighed the health risks from unregulated asbestos abatement against the costs attributable to the proposed regulation. EPA estimates that this rule would avoid about 200 cancer cases, among abatement workers, other employees in buildings where abatement occurs, and visitors to such buildings while costing about $730,000 over 15 years. This is about $3,650 per cancer case avoided. Even if EPA underestimated the number of asbestos abatement projects covered by this rule, the cost per cancer case avoided would be about the same. EPA has concluded that the avoidance of these premature deaths substantially outweighs the costs of the control measures required.

Therefore, EPA finds that unregulated removal, enclosure, or encapsulation of friable asbestos material presents an unreasonable risk to human health and proposes to require that certain measures be taken to reduce the risk faced by asbestos abatement workers and persons using and visiting buildings during and after asbestos abatement activities. The finding is based on the following points:

1. The health effects from asbestos exposure are very serious. Asbestos is a demonstrated human carcinogen. The cancers caused by asbestos are usually fatal and cause much pain and suffering.

2. Available evidence supports the conclusion that there is no safe level of exposure to asbestos. This conclusion is consistent with present theory of cancer etiology and is further supported by the many documented cases where low or short-term exposure has been shown to cause asbestos-related disease.

3. Models developed to estimate the relative risk of developing cancer from exposure to asbestos show a linear dose-response relationship. Based on data from epidemiology studies, these models predict that humans exposed to even very low levels of asbestos incur some risk.

4. Many persons are involved in asbestos abatement activities, but are not protected by the OSHA Asbestos Standard.

5. Persons can be exposed to high levels of airborne asbestos if they conduct asbestos abatement without any exposure controls.

6. If persons attempt to abate asbestos hazards, but do so incorrectly, there may be very high levels of exposure to asbestos on the part of abatement workers, other employees who work in the building, and visitors to the building. These levels may far exceed the levels of exposure permitted by the current OSHA Asbestos Standard. For example, in schools that incorrectly abate asbestos hazards, school teachers and other school employees and school children could be exposed as well as abatement workers. State and local public employees could potentially take part in asbestos abatement activities in all State and local public buildings in the States not covered by OSHA State plans.

7. The estimated incremental economic costs of this rule are minimal in view of the number of cancers that may be avoided by the rule.

VIII. Enforcement

Section 15 of TSCA makes it unlawful to fail or refuse to comply with any provision of a rule promulgated section 6 of TSCA. Therefore, faulure to comply with this rule would be a violation of section 15 of TSCA. In addition, section 15 of TSCA makes it unlawful for any person to: (1) Fail or refuse to establish and maintain records as required by this rule; (2) fail or refuse to permit access to or copying or records, as required by TSCA; or (3) fail or refuse to permit entry or inspection as required by section 11 of TSCA.

Violators may be subject to both civil and criminal liability. Under the penalty provision of section 16 of TSCA, any person who violates section 15 could be subject to a civil penalty of up to $25,000 for each violation. Each day of operation in violation of this rule could constitute a separate violation. Knowing or willful violations of this rule could lead to the imposition or criminal penalties of up to $25,000 for each day of violation and imprisonment for up to 1 year. In additional, other remedies are available to EPA under sections 7 and 17 of TSCA, such as seeking an injunction to restrain violations of this rule.

IX. Confidentiality

A person may assert a claim of confidentiality for any information, including public comments, submitted to EPA in connection with this rule. Any person who submits a confidential public comments must also submit a nonconfidential version. Any claim of confidentiality must accompany the information when it is submitted to EPA. Persons would claim information confidential by circling, bracketing, or underlining it and marking it with "CONFIDENTIAL" or some other appropriate designation. EPA will disclose information subject to a claim of confidentiality only to the extent permitted by section 14 of TSCA and 40 CFR Part 2, Subpart B. If a person does not assert a claim of confidentiality for information at the time it is submitted to EPA, EPA may make the information public without further notice to that person.

X. Rulemaking Record

EPA has established a record for this rulemaking (docket control number OPTS-62044). A public version of the record, without any confidential business information, is available to the public in the Office of Toxic Substances Public Information Office, from 8 a.m. to 4 p.m., Monday through Friday, except legal holidays. The Public Information Office is located in Rm. E-107, 401 M St., SW., Washington, D.C.

The record includes information considered by EPA in developing this rule. The record now includes the following categories of information:

1. Federal Register notices.
2. Support documents.
3. Reports.
4. Memoranda and letters.

The record also includes by reference the rulemaking record compiled by OSHA as part of the revision of the OSHA Asbestos Standard. Persons may point out any errors or omissions in the record by May 9, 1986.

XI. References

(1) USCPSC. Reports to the U.S. Consumer Product Safety Commission by the Chronic Hazard Advisory Panel on Asbestos. July 1983.

(2) USEPA, OPTS, OTS. Exposure Assessment for Asbestos. Draft January 9, 1984.

(3) USEPA, OPTS, OTS. Regulatory Impact Analysis of Controls on Asbestos and Asbestos Products. Draft March 1985.

(4) USEPA, OPTS, OTS. Support Document for Final Rule on Friable Asbestos-Containing Materials in School Buildings-Health Effects and Magnitude of Exposure. January, 1982.

(5) National Research Council. "Asbestos" In: *Drinking Water and Health.* Vol. 3. National Academy Press. Washington, D.C. (1982): 223-263.

(6) National Research Council. "Nonoccupational Health Risks of Asbestiform Fibers." National Academy Press. Washington, D.C. 1984.

(7) NIOSH-OSHA Asbestos Work Group. Workplace Exposure to Asbestos: "Review and Recommendations." DHHS (NIOSH) Publication No. 81-103, U.S. Government Printing Office. Washington, D.C. 20402. (1980).

(8) OSHA. "Quantitative Risk Analysis for Asbestos-Related Cancers: A Preliminary Report." (1983).

(9) Seidman, H., Selikoff, I.J., Hammond, E.C., "Short-Term Observation." In: "Annals of the New York Academy of Science," 330 (1979): 61-89.

(10) Selikoff, I.J. Anderson, H.A., Seidman, H. "Asbestos Disease Among Household Contacts of Asbestos Workers." In: "Disability Compensation for Asbestos-Associated Disease in the U.S.," edited by I.J. Selikoff, Environmental Sciences Laboratory, Mount Sinai School of Medicine of the City University of New York. (1982): 73-76.

(11) Selikoff, I.J., Hammond, E.C., Seidman, H., "Mortality Experience of Insulation Workers in the U.S. and Canada, 1943-1976." In: "Annals of the New York Academy of Science," 330 (1979): 91-116.

(12) USDOL, OSHA. "Occupational Exposure to Asbestos, Proposed Rule and Notice of Hearing (April 10, 1984; 49 FR 14116)."

(13) USEPA, OPTS, OTS. Asbestos Abatement Rules: A Preliminary Cost-Effectiveness Analysis. Revised Draft Report May, 1985.

(14) USEPA, OPTS, OTS Evaluation, of Asbestos Techniques: Encapsulation. Draft Report April 1985.

XII. Regulatory Assessment Requirements

A. Executive Order 12291

Under Executive Order 12291, EPA prepared a Cost-Effectiveness Analysis. The Analysis estimated that this rule would cost about $730,000 over 15 years, while avoiding about 200 fatal cancer cases. This is a cost of about $3,650 per cancer case avoided. As shown in Unit V above, EPA believes that these costs are reasonable. Under Executive Order 12291, EPA must judge whether a regulation is "Major" and therefore requires a Regulatory Impact Analysis. EPA has determined that this rule is not a "Major Rule" because it will not have an effect on the economy of $100 million or more and it will not have a significant effect on competition, costs, or prices.

This rule was submitted to the Office of Management and Budget (OMB) for review as required by Executive Order 12291.

B. Regulatory Flexibility Act

EPA has analyzed the economic impact of this proposed rule on small businesses. A summary of EPA's analysis appears in Unit VI.D.

C. Paperwork Reduction Act

The information collection requirements in this rule were submitted to the Office of Management and Budget (OMB) for approval under the Paperwork and Reduction Act of 1980, 44 U.S.C. 3501 et seq. (Control No. 2070-0073). EPA received comments that 10-day advance notice of asbestos abatement projects is burdensome in particular instances such as emergency repairs. EPA has responded to those comments by not requiring 10-day advance notice of emergency projects. Instead, those projects must be reported to EPA as soon as possible. In addition, EPA has excluded small asbestos abatement projects from the reporting requirements of this rule.

List of Subjects in 40 CFR Part 763

Environmental protection, Hazardous substances, Recordkeeping and reporting requirements, Asbestos.

Dated: April 17, 1986.
Lee M. Thomas,
Administrator.

PART 763—[AMENDED]

Therefore, 40 CFR Part 763 is amended as follows:

1. The authority citation for Part 763 continues to read as follows:

Authority: 15 U.S.C. 2605 and 2607(c).

2. Subpart G is revised to read as follows:

Subpart G—Asbestos Abatement Projects

Sec.
763.120 Scope.
763.121 Regulatory requirements.
763.124 Reporting.
763.125 Enforcement.
763.128 Inspections.

Subpart G—Asbestos Abatement Projects

§ 763.120 Scope.

(a) This Part establishes requirements which must be followed during asbestos abatement projects by employers of State and local government employees not covered by the Asbestos Standard of the Occupational Safety and Health Administration (OSHA), 29 CFR 1910.1001, an Asbestos Standard adopted by a State as part of a State plan approved by OSHA under section 18 of the Occupational Safety and Health Act, or a State asbestos regulation in Idaho, Kansas, Oklahoma, and Wisconsin. The rule covers those employees who take part in asbestos abatement work.

(b) [Reserved]

§ 763.121 Regulatory requirements.

(a) *Definitions.* For the purpose of this section:

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

(2) "Asbestos abatement project" means any activity involving the removal, enclosure, or encapsulation of friable asbestos material, except removal, enclosure, or encapsulation during sampling or routine repair of less than either 3 linear feet or 3 square feet of friable asbestos material.

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

(4) "Emergency project" means a project involving the removal, enclosure, or encapsulation of friable asbestos-containing material that was not planned but results from a sudden unexpected event.

(5) "Employer" means the public department, agency, or entity which hires an employee. The term includes, but is not limited to, any State, County, City, or other local governmental entity which operates or administers schools, a department of health or human services, a library, a police department, a fire department, or similar public service agencies or offices.

(6) "Friable asbestos material" means any material containing more than 1 percent asbestos by weight which, when dry, may be crumbled, pulverized or reduced to powder by hand pressure.

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

(1) [Reserved]

(2) *Standard effective on June 9 1986.* 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 (3) 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 Z9.2–1979 (Revision of ANSI Z9.2–1971), which is incorporated by reference herein.

(B) ANSI Z9.2–1979 is available for inspection at the Office of the Federal Register Information Center, Rm. 8301, 1100 L St., NW., Washington, DC 20408. This incorporation by reference was approved by the Director of the Office of the Federal Register. This material is incorporated as it exists on the date of approval and a notice of any change in this material will be published in the Federal Register. Copies of the incorporated material may be obtained from the Document Control Officer (TS–793), Office of Toxic Substances, EPA, Rm. 107, 401 M St., SW., Washington, DC 20460, and from the American National Standards Institute, 1430 Broadway, New York, NY 10018 (212–354–3473).

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

(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) *Demolition or removal.* Employees engaged in 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 protection equipment.* (1) Compliance with the exposure limits prescribed by paragraph (b) of this section may not be achieved by the respirators except:

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

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

(iii) In emergencies.

(2) Where a respirator is permitted by paragraph (d)(1) of this section, it shall be selected from among those approved by the Mine Safety and Health

Administration, Department of Labor, the Bureau of Mines, Department of the Interior, or the National Institute for Occupational Safety and Health, Department of Health and Human Services, under the provisions of 30 CFR Part 11 and shall be used in accordance with paragraphs (d)(2) (i), (ii), (iii), and (iv) of this section.

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

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

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

(iv) *Establishment of a respirator program.* (A) The employer shall establish a respirator program in accordance with the requirements of the American National Standard Practices for Respiratory Protection, ANSI Z88.2-1980 (Revision of ANSI Z88.2-1969), which is incorporated by reference herein.

(B) ANSI Z88.2-1980 is available for inspection at the Office of the Federal Register Information Center, Rm. 8301, 1100 L St., NW., Washington, DC 20408. This incorporation by reference was approved by the Director of the Office of the Federal Register. This material is incorporated as it exists on the date of approval and a notice of any change in this material will be published in the Federal Register. Copies of the incorporated material may be obtained from the Document Control Officer (TS-793), Office of Toxic Substances, EPA, Rm. 107,401 M St., SW., Washington, DC 20460, and from the American National Standards Institute, 1430 Broadway, New York, NY 10018, (212-354-3473).

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

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

(4) Change rooms:

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

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

(iii) Laundering:

(A) Laundering of asbestos-contaminated clothing shall be done so as to prevent the release of 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 paragraph (d)(4)(iii)(A) of this section to effectively prevent the release of airborne asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section.

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

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

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

(2) *Personal monitoring.* (i) Samples shall be collected from within the breathing zone of the employees, on membrane filters of 0.8 micrometer porosity mounted in an open-face filter holder. Samples shall be taken for the determination of the 8-hour time-weighted average airborne concentrations and of the ceiling concentrations of asbestos fibers.

(ii) *Sampling frequency and patterns.* After the initial determinations required by paragraph (f)(1) of this section, samples shall be of such frequency and pattern as to represent with reasonable accuracy the levels of exposure of employees.

(3) *Environmental monitoring.* (i) Samples shall be collected from areas of a work environment which are representative of the airborne concentrations of asbestos fibers which may reach the breathing zone of employees. Samples shall be collected on a membrane filter of 0.8 micrometer porosity mounted in an open-face filter holder. Samples shall be taken for the determination of the 8-hour time-weighted average airborne concentrations and of the ceiling concentrations of asbestos fibers.

(ii) *Sampling frequency and patterns.* After the initial determinations required by paragraph (f)(1) of this section, samples shall be of such frequency and pattern as to represent with reasonable accuracy the levels of exposure of the employees.

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

(g) *Caution signs and labels*—(1) *Caution signs*—(i) *Posting.* Caution signs

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

(ii) *Sign specifications.* The warning signs required by paragraph (g)(1)(i) of this section shall conform to the requirements of 20" x 14" vertical format signs specified in 29 CFR 1910.145(d)(4), and to this paragraph (g)(1)(ii). The signs shall display the following legend in the lower panel, with letter sizes and styles of a visibility at least equal to that specified in this paragraph (g)(1)(ii).

Legend	Notation
Asbestos	1" Sans Serif, Gothic or Block.
Dust Hazard	¾" Sans Serif, Gothic or Block.
Avoid Breathing Dust	¼" Gothic.
Wear Assigned Protective Equipment.	¼" Gothic.
Do Not Remain in Area Unless Your Work Requires it.	¼" Gothic.
Breathing Asbestos Dust May be Hazardous To Your Health.	14 Point Gothic.

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

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

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

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 paragraph (b) of this section shall be collected and disposed of in sealed impermeable bags, or other closed, impermeable containers.

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

(2) *Employee access.* Every employee and former employee shall have reasonable access to any record required to be maintained by paragraph (i)(1) of this section, 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 paragraph (b) of this section shall be notified in writing of the exposure as soon as practicable but not later than 5 days of the finding. The employee shall also be timely notified of the corrective action being taken.

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

(2) *Preplacement.* The employer shall provide or make available to each of his employees, within 30 calendar days following his first employment in an occupation exposed to airborne concentrations of asbestos fibers, a comprehensive medical examination, which shall include, as a minimum, a chest roentgenogram (posterior-anterior 14 x 17 inches) at the discretion of the physician, a history to elicit symptomatology of respiratory disease, and pulmonary function tests to include forced vital capacity (FVC) and forced expiratory volume at 1 second ($FEV_{1.0}$).

(3) *Annual examinations.* On or before April 27, 1988, 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) at the discretion of the physician, 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) at the discretion of the physician, 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 Environmental Protection Agency, 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.

§ 763.124 Reporting.

(a) Employers subject to this rule must report to the Regional Asbestos Coordinator for the EPA Region in which the asbestos abatement project is located at least 10 days before they

begin any asbestos abatement project except one that involves less than either 3 linear feet or 3 square feet of friable asbestos material and is covered by this rule, other than an emergency project. Employers must report any emergency project covered by this rule as soon as possible but in no case more than 48 hours after the project begins. A list of the EPA Regional Offices is given under 40 CFR 1.7(b).

(b) The report must include:

(1) The employer's name and address.

(2) The location, including street address, of the asbestos abatement project.

(3) The scheduled starting and completion dates for the asbestos abatement project.

(c) If a report is mailed to EPA, the report must be postmarked at least 10 days before the asbestos abatement project begins unless the report is for an emergency project. In such a case, the report must be postmarked as soon as possible but in no case more than 48 hours after the project begins.

(d) Employers do not have to report under this section if they submit a notice to EPA under the National Emission Standard for Asbestos, 40 CFR 61.146, at least 10 days before they begin the asbestos abatement project and that notice clearly indicates that employees not covered by the OSHA Asbestos Standard or an Asbestos Standard adopted by a State as part of a State plan approved by OSHA will perform some or all of the asbestos abatement work.

(Approved by the Office of Management and Budget under the control number 2070-0072)

§ 763.125 Enforcement.

(a) Failure to comply with any provision of this Part is a violation of section 15 of the Act (15 U.S.C. 2614).

(b) Failure or refusal to establish and maintain records or to permit access to or copying of records, as required by the Act, is a violation of section 15 of the Act (15 U.S.C. 2614).

(c) Failure or refusal to permit entry or inspection as required by section 11 of the Act (15 U.S.C. 2610) is a violation of section 15 of the Act (15 U.S.C. 2614).

(d) Violators may be subject to the civil and criminal penalties in section 16 of the Act (15 U.S.C. 2615) for each violation.

(e) EPA may seek to enjoin an asbestos abatement project in violation of this Part, or take other actions under the authority of sections 7 of 17 of the Act (15 U.S.C. 2606 or 2616).

§ 763.126 Inspections.

EPA will conduct inspections under section 11 of the Act (15 U.S.C. 2610) to ensure compliance with this Part.

[FR Doc. 86-9190 Filed 4-24-86; 8:45 am]

BILLING CODE 6560-50-M