

24110 Federal Register / Vol. 49, No. 70 / Tuesday, April 10, 1984 / Proposed Rules

(H) The interest rate of the junior mortgage, if interest is charged, shall not exceed the interest rate of the insured mortgage.

(I) The total amount of repayments under the junior mortgage shall not exceed the least of:

(A) One-half of the mortgagee's equity interest in the property at the time of sale or refinancing;

(B) Three times the amount of funds advanced to affect the interest rate by-down; or

(C) The sum of the original loan amount plus the total accrued interest on the junior mortgage at the time of repayment; and

(J) The junior mortgage shall contain a provision permitting the mortgagee to prepay the mortgage in whole or in part at any time, and shall not provide for the payment of any charge on account of such prepayment.

(K) The sum of the principal amount of the insured mortgage any second mortgage made under paragraph (b) or (c) of this section, and the mortgage securing the repayment of funds advanced to reduce the borrower's monthly payments (whether a second or third mortgage) may exceed the loan-to-value limitation applicable to the insured mortgage, but such sum may not exceed the maximum mortgage limit for the area.

PART 235—MORTGAGE INSURANCE AND ASSISTANCE PAYMENTS FOR HOMEOWNERSHIP AND PROJECT REHABILITATION

4. In § 235.1(a), add in numerical order the following section heading:

§ 235.1 Cross-reference.

(a) * * *

235.12 Mortgage loan.

A new § 235.12 is added, to read as follows:

§ 235.12 Mortgage loan.

(a) Except as provided in paragraph (b) of this section, a mortgagee must establish that after the mortgage offered for insurance has been recorded, the mortgaged property will be free and clear from all liens other than such mortgage and that there will not be outstanding any other unpaid obligations contracted in connection with the mortgage transaction or the purchase of the mortgaged property, except obligations that are secured by property or collateral owned by the mortgagee independently of the mortgaged property.

(b) With prior approval of the Secretary, the mortgaged property may be subject to a second mortgage made or

insured, or other secondary lien held by a Federal, State or local government agency or instrumentality. However, the required monthly payments under the insured mortgage and the second mortgage or lien shall not exceed the mortgagee's reasonable ability to pay, as determined by the Secretary.

Authority: Section 211, National Housing Act (42 U.S.C. 1711(b)); Section 7(d), Department of Housing and Urban Development Act (42 U.S.C. 3535(d)).

Dated: March 14, 1984.

Marcel L. Backdale,
Assistant Secretary for Housing—Federal
Housing Commissioner.

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BILLING CODE 4210-47-02

DEPARTMENT OF LABOR

**Occupational Safety and Health
Administration**

29 CFR Parts 1910

(Docket No. H-033C)

Occupational Exposure to Asbestos

SUBJECT: Occupational Safety and Health Administration, Labor.

ACTION: Proposed rule and notice of hearing.

SUMMARY: On November 4, 1983, the Occupational Safety and Health Administration (OSHA) published an Emergency Temporary Standard (ETS) which amended OSHA's present standard regulating occupational exposure to asbestos, 29 CFR 1910.1001 (45 FR 51005). This supplemental proposal together with the November 4 Federal Register notice constitute proposed revisions to OSHA's permanent standard regulating occupational exposure to asbestos in all industries covered by the Act, including general industry, the maritime industry and the construction industry. The basis for this supplemental proposal is OSHA's determination that employees exposed to asbestos face a significant risk to their health and that the proposed permanent standard will substantially reduce that risk. This notice proposes two alternative permissible exposure limits: 0.2 fibers (5 micrometers or longer) per cubic centimeter of air as an eight hour time-weighted average (0.2 f/cc), or 0.5 fibers (5 micrometers or longer) per cubic centimeter of air as an eight hour time-weighted average (0.5 f/cc). Other changes such as the definition of asbestos are also being considered. OSHA also solicits comments, data and information concerning specific changes

to requirements affecting the construction industry. This notice schedules an informal rulemaking hearing concerning this proposal and the other revisions proposed by the ETS.

DATE: Notices of intent to appear at the informal rulemaking hearing must be received on or before May 10, 1984. Comments concerning the proposed revisions to the asbestos standard including changes proposed by the ETS must be received on or before May 23, 1984. Parties requesting more than 10 minutes for their presentations at the hearings, and parties submitting documentary evidence at the hearings shall submit the full text of their testimony and all documentary evidence which must be received no later than May 23, 1984. The informal rulemaking hearing will begin at 10:00 a.m., June 19, 1984, in the Auditorium, U.S. Department of Labor, Third Street and Constitution Avenue, NW., Washington, D.C. 20210.

ADDRESS: Written comments should be submitted to the Docket Officer, Docket No. H-033C, Room 5-8212, U.S. Department of Labor, Third Street and Constitution Avenue, NW., Washington, D.C. 20210. Notices of intent to appear at the informal rulemaking hearing, testimony and documentary evidence should be sent in quadruplicate to: Mr. Thomas P. Hall, OSHA Division of Consumer Affairs, Docket No. H-033C, Room N-3602, U.S. Department of Labor, Third Street and Constitution Avenue, NW., Washington, D.C. 20210; telephone (202) 523-7177.

FOR FURTHER INFORMATION CONTACT: Mr. James F. Foster, Director, Office of Information and Consumer Affairs, OSHA, U.S. Department of Labor, Room N-3607, 200 Constitution Avenue, NW., Washington, D.C. 20210. Telephone (202) 523-6151.

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2-034999 50105(07/03-APR-84-10-4740)

Form 1010-101-01

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In many construction operations, comments are solicited on actual field experience concerning the effectiveness of such controls.

OSHA is considering whether using the flexible compliance strategy proposed for general industry to reduce exposures from 2.0 f/cc to the new PEL should be adopted for the construction industry. Under this approach, employers would choose among engineering controls, work practices and respirators.

respirators are necessary to reduce exposure to or below the PEL, the employer must provide the respirators at no cost to the employee and ensure their use. OSHA believes that as a result of this rulemaking, there will be increased reliance on respiratory protection in the construction industry. OSHA proposes to allow employers to choose among respirators, engineering controls and work practices to reduce exposures from 2 f/cc to the new PEL. Also historically, because of the variable conditions

to supplied air respirators, powered air purifying respirators (PAPRs), or full facepiece respirators. OSHA invites comments concerning selection of appropriate respiratory protection for workers engaged in these segments.

Because of the heavy reliance on respirators in many construction operations, OSHA is also concerned with the adequacy of the current standards covering respirator programs and selection, sections 1910.134 and

2. Introduction
Pursuant to (c) of the Health Act, 29 U.S.C. 1502, 1503, 1504, 1505, 1506, 1507, 1508, 1509, 1510, 1511, 1512, 1513, 1514, 1515, 1516, 1517, 1518, 1519, 1520, 1521, 1522, 1523, 1524, 1525, 1526, 1527, 1528, 1529, 1530, 1531, 1532, 1533, 1534, 1535, 1536, 1537, 1538, 1539, 1540, 1541, 1542, 1543, 1544, 1545, 1546, 1547, 1548, 1549, 1550, 1551, 1552, 1553, 1554, 1555, 1556, 1557, 1558, 1559, 1560, 1561, 1562, 1563, 1564, 1565, 1566, 1567, 1568, 1569, 1570, 1571, 1572, 1573, 1574, 1575, 1576, 1577, 1578, 1579, 1580, 1581, 1582, 1583, 1584, 1585, 1586, 1587, 1588, 1589, 1590, 1591, 1592, 1593, 1594, 1595, 1596, 1597, 1598, 1599, 1600, 1601, 1602, 1603, 1604, 1605, 1606, 1607, 1608, 1609, 1610, 1611, 1612, 1613, 1614, 1615, 1616, 1617, 1618, 1619, 1620, 1621, 1622, 1623, 1624, 1625, 1626, 1627, 1628, 1629, 1630, 1631, 1632, 1633, 1634, 1635, 1636, 1637, 1638, 1639, 1640, 1641, 1642, 1643, 1644, 1645, 1646, 1647, 1648, 1649, 1650, 1651, 1652, 1653, 1654, 1655, 1656, 1657, 1658, 1659, 1660, 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information regarding occupational accidents and illnesses, section 6(c)).

In vacating OSHA's revision to its benzene standard, the Supreme Court required in *Industrial Union Department, AFL-CIO v. American Petroleum Institute*, 448 U.S. 607, 65 L. Ed. 2d 1010, 100 S. Ct. 2344 (1980), that before the issuance of a new or revised standard pursuant to section 6(b)(5) of the Act, OSHA must make two threshold findings. These are that a significant risk exists under the current standard and that the issuance of a standard would reduce or eliminate that risk. The Court stated:

"We agree . . . that section 6(b) requires the Secretary to find, as a threshold matter, that the toxic substance in question poses a significant health risk in the workplace and that a new, lower standard is therefore 'reasonably necessary or appropriate to provide safe and healthful employment and places of employment.' 448 U.S. 607 at 614-15, 65 L. Ed. 2d 1010 at 1015-16."

The Court also stated:

" . . . before he can promulgate any permanent health or safety standard, the Secretary [of Labor] is required to make a threshold finding that a place of employment is unsafe—in the sense that significant risks are present and can be eliminated or lessened by a change in practices . . ." (448 U.S. at 642, 65 L. Ed. 2d at 1033)

The decision, although it recognized the uncertainties involved, indicated that the determination of "significant risk" should, if at all possible, be established on the basis of an analysis of the best available evidence through such means as quantitative risk assessments. However, in making that determination, the Supreme Court in its general guidance for the future, noted that:

" . . . The requirement that a 'significant' risk be identified is not a mathematical straitjacket. It is the Agency's responsibility to determine, in the first instance, what it considers to be a 'significant risk.' (448 U.S. at 653, 65 L. Ed. 2d at 1043)

It pointed out that while OSHA:

must support its finding that a certain level of risk exists by substantial evidence, it recognizes that its determination that a particular level of risk is "significant" will be based largely on policy considerations. (448 U.S. at 656, n. 62, 65 L. Ed. 2d at 1043, n. 62)

Finally, the Court pointed out that:

" . . . OSHA is not required to support its finding that a significant risk exists with anything approaching scientific certainty. Although the Agency's findings must be supported by substantial evidence, OSHA [has] some leeway where its findings must be made on the frontier of scientific knowledge. (448 U.S. at 658, 65 L. Ed. 2d at 1045)

In the only concrete example of significance, the Court states:

"Some risks are plainly acceptable and others are plainly unacceptable. If, for example, the odds are one in a billion that a person will die from cancer by taking a drink of chlorinated water, the risk clearly could not be considered significant. On the other hand, if the odds are one in a thousand that regular inhalation of gasoline vapors that are 25 benzene will be fatal, a reasonable person might well consider the risk significant and take appropriate steps to decrease or eliminate it. (448 U.S. at 653, 65 L. Ed. 2d at 1043)

After OSHA has determined that a significant risk exists and that such risk can be reduced or eliminated by the proposed standard, it must set the standard "which most adequately assures, to the extent feasible on the basis of the best available evidence, that no employees will suffer material impairment of health . . ." (Section 6(b)(5) of the Act). The Supreme Court has interpreted this section to mean that OSHA must enact the most protective standard possible to eliminate a significant risk of material health impairment subject to the constraints of technological and economic feasibility. *American Textile Manufacturers Institute, Inc. v. Donovan*, 452 U.S. 490 (1981).

IV. Regulatory History

OSHA first regulated occupational exposures to asbestos in 1971 when it adopted a 12 f/cc limit pursuant to section 6(a) of the Act. In June 1972, OSHA promulgated the present standard which is found at 29 CFR 1910.1001 (37 FR 11515). This standard established an 8-hour time-weighted average permissible exposure limit (PEL) of 5 f/cc (with a ceiling limit of 10 f/cc), mandated a further reduction in the PEL to 2 f/cc effective July 1976 and contained other requirements such as exposure monitoring and medical surveillance. This standard promulgated in 1972 was based upon the determination that it would prevent asbestosis and possibly reduce the risk of cancer to an undefined extent.

In 1973, OSHA proposed to lower the PEL from 2.0 f/cc to 0.5 f/cc and the ceiling limit from 10 f/cc to 5 f/cc (40 FR 47652). This notice of proposed rulemaking was based on a review of the then available evidence which OSHA believed had now "accumulated to warrant the designation of asbestos as a human carcinogen." That notice, however, explicitly excluded the construction industry. As pointed out above, this notice withdraws the earlier 1973 proposal. On November 4, 1983, OSHA published an ETS (49 FR 51006) which has been held invalid by the U.S.

Circuit Court of Appeals in the Fifth Circuit on March 7, 1984.

V. The Assessment of Asbestos Risk and Determination of its "Significance"

As discussed above, the Supreme Court in the benzene case (*Industrial Union Department, AFL-CIO v. American Petroleum Institute* 448 U.S. 607 (1980)) ruled that prior to issuance of a new or revised standard regulating occupational exposures to toxic materials, OSHA must make a determination that a "significant" risk exists and that the new standard will reduce or eliminate that risk.

OSHA believes that it is appropriate to consider a number of different factors in arriving at a determination of significant risk. The Court gave some general guidance as to the process to be followed. It recognized that while the Agency must support its finding with substantial evidence it also recognized that its determination that a particular level of risk is "significant" will be based largely on policy considerations (448 U.S. 655, 656, n. 62).

In a frequently quoted footnote, the Court suggested that determination of "significance" could be based on a quantitative expression of the risk. The Court stated:

"It is the Agency's responsibility to determine in the first instance what it considers to be a 'significant' risk. Some risks are plainly acceptable and others are plainly unacceptable. If, for example, the odds are one in a billion that a person will die from cancer by taking a drink of chlorinated water, the risk clearly could not be considered significant. On the other hand, if the odds are one in a thousand that regular inhalation of gasoline vapors that are 25 benzene will be fatal, a reasonable person might well consider the risk significant and take appropriate steps to decrease or eliminate it. (448 U.S. at 653, 65 L. Ed. 2d at 1043)

The Supreme Court's language indicates that the examples given were of excess risk over a lifetime. It speaks of "regular inhalation" which implies that it takes place over a substantial period of time and refers to the "odds . . . that a person will die."

The Court indicated, however, that the significant risk determination required by the OSHA Act is "not a mathematical straitjacket," and "OSHA is not required to support its finding that a significant risk exists with anything approaching scientific certainty." A reviewing court (b) to give OSHA some leeway where its findings must be made on the frontier of scientific knowledge (and that) . . . the Agency is free to use conservative assumptions in interpreting the data with respect to carcinogens, risking error on the side of

overprotection rather than protection (448 U.S. at 655)

OSHA has followed the in assessing the significant of material health impairment results from asbestos exposure quantitative risk assessment. Asbestos exposure is base evidence (Ex. 84-392). In an assessment has impressive weight because it relies up human worker population a variety of industrial situations, processes, and fiber types predicted results of this assessment of risk at low are consistent with studies observed excess risk at or measured low cumulative. The conclusion of significant further supported by examining and interpreting quantitative estimates derisk assessment. OSHA evidence in the light of consider the extent and kind of produced and the appropriate models used to extrapolate OSHA considered policy affecting the significant risk determination, such as on the risk from asbestos exposure other occupational risks; the treatment accorded to risk magnitude and kind and the which Congress and the pe expressed their concern resulting from asbestos exposure. OSHA's risk estimates p of 68 excess cancer deaths lung, mesothelioma, and per cancer) per 1,000 workers a permissible exposure limit 45 years, a working lifetime. Mesothelioma risk is predict excess deaths per 1,000 wo exposed 45 years at 12 f/cc risk is predicted as 44 excess 1,000 workers exposed 45 f/cc. Excess deaths from cancer are predicted as 44 workers exposed to 2 f/cc (These estimates assume the average age at initial occupation is 25, as discussed Ex. 84-392)

OSHA has predicted the from lung cancer, mesothelioma, gastrointestinal cancer at a potential PEL. In summary working lifetime of exposure estimates of lifetime risk a deaths per 1,000 workers a PEL, 7 excess deaths per 1,000 workers at a 0.5 f/cc PEL and 3 excess 1,000 workers at a 0.1 f/cc estimates include only excess from lung cancer, mesothelioma, gastrointestinal cancer, and

OSHA presently intends to codify the asbestos construction standard at the place designated for construction standards, namely 29 CFR Part 1926.

VII. Regulatory Impact Analysis and Regulatory Flexibility Analysis

Introduction

The Occupational Safety and Health Administration (OSHA) is required to assess the feasibility of the proposed standard and is required by Executive Order 12291 and the Regulatory Flexibility Act to assess the economic impact of the proposed standard. The following summary presents OSHA's analysis of the industries which would be covered, the technical feasibility, the benefits, costs, and overall economic

products. Secondary processing involves sawing, pressing, drilling or drilling of asbestos-containing materials and hence, produces some relatively high exposure levels. OSHA does not have more recent survey data on which to base an estimate of numbers of plants using asbestos materials or the number of workers exposed. For analytical purposes, OSHA uses the SIC categories and exposure level provided by RIL. The number of plants and workers are presented in Table 1.

Three groups in the automotive aftermarket may be affected: (1) refacing or rebuilding of friction materials, (2) repackaging of friction materials, and (3) general brake repair and maintenance. The exposures during repackaging of

TABLE 1.—OSHA ESTIMATE OF EMPLOYEES EXPOSURE TO ASBESTOS—Continued

Industry segment	Number of employees (1981)	Number of plants (1981)	Change in employees (1981-82)
Factories and kindred	4,301	1,076	233
Automotive maintenance, repairing and related	4,301	940	236
Other repair, cleaning and maintenance	175,353	60,000	9,116
Construction	94,881	77,000	<9,110
Manufacturing and repair	2,122	20	630
Other repair	824	1	1,336
Construction	1,719	1	630
Construction of new roads, etc.	2,000	200	676

Due to lack of information workers, OSHA has not included in the economic analysis. Information for this group maintenance workers is in the study (Ex. 84-392). The SICs in construction would 1321, General Building Construction; Family Housing; SIC Building Contractors, Other Family Housing; SIC 1531, Contractors; SIC 1541, General Construction; Industrial Building Contractors; SIC 1542, Construction; Other than Buildings and Warehouses; Water, Sewer, Pipeline, and Power Line Construction.

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overprotection rather than underprotection (48 U.S.C. § 555, 556). OSHA has followed these guidelines in assessing the significance of the risk of material health impairment that results from asbestos exposure. OSHA's quantitative risk assessment concerning asbestos exposure is based on extensive evidence (Ex. 64-362). In large part, this assessment has impressive evidentiary weight because it relies upon studies of human worker populations and includes a variety of industrial situations, processes, and fiber types. Further, the predicted results of this quantitative assessment of risk at lower exposures are consistent with studies which observed excess risk at estimated or measured low cumulative exposures. The conclusion of significant risk is further supported by examining OSHA's weighting and interpretation of the quantitative estimates derived from the risk assessment. OSHA evaluated these data in the light of considerations such as the extent and kind of disease produced and the appropriateness of the models used to extrapolate risk. Finally, OSHA considered policy issues affecting the significant risk determination, such as comparison of the risk from asbestos exposure with other occupational risks; the regulatory treatment accorded to risks of similar magnitude and kind and the extent to which Congress and the public have expressed their concern with the risks resulting from asbestos exposure.

OSHA's risk estimates predict a risk of 64 excess cancer deaths (including lung, mesothelioma, and gastrointestinal cancer) per 1,000 workers exposed at the permissible exposure limit of 2 f/cc for 45 years, a working lifetime. Mesothelioma risk is predicted as 18 excess deaths per 1,000 workers exposed 45 years at 2 f/cc. Lung cancer risk is predicted as 44 excess deaths per 1,000 workers exposed 45 years to 2 f/cc. Excess deaths from gastrointestinal cancer are predicted as about 4 per 1,000 workers exposed to 2 f/cc for 45 years. (These estimates assume that the average age at initial occupational exposure is 25, as discussed in Ex. 64-362.)

OSHA also predicted the mortality from lung cancer, mesothelioma and gastrointestinal cancer at various potential PELs. In summary form, for a working lifetime of exposure, the estimates of lifetime risk are: 17 excess deaths per 1,000 workers at a 0.5 f/cc PEL, 7 excess deaths per 1,000 workers at a 0.2 f/cc PEL and 3 excess deaths per 1,000 workers at a 0.1 f/cc PEL. These estimates include only excess mortality from lung cancer, mesothelioma, and gastrointestinal cancer, and do not

include excess mortality from asbestosis or other cancers. OSHA did not attempt to quantify the risk for cancer sites other than the lung, mesothelioma and gastrointestinal tract. It should be noted that at all the reduced levels for which calculations were done, the residual excess cancer risks still exceed the Supreme Court's rough guideline of 1 per thousand lifetime risk of dying which was suggested as an example of a risk which a reasonable person might well consider significant.

OSHA has also estimated the risk of the incidence of asbestosis at the current permissible level of 2 f/cc. OSHA's best estimate is based on the results of a high quality study at an asbestos-cement factory in Ontario to determine the incidence of compensable (certified) asbestosis (Pinkelstein, Ex. 64-240). A linear model using cumulative exposure was used to generate the risk estimated. OSHA estimated an incidence for asbestosis of approximately 50 per 1,000 workers exposed to 2 f/cc for 45 years.

For the risks associated with asbestos, OSHA believes the basis for determining "significance" at the 2 f/cc level and even lower is particularly strong. First, the underlying data upon which the quantitative risk assessment for asbestos is based are the results of high quality epidemiologic studies conducted in occupational environments. This gives OSHA great confidence that the estimates of risks derived from these studies are representative of actual workplace conditions. Second, OSHA emphasizes that the data bases for asbestos are of unusually high quality. More than most potential occupational carcinogens, asbestos has been studied often and thoroughly for evaluation of its effects on various occupational populations.

Third, the validity of the results of these studies is also underscored by the relatively consistent estimates of dose-response. The ranges of K_1 (the potency factor for lung cancer risk—see Ex. 64-362 for a detailed explanation) as well as the ranges of K_2 (for mesothelioma risk) derived from each study generally were overlapping. As described in the ETS, OSHA's best estimate of the potency factor K_1 is 0.01, but an appropriate estimate of K_1 could lie between 0.003 and 0.03. OSHA believes that the agreement is good among the K_1 values considering the different statistical powers of the studies and the different types of workplaces studied. Similarly, a relatively narrow range (a factor of 10) represents the mesothelioma risk predicted by the four studies used to calculate K_2 .

And finally, OSHA believes that it used the most appropriate models to calculate the risks. OSHA used a linear dose-response model in calculating the risks for lung cancer. OSHA believes this model is appropriate because dose-response information derived from several epidemiologic studies indicates that risk of asbestos-induced cancer increases linearly with total dose, including studies by Henderson and Enterline (1979, Ex. 64-048), Liddell et al. (1977, Ex. 64-050), and Dement et al. (1963, Ex. 64-037). Further, OSHA notes that other scientists and scientific groups, such as Crump (Ex. 63-022), the Environmental Protection Agency (EPA) (Ex. 64-180) and the Chronic Hazard Advisory Panel on Asbestos of the Consumer Product Safety Commission (CHAP) (Ex. 64-250) and Ascherson and Gardner of the British Advisory Committee on Asbestos (Ex. 64-243), have also chosen the linear model to predict lung cancer mortality due to asbestos exposure. Thus, OSHA's estimates of asbestos-related lung cancer risks appear to be very reasonable.

With regard to mesothelioma risk, OSHA believes that an absolute risk model provides the best means to estimate such risks. As explained by the preamble to the ETS, absolute risk for mesothelioma is calculated as observed deaths/person-years at risk (48 FR 51213). Because of the extreme rarity of the disease absent asbestos exposure, use of Standardized Mortality Ratios (SMRs) is not appropriate for mesothelioma. (The SMR is calculated as the observed number of deaths in the exposed population divided by the number of deaths that would be expected in the exposed population. The expected number of deaths is derived from the mortality rate from a specific cause in an appropriate comparison population. The mortality rate from mesothelioma is close to zero in most populations against which asbestos workers have been compared.) This model is also different from that used for lung cancer because both duration of time since initial exposure and duration of exposure are more determinative of risk.

In sum, and as OSHA pointed out in the ETS, OSHA has estimated that at the present 2 f/cc level, employees exposed over a working lifetime of 45 years are predicted to have an excess risk of dying from cancer of 64 in 1,000 and of contracting disabling and often fatal asbestosis of 50 in 1,000. OSHA believes that each of these risks are significant and unacceptable. Risks at the 2 f/cc level have been acknowledged

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Due to lack of information on these workers, OSHA has not included them in the economic analysis. Preliminary information for this group of maintenance workers is available in the ETS study (Ex. 64-363). The affected SICs in construction would include: SIC 1521, General Building Contractors, Single Family Houses; SIC 1522, General Building Contractors, Other Than Single Family Houses; SIC 1531, Operative Builders; SIC 1541, General Building Construction: Industrial Buildings and Warehouse; SIC 1542, General Building Construction, Other Than Industrial Buildings and Warehouse; SIC 1553, Water, Sewer, Pipeline, Communication, and Power Line Construction; SIC 1554, Heavy Construction; SIC 1711, Plumbing, Heating (Except Electrical), and Air

conditioning and duct facings in the near future.

Fiberglass has been used as a substitute fiber for asbestos in many products. Roofing felts, pipeline felts, and asphalt coatings have all been produced using fiberglass in place of asbestos fibers.

In the past, the price of substitute materials has been much higher than the price of asbestos. The "full price" of using asbestos, which includes the potential cost of control methods, tort litigation, etc., however, has increased significantly in recent years. Hence, comparability in terms of price with many other substitute materials may have been achieved.

C. Nonregulatory Environment

exposure will have occurred.

Furthermore, because of the long latency associated with asbestos-related diseases, the link between occupation and disease is considerably less clear.

For the majority of workers who have filed suit, the basis for the legal action has been a failure by the company to warn the worker of the asbestos hazards. Suits have been brought against producers, distributors, and users of asbestos products as well as insurance companies. MacAvoy has estimated that for the 1980-2015 period the total expected direct financial liability for these companies will be \$35.2 billion (Ex. 64-12). As a consequence, the debt ratings of many of the companies involved have fallen

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as unacceptable by other governments (Ex. 84-378, 84-379), and they also are plans to codify the asbestos standard, insofar as it relates to the construction industry, at 29 CFR Part 102a.

1. *Scope and Application.* This standard, as revised, would continue to apply to all workplaces where occupational exposures to asbestos are present. The proposed standard, as does the current permanent standard includes the construction industry. As discussed more fully below, OSHA anticipates the promulgation of a separate standard for the construction industry.

2. *Definitions.* The present standard, promulgated in 1972, defined "asbestos" as chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite and defined "asbestos fiber" as asbestos fibers longer than 5 micrometers. OSHA is considering the addition of the following language to the definition of "asbestos": "and every product containing any of these minerals and any of these minerals that has been chemically treated and/or altered." Also, OSHA may amend the definition of "asbestos fiber" to "a particulate form of asbestos, 5 micrometers or longer, with a length-to-diameter ratio of at least 3 to 1, and with a maximum diameter of 5 micrometers."

OSHA does not believe that this modified definition would alter the manner in which the current standard is now enforced but rather clarifies the standard where areas of uncertainty have arisen in the past. The term "and every product containing any of these minerals" is intended to recognize that, in most asbestos exposure conditions today, airborne asbestos fibers are mixed with other dusts. The standard requires however, that only asbestos fibers be counted and assessed for determining worker exposure, and no change to the standard should occur in practice as a result of this change in definition.

The new definition of "asbestos fiber" would be consistent with experimental studies in the record suggesting that the fiber diameter and length-to-diameter (aspect) ratios influence the degree of carcinogenicity of asbestos fibers. The maximum diameter of 5 micrometers is the appropriate limit of respirability for asbestos fibers. That is, fibers with diameters greater than 5 micrometers are too large to enter the portions of the lung where asbestos disease occurs. Also, OSHA hopes that this maximum diameter may include the most carcinogenic fibers, although the potential carcinogenicity of fibers with diameters exceeding 5 micrometers cannot be definitely excluded.

The current and proposed fiber length of 5 micrometers or more is consistent with experimental studies of Stanton et al. indicating carcinogenicity for fibers of these lengths. This aspect ratio has been suggested as a factor in carcinogenesis by Bertrand and Pезerat, which is not unexpected since the ratio incorporates two potential determinants of carcinogenicity, namely length and diameter. In addition, the proposed definition, including length, diameter, and aspect ratio, is consistent with the definition used by epidemiologic and experimental studies. Moreover, since 1972, OSHA, NIOSH, and virtually all other laboratories have been using the parameters of the proposed definition, which ensure that the fibers being counted are both respirable and visible using phase contrast microscopy. This change would be a clarification of the present requirements for determining what constitutes asbestos fibers and would not actually change the present scope of the standard with regard to inclusion of various types of asbestos fibers.

As discussed in the preamble to the ETS, OSHA has historically taken the position that all of the minerals listed in the current asbestos definition, namely chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite constitute forms of asbestos and that all forms of asbestos pose a significant health risk to exposed workers (49 FR 51113).

Currently, OSHA defines asbestos (29 CFR 1910.1001(a)) as follows:

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OSHA's asbestos definition, differs from that taken by other governmental agencies. The Mine Safety and Health Administration, at 30 CFR 57.51(b) defines asbestos as follows:

"Asbestos" is a generic term for a number of hydrated silicates that, when crushed or processed, separate into flexible fibers made up of silicate. Although there are many asbestos minerals, the term "asbestos" as used herein is limited to the following minerals: chrysotile, amosite, crocidolite, anthophyllite asbestos, tremolite asbestos, and actinolite asbestos.

The Consumer Product Safety Commission, at 16 CFR 1304.3(b), defines asbestos this way:

(b) "Asbestos" means a group of mineral fibers composed of hydrated silicates, oxygen, hydrogen, and other elements such as sodium, iron, magnesium, and calcium in diverse combinations and are: amosite, chrysotile, crocidolite, anthophyllite asbestos, actinolite asbestos, and tremolite asbestos.

"Asbestos" means:

(a) Chrysotile, amosite, crocidolite, anthophyllite asbestos, tremolite asbestos, and actinolite asbestos.

Therefore, OSHA only governmental non-asbestiform fibers. Thus one comment that tremolite talc is by OSHA for enforcement purposes, although, non-asbestiform regulated as asbestos.

Such comments, the OSHA definition consistent with the definition of asbestos state that there is a difference between a non-asbestiform mineral type, and the should be recognized asbestos definition. It suggested special procedures counting asbestos by changing the optical technique to polarize and a change in the (Ex. 84-369).

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the applicability of each provision of the present standard to construction. OSHA plans to codify the asbestos standard, insofar as it relates to the construction industry, at 29 CFR Part 102a.

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As discussed in the preamble to the ETS, OSHA has historically taken the position that all of the minerals listed in the current asbestos definition, namely chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite constitute forms of asbestos and that all forms of asbestos pose a significant health risk to exposed workers (49 FR 51113).

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"Asbestos" is a generic term for a number of hydrated silicates that, when crushed or processed, separate into flexible fibers made up of silicate. Although there are many asbestos minerals, the term "asbestos" as used herein is limited to the following minerals: chrysotile, amosite, crocidolite, anthophyllite asbestos, tremolite asbestos, and actinolite asbestos.

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(b) "Asbestos" means a group of mineral fibers composed of hydrated silicates, oxygen, hydrogen, and other elements such as sodium, iron, magnesium, and calcium in diverse combinations and are: amosite, chrysotile, crocidolite, anthophyllite asbestos, actinolite asbestos, and tremolite asbestos.

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Several studies have of respiratory system (Ex. 84-402, 84-141).

In 49 FR 5117, the first consideration is that the record indicate that may be the morphological rather than its strict designation (Ex. 84-369).

On the other hand, presented by propose OSHA of a mineralogical asbestos which has excluding asbestos from a mineralogical view (Ex. 84-369).

Thus, OSHA anticipates the mineralogical definition advocated by the authors comments cited above evidence presented in comments, if any, and from cross examination considered in OSHA's.

OSHA anticipates its definition by adding "asbestiform" in front

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