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July 15, 1976

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S. John Byington
Chairman
Consumer Product Safety Commission
1750 K Street, N. W.
Washington, D. C. 20036

Dear Chairman Byington:

Recent scientific studies show that consumers of drywall patching compounds containing asbestos are exposed to a substantial risk of cancer. These studies found very high quantities of asbestos fibers in the air after patching compounds containing asbestos were used in rooms for drywall repair. These suspended fibers are readily inhaled by consumers exposing them to a substantial increase in the risks of lung cancer and mesothelioma. Mesothelioma is an always fatal malignancy of the pleura and peritoneum, membranes which enclose the lungs and abdomen. Brief exposures to asbestos fibers such as those experienced by consumers of patching compounds have been shown to substantially increase the risk of cancer.

This evidence is summarized in the attached petition which asks the Consumer Product Safety Commission to protect the public health by issuing an order declaring patching compounds containing asbestos to be banned hazardous substances, thus prohibiting their interstate sale and requiring their repurchase by the manufacturer.

Hundreds of other consumer products including fake fireplace ash and papier mache contain asbestos which may be released into the air exposing consumers to increased risks of cancer. We request the

Not used for drywall repair. Original construction. Asbestos free by professionals.

ASBESTOS INFORMATION ASSOCIATION/
North America
1835 K Street, N. W. Suite 402
Washington, D. C. 20005

PLAINTIFF'S
EXHIBIT
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Commission, in cooperation with the Federal Trade Commission, to examine these other products for asbestos content and declare those products which present a significant health risk to be banned hazardous substances.

We urge the Commission to take action on this petition and request as expeditiously as possible. Thank you very much for your attention.

Sincerely,

Ruby I. Compton

Ruby I. Compton

Attachment

KM BB 5429

UNITED STATES OF AMERICA
BEFORE THE
CONSUMER PRODUCT SAFETY COMMISSION

Petition of Natural Resources Defense :
Council, Inc., and the Consumers Union :
of U.S.A., Inc., for the Promulgation :
of a Rule Declaring Certain Patching :
Compounds To Be Banned Hazardous :
Substances :

I. Summary

1. This petition requests this Commission to issue an order which declares consumer patching compounds^{1/} containing asbestos^{2/} to be banned hazardous substances.

2. This petition summarizes scientific evidence that continued use of patching compounds containing asbestos will expose many persons to the risk of substantial illness. This evidence indicates that continued use of these products will result in the inhalation of asbestos fibers by consumers which will result in a significantly higher incidence of cancer (including lung cancer and mesothelioma).

3. This petition demonstrates that no cautionary label would adequately protect the public from the risk of illness associated with patching compounds containing asbestos. This petition therefore requests that this Commission exercise its power to declare patching compounds containing asbestos to be banned hazardous substances.

II. Jurisdiction

4. This petition is filed pursuant to § 2 of the Federal Hazardous Substances Act (hereinafter "the Act"), 15 U.S.C. § 1261

1/ Consumer patching compounds include taping, spackling, and joint sealing compounds.

2/ Asbestos is a generic term used to describe a number of naturally occurring, fibrous, hydrated mineral silicates including chrysotile, amosite, crocidolite, tremolite, anthophyllite and actinolite. The forms of asbestos contained in patching compounds are chrysotile, tremolite, and anthophyllite.

(1974), which provides in relevant part:

(g)(1) The term "banned hazardous substance" means . . . (B) any hazardous substance intended, or packaged in a form suitable, for use in the household, which the Secretary by regulation classifies as a "banned hazardous substance" on the basis of a finding that, notwithstanding such cautionary labeling as is or may be required under this chapter for that substance, the degree or nature of the hazard involved in the presence or use of such substance in households is such that the objective of the protection of the public health and safety can be adequately served only by keeping such substance, when so intended or packaged, out of the channels of interstate commerce;

(2) Proceedings for the issuance, amendment, or repeal of regulations pursuant to clause (B) of paragraph (1) of this subsection shall be governed by the provisions of sections 371 (e), (f), and (g) of Title 21: Provided, That if the Secretary finds that the distribution for household use of the hazardous substance involved presents an imminent hazard to the public health, he may by order published in the Federal Register give notice of such finding, and thereupon such substance when intended or offered for household use, or when so packaged as to be suitable for such use, shall be deemed to be a "banned hazardous substance" pending the completion of proceedings relating to the issuance of such regulations.

Authority under the Federal Hazardous Substances Act is vested in the Consumer Product Safety Commission by § 30(a) of the Consumer Product Safety Act, 15 U.S.C. § 2079(a) (1974), which provides:

(a) The functions of the Secretary of Health, Education, and Welfare under the Federal Hazardous Substances Act and the Poison Prevention Packaging Act of 1970 are transferred to the Commission. The functions of the Administrator of the Environmental Protection Agency and the Secretary of Health, Education, and Welfare under the Acts amended by subsections (b) through (f) of section 7 of the Poison Prevention Packaging Act of 1970, to the extent such functions relate to the administration and enforcement of the Poison Prevention Packaging Act of 1970, are transferred to the Commission.

Sections 371(c), (f), and (g) of Title 21 provide in relevant part:

(e)(1) Any action for the issuance, amendment, or repeal of any regulation under [certain sections of Title 21] shall be begun by a proposal made (A) by the Secretary on his own initiative, or (B) by petition of any interested person, showing reasonable grounds therefor, filed with the Secretary. The Secretary shall publish such proposal and shall afford all interested persons an opportunity to present their views thereon, orally or in writing. As soon as practicable thereafter, the Secretary shall by order act upon such proposal and shall make such order public. Except as provided in paragraph (2) of this subsection, the order shall become effective at such time as may be specified therein, but not prior to the day following the last day on which objections may be filed under such paragraph.

Review of order

(f)(1) In a case of actual controversy as to the validity of any order under subsection (e) of this section, any person who will be adversely affected by such order if placed in effect may at any time prior to the ninetieth day after such order is issued file a petition with the United States court of appeals for the circuit wherein such person resides or has his principal place of business, for a judicial review of such order. A copy of the petition shall be forthwith transmitted by the clerk of the court to the Secretary or other officer designated by him for that purpose. The Secretary thereupon shall file in the court the record of the proceedings on which the Secretary based his order, as provided in section 2112 of Title 28.

5. Section 4 of the Act, 15 U.S.C. § 1263 (1974), provides:

The following acts and the causing thereof are prohibited:

(a) The introduction or delivery for introduction into interstate commerce of any misbranded hazardous substance or banned hazardous substance.

(c) The receipt in interstate commerce of any misbranded hazardous substance or banned hazardous substance and the delivery or proffered delivery thereof for pay or otherwise.

(g) The manufacture of a misbranded hazardous substance or banned hazardous substance within the District of Columbia or within any territory not organized with a legislative body.

Section 15 of the Act, 15 U.S.C. § 1274 (1974), provides in part:

(a) In the case of any article or substance sold by its manufacturer, distributor, or dealer which is a banned hazardous substance (whether or not it was such at the time of its sale), such article or substance shall, in accordance with regulations of the Secretary, be repurchased as follows:

(1) The manufacturer of any such article or substance shall repurchase it from the person to whom he sold it, and shall --

(A) refund that person the purchase price paid for such article or substance . . .

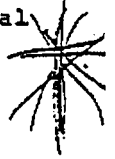
(2) The distributor of any such article or substance shall repurchase it from the person to whom he sold it, and shall --

(A) refund that person the purchase price paid for such article or substance . . .

(3) In the case of any such article or substance sold at retail by a dealer, if the person who purchased it from the dealer returns it to him, the dealer shall refund the purchaser the purchase price paid for it and reimburse him for any reasonable and necessary transportation charges incurred in its return.

6. Patching compounds containing asbestos, the use of which cause asbestos fibers to be released into the air and inhaled by consumers, are hazardous substances within the meaning of the Act. Section 2(f) of the Act, 15 U.S.C. § 1261(f) (1974), defines "hazardous substance" as:

(1)(A) Any substance or mixture of substances which (i) is toxic, (ii) is corrosive, (iii) is an irritant, (iv) is a strong sensitizer, (v) is flammable or combustible, or (vi) generates pressure through decomposition, heat, or other means, if such substance or mixture of substances may cause substantial personal injury or substantial illness during or as a proximate result of any customary or reasonably foreseeable handling or use, including reasonably foreseeable ingestion by children.



Section 2(g) of the Act, 15 U.S.C. § 1261(g) (1974), provides

(g) The term "toxic" shall apply to any substance (other than a radioactive substance) which has the capacity to produce personal injury or illness to man through ingestion, inhalation, or absorption through any body surface.

Section 1500.3(c)(2) of Title 16 of the Code of Federal Regulations (1975) further defines "toxic":

'Toxic' also applies to any substance that is "toxic" (but not "highly toxic") on the basis of human experience.

Established scientific evidence, cited in ¶ 9, *infra*, shows that inhalation of asbestos fibers causes "personal injury [and] illness to man" by significantly increasing the risk of mesothelioma, and lung cancer.

III. Description of the Petitioner

7. Petitioner Natural Resources Defense Council, Inc. (NRDC), is a nonprofit, tax-exempt corporation organized under the laws of the State of New York, with offices at 15 West 44th Street, New York, New York; 917 - 15th Street, N. W., Washington, D. C.; and 2345 Yale Street, Palo Alto, California. NRDC is a national organization dedicated to environmental protection, including protection of the human environment. NRDC has about 25,000 members and contributors in the United States. Many of these persons and their children will be subjected to an increased

risk of cancer discussed in ¶ 9, *infra*, if the Commission does not ban the use of patching compounds containing asbestos. Among the methods NRDC uses to achieve its objectives are: (1) improving federal agency decisionmaking which affects the environment by commenting, furnishing information, participating in administrative proceedings, and bringing lawsuits where legal duties are not being fulfilled; and (2) improving federal agency decision-making which affects the environment by encouraging agencies to solicit and utilize the views, knowledge, and expertise of members of the general public.

8. Consumers Union is a nonprofit membership organization chartered in 1936 under the laws of the State of New York to provide information, education, and counsel about consumer goods and services and management of family income. Consumers Union has offices at 256 Washington Street, Mount Vernon, New York and 1714 Massachusetts Avenue, N. W., Washington, D. C. The Consumers Union has about 286,540 members in the United States. Many of these persons and their children will be subjected to an increased risk of cancer discussed in ¶ 9, *infra*, if the Commission does not ban the use of patching compounds containing asbestos. The Consumers Union achieves its objectives by publishing *Consumer Reports* and other publications and by improving federal agency decisionmaking which affects consumer interests by commenting, furnishing information, participating in administrative proceedings, and bringing lawsuits.

IV. Scientific Evidence

A. Summary

9. Recent studies demonstrate that consumers of patching compounds containing asbestos are exposed to a substantial risk of cancer. These studies found very high quan-

No studies cited

ties of asbestos fibers in the air after patching compounds containing asbestos were used in rooms for drywall repair. These suspended asbestos fibers are readily inhaled by consumers residing in dwellings where such drywall repair has occurred. Inhalation of asbestos fibers substantially increases the risk of mesothelioma and lung cancer. Patching compounds containing asbestos are sold to hundreds of thousands of consumers every year, thus exposing millions of home and apartment dwellers to increased risks of cancer.

B. Use of Patching Compounds Containing Asbestos

9a. As shown in the following table, more than 29,000 retail outlets -- hardware stores, home centers, and lumber and building material outlets -- sold over \$3.5 million worth of patching compounds in 1971 and approximately \$6.9 million worth of patching compounds in 1975.

Type of Outlet	Number of Retail Outlets ^{4/} Which Sold Patching Compounds in 1975	Sales of Patching Compounds (Millions of Dollars) ^{5/}	
		1971	1975
Hardware Stores	21,600	\$2.1	\$3.1
Home Centers	6,040	1.4	3.6
Retail Lumber & Building Material Outlets	2,040	no data \$3.5	0.2 \$6.9

9b. Patching compounds sold to consumers and professional craftsmen at retail outlets are used principally in home drywall repair and construction. A small fraction is used in offices and other places of business.

^{3/} Product Sales Study 1971 (1972), and Product Sales Study 1975 (to be published August 1976), National Retail Hardware Association, Indianapolis, Indiana. Data are not available for wholesale sales or sales to professionals or for the years 1972, 1973, and 1974.

^{4/} This is the projected number of retail outlets in the U.S. which sold patching compounds in 1975, based on reports of sales to the National Retail Hardware Association.

^{5/} Op. Cit. supra n. 3.

9c. According to retail marketers, in 1975 approximately two-thirds of all sales of patching compounds, or \$4.6 million dollars worth, were spackling, taping, and joint sealing compounds -- compounds which may contain asbestos as an ingredient (hereinafter "asbestos-suspect patching compounds"). The other one-third are products such as plaster-of-paris which appear not to contain asbestos as an ingredient.^{6/} The asbestos-suspect patching compounds were most commonly sold in 1975 in units of 1/2 pint to one quart, ranging in price from \$1.00 to \$2.50, with an average unit cost of approximately \$2.00. Accordingly, it can be estimated that approximately two million units of asbestos-suspect patching compounds were sold in 1975. Of these two million units of asbestos-suspect patching compounds sold in retail outlets in 1975, it is estimated that approximately one-third -- or 670,000 units -- actually contained asbestos.^{7/}

9d.. If it is assumed that the average consumer of patching compounds purchases approximately 1 to 3 units in a given

6/ Dave F. Fischer, Jr., Fischer Hardware Corp., Springfield, Virginia (telephone communication, March 1976); Steve McQuitty, Montgomery Wards, Wheaton, Maryland (telephone communication, May 13, 1976).

7/ Rohl, A.N., et al.; *Exposure to Asbestos in the Use of Consumer Spackling, Patching, and Taping Compounds*, Science, 189:551 (August 15, 1975). Dr. Rohl and co-workers tested fifteen retail brands; one third, or five, were found to contain asbestos. These were Perf-A-Tape joint sealant (U.S. Gypsum, 1972); Metro spackling compound (Bondex International); Perf-A-Tape joint sealant (U.S. Gypsum, 1974); Arvon spackling compound (Arvon products), and USG Texolite spackling putty (U.S. Gypsum). Two of these manufacturers indicated to Dr. Rohl that they intend to cease using asbestos in their products. Letter from S. J. Burgeson, Synkoloid Company, to Arthur Rohl, September 18, 1975; Letter from K. S. Freeman, U.S. Gypsum Company, to Ralph Georgialis, September 12, 1975. A recent market survey revealed that other retail brands of patching compounds, including Georgia-Pacific and Wards, were labeled, as containing asbestos. (Market survey conducted by Barry Castleman, May 1976).

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year, then the more than 660,000 units assumed to contain asbestos will reach approximately 220,000-660,000 homes each year.

Therefore, more than one million people will be exposed to asbestos inhalation each year;^{8/} every application of patching compounds containing asbestos causes the asbestos fibers to be released into the air in large quantities as described in ¶ 9f, *infra*.

9e. An even greater number of people may be exposed to asbestos fibers due to the use of patching compounds. The above figures do not include wholesale distribution.^{9/} Contractors and builders but patching compounds at wholesale outlets. Use of these patching compounds exposes consumers who rent apartments, buy homes, or hire professionals to make home wall repairs.

C. Asbestos Levels In The Home Resulting From Use of Patching Compounds

9f. Asbestos-containing spackling, patching and taping compounds used in home drywall construction and repair expose consumers to a substantial risk of cancer. Dr. Arthur Rohl and co-workers at the Mt. Sinai School of Medicine analyzed 15 representative samples of patching compounds retailed in the State of New York and 15 samples of patching compounds sold wholesale throughout the U.S. The analysis found that five retail

^{8/} Based on population per household estimate of 3.01 persons. *Statistical Abstract of the United States: 1974*, U.S. Bureau of the Census, Washington, D. C., 39-40 (1974).

^{9/} Dr. Rohl and co-workers tested samples of 15 patching compounds sold by wholesale distributors. Thirteen of the compounds were found to contain asbestos: Sterling Redy Mix Vinyl joint cement, S-C-I vinyl taping compound, Sterling all purpose vinyl joint cement, Synko spackling compound, seven different U.S. Gypsum spackling and taping products, a Muralo Co. spackling compound, and a spackling compound for which the manufacturer was unknown. These samples were analyzed by x-ray diffraction, optical and electron microscopy. Five of the samples were procured for analysis in mid-July 1975, the other 10 were obtained in previous years. Letter and attachments from Dr. Arthur Rohl to S. Frank Raftery, General President, International Brotherhood of Painters and Allied Trades (August 11, 1975).

samples and thirteen wholesale samples contained appreciable amounts (4-15 percent) of the asbestos minerals chrysotile, anthophyllite, and tremolite.^{10/} The Mt. Sinai group measured asbestos concentrations in the air in the breathing zone of drywall construction workers during and after sanding, dry mixing, and sweeping (conditions similar to home drywall repair). These breathing zone measurements showed considerable amounts of asbestos in the air, counts ranging from 2.5 to 19.8 fibers per millileter (fibers longer than 5 microns) ("f/ml"). Fiber counts during mixing were considerably higher -- 35.4 to 59.0 f/ml, or 7 to 12 times greater than the then applicable Occupational Safety and Health Administration ("OSHA") standard.^{11/} Samples of air in adjacent rooms resulted in fiber counts averaging from 2.6 to 4.8 f/ml. "Fiber counts could not be made on floor sweeping samples because the filters were too heavily laden to count."^{12/} Air samples taken after floor sweeping contained 26.4 and 41.4 f/ml.^{13/} Dr. Rohl and co-workers noted that the OSHA workplace limit for peak exposures -- 10 f/ml -- was exceeded for a 15 minute interval.^{14/} These concentrations determined by the standard optical microscopic method of the National Institute for Occupational Safety and Health ("NIOSH"), were "only suggestive of the total asbestos exposure."^{15/} There may have been as many as 1000 additional fibers for every fiber seen under the less powerful magnification.^{16/}

^{10/} *Id.*; Rohl, et al., supra n. 7, at 552.

^{11/} The then applicable 8-hour average Occupational Safety and Health Administration ("OSHA") standard for asbestos workers was 5 f/ml. This standard was lowered to 2 f/ml on July 1, 1976. Rohl, et al., supra n. 7, at 553.

^{12/} *Id.* This means that air samples taken at the time of floor sweeping were so high in asbestos that the standard fiber-counting method used in asbestos plants could not be used to determine exactly how much asbestos was in the air.

^{13/} Rohl, et al., supra n. 7, at 552.

^{14/} Rohl, et al., supra n. 7, at 553; 36 Fed. Reg. 23207 (June 7, 1972).

^{15/} *Id.*

^{16/} *Id.*

Conditions are not similar to other commercial drywall repair.

25/6. log

continuous

D. Health Effects of Exposure to Asbestos

1. Introduction

9g. Asbestos is the generic name of a group of hydrated silicate mineral fibers. There are two groups of these minerals -- serpentine (chrysotile) and amphibole (amosite, crocidolite, anthophyllite, tremolite, and actinolite). Ninety-five percent of the world's asbestos production is chrysotile.^{17/}

9h. Reports of epidemiological and pathological studies reveal that exposure to commercial asbestos minerals greatly enhances the likelihood of a number of diseases -- cancers of the lung, pleura, peritoneum, larynx, and gastro-intestinal tract and asbestosis.^{18/} These diseases are not clinically apparent until approximately 20 years after the onset of exposure to asbestos.^{19/}

9i. Cancer is the prime health threat.^{20/} Asbestos insulation workers, whose exposure to asbestos was light and intermittent compared to that of factory workers in the past, incur a very high rate of cancer. Asbestosis was a cause of death in some cases, but a recent report shows that cancer was

17/ Cooper, W. C., et al., *Asbestos - The Need For and Feasibility of Air Pollution Controls*, National Academy of Sciences, Washington, D. C. (1971).

18/ Id. Selikoff, I. J., Hammond, E. C., and Churg, J., *Mortality Experiences of Asbestos Insulation Workers*, in *Proceedings of the International Conference on Pneumoconiosis*, Johannesburg, 1969, edited by H. A. Shapiro, Oxford University Press, Capetown, South Africa, 180-186 (1970) ("Selikoff & Churg"); Stell, P. M., and McGill, T., *Asbestos and Laryngeal Carcinoma*, *Lancet* 2:416 (1973); Newhouse, M. L., and Thompson, H., *Mesothelioma of the Pleura and Peritoneum Following Exposure to Asbestos in the London Area*, *Br. J. Ind. Med.* 22:261 (1965); Wagner, J. C., et al., *The Effects of the Inhalation of Asbestos in Rats*, *Brit. J. Cancer* 29:252 (1974) ("Asbestos in Rats").

19/ Selikoff, I. J., *Environmental Cancer Associated With Inorganic Microparticulate Air Pollution*, in *Clinical Implications of Air Pollution Research*, A. J. Finkel and W. C. Dael (eds.), Publishing Sciences Group, Acton, Mass., 49-66 (1975) ("Environmental Cancer").

20/ Asbestosis is a non-malignant disease. Asbestos exposures which may not greatly increase the risk of death from asbestosis may nevertheless significantly increase the risk of death from cancer. Nicholson, W. J., *Cancer Study 1: Asbestos - The TV Approach*, *Ann. N.Y. Acad. Sci.*, 271:152 (1976). NIOSH has stated, "Reduction of asbestos exposures to levels sufficient to prevent asbestosis is known, at least in some instances, to be insufficient to prevent asbestos-cancer." 40 *Fed. Reg.* 47651, 47654 (October 9, 1975).

^{21/} dominant. Of the occupationally related deaths, more than four times as many were from cancer as were from asbestosis.^{22/} Lung cancer alone was the cause of death for 20 percent of these men, gastrointestinal cancer for another 10 percent. Seven percent died of mesothelioma, an always-fatal, cancerous, malignancy of the pleura or peritoneum,^{23/} membranes which enclose the lungs and abdomen. Mesothelioma is associated almost exclusively with exposure to asbestos.^{24/} In a memorandum dated September 29, 1975, to the Deputy Assistant Secretary of Labor for Occupational Safety and Health, the Director of NIOSH wrote:

Multiple and consistent epidemiological studies have shown virtually no doubt that asbestos is carcinogenic to man.^{25/}

9j. Studies have shown that the risk of cancer for asbestos workers is much greater than for the general community. The risk of lung cancer for males who work with asbestos and also smoke is 92 times the risk for males who do neither,^{26/} but the risk of lung cancer for male smokers not exposed to asbestos is only 10 times the risk for male nonsmokers.^{27/} In other words, male smokers who are exposed to asbestos at the workplace increase their risk of lung cancer ninefold. However, the risk for asbestos workers of other types of cancer does not appear to be related to

^{21/} Environmental Cancer, *supra* n. 19.

^{22/} *Id.*

^{23/} *Id.*

^{24/} Council on Environmental Quality, *Sixth Annual Report* 13 (1976); Selikoff, I. J., *Recent Perspectives in Occupational Cancer*, *Ambio* 4:1 (1975).

^{25/} 40 Fed. Reg. 47651 (October 9, 1975).

^{26/} Selikoff, I. J., Hammond, E. C., and Churg, J., *Asbestos Exposure, Smoking, and Neoplasia*, *J.A.M.A.* 204:106 (1968).

^{27/} Hammond, E. C., *Tobacco, in Persons at High Risk of Cancer*, J. F. Fraumeni (ed.) Academic Press, New York, 135 (1975).

smoking habits; the risks of mesothelioma and lower intestinal tract cancer are high for nonsmoking asbestos workers as well as smokers. ^{28/}

9k. All commercial varieties of asbestos are carcinogenic to man. ^{29/} Laboratory animal inhalation studies do not show any marked difference in effect among the different types of asbestos. ^{30/} In fact, each of the three important commercial varieties of asbestos -- chrysotile, amosite and crocidolite -- produced either lung cancer or mesothelioma in experimental animals. ^{31/}

2. Brief and Low Level Exposure to Asbestos Increases the Risk of Cancer

a. Introduction

Studies have shown that brief, high level exposure as well as longterm, low level exposure to asbestos leads to an increase in the risk of cancer. ^{32/} In recommending criteria for asbestos exposure, NIOSH noted:

[T]he effect after several decades of a one-time acute dose [of asbestos] of limited duration which overwhelms the cleaning mechanism, and is retained in the lungs, may be as harmful as the cumulative effect of lower daily doses of exposure over many years of work. ^{33/}

^{28/} Center for the Study of Biological Effects of Environmental Agents, *First Annual Report to the National Institute of Environmental Health Sciences*, 2 (New York 1974).

^{29/} *Environmental Cancer*, supra n. 19, at 51; Castleman, B. I., et al., *Hazards of Asbestos for Brake Mechanics*, *Publ. Health Rep.* 90:254 (1975); Selikoff, I. J., Hammond, E. C., and Churg, J., *Carcinogenicity of Amosite Asbestos*, *Arch. Environ. Health* 25:183 (1972) ("Carcinogenicity of Amosite Asbestos"); Mourman, L. O., Kiviluoto, R., and Hakama, M., *Mortality and Morbidity Among the Working Population of Anthophyllite Asbestos Miners in Finland*, *Brit. J. Industr. Med.* 31:105 (1974).

^{30/} *Asbestos in Rats*, supra n. 18.

^{31/} *Id.*, at 263-264.

^{32/} Selikoff, I. J., Nicholson, W. J., and Langer, A. M., *Asbestos Air Pollution*, *Arch. Environ. Health*, 25:1 (1972).

^{33/} National Institute for Occupational Safety and Health, *Criteria for a Recommended Standard . . . Occupational Safety and Health*, V-5 (Washington, D. C. 1972) ("NIOSH Criteria").

Studies have shown that asbestos workers, people living in the area of asbestos mines and mills, and family members of asbestos workers have a significantly higher incidence of cancer than the rest of the population although their exposure to asbestos may have been brief, as is the exposure to asbestos of consumers using patching compounds. In addition, experimental animals developed lung cancer and mesothelioma from only seven hours' exposure. ^{34/}

In some studies the concentration of asbestos exposure - in f/ml - was not available, but in studies in which such data are available, exposures were often lower than those measured during the use of patching compounds. See ¶ 9f, supra.

b. Studies of Workers

91. In a study of the mortality of workers due to amosite asbestos employed between 1941 and 1945 in New Jersey, total deaths observed were more than twice the number expected by 1971 (105 died; 46.4 deaths were expected from U.S. age-specific rates for white males). ^{35/} More recent follow-up has revealed that a significant excess cancer mortality occurred in workers with less than one month's employment in the plant, as seen in the following table.

^{34/} Asbestos in Rats, supra n. 18.

^{35/} Carcinogenicity of Amosite Asbestos, supra n. 29, at 183.

TABLE 1 ^{36/}
^{37/}

Deaths of lung cancer among workers
employed in an amosite asbestos factory
starting five years from onset of work 1941-1945
to December 31, 1974. Effect of duration of exposure.

Duration of employment	No.	Death of Lung Cancer 1946-1974		
		Expected ^{38/}	Observed	Ratio
< 1 month	62	1.34	3	2.24
1 month	92	1.44	5	3.47
2 months	79	1.30	8	6.15
3-5 months	145	2.24	8	3.57
6-11 months	129	1.63	9	5.52
1 year	105	1.53	12	7.84
2 years	77	1.06	13	12.26
3-4 years	51	0.87	9	10.34
5+ years	65	1.04	16	15.36
Total	805	12.45	83	6.67

9m. Brake repair mechanics may also have a higher than average incidence of cancer. Studies in Great Britain show that individuals who do full-time brake repair work have time-averaged exposure to asbestos measured at 0.79 f/ml with peaks up to 7 f/ml ^{39/} when brake parts are cleaned with a compressed air hose. During "blow out" of automobile brake drum assemblies, brief peak values averaging near 10 f/ml have been reported by researchers

^{36/} Selikoff, I. J., data presented at the "Fourth Symposium on Statistics and the Environment," National Academy of Sciences, Washington, D. C., March 3, 1976.

^{37/} 128 workers were omitted from these calculations: 33 had prior asbestos exposure; 38 died in the first five years after onset of employment. 49 were not completely traced; and eight had other asbestos employment after the five years from onset point.

^{38/} Expected deaths are based upon white male age-specific death rate data of the U.S. National Office of Vital Statistics 1949-1972. Rates were extrapolated for 1946-1948 from rates for 1949-1955 and for 1973-1974 from rates for 1968-1972.

^{39/} Hickish, D. E., and Knight, K. L., Exposure to Asbestos During Brake Maintenance, Ann. Occup. Hyg. 13:17 (1970).

at the Mt. Sinai School of Medicine.^{40/} Background samples for blowing dust out of drum brakes range from 0.1 to 0.8 f/ml.^{41/} Such asbestos concentrations are of the same order of magnitude as those measured for drywall repair activities. The Mt. Sinai researchers examined 90 men who had 10 years or more experience in shops where brake repairs were done and who had no history of other occupational asbestos exposure. Sixty-one of these men were general mechanics who did brake lining more than once a week for 10 years or more. Over one-half of the mechanics had characteristics of asbestosis which are generally thought of as indicators for cancer.^{42/} Dr. William Lloyd of NIOSH found in separate studies at least four cases of mesothelioma reported for brake mechanics.^{43/}

9n. In a 1972 publication, Harries and co-workers reported 37 cases of mesothelioma in shipyard workers whose only exposure to asbestos was from proximity to asbestos workers. Thus, indirect occupational exposure was sufficient to produce mesothelioma years later.^{44/} Similar data was presented by Stumphius and Meyer from a series of cases of mesothelioma in Zeeland, Netherlands, and elsewhere.^{45/}

9o. One study has shown a statistically significant excess of lung cancer among a group of gold miners exposed to only 0.25 f/ml in the workplace,^{46/} considerably less than concentrations which would result from the use of patching compounds.

^{40/} Lorimer, W. V., et al., *Asbestos Exposure of Brake Repair Workers in the United States*, *Mount Sinai J. Med.*, 43:207, 210 (1976).

^{41/} Id.

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^{42/} Id.

^{43/} Lloyd, W. J., *Alert on Brake and Clutch Servicing* (untitled), National Institute for Occupational Safety and Health (August 8, 1975).

^{44/} Harries, P. G., et al., *Radiological Survey of Men Exposed to Asbestos in Naval Dockyards*, *Brit. J. Ind. Med.*, 29:274 (1972).

^{45/} Stumphius, J. and Meyer, P. B., *Asbestos Bodies and Mesothelioma*, *Ann. Occup. Hyg.*, 11:203 (1968); 40 Fed. Reg. 47651, 47656 (October 9, 1975).

^{46/} Gillam, J. D., et al., *Mortality Patterns Among Hard Rock Gold Miners Exposed to an Asbestiform Mineral*, Paper presented at Conference on Occupational Carcinogenesis, New York Academy of Sciences (March 24, 1975).

9p. Mesothelioma was the cause of death of a man who had regularly sanded vinyl asbestos floor tile. Under simulated conditions, a maximum asbestos dust concentration of only 1.3 f/ml was found in air samples passed through membrane filters worn by a person sanding vinyl asbestos.^{47/}

c. Neighborhood Exposure

9q. Cases of mesothelioma in persons not exposed to asbestos at the workplace or the home were first reported in the original epidemiological report in 1960 which discussed the association between asbestos and mesothelioma.^{48/} Indeed, roughly two-thirds of 33 mesothelioma cases described in that 1960 report were individuals who simply lived or worked in the vicinity of an asbestos mining area.^{49/} Cases of mesothelioma resulting from neighborhood exposure to asbestos were reported in epidemiologic reports from New Jersey^{50/} and Pennsylvania.^{51/} Researchers Dalquen and co-workers considered asbestos air pollution a major cause of death in their study of 119 cases of pleural mesothelioma in Hamburg, Germany.^{52/}

9r. In 1963, Thomson and co-workers of South Africa predicted that asbestos-associated neoplasms would rival cigarette-induced lung cancer by the end of this century.^{53/} He based this

47/ Murphy, R. L., et al., Floor Tile Installation as a Source of Asbestos Exposure, Amer. Rev. Resp. Dis., 104:576 (1971).

48/ Wagner, J. C., Sleggs, C. A., and Marchand, P., Diffuse Pleural Mesothelioma and Asbestos Exposure in the North Western Cape Province, Brit. J. Industr. Med., 17:260 (1960).

49/ Id.

50/ Borow, M., et al., Mesothelioma and its Association with Asbestos, J.A.M.A., 201:587 (1967).

51/ Lieben, J., and Pistawka, H., Mesothelioma and asbestos exposure, Arch. Environ. Health, 14:559 (1967).

52/ Dalquen, P., Dabbert, A. F., and Hinz, I., Epidemiologie der Pleuramesothelioma Vorlaufiger Bericht uber 119 Falle aus dem Hamburger Raum, Prax. Pneumol., 23:547 (1969).

53/ Thomson, J. G., Kaschula, R. O. C., and MacDonald, R. R., Asbestos as a Modern Urban Hazard, S. Afr. Med. J., 37:77 (1963).

claim on the prevalence of "asbestos bodies" in the lungs of urban dwellers and the sky-rocketing rate of world asbestos use following World War II. Due mainly to historic under-diagnosis of mesothelioma, and the typically long period between exposure and development of disease, it is impossible yet to know whether Thomson's extrapolation will prove correct; however, the widespread presence of asbestos in the lungs of urban dwellers has been verified by Langer and co-workers.^{54/} Doctors at the National Naval Medical Center are now finding increased prevalence of chronic pleural thickening such as that found in asbestos workers among individuals past the age of 50.^{55/} They postulate that the pleural thickenings observed are caused by nonoccupational, environmental asbestos exposure.^{56/} In 1971 the U.S. Environmental Protection Agency ("EPA") declared asbestos a "hazardous air pollutant" and published national emission standards in 1973.^{57/}

9s. Not all environmental exposure to asbestos is in the form of air pollution from mining, milling, manufacturing, and fabrication. Wagner, who first showed an association between asbestos and mesothelioma described a case of a woman born in the asbestos fields of the Republic of South Africa.^{58/} She left there at age 5, moved to Johannesburg, and died at 57 of pleural mesothelioma. Detailed questioning revealed that she had attended an infant's school near an asbestos dump. The children used to slide

^{54/} Langer, A. M., Selikoff, I. J., and Sastre, A., *Chrysotile Asbestos in the Lungs of Persons in New York City*, *Arch. Environ. Health*, 22:348 (1971).

^{55/} Ochs, C. W., and Smith, J. P., *Chronic Pleural Thickening: Some Observations on Cause and Pathogenesis*, *Milit. Med.*, 141:77 (1976).

^{56/} *Id.*

^{57/} 38 *Fed. Reg.* 8820 (April 6, 1973).

^{58/} Wagner, J. C., *Epidemiology of Diffuse Mesothelial Tumors: Evidence of an Association from Studies in South Africa and the United Kingdom*, *Ann. N. Y. Acad. Sci.*, 132:575 (1965).

down the dump on their way home. Two of her playmates at the school have subsequently died of mesothelioma.^{59/} In England, at least four Post Office engineers have died of mesothelioma. Their exposure consisted of "infrequent visits to Post Office repeater stations [which used asbestos for insulation], over 4-6 months and lasting 3-4 hours each time."^{60/}

d. Asbestos in the Home

9t. In 1965, nine cases of mesothelioma were reported by Newhouse and Thompson in individuals who lived with asbestos workers^{61/} and who had no exposure to asbestos at the workplace. Recently, Anderson and associates reported four additional cases of mesothelioma in family members of former asbestos factory employees. Additionally, they reported that 35% of 326 family contacts had x-ray evidence characteristic of asbestos exposure.^{62/} The U.S. occupational standard requires workplaces exceeding the limit for time-averaged exposure to provide change rooms and separate clothes lockers for work clothes and street clothes.^{63/} This action was taken in recognition of the threat posed by asbestos brought into the home on a worker's clothes.

9u. Other cases of brief asbestos exposure in the home which resulted in mesothelioma include a woman whose only known exposure was that she sometimes played with samples of asbestos products her father brought home;^{64/} a 14 year old boy who had

^{59/} Id.

^{60/} Tait, N., *Asbestos Kills*, The Silbury Fund, London, 5 (1976).

^{61/} Newhouse, M. L., and Thompson, H., *Epidemiology of Mesothelial Tumors in the London Area*, *Ann. N.Y. Acad. Sci.*, 132:583 (1965).

^{62/} Anderson, H. A., et al., *Confidential Asbestos Neoplastic Risk*, Paper presented at Conference on Occupational Carcinogenesis, New York Academy of Sciences (March 24, 1975).

^{63/} 36 Fed. Reg. 23207 (June 7, 1972)

^{64/} Broder, P., *Expandable Americans*, Viking Press, New York, 16 (1974).

helped his father replace plaster board containing asbestos;^{65/}
a man who mixed and applied asbestos cement insulation to boilers^{66/}
in his home; a man who had sawed and applied asbestos insulation^{67/}
to basement heating pipes; a man who spent one day sawing^{68/}
asbestos cement sheets to construct two sheds.

9v. The threat of asbestos brought into the home was well described by Dr. Paul Kotin, medical spokesman and vice president for the Johns-Manville Corporation, the leading manufacturer of asbestos products, in a recent statement:

I would suggest, however, that once asbestos gets into the home, carried home by the workmen, which in itself is a tragedy, it shouldn't happen, it is asbestos that is there virtually permanently -- it gets into the rugs, into the carpets, it gets suspended by movement and actually you are getting 24 hour/day exposure, relatively speaking, rather than a partial exposure. But even worse than that is the fact that you are exposing the population of the family which includes the very young and very old. And in the induction of cancer, it is the very young that are always the most susceptible. We use the fact that it is the young that are the most susceptible in the laboratory when we want to test agents for their ability to induce cancer.^{69/}

e. Conclusion

9w. Brief and low level exposures similar to those of consumers using patching compounds increases the risk of cancer. It is therefore difficult, if not impossible, to prescribe any safe exposure level for asbestos.^{70/}

65/ Lieben and Pistawka, *Mesothelioma and Asbestos Exposure*, Arch. Environ. Health, 14:559 (1967).

66/ *Id.*

67/ *Id.*

68/ Greenberg, M., and Lloyd-Davies, T. A., *Mesothelioma Register 1967-68*, Brit. J. Industr. Med., 31:91-104 (1974).

69/ Paul Kotin, Presentation before OSHA Advisory Committee on Construction Safety and Health, January 22, 1976.

70/ *NIOSH Criteria*, *supra* n. 33, at V-10 to V-17.

The problem of determining a safety threshold or a "no effect" level of carcinogenic substance is discussed in the preamble to the September 1975 OSHA proposal^{71/} for a lower asbestos occupational standard:

Because of the variability of individual response to carcinogens and other factors, the concept of a 'no effect' or 'threshold level' may have little real significance on the basis of existing knowledge. While some level, below which exposure to a carcinogen does not cause cancer, may conceivably exist for any one individual, other individuals in the working population may have cancer induced by doses so low as to be effectively zero. (Emphasis added).^{72/}

OSHA now notes that due to the long latency period of cancer and its irreversible nature, preventive action is warranted:

Prudent policy would therefore seem to indicate that every reasonable measure should be taken to eliminate human exposure to chemical compounds as soon as their carcinogenic nature is identified.^{73/}

Accordingly, Dr. Rohl and co-workers in recognizing that significant concentrations of asbestos would remain suspended and could pervade living quarters for a considerable duration of time after sweeping and that use of these materials in home repair work (for example, mixing, sanding, and clean-up) may expose the user (and other members of the household) to significant concentrations of asbestos, recommended that:

potentially toxic or hazardous materials be eliminated from consumer spackling, taping, and wall-patching compounds as soon as feasible.^{74/}

^{71/} 40 Fed. Reg. 47654 (October 9, 1975).

^{72/} Id., at 47656.

^{73/} Id.

^{74/} Rohl, et al., supra n. 7, at 553.

V. This Commission Should Issue an Order
Declaring Patching Compounds
Containing Asbestos to be Labeled
Hazardous Substances

A. No Cautionary Label Which Could be
Required Pursuant to the Act Would
Adequately Protect the Public

10. There appears to be no feasible way of preventing asbestos fibers found in patching compounds from being released into the ambient atmosphere. Patching compounds are sold both in dry powder form to be mixed with water at home and in premixed paste form. These compounds are applied in paste form to interior walls of homes and sanded to produce a smooth surface for painting. The asbestos fibers found in these compounds are released into the air during the mixing process (dry form) and during the sanding process (dry and paste form). The asbestos fibers are also released into the air at subsequent times when the walls are sanded or repaired or torn down for replacement. The consumer might protect himself in part by wearing a respirator for protection during application and clean-up. However, the asbestos fibers disperse to adjacent rooms and remain in the air and in the rugs and furniture well after the repair work is completed. Moreover, once the fibers settle on the floors of homes, they may be returned to the air by movement, resulting in a continuous exposure. Also, ventilation systems may disperse asbestos fibers widely throughout the home. Therefore, the only feasible way of protecting the public from the risk of illness presented by these products is to ban the sale and require the repurchase of patching compounds which contain asbestos. Safe, workable, and economical patching compounds exist which do not contain asbestos. As noted in ¶ 9f, *supra*, two-thirds of the patching compounds sold in retail outlets tested by Dr. Rohl and co-workers did not contain asbestos. Moreover, two manufacturers of patching compounds containing asbestos tested by Dr. Rohl notified Dr. Rohl and co-workers that they intended to discontinue

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use of asbestos in their patching compounds. Other manufacturers of asbestos-containing patching compounds could also discontinue the use of asbestos in their products without undue economic hardship.

B. This Commission Can Protect the Public From A Severe Risk of Illness Only By Declaring Patching Compounds Which Contain Asbestos To Be Banned Hazardous Substances

11. The scientific evidence summarized in ¶ 9, *supra*, shows that continued use of patching compounds containing asbestos will subject the public to a severe and increasing risk of lung cancer and mesothelioma. It is demonstrated in ¶ 10, *supra*, that the only feasible way of protecting the public from this risk is to ban the sale and require the repurchase of these products.

PRAYER

There being convincing scientific evidence that continued use of patching compounds containing asbestos will expose the public to an unreasonable risk of cancer, and

There being no feasible cautionary label which would adequately protect the public from this risk,

Petitioners pray that this Commission expeditiously issue an order declaring patching compounds containing asbestos to be banned hazardous products.

Respectfully submitted,

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