

UNITED STATES GOVERNMENT

Memorandum

U.S. CONSUMER PRODUCT
SAFETY COMMISSION

TO : John Liskey, EX-P

DATE: Oct. 26, 1977

FROM : Dale Ray, HICP



SUBJECT: Proposed Asbestos Ban: Section 9 Findings

**PLAINTIFF'S
EXHIBIT**

JM-449

Attached is some revised wording for the Commission's findings under Section 9 of the CPSA to be published in the Federal Register with the ban on asbestos-containing patching compounds and artificial emberizing material. Please contact me as soon as possible with any comments or questions.

Attachment

cc: Bea Pitkin, OGC

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BAN ON PATCHING COMPOUNDS AND
ARTIFICIAL EMBERIZING MATERIALS CONTAINING ASBESTOS:
SECTION 9(c) FINDINGS

- (a) The degree and nature of the risk of injury.

To be submitted by ESH.

- (b) The approximate number of consumer products, or types or classes thereof subject to the ban.

This ban covers two types of consumer products: patching compounds and artificial fireplace emberizing material. The term "patching compounds" includes such products as drywall spackling compounds, and tape joint compounds (commonly known as "joint cement" or "tape joint mud"), which are used to seal cracks, holes or joints in walls and ceilings. "Artificial emberizing materials" are decorative simulated ashes or embers, used in certain gas-burning fireplace systems, which glow to give the appearance of real burning embers. The material is sprinkled on or glued to gas logs, or sprinkled on fireplace floors.

The Commission estimates annual shipments of patching compounds at approximately 30-50 million "units," or individual packages, of various sizes from 0.5 to 25 pounds (dry) or 0.5 to 5 gallons (wet). The Commission believes that about half the patching compounds sold in 1977, and intended for sale to or use or enjoyment by consumers, will be formulated with asbestos. Thus, as many as 25 million units of products may be affected by the ban.*

Gas logs may be sold with artificial emberizing material attached at the factory (the logs commonly referred to as being "frosted"), or with the "embers" in a separate kit, often mixed with simulated "ashes." Virtually all gas logs are either frosted or packaged with an emberizing kit; however, the majority of gas logs produced in 1977 were packaged with non-asbestos-containing emberizing kits. The Commission estimates annual sales of artificial gas logs at approximately 100,000 units. Some 25,000-30,000 of these would be subject to the ban. Approximately 100,000 gas logs frosted or treated by consumers with asbestos are estimated to be in existence. The Commission believes that the majority of gas logs are sold with emberizing kits; this gives the consumer a choice as to whether or not to use the artificial embers and ashes.

*NOTE: This language assumes that intentionally-added asbestos is to be banned or limited; alternate words to the effect that substantially all patching compounds are covered would be necessary if this assumption is incorrect.

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- (c) The need of the public for the consumer products subject to the ban, and the ban's probable effects upon the utility, cost or availability of such products to meet such need.

Patching compounds, though used primarily by commercial construction workers, are also used by consumers, and are used for the patching and sealing of cracks and joints in and around the household and in other consumer environments. The compounds are used to cover areas on gypsum drywall which might otherwise be aesthetically undesirable or which might lead to structural damage, energy loss, lower property value, etc. The asbestos in these compounds acts as a structural reinforcing agent which helps to reduce cracking and shrinkage of the compound over time, and which renders the compound more pliable or "workable" upon application.

Artificial fireplace emberizing material serves a strictly decorative purpose, and does not materially affect the actual performance of the gas log or its gas jets in terms of its ability to provide heat. A certain degree of aesthetic desirability exists, however, since the product "system" itself (the gas log, ashes, and embers) is intended to simulate burning wooden logs.

The elimination of asbestos from these products may result in the increased use or new development of substitutes which have similar properties to those of asbestos, or which impart similar qualities to the product. In current reformulations, asbestos is replaced by a combination of substances, of which the most common is attapulgite, a fibrous clay. Some non-asbestos formulations are reportedly not as effective as those containing asbestos in controlling shrinkage and cracking over time. The workability of some compounds may be diminished as well. This may adversely affect the utility derived from the product by consumers, and especially by professional contractors until such time as improved formulations are developed and available to end-users.

Asbestos-free patching compounds may require more time to use. This would tend to increase the direct labor costs of residential and other construction and renovation. The expected increase is between 10 and 25 percent. The Commission estimates that the annual labor cost of drywall finishing in these consumer environments is on the order of \$1 billion. The use of non-asbestos patching compound formulations in all applications may increase this cost by \$50-125 million, assuming that roughly half the current labor costs (i.e., that portion now associated with the use of asbestos formulations) are affected by the 10-25 percent increase. The burden of this cost is expected to fall directly on owners of existing homes who may engage in some renovation, and on purchasers of newly-renovated or newly-constructed homes.

The use of asbestos substitutes may also lead to cost increases in the manufacture of patching compounds. The Commission estimates this cost, which may vary widely from firm to firm, at an average of 5-15 percent. This is made up primarily of increased costs of raw materials and of formulation research and development. It is expected that the price of many patching compounds may rise as a result.

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to incur costs associated with the disposal or recall of products in inventory, and, to a lesser extent, the recall of some merchandise in the hands of consumers and contractors. The Commission estimates that the wholesale value of manufacturers' and distributors' inventories at the time the ban becomes effective will be approximately \$15 million. These costs may be reflected in the prices charged for asbestos-free patching compound formulations, and in the prices of other drywall and paint products.

It appears that, because of competitive pressure from asbestos-containing compounds, producers of asbestos-free formulations have not yet passed on to purchasers their increased costs. If the increased production costs of asbestos-free formulations can be passed on completely as a result of the ban, the total annual price effect for the year following the issuance of the ban may be \$10-60 million. The magnitude of this effect may be reduced significantly in successive years following the issuance of the ban as producers' development costs are amortized, as raw materials become more widely available, and as price competition is strengthened because of market pressure and economics of scale associated with production.

The supply of asbestos substitutes, particularly attapulgite clay, for use in the manufacture of patching compounds may be insufficient to meet the short-run demand which is expected to be stimulated by the promulgation of the ban. Further, many small producers probably lack the technical capability to reformulate their products, and may be forced to cease production, at least until formulations of satisfactory cost and performance are developed. This may affect some professional contractors. In the short run, consumers may be indirectly affected by delays in drywall finishing and building completion.

Manufacturers of artificial gas log emberizing material are currently using four substitutes for asbestos in their products: vermiculite, rock wool, mica, and a synthetic fiber. None of the four is claimed to be as aesthetically effective as asbestos. Thus, the utility derived by consumers from some gas-burning fireplace systems may be adversely affected.

No effect on the overall price level of gas logs is anticipated as a result of the ban. The average price of emberizing kits may rise somewhat; the Commission estimates this price effect at under \$25,000.

The Commission believes that all producers of artificial emberizing material will have eliminated asbestos from their products by the time the ban becomes effective. No significant impact on the availability of asbestos substitutes to producers or on the availability of gas logs or emberizing kits to retail dealers and consumers is expected as a result of the ban.

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- (d) Any means of achieving the objective of the ban while minimizing adverse effects on competition or disruption or dislocation of manufacturing and other commercial practices consistent with the public health and safety.

The adverse effects of the ban on patching compounds containing asbestos will be reduced by limiting the ban to intentionally added asbestos and setting an effective date 180 days after promulgation. The 180 day period will accommodate small manufacturers who may have difficulty in reformulating and will therefore allow these small manufacturers to maintain a competitive posture relative to the larger manufacturers that have already reformulated their products or have the capacity to do so well within the 180 day period. Limiting the ban to asbestos intentionally added to patching compounds will avoid complicated and costly production controls and testing procedures. The Commission believes that there will be minimal disruption to the market for artificial emberizing material as a consequence of the ban and that no further reduction in adverse effects is feasible.

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UNITED STATES GOVERNMENT

U.S. CONSUMER PRODUCT
SAFETY COMMISSION

Memorandum

TO : John Liskey, EX-P

DATE: Oct. 19, 1977

FROM : Dale Ray, HICP

SUBJECT: Response to Asbestos Proposal Comments

We have reviewed the comments received thus far on the proposal to ban patching compounds and artificial emberizing material containing free asbestos. Some of the comments offered data which will be useful in the preparation of our economic impact reports and the Commission's findings under Section 9 of the CPSA. Many raised economic questions and issues regarding the language of the proposal in the areas discussed below. References to specific commentators are noted in the left margin.

Scope and Definitions

(Rustic Crafts)

One commentator, a manufacturer of electric artificial fireplace logs, suggested that electric logs should be explicitly excluded from the ban, as are synthetic (combustible) logs. Electric logs use no emberizing material and therefore are not of interest to the Commission in this banning action. We believe that the wording of the proposal is not sufficiently clear to convey the Commission's intent. Confusion over such wording can be and has been a source of adverse publicity about all decorative logs; sales of all types have reportedly been lost as a result. To avoid unfair treatment of these products, we suggest that the Federal Register notice use the words "artificial gas logs" or "gas-burning fireplace systems" where appropriate, rather than "artificial logs" or "decorative logs". Further, we suggest that electric logs be treated the same as synthetic logs in whatever exclusion is printed.

(Thomas; Allied; Norton)

A similar question was raised concerning the types of patching compounds covered by the ban. We believe that the term, "tape joint compound" and "spackling compound" should be used to describe the types of products covered by the broader term "patching compounds" in the Federal Register notice. Some of the comments evidenced confusion on this point.

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(DAP) One commentor suggested changes in the wording of the definition in 1304.1(a) and 1304.3(d) to avoid confusion over products which may contain asbestos but which are not sanded after drying. We believe that 1304.1(a) is sufficiently clear to show that these products are not covered by the ban.

(Thomas) One of the comments briefly discussed the distinction between "wet" versus "dry" patching compound. We believe the wording of Part B of the proposal adequately reflects the Commission's intention to regulate both varieties.

(Thomas;
Bondex;
Johns-
Manville;
Union
Carbide;
Paco) Several comments raised the general issue of professional versus consumer use (application) of patching compounds, calling for clearer definitions. There are certainly major differences in the economic impacts of a ban on consumer-applied compounds and a ban on consumer- and professionally-applied compounds. These differences are discussed in our Environmental and Economic reports. The wording of the proposal clearly indicates that both are covered insofar as they are either available to or intended for use or enjoyment by consumers.

(Johns-
Manville;
Union
Carbide;
DAP; Paco) Some comments discussed the ubiquity of asbestos in constituent materials of patching compounds (mostly talc), and even in water that might be mixed with "dry" compounds. It is correctly pointed out that the ban, as proposed, will eliminate all consumer patching compounds from the market, rather than just those formulated with asbestos, since all compounds probably contain a certain amount of asbestos by way of contamination. The feasibility of a ban on intentionally-added asbestos and perhaps also on highly-contaminated compounds (above a minimum percentage content by weight) has been discussed with regard to this ban. We believe that this may be a reasonable course of action which can lessen the adverse economic impact of the ban. Several of the largest patching compound producers currently have asbestos-free formulations on the market. The information we have been able to get from other manufacturers indicates that the current minimum feasible level for intentional asbestos addition in their products is on the order of from 0.5 to 2.0 percent. Several compounds produced in the past several years have reportedly contained up to 8 to 10 percent asbestos, including contamination. It seems, however, that contamination can be controlled to an extent, and that some compounds of "acceptable" performance have been produced with relatively low contamination levels. Such a ban would certainly be clearer, particularly from an enforcement standpoint, than it would be under the present proposal. It might also lessen the economic impact of the ban on the producing industry. There may also, however, be problems with the accuracy and reproducibility of the known techniques of measurement of asbestos in these products. Compliance and Enforcement and the Office of General Counsel may wish to comment further on this potential course of action.

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Economic Impacts

(Southeast
Fireplace)

A distributor of gas logs commented that the proposed ban may have adverse effects on manufacturers, distributors, and retailers that the Commission should be aware of in its deliberations on this ban. Section 9(e) of the CPSA requires the Commission to consider the economic effects of its actions. Our study indicates that the effects on the gas log industry are of the following types: a) cost, availability, and utility effects associated with the purchase and use of asbestos-substitutes in new production and for the retrofit of some existing logs; and b) effects on industry sales and profits, claimed to be primarily a result of adverse publicity surrounding the ban. The nature and extent of the effects on the industry are discussed in the Environmental and Economic Assessment reports which are considered by the Commission in the process of reaching a decision about the ban. Other points of interest concerning the patching compound-producing industry on which comments were received are discussed below.

(Better
Bond;
U.S.
Gypsum)

One patching compound manufacturer claimed that some firms in that industry will go out of business should the ban be promulgated. As noted below, our studies indicate that some small producers may not have the technical capability to reformulate their products satisfactorily for several months from the time of publication of the ban. Thus, some may go out of business, or cease production temporarily, until such reformulation is achieved. This assumes that the ban will proscribe deliberate formulation with asbestos and limit contamination. The competitive advantage currently enjoyed by some sellers of asbestos-formulated compounds would disappear as a result. It may, in fact, be reversed. Reformulation expertise would become a prime factor in the introduction of products which would be competitive in terms of price, availability, and performance with those of the major manufacturers, who have more experience in non-asbestos formulation technology. U.S. Gypsum Company has stated that it may be able to offer non-exclusive licenses to produce and market its patented non-asbestos formulation. This may be a method of avoiding the necessity of developing non-asbestos formulations for many small companies.

(Bondex)

Another patching compound manufacturer, in support of the ban under the CPSA, pointed out that a repurchase under the FHSA would have a "drastic financial impact on manufacturers." It appears that this refers to a repurchase through all levels of distribution, including the return of products by consumers to retailers. As proposed, the ban involves no mandatory repurchase program. Retailers and distributors may, however, be able to return inventoried merchandise or submit proof-of-purchase to manufacturers for credit or refund in some cases. This would probably have a serious impact on all manufacturers under the "no contamination limit" interpretation; the total impact would be considerably less if only asbestos-formulated products are concerned. Even if the latter course is pursued, however, some retailers may return non-asbestos-formulated merchandise by mistake or just to be safe. The costs associated with this phenomenon may be significant for some firms.

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(Johns-
Manville;
Better
Bond)

Two commentators discussed potential cost effects of the ban on patching compounds other than those relating to the product itself. One patching compound producer estimated the increased "workload" associated with the professional application of non-asbestos formulations at 60 percent. We have investigated the potential increase in direct labor costs associated with existing asbestos and non-asbestos formulations; we estimate a 10 to 25 percent average increase as a result of switching from the former to the latter. Other costs may accrue to professional users of the product should different application tools be needed or should some jobs have to be redone due to the relatively poor shrink- and crack-resistance of some non-asbestos formulations.

(Allied)

One company which may be adversely affected by the proposed ban reports that attapulgate, one of the prime substitutes for asbestos in patching compounds, is in "limited supply" and that some small manufacturers may have difficulty in obtaining that material. Other industry sources have reported this same problem. The larger patching compound producers, who already have asbestos-free formulations on the market, are not expected to have as much difficulty in obtaining substitute materials.

(Allied;
Better
Bond)

Two manufacturers discussed the ban's potential adverse effect on the utility of the product. One expressed a belief that non-asbestos formulations are inferior in performance to asbestos formulations. Another reinforced that belief, reporting that the absence of asbestos formulations may prompt workmen to add their own asbestos to the product to help prevent cracking when wall joints are covered. As mentioned at the August 15 public meeting, there is widespread agreement that at least some existing non-asbestos formulations are less desirable, from a performance standpoint, to professional contractors; most consumer applicators are not expected to perceive a significant difference in the product's performance. Some of the larger producers feel that their non-asbestos formulations perform equally as well as asbestos-containing ones; our study indicates that these "mature" reformulations are likely to be more satisfactory than the more recent reformulations offered by some smaller manufacturers.

Effective Date

Four comments have been received concerning the effective date of the ban on patching compounds. As proposed, the manufacture and sale of asbestos-containing compounds would be prohibited 30 days after publication of the ban in the Federal Register.

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(Mass
PING)

One commentor suggested that the effective date be shortened to zero, i.e., upon publication of the ban. At the time of publication, some manufacturers, distributors, and retailers may still be producing or have in inventory compounds formulated with asbestos. In general, when no "imminent hazard" exists, the primary purposes of having an effective date at some point in the future are to allow producers sufficient time to make necessary changes to their products, and to allow existing merchandise in inventory at various levels of distribution to be cleared. This tends to reduce any disruption of the industries involved that may result from a CPSC action. We do not believe that an immediate effective date is warranted in this case since no "imminent hazard" has been declared and since there may be significant adverse economic effects on the industry under an immediate ban.

(Georgia-
Pacific;
DAP;
Bondex)

Three patching compound manufacturers suggested that the effective date should be set later than 30 days after publication so that existing inventories could be depleted. One requested that the ban cover only those products manufactured after the effective date. Another requested a step-wise set of effective dates of 30, 90, and 180 days for manufacturers, distributors, and retailers respectively. These comments correctly note that manufacturers may have to repurchase banned products from distributors, retailers, and perhaps from some contractors. They also note that the financial impact of the ban on the industry, especially on some small manufacturers, who may bear a disproportionate amount of the burden of a voluntary recall from distribution, might be lessened if the effective date is extended beyond 30 days after publication of the ban.

We view a 180-day effective date as a much more equitable approach than the 30-day proposed lead time. It would tend to reduce, but not eliminate, the hardships on small businesses in the patching compound-producing industry. For most companies that have not started reformulating without asbestos, 180 days may actually be insufficient. Several firms have claimed required development times (i.e., for reformulation only, not including time for products to get through the channels of distribution) of over a year. To the extent that small companies must temporarily cease production as a result of the ban, some of the larger firms may be afforded a competitive advantage in regional markets ordinarily served by the smaller producers.

No comments were received concerning the effective date for artificial emberizing material, which is immediately upon publication of the ban in the Federal Register. We anticipate no significant adverse economic impacts as a result of this proposed effective date.

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Other Comments

(Johns-
Manville)

One commentor questioned our reporting of the use of fibrous glass as a substitute for asbestos in artificial emberizing material. That fibrous glass was being considered as an asbestos substitute was mentioned to us by a trade association representative before the proposal was issued. We have since been able to locate no manufacturer or distributor of emberizing material that uses or knows of the use of fibrous glass for this purpose. Fibrous glass is not now viewed as suitable for use on gas logs as an emberizing material. It appears that most manufacturers are now using a synthetic fiber (i.e., Johns-Manville's Cerafiber), rock wool, vermiculite, or a combination of the three. Thus, the wording of Part C should be modified accordingly, and the reference to fibrous glass deleted.

(Forshaw)

One fireplace equipment manufacturer, in questioning the Commission's assessment of the hazard associated with artificial embers on gas logs, stated that all gas logs "must be burned in natural (vented) wood-burning fireplaces..." This is not correct: we know of at least one company whose gas logs are certified by the American Gas Association for unvented use. Individuals may also install gas logs intended for venting in unvented locations. Even if gas logs are installed in vented fireplaces, downdrafts could still occur, presenting a potential hazard if asbestos fibers are released. Further, respirable fibers may be released during handling and installation. We are not sure that it is necessary that the ban cite these hazard patterns specifically.

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UNITED STATES GOVERNMENT

Memorandum

U.S. CONSUMER PRODUCT
SAFETY COMMISSION
WASHINGTON, D.C. 20207

TO : Francine Shacter, OPM

DATE: October 21, 1977

FROM : Georg Maisel, ESHS

SUBJECT: Federal Register, Vol. 42, No. 146: CPSC Respirable Free-Form Asbestos:
Proposed Rulemaking. July 29, 1977

Attached are draft responses prepared by Mrs. June Thompson and Dr. Steven Bayard to comments received for the subject proposed asbestos banning regulation.

As requested by OPM, each comment has been addressed separately as assigned to either Bayard or Thompson, although there are some overlapping responses (eg. comments regarding asbestos substitutes).

Dr. Nicholson, Mt. Sinai, has reviewed the health-related comments, but has not had time to prepare his written responses since he was in South Africa for a week and, more recently, in Cincinnati. Dr. Nicholson indicated that his written responses will be mailed to us early next week. Bea Pitkin (OGC) is aware of this delay and thinks, in view of the importance of this authority's comments, the late receipt of his responses can be accommodated.

Because of our dearth of typing help, and the close deadline, we are attaching the mag cards for each of these responses.

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BY
JAN 1978

Thompson - ESHS

RESPONSIBILITY FOR RESPONSE TO COMMENTS RECEIVED ON THE
PROPOSED ASBESTOS BAN

Due: October 21, 1977.

cc10-77-2: Thomas Paint:

(2) Statement that lung cancer was not significantly increased among asbestos workers with no history of cigarette smoking.

cc:10-77-3: Bondex:

((1) Statement that Commission data is based on occupational statistics; therefore, it is difficult to support the statement, "for many people the exposure to inhalable asbestos is in the home".

cc10-77-7: Allied:

(5) Raw material used as substitute materials have not been approved - raw materials may be of a fibrous nature.

cc10-77-9: Phila. Quartz:

Suggestion that a change be made in definition of "silica".

cc10-77-14: Johns-Manville:

(4) Comment that too little attention may have been given to the issue of potential hazards of the substitute materials that will replace asbestos.

(6) Use of OSHA F. R. proposal background material - criticism by J-M.

(11) Statement about similarity of fibrous glass to chrysotile.

cc10-77-15: Public Citizen:

(1) Questions and comments re: definitions of asbestos and asbestos fiber.

cc10-77-19: Forshaw:

(1) Feels there is not a hazard associated with emberizing materials.

cc10-77-20: HEW:

Concern about the use of fiberglass as a substitute material in emberizing materials.

cc10-77-22: Vanderbilt Co.:

Questions information contained in a letter from Public Citizen - asbestos definition.

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Thomas Paint Co.

(3) Response to the comment ". . . that the main problem occurs when someone employed . . . as a sander also smokes, and that "lung cancer was not significantly increased among asbestos workers with no history of cigarette smoking."

While data from an epidemiological study of asbestos insulation workers indicated there was an increased risk of death from lung cancer among smokers, it also indicated there was ^{also} an increased risk of death from other asbestos-related diseases, including asbestosis, among non-smokers. Data also suggests that the high risk of mesotheliomas (cancers of the pleura and peritoneum) from asbestos exposure appears to be unrelated to smoking.

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- (1) Hammond and Selikoff: "Relation of Cigarette Smoking to Risk of Death of Asbestos-Associated Disease Among Insulation Workers in the U.S." Biological Effects of Asbestos. WHO, IARC, Lyon, 1973.
- (2) Dept. of Labor: Occupational Safety & Health Administration: Occupational Exposure to Asbestos.: Notice of Proposed Rulemaking. F.R. vol.40, no.197, Oct. 9, 1975.

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Bondex

Statement that it appears that Commission data is based on occupational statistics, it probably would be difficult to document the statement that "for many people the major exposure to inhalable asbestos is in the home" particularly in view of exposure to asbestos which exist in the environment today.

While it is true that much of the Commission data on asbestos-related disease are based on occupational statistics, a risk assessment was made of consumer exposure to respirable asbestos in patching compounds during mixing, sanding and cleanup operations which estimated the increased risk of lung cancer from such exposure in the home. A report of asbestos in consumer spackling / patching compounds indicated that a significant level of respirable free-form asbestos fibers were detected in rooms adjacent to that where the actual patching and sanding operations had occurred/as well as the individual performing the patching job.

In many areas of the Country (nonurban), there appears to be a relatively low background level of asbestos.* Therefore, exposure in the home to asbestos fibers released from consumer products might represent the major exposure.

*Rohl, A., Langer, A. and Selikoff, I.: "Environmental Asbestos Pollution Related to Use of Quarried Serpentine Rock". Science, v.196, p.1319-1322, 17 June 1977.



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cc-10-77-3

Bondex: (cont):

Dr. Paul Kotin, Johns-Manville, stated (in a presentation before the Commission, June 9, 1977) that young children are particularly vulnerable to exposure to carcinogens* and clearly their major exposure to inhalable asbestos would be in the home. The Commission therefore feels it is essential to minimize, to every extent possible, exposure to respirable asbestos in consumer products.

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*F. R. 42, No. 146, P. 38786, 29 July 1977.

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Allied:

Comments The raw material used to replace asbestos has not been approved and since this material is of a fibrous nature, this product might be banned.

In assessing asbestos substitutes, data available to the Commission indicates that a number of substances may be used, many of which are not fibrous. For the fibrous clay minerals which may be used as asbestos substitutes, the Commission is aware that there is a lack of conclusive data on the hazard potential associated with these minerals. However, the Commission has proposed a study to evaluate the risk of inhalation exposure to such small mineral fibers.

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Phila. Quartz

Comment: That the terminology, "silica" should not be used and references should be changed to "silicon" - concern that the erroneous impression may be created that naturally - occurring or synthetic silica is a component of asbestos.

The Commission concurs that the term "silica" should not be used but rather, "silicates" since asbestos is a generic term used to describe a number of naturally - occurring hydrated mineral silicates.

Therefore, on p. 38783, under Part A, Background, should read:

"Asbestos" is a general term for any of several varieties of mineral fibers composed of hydrated silicates, and other elements such as sodium, calcium . . . etc." Also under 1304.3 Definitions (b) "Asbestos" means . . . composed of hydrated silicates and other elements such as . . ."

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J-M (Johns-Manville)

(4) The commentor expresses concern that ". . . too little attention may have been given to the issue of potential hazards of the substitute materials." That will replace asbestos.

The Commission shares the ~~Commentor's~~ concern expressed in the comment about the potential hazards of substitute materials. There is, presently however, insufficient data on which to base an assessment of the potential hazards associated with asbestos substitutes. There are studies now, or are proposed to be undertaken, which will assess the potential inhalation hazards associated with certain man-made mineral fibers, including ceramic fibers (reported to be an asbestos substitute for asbestos emberizing material). In addition, the Commission has under consideration an inhalation study of other small mineral fibers, including fibrous clay minerals used as substitutes in consumer patching compounds.

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Johns-Manville

(6) Use of OSHA F. R. proposal background material: Criticism by J-M.

In a June 3, 1977 Memo - Hehir to Clay - ES presented a literature review and analysis and a risk assessment, as well as the OSHA F. R. background data.

Parts of all 3 documents eventually were utilized in the F. R. proposal.

As for the use of the OSHA F. R. proposal material, Dave Melnick, OGC, indicated that since the OSHA F. R. data had already been subject to public scrutiny, it would be more defensible.

However, we offer the following response to this comment:

(6) Use of OSHA F. R. proposal background material :

One comment has stated that it appears the Commission relied almost exclusively on OSHA's proposed amendment to the Standard for Occupational Exposure to Asbestos for background data on asbestos-related diseases and threshold limit - and has requested that the Commission correct the . . . scientific inaccuracies in the information taken from the OSHA proposal . . ."

The Commission acknowledged, in the July 29 Federal Register Proposal, that much of the asbestos-related disease background data were based on the OSHA October 9, 1975 F. R. proposal to amend the standard for occupational exposure to asbestos. Most of our knowledge about the hazards associated with exposure to asbestos is based upon occupational exposure data and it seemed appropriate

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to cite this body of scientific literature which had already been subject to public scrutiny. The Commission conferred with OSHA during preparation of its proposal and deleted references to studies which OSHA termed to be of "questionable scientific validity,".

The Commission also based its proposal on direct and indirect evidence of asbestos inhalation in non-occupationally exposed individuals, including reports from autopsy findings of asbestos fibers in lung tissue and from epidemiological studies.

As pointed out in the CPSC F. R. proposal of July 29th, there had been only one report of consumer exposure to asbestos in the scientific literature prior to the proposal. Based on the data from that study, a Commission assessment was made of the potential increased risk of respiratory cancer associated with use of consumer patching compounds containing asbestos fibers.

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J-M

(11) Statement about similarity of fibrous glass to chrysotile

Although we are not aware of the ^{source} ~~source~~ of this statement we suggest the following response:

(11) Statement that "fibrous glass and the synthetic fibers are similar in shape and size to chrysotile, for example" is inaccurate.

The Commission agrees with the comment that glass fibers are not similar in size and shape to chrysotile - since, unlike the rod-like glass fibers, chrysotile tends to be curved, or curly fiber^s or fiber bundles, comprised of extremely small-diametered fibrils. However, glass fibers^{are similar - at least in shape - to s} of the amphibole asbestos minerals. The diameter of most fibrous glass is reportedly greater than 3-5 microns and considered too large to be respirable. However, glass fibers are not of uniform dimensions and a small percentage may be of respirable size. Studies are now underway which will assess the pathologic effects of inhaled fibers, including fibrous glass.

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Public Citizen

Comment that CPSC should use the OSHA's ^{ed}propos~~al~~ definition of "asbestos"
(F. R. 40, No. 197, Oct. 9, 1975)

Response: The definition propos^{ed}~~al~~ by OSHA in 1975 has not been finalized and may be subject to change. The proposed definition reflects OSHA's concern for the health aspects based on experimental findings associated with fiber morphology rather than chemical composition. Thus, the aspect ratio proposed in the OSHA definition sets parameters for respirable fibers as well as those which can be counted using current counting methodology and use of phase-contrast microscopy.

The Commission has reviewed much, if not most, of the available data on the characteristics of asbestiform mineral fibers and their non-asbestos counterparts. From these data, it would appear that ^{use of}~~the~~ proposed OSHA definition could also include nonfibrous cleavage fragments and other particulate substances, as well as other ~~non-asbestos~~ mineral fibers within the proposed dimension range that are not asbestos fibers.

The recent workshop on asbestos definitional and identification problems clearly indicated the lack of agreement among health scientists, mineralogists, industry and regulatory agencies as to what constitutes an "asbestos fiber."

While the Commission is interested in arriving at an unambiguous uniform definition of asbestos we feel there is not yet enough evidence to base a definition of "asbestos" on fiber morphology.

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cc-10-77-15

Therefore, the Commission believes the proposed definition should remain "as is" for the present time. As circumstances warrant, the definition could be amended at a later date.

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ce-10-77-19

Forshaw

Comment: Feels there is not a hazard associated with asbestos emberizing materials suggests CPSC should investigate vinyl asbestos floor tile.

The Commentor states that the asbestos fibers used in artificial embers are relatively large, stringy pieces of asbestos and if some of the asbestos fibers did become airborne, they would automatically be pulled up the fireplace flue . . .

While it is true that the large asbestos fiber bundles pose little risk of inhalation, the fiber bundles release individual fibers which in turn, can break longitudinally into microscopic fibrils. Fibers could become airborne under normal "use," installation, and handling conditions, as well as from room drafts. Once the fibers become airborne, they can remain suspended over long periods of time, eventually settling out on items of furniture, draperies, etc., only to become airborne and available for respiration with use of these items. As long as the free-form asbestos emberizing material remains loose on the fireplace floor, there is a possibility that it could become airborne and ^{thus} ~~they~~ respired.

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NEW

Comment that the use of fiberglass as an emberizing material may itself represent a health hazard.

The Commission has been advised by one of the leading fiberglass manufactureres that it is not aware of the use of fiberglass for emberizing material and, in fact, indicates that galss fiber properties would make it unsuitable for this purpose.

Another material which has been brought to the Commission's attention as a substitute emberzing material is a ceramic fiber.

data

The Commssion has reviewed the fibrous glass/referenced by the Commentor and will continue to monitor ongoing studies which are, or have been proposed, to evaluate the inhalation hazard potential of glass, ceramic, and other man-made mineral fibers. The Commission is also evaluating its needs for a small fiber inhalation study which would, among other fibers, assess other asbestos substitutes, including the fibrous clay minerals.

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cc-10-17-22

Vanderbilt

The Comments are a critique of Public Citizens' letter concerning the OSHA definition of "asbestos"

Response:

(1) Whether the proposed OSHA definition is "scientifically imprecise" remains to be resolved. However, after a review of the data on mineral fiber characteristics, it would not be considered a precise "minerological" definition.

(2) The NBS report of an analysis of 80 industrial talcs indicated that, using the present OSHA official regulatory method for asbestos fiber analysis, only a fiber (as defined by the current regulation) count was possible. It was not possible, by the current methodology, to state whether the "particles" were asbestos fibers.

This points out one of the problems^{of} ₁emplying fiber morphology in the definition of asbestos fiber.

DRAFT

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A.

Re: cc-10-77-17 - Union Carbide

Testimony from Dr. Harrison B. Rhodes of Union Carbide Corporation presented to the Commission 8/15/77, raised certain questions.

1. On page 6 Dr. Rhodes questioned a 6/13/77 memorandum to Don Clay from Dr. Steven Bayard on the risk assessment from the use of asbestos containing wall taping compounds. Specifically he questioned whether there is any basis for the assumption of the effect of dose being cumulative. I believe this assumption of cumulative dose response to be valid in the case of asbestos exposure since, unlike most chemicals which the body metabolize, asbestos fibers appear to remain in the body and accumulate. (ref. Thompson, J.G., Ann. of N.Y. Acad. Sci. 132: 196 - 214. 1965)

2. Also on page 6 of his testimony, Dr. Rhodes stated, that the (Enterline) model used by the Commission was "heavily biased toward predicting a high risk." The opposite is true. It is heavily biased toward predicting a low risk at consumer exposure levels. For example, the projected risk based on exposure for 1 year with the Enterline model is a lifetime excess of 10 respiratory cancer deaths per million. With a single hit (or exponential) model the projected excess rate is over 2,200/million. Based on 5 years exposure the Enterline and single hit models project 990 and 11,500 lifetime excess respiratory cancer deaths per million. While these figures probably represent the upper and lower range of risk, even this lowest estimate of 10/million is considered too high.

Union Carbide, Inc. has also presented a study it conducted of asbestos dust fiber levels to which a consumer might be exposed during wall taping operations. This study showed levels which were of the order of one-fiftieth to hundredths of the exposure levels reported by Rohl et al (1975) and used by the Commission in its risk assessment. Based on their highest time weighted average of 0.3f/cc, the Enterline model predicts less than 1 death per million for the projected five years exposure, while the single hit model predicts 226 lifetime excess cancer respiratory deaths per million exposed.

A disturbing feature of the study presented by Union-Carbide was the above mentioned 50-200 fold difference in the exposure levels. One reason for this large difference appears to be the amount of asbestos originally in the joint compounds in each study. While Rohl has published a range of 5-12% asbestos (dry weight) for his study, the study submitted by Union-Carbide does not report the asbestos content of the joint compound used. However, the author of the report, Dr. H.B. Rhodes, did state in testimony before the Commission on 8/15/77 (page 5 of handout) that the asbestos content for part of the compound used in the study was 2.6%. This difference in original content explains at least part of the difference in observed counts. Another possible explanation is

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given by Dr. Rhodes in a previously published article (Drywall, 1975) in which he compared the results of Rohl vs. a study by "a major supplier of asbestos and other products to tape joint compound manufacturers". Dr. Rhodes states, "In contrast to the New York City (Rohl) results, the fiber levels found were low and well within (OSHA) regulations. A possible reason for the difference can be found in the application and sanding conditions, i.e. hand tools applied and heavily sanded in New York City compared with Ames tools and light sanding in Florida."

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B.

Wilson - Georgia Pacific

A comment was received from Mr. Glen E. Wilson, Vice President of Georgia-Pacific Corporation discussing a pre-mix compound which his company manufactures, which "results in a minimum exposure which, based on (CPSC) risk assessment analysis, presents an insignificant health hazard." The Commission did not analyze each individual joint compound, but did base exposure on, among other procedures, the sanding and clean-up operations. These operations should provide similar exposure regardless of whether the compound was initially dry or pre-mixed. Thus, the risk assessment values would be similar.

The question of a four-day, eight-hour exposure being too high an estimate was also raised. The Commission concedes this "to be a high, yet reasonably foreseeable, exposure" (FR Vol. 42, No. 146 pg. 38787. 7/29/77.)

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C.

cc 10-77-2

A comment was received from C.B. Thomas, President, Thomas Paint Manufacturing Company discussing the relative hazards of an asbestos containing patching compound vs. cigarettes. While the Commission will not disagree that cigarettes may be a comparatively greater hazard, cigarettes are not a "consumer product" within the framework of the Commission's jurisdiction.

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Johns-Manville

D. cc 10-77-14 + 7/13/77 J-M Letter
+ 6/14/77 J-M Letter

A letter was received from Richard P. Carter, Manager, Government Affairs of the Johns-Manville Corporation mentioning two previous letters to the Commission from other Johns-Manville employees, Dr. Gerald R. Chase, biostatistician 7/13/77, and Dr. Paul Kotin, Senior Vice President, 6/14/77. These comments are answered below:

1. Dr. Kotin discusses (page 6) the use of high exposure human data in projecting to low exposure human data and cites my (Steven Bayard) statement 6/13/77 that "this model is to be used for low exposure estimates. It does not fit the data for high or long term exposure data". This is the explanation for that statement. We have extrapolated from only one human data point, which while the lowest short term exposure data available, is still high in relation to projected consumer exposure levels. For extrapolation, I wanted to use the lowest short term human exposure data available. Longer term exposure data, while available, would complicate the analysis by introducing the competing risks of asbestosis and other chronic lung conditions. I felt little valuable information would be gained in including these data since they would not reflect consumer exposure.

In fact I believe that these competing risks indicate that two different models should be used—one for low exposure and one for high exposure. The Enterline model projects what I believe to be a minimum response for low exposure data, but a response which rises quite rapidly at high exposures. Thus, use of the Enterline model at high exposures would give estimates which are just too high. On the other hand, a single hit or linear model did fit the long term high exposure data better than the Enterline model. But this single hit model estimated 1100 excess deaths per million at the same low exposure consumer levels that the Enterline model estimated 10 per million. Thus, this range of between 10 and 1100 excess deaths per million based on four exposures in a lifetime (between the ages of 20 and 35) represented the range which might be expected.

It should be pointed out here that these figures are only estimates, as is the exposure level of 30 f/cc at the New Jersey factory, from which the data came. However, the fact is that this is human, not animal, data and that errors of the magnitude of five, ten, or even one hundred fold would still, in our opinion, render these data more meaningful and useful for extrapolating purposes, than the best animal studies.

2. Dr. Chase discusses an assumption in CPSC's asbestos risk assessment memorandum (6/3/77) which states that intermittent exposure over several years has the same effect as if the same exposure had taken place in a single year. I believe this assumption of cumulative

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and might thus hide the long term respiratory
concern of risks to which consumers would
be at risk

dose response to be valid in the case of asbestos exposure since, unlike most chemicals, which the body metabolizes, asbestos fibers appear to remain in the body and accumulate. (ref. Thompson, J.G., Ann. of N.Y. Acad. Sci. 132:196-214. 1965)

3. Mr. Carter questions (page 5 8/19/77) "whether there is any foundation for the assumption of consumer use of patching compounds for six-hour a day, four times a year." He suggested a "more accurate assumption would likely be fewer hours of exposure once or twice in a lifetime." Since the estimate of risk of 10 per million to 1100 per million excess deaths was based on four uses in a lifetime, the Commission feels that there would be little argument that a substantial number of people are actually exposed to that degree.

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