

... the newspaper article stated the ban was in effect but this indicates it is not.

Gypsum Association

Eastern Office
1120 Connecticut Avenue, N.W.
Washington, D.C. 20036

(202) 293-2646
Suite 940

Mr. W. C. Lehnert
Georgia-Pacific Corp.

RECEIVED

November 21, 1977

Misters Gafford, Houser, Lehnert, Maddox and Marshall:

Attached are a number of pages taken from a Consumer Product Safety Commission document which describe the study of "patching plaster" and the Commission's proposed ban. Action by the Commission will be delayed until after December 12, 1977. There is the same question as to whether the ban will be issued at that time as there appears to be a good deal of confusion within the Commission as to what they are going to accomplish with this proposed ban.

Herb Carlsen has the entire A.T. Kearney report summary, so if more details are required, please contact Herb.

Very truly yours,

D. E. Brackett

D.E. Brackett
Eastern Manager

DEB/sw

PLAINTIFF'S EXHIBIT

GP-1817

SGP 0009386



INTRODUCTION

In response to petitions filed in 1976 and 1977, the Consumer Product Safety Commission (CPSC) proposed to ban the manufacture and sale of consumer patching compounds and artificial fireplace emberizing materials containing respirable free asbestos. This proposal was published in the Federal Register on July 29, 1977.

The purpose of this report is to provide information to the Commission regarding the probable economic impacts of the proposed ban and of alternatives available to the Commission on certain issues. Study was initiated by HI/Economics to examine the impacts of a potential ban in mid-1976. In the course of this study, a preliminary assessment of the ban on patching compounds was provided by A.T. Kearney, Inc. Sections III and V of that report are attached as Appendices to this document.

This report is divided into two parts: the first deals with the proposed ban on patching compounds, the second with the proposed ban on artificial emberizing materials.

SUMMARY OF MAJOR ECONOMIC IMPACTS

Patching Compounds

If the ban is promulgated so as to cover only intentional addition of asbestos or asbestos-containing tremolitic (i.e., fibrous) talc or other raw materials to the product, thereby permitting inadvertent asbestos contamination to be present, patching compound production by many firms will be continued. Most products now on the market would have to be reformulated to comply with the ban and significant disruption of inventoried products in distribution would occur; the production and sale of some compounds would be continued without reformulation and without disruption of distribution channel inventories. Other principal alternatives such as setting a minimal contamination level (e.g., one fiber per thousand particles) or prohibiting the presence of asbestos altogether (in the rule as proposed) would have substantially greater adverse effects.

Many manufacturers who do not have extensive technical reformulation capabilities may discontinue patching compound production temporarily or permanently. Some manufacturers have claimed that they may go out of business if the ban is promulgated. There may be particularly serious effects on the cost structures and competitive posture of small businesses.

Costs associated with reformulation, raw materials procurement, production processes, inventory obsolescence and repurchase, and product testing may increase the average cost of producing patching compounds. The average prices to consumers and professional contractors may also rise. The total price effect of the ban may be about \$10-60 million, depending on the extent of reformulation necessary and the ability of producers to pass on cost increases.

In professional uses of patching compounds, the aggregate labor cost of drywall finishing may increase for the first year by as much as \$50-125 million. The effective date chosen and the way in which professional use of the product is treated will have a significant impact on the magnitude of these costs and on the degree of disruption in the construction industry. In the short run, near maximum adverse effects would accompany the proposed 30-day effective date and prohibition of the use of asbestos-containing compounds by professionals.

The utility derived from the product by consumers and drywall contractors may be adversely affected; many substitute formulations are expected to have poorer performance qualities than those containing asbestos. This is likely to be noticed more by professional applicators; most consumers, who are typically infrequent and unskilled users of the product, will probably perceive no significant difference in performance.

To the extent that contractors and their employees and consumers are no longer exposed to free asbestos in patching compounds, the ban may have beneficial effects on the public health. The extent of these benefits is not known, but is expected to be fairly small.

Artificial Emberizing Material

The cost to manufacturers of producing some emberizing material mixtures may increase as a result of the use of substitutes for asbestos. This may lead to slight increases in the average price of separately-sold emberizing kits. This price effect is expected to total less than \$25,000 in the year following the promulgation of the ban. No effect on the overall price level of gas logs is expected, whether they are frosted, unfrosted, or packaged with emberizing kits.

Some manufacturers, distributors, and retailers have incurred and will for a period of time continue to incur costs associated with the voluntary recall of potentially banned products. These costs may total up to \$20,000 for some firms.

PART I

PATCHING COMPOUNDS

Patching compounds are mixtures of casein, clays, marble, mica, and other substances which are used to cover, seal, or mask cracks, joints, and holes in interior gypsum drywall structures, including ceilings. These may be packaged in "dry" form to be mixed with water, or in premixed ("wet") form. The Commission's proposed definition in the Federal Register notice of July 29, 1977, which discusses the hazard associated with sanding, is interpreted to cover such products as spackling compounds (including the industry term "patching plaster") and tape joint compounds (commonly referred to as "joint cement" or "tape joint mud").

Many of these products now use or have used asbestos as an ingredient in their formulations. Under the ban, addition of asbestos to the product would become a prohibited act under Section 19 of the Consumer Product Safety Act. It appears that the use of constituent materials (e.g., talcs) known to contain significant levels of asbestos contamination, would also be prohibited. Further, the ban may prohibit use of these products if they are inadvertently contaminated with asbestos above a certain minimum level. Significant amounts of naturally occurring tremolite asbestos and anthophyllite asbestos may be present in talc or other substances used in the manufacture of some patching compounds.

Policy Issues

This section is presented in the context of three basic issues on which the Commission has available to it policy alternatives, choices among which will have a direct bearing on the economic impact of the ban. These three sets of alternatives relate to the scope and coverage of the ban, levels of asbestos contamination in the product addressed by the ban, and the effective date of the ban.

The criterion of one asbestos fiber per thousand particles is not based on any conclusions as to the lowest level of asbestos contamination the patching compound industry could reasonably attain. It is based on the Commission's best information on the feasibility, from a testing standpoint, of using a fiber-counting procedure as a compliance screening tool. The overall effect of the inclusion of the procedure in the ban may be to ban or bring into question most, if not all, existing patching compounds, and to cause confusion in the producing industry in the process.

Virtually all patching compounds contain fibrous material, be it asbestos or some other substance. Most patching compound producers have never tested their products for asbestos contamination, although for quality control purposes, they do measure their own intentional addition of asbestos or asbestos-containing (i.e., labeled) talc. Intentionally-added asbestos is generally quantified in terms of percent content by weight; this method is not directly applicable to the detection and measurement of end-product contamination. It has been suggested that the lowest feasible level of contamination that manufacturers could achieve is on the order of 0.5 to 1.0 percent by weight; this would probably still allow detection of more than one true asbestos fiber per thousand particles in a sample. Even those firms with products that are labeled "asbestos-free" may have to change their formulations to reduce and compensate for unintentionally-added asbestos.* Some manufacturers are probably unaware of the possibility of truly inadvertent (i.e., raw materials) asbestos contamination.

*The terms "unintentionally-added" and "contamination" imply a certain ignorance on the part of manufacturers concerning what goes into their products. This is not always the case; as mentioned previously, some talcs may contain fairly high levels of asbestos, and OSHA requires all asbestos-containing talc mined and sold to patching compound producers (or anyone else) to be labeled. Talc suppliers are thus certifying to manufacturers that they know certain kinds of talc contain asbestos. Truly inadvertent contamination of talcs or other constituent substances which are not supposed to contain fibrous material may also occur. This is likely to appear, however, at substantially lower levels than are present in compounds to which asbestos is currently added intentionally.

There exists considerable uncertainty in the industry over the accuracy and reliability of the screening procedure: some industry experts believe, for example, that fibrous materials other than asbestos would be counted as asbestos under the procedure. To the extent that this is shown to be the case from actual sampling, some compounds which may contain less than one true asbestos fiber per thousand particles may unnecessarily be banned, or manufacturers may be obliged to perform the more sophisticated forms of analysis to determine whether their products should or should not be banned. Uncertainty also exists concerning the definitions of fibers, asbestos fibers, samples, and other technical aspects of the testing procedures which manufacturers might use. This uncertainty may lead to measurement mistakes, resulting in the inadvertent marketing of a banned product.

This would involve additional testing-related costs to manufacturers or raw materials suppliers. Few firms in these industries own x-ray diffraction equipment or electron microscopes (which may cost over \$50,000 and \$100,000, respectively, and require one or more trained employees to operate); the only course of action for most firms would be independent laboratory certification. While there are hundreds of laboratories across the country with optical microscopy capabilities, there appear to be only a few offering x-ray diffraction and electron microscopy services.

The magnitude of these testing costs may also be significant. Manufacturers may submit an unknown, but potentially large, number of samples for testing at an estimated \$50 per sample for phase-contrast optical scanning and up to \$300 per sample for the full complement of analytical procedures. Manufacturers would set up their own sampling plans according to good business practice, their perceived need for safety from prosecution, etc. Some compounds or production lots may be destroyed or diverted to other uses as a result; some small manufacturers have stated that they would drop patching compounds from their product lines if significant formulation testing were required.

Some compounds, such as those containing no talc, may be found after testing to be below the one-fiber-per-thousand-particles level. Some firms may still decide to stop production rather than incur testing costs, or because they perceive that their products would be banned. Thus, the very existence of the screening procedure may cause significant disruptions to the producing industry to the extent that business decisions involving costs or the financial and market status of firms may be made on the basis of perceptions about the Commission's enforcement policy.

The Commission could ban intentionally-added asbestos, defining intentional addition to encompass the known asbestos content of fibrous talc. This would eliminate the sources of significant asbestos content in patching compounds while permitting some low level of truly inadvertent contamination, which may be greater or less than one fiber per thousand particles. The remaining discussion of the economic effects of the ban is based primarily on this alternative.

Effective Date

The Commission has proposed a 30-day effective date for the ban on patching compounds. Several comments were received requesting more time, typically 180 days.

The costs associated with reformulation tend to be inversely related to time. As mentioned above, the major portions of virtually all patching compounds formulations are quite similar; small changes in ingredient combinations and substitutions, however, are critical to arriving at a satisfactory result. Though the basic research on asbestos-free formulations has been performed by the large producers, many companies claim that considerable amount of time is required for research and development and testing new formulations. This is especially true for some of the smaller firms whose compounds are sold only in one or two regions of the country in which specific climatic requirements are a prime formulation consideration. The range of estimated reformulation time requirements is 6-18 months. Some manufacturers who may not be able to reformulate their products by the effective date may have to stop production until products are reformulated satisfactorily.

Some disruption of this sort may occur even if the effective date of the ban is set at 180 days. This disruption would, however, be considerably more widespread, particularly among small manufacturers, under a 30-day effective date. A short effective date may also aggravate any potential asbestos-substitute supply shortage problems for small manufacturers.

The second major effect of the ban which would vary considerably with the effective date is the effect on manufacturers', wholesalers', and retailers' inventories. As stated below, the proposed 30-day effective date may have substantial effects on certain firms' products, depending upon the treatment of the scope and coverage and contamination issues. Generally, a 30-day effective date will have greater adverse effects than a 180-day effective date. A 180-day effective date alone would allow for the clearance of most inventories, even if all patching compounds were banned. The adverse effects of a 30-day effective date would be substantially mitigated by allowing professional use of asbestos-containing patching compounds since the major market for the product would not be disrupted by the ban. The impact on inventories of any effective date will be strongly affected by decisions concerning professional uses of patching compounds and contamination levels.

Market/Industry Characteristics

A summary of the characteristics of the patching compound-producing industry and the markets for the product is outlined below:*

The value of shipments of patching compounds in 1976 was between \$90 million and \$150 million. Total 1977 shipments may be slightly higher in value. Total annual sales to end-users, including retail sales to consumers, are estimated to be roughly \$200-400 million in 1976 and in 1977.

*For a more comprehensive profile, see Section III of the A.T. Kearney report entitled, "Economic Impact Assessment of the Proposed Ban of Asbestos-Containing 'Patching compounds'," attached as Appendix I.

and lend desirable properties to the product. Since the three largest producers in the industry (Georgia-Pacific, National Gypsum, and United States Gypsum) already appear to have eliminated asbestos from their formulations, the costs associated with reformulation necessitated by the ban will be incurred primarily by the other producers. Some of the largest of the remaining firms now have asbestos-free formulations on the market. Most of the other firms in the industry, however, are small businesses which do not have asbestos-free compounds, and which lack the technical research capability that the industry leaders have used to develop asbestos-free formulations.

Manufacturers will probably not need new physical plant or equipment to produce asbestos-free patching compounds. The costs of reformulation are thus primarily those of technical research and development, field testing, and pilot production. The largest producer reportedly spent over \$1 million over a period of a few years to develop its asbestos-free formula. Other companies with non-asbestos formulations, or in the process of developing them, report reformulation expenditures of \$10,000-100,000. Some of the large manufacturers have stated that they may be able to license their asbestos-free formulations (or parts of them) to smaller firms that wish to avoid or cannot afford the expense of reformulation, if those non-asbestos formulations do not contain sufficient contamination to be banned. The projected cost of such licensing agreements to the licensees has not yet been made available to us.

All manufacturers may have to assess the amount of asbestos contamination in their products, and incur some testing costs, either by their own technical staffs or by outside testing laboratories. Alternatively, talc suppliers may be asked to certify that their shipments contain less than a certain percentage by weight of asbestos, as determined by the amount of talc in the final product. Testing by manufacturers may be limited if careful raw materials selections are made. Talc-containing formulations may be altered, or discontinued in some cases, to the extent that manufacturers perceive that existing formulations would be banned.

It is likely that, since average retail turnover rates are relatively slow (stocks turn over in approximately two to six months for most stores), some banned products may remain in inventory whether the effective date is 30 days or 180 days. Producers and distributors may still be able to sell their inventories to industrial users, with some delay or some reduction in price to industrial buyers to the extent that short-run finished goods supplies exceed short-run demand. In general, the shorter the effective date, the greater the adverse effect on retail inventories will be.

Effects on Competition

If some of the producers of patching compounds go out of business or cease production temporarily or permanently as a result of the ban, the producing industry will become more concentrated. The overall and regional market shares of some producers may increase. This increase in concentration may be slight nationwide; however, significant increases in regional concentration may occur, since the firms likely to be put out of production are typically specialized, serving only certain regions, with few regional competitors.

The promulgation of the ban may also affect, for some time after the effective date, the competitive posture of some of the smaller firms which remain in the industry if their newly-reformulated compounds are relatively less desirable from a cost or performance standpoint and if their sales are adversely affected as a result. A competitive advantage would be afforded those firms with the greatest reformulation expertise. The current competitive advantage held by producers of asbestos-containing compounds will tend to disappear or be reversed until such time as all formulators can develop satisfactory products that are not banned.

Other Effects

Some industry sources have indicated that substitute raw materials, particularly attapulgate clay, may be in short supply in 1977 and 1978, and that current supplies may be insufficient to meet the increased demand generated by patching compound manufacturers formulating with attapulgate for the first time. Thus, some of these firms may lose sales and profits for a period of time until supplies are sufficient to continue production.

If the major manufacturers continue production of current reformulations and can raise their prices as a result of the ban (see sections on the Construction Industry and Consumers, below), those firms or their patching compound-producing divisions may enjoy slightly higher profits, at least until other firms' products are perceived by purchasers to be equivalent or better in terms of price and performance.

Impacts of the Proposed Ban on the Construction Industry

Cost Effects

The drywall finishing industry is generally sensitive to two major factors when purchasing and using patching compounds: price and performance. Both of these factors are likely to be adversely affected by the reformulation or discontinuation of compounds in order to comply with the ban.

It appears that, because of competitive pressure from asbestos-containing formulations in recent years, producers of asbestos-free formulations have not yet passed on to purchasers their increased costs of production and research. If the increased costs of making asbestos-free formulations can be passed on as a result of the ban by virtue of the fact that all producers will have to market asbestos-free formulations

refinements are made in asbestos-free formulations; however, the widespread use of non-asbestos-containing compounds can be expected to result in less efficient drywall finishing and use of the product in terms of more material needed, more sanding required, and more time spent in actually applying the compounds and waiting for them to dry. Some contractors may be prompted to add their own asbestos to the product, if the improvement in the products' performance is perceived to be substantial. This practice would present a hazard which may be greater than the one the Commission intends to reduce.

There may also be an adverse effect on aesthetics, since premature shrinkage⁶ and cracking can occur. This reported inferiority of asbestos-free products may also be expected to diminish in subsequent years as more mature reformulations are offered which cover joints, cracks, and nailheads more satisfactorily. Until such time as drywall finishers become more accustomed to using asbestos-free products, some jobs may have to be done over.

Health Benefits to Drywall Contractors

Though the proposed ban is intended to protect consumers, the main health benefit will probably accrue to drywall contractors, if the use of asbestos-containing compounds by this industry is prohibited. Drywall mechanics are the heaviest (i.e., almost daily) users of the product. Some benefits, in the form of longer life and reduced illness, may accrue to these workers. The possible continued practice of adding raw asbestos to patching compounds in the field may offset this benefit somewhat.

Other Effects

To the extent that contractors' inventories are banned and to the extent that the availability of new asbestos-free compounds is delayed on a local basis, housing construction and renovation projects may be delayed up to several months, resulting in an inefficient allocation of construction industry resources.

Impacts of the Proposed Ban on Small Business

As noted above, most of the manufacturers and professional users of patching compounds are small businesses. Small manufacturers may be disproportionately affected by the ban. They are the firms without extensive reformulation capabilities. Their products, which may often be sold in specialized geographical regions under specialized climatic conditions, are most likely to be affected adversely by the use of substitute for asbestos when reformulation is achieved. Small producers may not have comparable access to supplies of substitute raw materials, particularly attapulgite, which may be in short supply in 1977 and 1978. Small producers may also be in a less favorable position than larger firms to pass on cost increases to contractors because of long-term contractual price agreements. These factors may afford a competitive advantage to the larger firms in the markets for the product affected by the ban.

Since virtually all drywall finishing contractors are small, the impacts of the ban on this industry would be relatively uniform. The ban may have adverse effects on contractors, including possible temporary reductions in employment, if drywall finishing cannot be completed due to regional materials shortages; this could lead to overall construction delays.

Impacts on Consumers

Price Effects

The average price of patching compounds may rise as a result of the ban. We estimate that price increases will occur to reflect, at the minimum, the 5-15 percent production cost increases. Thus, for example, a 1-gallon container of wet material, which typically retails at about \$4.00, may increase in price by about \$.20-.60; a 5-gallon container -- that most commonly used by drywall contractors -- which

typically sells in retail stores for \$7.00 - 10.00, may increase in price by about \$.35-1.50. Similarly, a 5-pound container of dry material, which typically retails at about \$2.50, may increase in price by about \$.12-.38.

Some prices of consumer-market patching compounds may increase disproportionately to compensate for cost increases which cannot be passed on to the primary market of professional contractor because of contractual arrangements, etc. Prices of other paint and drywall-related products (such as textured coatings, wallboard, plaster, etc.) may also rise slightly to cover cost increases or other losses associated with patching compounds.

If the total increase in patching compound production costs can be passed on to end-purchasers 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 as producers' development costs are amortized, as substitute raw materials and asbestos-free formulation technology become more widely available, and as price competition is increased because of market pressure and economics associated with full-scale production.

To the extent that new construction and renovation labor costs are increased, there may be effects on the prices of new housing and renovation projects. As noted previously, the total annual direct labor cost associated with drywall finishing is around \$1 billion, and the promulgation of the ban may lead to a \$50-125 million increase in this cost. This would amount to an average of about \$28-70 per new residential housing start in 1978, assuming a housing start rate of about 1.8 million in that year; for a 10' x 15' room, the increase may be about \$5 to \$10. The burden of the increased cost is expected to be spread across owners of existing homes who may engage in some renovation, and on purchaser of newly-renovated or newly-constructed homes, though indirect long-term price effects may accrue to users of affected facilities such as schools, stores, and other public buildings.

(c) Product
Packaging

"Patching compounds" are sold in a wide variety of consumer and commercial packages. Consumer packaging is typically one gallon or less of premix (wet) and five pounds or less of dry mix. Often consumer packages include tape and an application knife. Commercial packaging for premix is typically four gallon or fifty pound boxes (in a plastic bag) or five gallon or 62.5 pound pails. Commercial packaging for dry mix is typically 25 pound bags.

(d) Related
Products

"Patching compounds" are inherently part of the drywall construction process. Tape joint cement, tape, and corner beads make up the drywall finishing system. The drywall itself is gypsum wallboard. About 13 billion square feet of gypsum wallboard were produced in 1976(2) with a manufacturer value of shipments of approximately \$850 million.(3) Hanging and finishing labor for this amount of drywall would be on the order of \$2.5 billion.(4)

SIZE OF
MARKET

There are no published series of data recording prices and total sales volumes for "patching compounds." Estimates have been developed based on industry contacts.

(a) Pricing

Typical prices for premix at the manufacturer level are about \$1.00/gallon. For dry mix, typical prices are about \$.12/pound. Consumers prices are generally much higher ranging from about \$1.00 to \$4.00 for half pint to 1 gallon cans.

(b) Total
Market

The annual value of "patching compound" shipments were in the range of \$90 to \$150 million for 1976 based on different sources and methods of estimation. Kearney's best estimate is \$120 million.

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- (2) U. S. Bureau of Mines
 - (3) Composite of Industry Estimates
 - (4) R. S. Means' Estimate

(c) Market by
User Category

Kearney's estimates of sales by user category are shown in the table below:

Table III - 2

Estimated Percentage of Annual Sales
of "Patching Compounds" By User Category

<u>User Category</u>	<u>Estimated Percentage of Sales</u>	<u>Total 1976 Constructio Expenditure</u>
Consumer - Dwellings	5% - 8%]	28%*
Professional - Remodeling Dwellings	18% - 22%]	
New Dwelling	42% - 55%	41%
Commercial/Institutional	15% - 20%	18%
Industrial	5% - 10%	13%
Total		100%

* Total residential remodeling expenditures.

Source: A. T. Kearney, Inc.
F.W. Dodge Reports

By weight, the consumer represents a smaller percentage of the total of the market than by dollar sales. This is due to the consumer pattern of purchasing smaller packages at a higher unit price. Kearney estimates that consumers purchase from 3% to 6% of total production by weight.

STRUCTURE OF
THE MARKET

The flow of "patching compounds" from suppliers of raw materials to end users is graphically illustrated in Exhibit III-1. These stages include raw materials suppliers, patching compound manufacturers, distributors, retailers, and professional and consumer applicators. The role of each of these groups in the marketplace is briefly discussed on the following pages.

(a) Raw Materials
Suppliers

Raw materials used in "patching compounds" includes limestone, mica, talc, asbestos, clays, and other minor ingredients. The raw materials are generally supplied by large companies. The percentage of their production sold to the "patching compound" manufacturers is very small compared to overall production. For instance, the Asbestos Information Association (AIA) reported to the Commission that approximately 10,000 tons of asbestos were used annually in "patching compounds." This compares to an annual U. S. consumption of 750,000 tons of asbestos. Since the AIA report, Calidria reported to the Commission on August 15, 1977 that asbestos use was significantly reduced due to the "patching compound" industry's increased use of asbestos substitutes.

(b) "Patching Compound"
Manufacturers

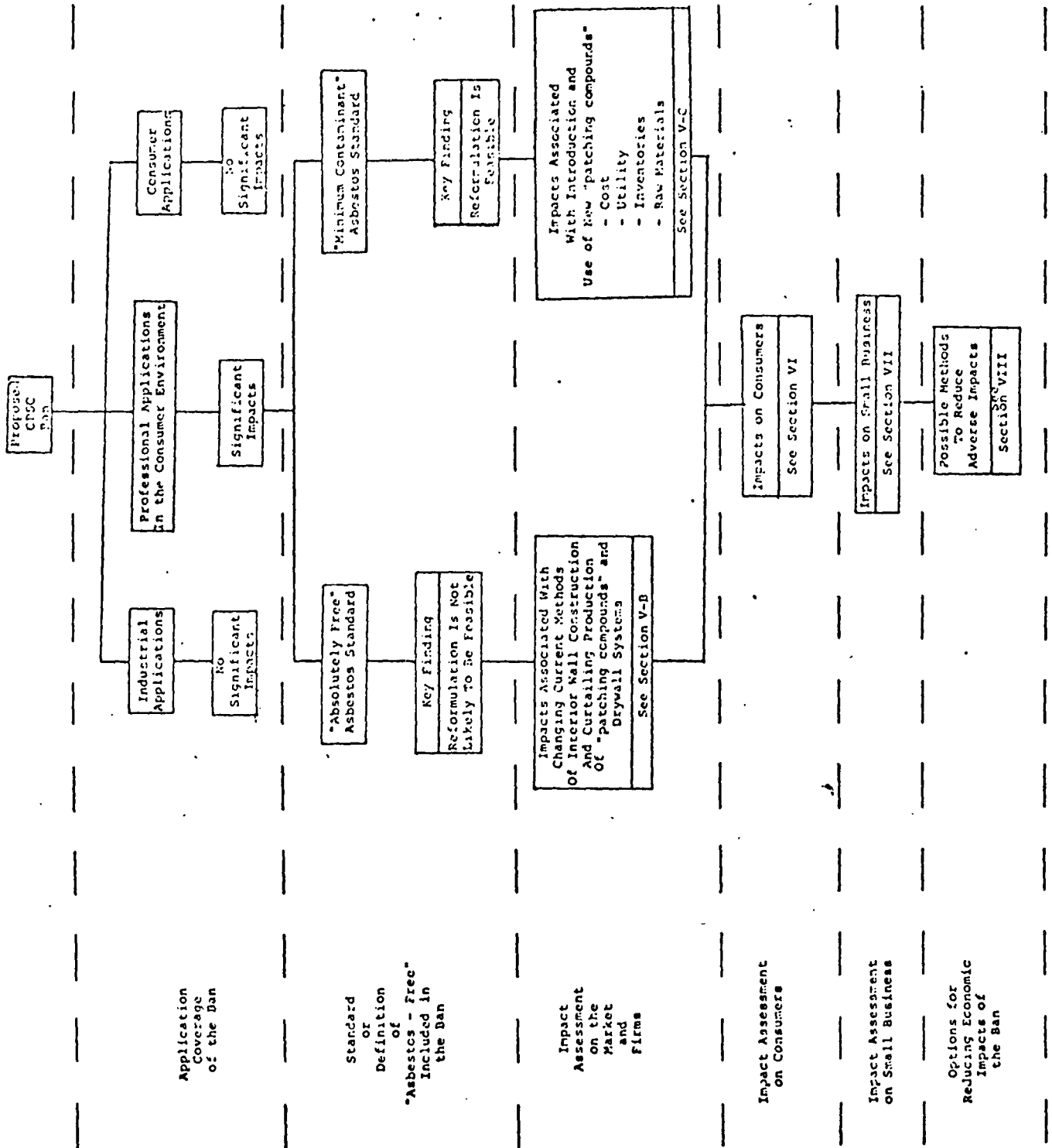
"Patching compound" manufacturers (see Appendix G) may be described as belonging to one of three groups.

1. Independent Operations. Thirty-eight firms or divisions were identified whose primary products include "patching compound". Many of these are "small businesses" who typically employ ten to twenty workers, have limited financial resources, and are not well prepared to conduct extensive product research and development. These firms are typically single-plant operations and usually supply a limited number of contractors. Their markets are characteristically regional due to shipping cost and limited sales force. They typically have annual sales of \$1 to 2 million.

2. Drywall Manufacturers. Six firms, (Celotex, Georgia-Pacific, Grand Rapids, Kaiser, National Gypsum and U.S. Gypsum) were identified who manufactured both wall board and "patching compound". These firms are major corporations. Three of these firms (Georgia Pacific, National Gypsum, and U.S. Gypsum) are estimated to supply approximately half of the total "patching compound" market. These three firms claim to have ceased manufacturing patching compounds with intentional asbestos additions.

3. Paint Manufacturers. Four firms were identified who manufacture paint as well as "patching compounds". These companies are not generally considered "small businesses". It is estimated that "patching compound" is not a significant element of their product line.

ECONOMIC IMPACT ANALYTICAL STRUCTURE



economic impacts. The market conditions in this application segment dominate the "patching compound" market due to its size and its professional specialization which results in sensitivity to product characteristics.

DEFINITION OF "ASBESTOS-FREE"

"Asbestos-free" can be defined as eliminating intentional additions of asbestos from the product with a practically attainable "minimum contamination" permitted or it can be more strictly defined to require an "absolutely free" from asbestos "patching compound" formulation.

A "minimum contaminant" formulation is feasible and workable. "Patching compounds" are currently on the market which meet this requirement although the extent of asbestos contamination in these products is not known. The economic impacts associated with the interpretation of the ban are those associated with changing over and utilizing the asbestos-free formulations.

An "absolutely free" asbestos requirement for "patching compounds" is likely to be technically and/or economically infeasible. Asbestos contamination in raw material is common according to manufacturers. Methods of identification and measurement of small amounts of asbestos contamination are not well established. In order to assess the economic impact of this interpretation of the ban, it appears reasonable to consider its effect as eliminating "patching compounds" from the marketplace. In the long run, completely new, currently unidentified drywall finishing "patching compounds" might be developed, or some other finishing system might be invented and accepted. Elimination of "patching compounds" used to finish drywall would result in serious economic disruption in the construction and building products markets.

IMPACTS ON CONSUMERS

The impacts on consumers (aside from the beneficial health effects of the elimination of asbestos) will depend primarily on the impact on professionals since the consumer, economically, is primarily a purchaser of professionally applied product rather than a personal user.

It was generally reported that an expedited effort to reformulate would increase the investment required and could expose smaller companies to serious financial losses if unsatisfactory formulations were rushed to the market. Alternatively smaller companies expressed concern that if they ceased production until a satisfactory formula were developed, they would lay-off employees and possibly lose customers to larger competitors.

Three broad conclusions follow from this analysis:

1. The cost of reformulating is a function of time available (the more time the less likelihood of losses due to unsatisfactory product). The time available is to some extent a function of size of company. Larger companies can afford to allocate more resources at one time to the reformulation project.
2. The economic consequence of the reformulation investment is closely related to size of company. The larger the company the greater the available assets and also the broader the sales base across which the cost of reformulation may be allocated.
3. It is possible that if the required date for reformulation is less than twelve to eighteen months after promulgation of the ban, the large companies will have a significant advantage over their smaller competitors who have not achieved acceptable formulations. The degree of competitive advantage will vary with the amount of unformulation time allowed. Any reduced competition could adversely affect the consumer by permitting significant price increases.

AVAILABILITY OF SUBSTITUTE MATERIALS

Research indicated that companies who plan to increase their production of asbestos-free compounds, whether they are presently producing exclusively asbestos-free, both asbestos-free and asbestos containing compounds, or exclusively asbestos containing compounds, face two primary raw material supply problems.

1. Judging from contacts with the two primary producers of attapulgite, this key asbestos substitute may be in short supply for the rest of 1977 and may not be readily available for 6 to 12 months.
2. The other asbestos substitutes used with attapulgite are more readily available but may require more than 30 days to procure in quantity sufficient for production of new formulations.

interviews were conducted on job-sites with employees who actually used the product on a day-to-day basis.

The results of these interviews were not conclusive insofar as the amount of additional labor required is concerned. However, the following points were noted:

1. Workers paid by the hour seemed less concerned about the quality of the product than those paid by the job.

2. Contractors using mature reformulations were less dissatisfied than those using a recent reformulation.

3. Many reported that U.S. Gypsum, which reformulated during 1975, had had a great deal of difficulty with the product for an extended period, but had achieved a reasonably good product after a year or so. Georgia-Pacific's initial reformulated shipments of asbestos-free products were similarly perceived as less satisfactory than their asbestos formulations.

4. Some small contractors who paid their crew by the job rather than the hour reported that they had experimented with asbestos-free products but could not tell how much extra time was required to perform satisfactory work because the crew refused to use the product long enough to develop a reasonable estimate. One of these contractors suggested 25% more labor might be required. A contractor who paid by the hour stated that his crew using an asbestos-free formulation regularly took about 25% longer, which cost about \$150 more per house.

Given the variety of inputs which did not yield readily quantifiable results, Kearney attempted to estimate a range of possible cost increases which might be expected if the asbestos-free formulations were required.

1. The increase in direct labor could not be too great or, despite the pressures to reduce the use of asbestos, those manufacturers which do not use asbestos would have permanently lost a significant share of the market. This statement is supported by the finding that the three largest suppliers are now manufacturing exclusively asbestos-free material.

Considering a combination of factors including customer loyalty, some regional price cutting by asbestos-free manufacturers, and the concern of contractors, their customers, and their workers about the highly publicized health issues surrounding the use of asbestos, the highest reasonable estimate of increased labor would be 25%.



Georgia-Pacific Corporation

900 S.W. Fifth Avenue
Portland, Oregon 97204
Telephone (503) 222-5561

C
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P
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November 29, 1977

Mr. R. E. Byrne, Jr.
Union Carbide Corporation
Mining & Metals Division
P.O. Box 579
Niagara Falls, New York 14302

Dear Bob:

Please advise when we might expect to receive Union Carbide's check to cover the carload of HPO asbestos returned to King City last August by our Marietta plant.

We would like to get this whole matter cleared up before year-end.

Thank you.

Very truly yours,

Edward L. Aasen
Purchasing Manager
Gypsum Division

ELA:shga

cc: Messrs. R. V. Favero - Marietta Plant
D. C. Corkill - Portland (8)
Mrs. G. McCrary - Marietta Plant
Gypsum Cost Dept. - Portland (8)

THIS COPY FOR

SGP 0009408

Georgia-Pacific



intracompany memo

to **Dave Corkill**

location **Portland**

from **W. D. Brooks**

location **Dallas**

subject **Joint System**

date **December 5, 1977**

re: **Asbestos**

U
U
For your information, attached is a copy of a letter Proko sent to the trade. Apparently asbestos hasn't been banned; Proko is still selling asbestos type joint system.

W. D. B.

WDB/kb

Attachment

cc: Gene Burch

U
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U
U

SGP 0009409

August 17, 1977

Important Notice

Subject: The use of Asbestos in Drywall Products - is it legal or not?

Much has been written and spoken by individuals, insurance companies, labor organizations and consumer advocates about the dangers and legality of the use of Asbestos in the Building Trades Industry; especially its use in Drywall Products - both ready-mix and powder. In this bulletin we will seek to define our position as it relates to both Proko Industries, Inc. and our customers.

As of the date of this bulletin the use of Asbestos in Drywall Products is legal as far as the Federal Government is concerned. However, some states and local Municipalities have passed laws or ordinances banning the use of Asbestos in any product. Before ordering products for your area it would be advisable to check these two areas out. If Asbestos is banned in your area, or if a job calls for the use of a Non-Asbestos product; be sure and specify which type you need when ordering.

Until recently the use of Asbestos in Drywall Products has been under the control of the Occupational Safety and Health Act and only applied at the manufacturing plant or when mixing on the job-site. Under the provisions of the aforementioned act (OSHA), employees cannot be exposed to excessive concentrations of Asbestos fibers over an eight hour time-weighted period. The amount is (2) fibers per cubic centimeter of air. Also, employees at the manufacturing plants and job-sites must be given annual physical examinations and periodic monitoring of the air where employees work is required. Records must be kept on these employees for thirty (30) years. Needless to say this in itself creates quite a problem.

The Consumer Products Safety Commission on Friday, July 29, 1977, published in the Federal Register their intent to ban "certain patching compounds" which contain respirable free-form Asbestos. Under article 16cfr parts 1304 & 1305 of the

THE **PROKO** COMPANY
Manufacturers "FINE WATER PAINTS"

GENERAL OFFICES: 1910 WALL ST. DALLAS, TEXAS 75215 428-1373



SGP 0009410

Subject: The use of Asbestos in Drywall Products - is it legal or not?

continued:

aforementioned Federal Register, Part 5, they propose to ban (consumer patching compounds used to join or repair interior walls and ceilings) which would, if implemented, mean a total ban on Asbestos in any Drywall Product which has to be mixed from a dry form or any product which might be sanded after it is applied. Interested parties are invited to submit in writing, on or before August 29, 1977, their comments to Consumer Products Safety Commission, Washington, D. C.

If this proposed ban should become reality, Proko Industries, Inc., and all other manufacturers of Drywall Products, will be forced to discontinue the use of Asbestos in all Taping, Bedding, and Texturing Compounds. However, if this proposed ban is implemented, and we believe that it will be, Proko Industries has Asbestos free products available at no sacrifice in quality. If Asbestos is banned it will probably be somewhere around January 1, 1978. No one knows whether a recall of products containing Asbestos will be a part of the order or not, but it could be. With this possibility in mind, we will begin immediately to phase out the use of Asbestos in all of our Drywall Products.

We hope this bulletin, which we believe to be as accurate as possible, helps to clarify this touchy subject.

Sincerely,

Proko Industries, Inc.



intracompany memo

to Mr. W. D. Brooks

location Dallas Reg

from D. C. Corkill

location Portland

subject ASBESTOS IN JOINT SYSTEM PRODUCTS

date December 12, 1977

For your information, attached is a copy of the latest Consumer Products Safety Commission publication on asbestos in joint compounds.

DCC
D. C. C.

DCC:de

Attach.

cc: O. E. Burch - Portland

¶ 43,784 ASBESTOS BAN PROPOSAL ACTION PERIOD EXTENDED

The date by which proposed rule declaring two products containing respirable free-form asbestos to be banned hazardous products must be either promulgated or withdrawn has been postponed to November 28, 1977. The period for action on the proposal was extended from September 27 by the Consumer Product Safety Commission because the Commission needs more time to analyze the large number of technical comments received concerning the proposal.

The proposed rule would ban consumer patching compounds and artificial emberizing materials (embers and ash) containing respirable free-form asbestos. Preliminary determinations of the CPSC indicated that inhalation of asbestos fibers released during the use of these products presents an unreasonable risk of some types of cancer to the consumer. The Commission also determined that these products are not adequately regulated by any other standard (42 F. R. 53970, October 4, 1977). See ¶ 4004

¶ 43,785 PROBLEMS FORESEEN IN POSSIBLE LABELING RULE FOR FYROL

Possible courses of action available to the Consumer Product Safety Commission in response to recent Ames-test evidence that the flame retardant Fyrol FR-2 is mutagenic have been outlined in an October 5, 1977, briefing

¶ 43,782

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UNITED STATES GOVERNMENT

Memorandum

U.S. CONSUMER PRODU
SAFETY COMMISSION
WASHINGTON, D.C. 202

TO : See Distribution
THRU : S. John Byington, Chairman *SPB*
THRU : Richard E. Rapps, Secretary *REK*
FROM : Richard A. Danca, *RD*
Office of the Secretary

DATE: December 1, 1977

SUBJECT: Follow-Up to Commission Meeting of December 1, 1977
(All Commissioners present and voting)

AGENDA
ITEM #

1. ISSUE : Asbestos--Final Rule on Patching Compounds and Artificial Emberizing Materials
DECISION: (A) Consumer Patching Compounds:
Issue final ban.
(B) Artificial Emberizing Materials:
Issue final ban.
(C) Scope of Ban on Patching Compounds:
Approve scope as drafted.
(D) Effective Date of Ban on Patching Compounds:
30 days for manufacture and initial introduction into interstate commerce; 180 days for all other sales.
(E) Unintentional Addition of Asbestos
Approve substitute language prepared by OGC as revised to read "to the maximum extent possible;" direct staff to prepare a proposal to study further a feasibly-attainable level of asbestos contamination.
(F) Other Changes to FR Document:
Commissioners to submit editorial changes, etc. to OGC.
(G) Section 30(d) Rule:
Approve with editorial changes.
ACTION : OGC to redraft FR document to incorporate necessary changes;
OS to circulate as ballot vote item.
2. ISSUE : TAC/PPP Recommendation on Scent in Lighter Fluid
DECISION: Concur in resolution prepared by the advisory council.
ACTION : OGC to draft letter to lighter fluid manufacturers for Chairman's signature.

Follow-Up to Commission Meeting of December 1, 1977 (Cont.)

AGENDA
ITEM #

3. ISSUE : Recommendation to Accept Corrective Action Plans:
Bombardier, Ltd. snowmobiles, ID 77-50; and Mikuni
American Corp. snowmobile carburetors, ID 77-51
DECISION: Accept and monitor corrective action plans; do not
pursue timeliness case against either company.
ACTION : PDCD to take appropriate action. Also, staff to
coordinate with Canadian Minister of Consumer and
Corporate Affairs on Bombardier case and future
section 15 cases involving Canadian companies.
4. ISSUE : Recommendation to Accept Corrective Action Plan:
Philco Consumer Electronics Corp. color television
sets, ID 77-64
DECISION: Accept and monitor corrective action plan.
ACTION : PDCD to take appropriate action.
5. ISSUE : Recommendation to Close Possible Substantial Product
Hazard Case: Cutler-Hammer, Inc. circuit breakers,
ID 77-63
DECISION: Close the case; do not pursue timeliness case.
ACTION : PDCD to take appropriate action.

CLOSED PORTION

6. ISSUE : Freedom of Information Appeal from the Aluminum Association
DECISION: Deny appeal.
ACTION : OS to take appropriate action.

Distribution

Chairman Byington
Commissioner Franklin
Commissioner Pittle
Executive Director
Deputy Executive Director
Associate Executive Directors
Office Heads
FO for distribution to Area Offices

~~DET~~
~~WAG~~ N & 2
Gypsum Association

CPUC
Mr. C. W. Lahnert, Gypsum Div'n.
Georgia-Pacific - Tigard, Ore.

1603 Orrington Ave., Suite 1210
Evanston, Illinois 60201

(312) 491-1744

RECEIVED

December 27, 1977

DEC 29 1977

TO ALL MEMBERS OF THE
MANUFACTURING & MINING COMMITTEE

Subject: Consumer Product Safety
Commission Asbestos
Patching Compound Ban
Effective January 16, 1978

Gentlemen:

The attached December 15, 1977, Federal Register covers the Consumer Product Safety Commission's final rules for consumer patching compounds containing respirable, free-form asbestos effective January 16, 1978.

Page 63363 of the Register, 1304.5 (b), specifies that consumer patching compound include drywall spackling and tape joint compounds.

This material is forwarded for your information and files.

Very truly yours

GYPSUM ASSOCIATION

F. J. Rogers
F. J. Rogers
Secretary

FJR:mf
Attachments
cc: Technical Committee



SGP 0009416

Georgia Pacific
route slip



LOCATION <i>Portland</i>	
ATTN: <i>Mr. Glenn Wilson</i>	
<i>D.C. Coe, II</i>	
<i>John R. H. H. H. H.</i>	
<i>Kip H. H. H. H.</i>	
☐ PLEASE HANDLE TO CONCLUSION ☐ FOR YOUR FILES	
☐ READ AND GIVE ME YOUR COMMENTS ☐ FOR YOUR APPROVAL	
☐ PLEASE READ AND RETURN ☐ PER YOUR REQUEST	
DATE <i>12/15/77</i>	FROM <i>Jo Peters</i>

GP02

②

SGP 0009417

THURSDAY, DECEMBER 15, 1977

PART III



12/15/77 - ~~Glenn Burton~~ DEC 20 1977

*Tom Withycombe
Kip Howlett*

**CONSUMER
PRODUCT SAFETY
COMMISSION**

■
**CONSUMER PATCHING
COMPOUNDS AND
ARTIFICIAL EMBERIZING
MATERIALS (EMBERS
AND ASH) CONTAINING
RESPIRABLE FREE-FORM
ASBESTOS**

Banned Hazardous Products

[6355-01]

Title 16—Commercial Practices
**CHAPTER II—CONSUMER PRODUCT
 SAFETY COMMISSION**

**SUBCHAPTER B—CONSUMER PRODUCT
 SAFETY ACT REGULATIONS**

**PART 1145—REGULATION OF PRODUCTS
 SUBJECT TO OTHER ACTS UNDER THE
 CONSUMER PRODUCT SAFETY ACT**

**Consumer Patching Compounds and Artificial
 Emberizing Materials (Embers and
 Ash) Containing Respirable Free-Form
 Asbestos**

AGENCY: Consumer Product Safety Commission.

ACTION: Final rules.

SUMMARY: The Commission issues final rules determining that it is in the public interest to regulate consumer patching compounds and artificial emberizing materials (embers and ash) containing respirable, free-form asbestos, for the purpose of addressing the risk of cancer associated with inhalation of asbestos fibers, under the Consumer Product Safety Act (CPSA) rather than under the Federal Hazardous Substance Act (FHSA). According to the CPSA, a risk of injury that could be eliminated or reduced to a sufficient extent under the FHSA may not be regulated under the CPSA, unless the Commission finds by rule that it is in the public interest to do so.

EFFECTIVE DATES: For consumer patching compounds containing respirable, free-form asbestos, this rule becomes effective on January 16, 1978. For artificial emberizing materials (embers and ash) containing respirable free-form asbestos, this rule becomes effective December 15, 1977.

FOR FURTHER INFORMATION CONTACT:

Charles M. Jacobson, Compliance and Enforcement Regulatory Management Division, Consumer Product Safety Commission, Washington, D.C. 20207, 301-492-6400.

SUPPLEMENTARY INFORMATION:

BACKGROUND

On July 29, 1977, by publication of a notice in the *FEDERAL REGISTER* (42 FR 38782), the Commission proposed a rule under section 30(d) of the Consumer Product Safety Act (CPSA) (15 U.S.C. 2079(d)) as amended, that it is in the public interest to regulate consumer patching compounds and artificial emberizing materials (embers and ash) containing respirable free-form asbestos under the CPSA rather than under the Federal Hazardous Substances Act (FHSA), (15 U.S.C. 1261-1274). Section 30(d) reads:

A risk of injury which is associated with a consumer product and which could be eliminated or reduced to a sufficient extent under the Federal Hazardous Substances Act . . . may be regulated under the CPSA only if the Commission by rule finds that it is in the public interest to regulate such risk of injury under [the CPSA.]

Also on July 29, 1977, the Commission proposed in the *FEDERAL REGISTER* (42 FR 38783) a regulation under the CPSA that would declare as banned hazardous products, consumer patching compounds and artificial emberizing materials (embers and ash) containing respirable free-form asbestos.

The Commission's reasons in the proposed section 30(d) rule for proceeding under the CPSA rather than the FHSA are:

1. The rulemaking proceedings for regulation of these products under the FHSA are likely to be lengthy and resource-consuming.

2. Rulemaking proceedings under the CPSA are governed by provisions of the Administrative Procedure Act (5 U.S.C. 553), and are informal and nonadversarial in nature and thus it would be more likely that participation of the public, including consumers, would be forthcoming in rulemaking proceedings under the CPSA.

3. The Commission believes that civil penalty provisions available under the CPSA against persons who knowingly violate the CPSA may provide additional incentive for compliance under the CPSA. The FHSA does not provide the remedy of civil penalties.

COMMENTS

No comments were received by the Commission which deal directly with the proposed section 30(d) rule. In comments on the proposed ban, however, several persons in the marketing chain commented approvingly on the decision to regulate under the CPSA because CPSA does not require repurchase of banned hazardous products by manufacturers, distributors, and retailers. On the other hand, several groups of consumer-oriented interests noted that they would have preferred regulation under FHSA because FHSA provides for such repurchase.

As noted in the proposed section 30(d) rule, the Commission is aware that regulation under CPSA would preclude mandated repurchase of banned hazardous products. However, the CPSA does not preclude voluntary arrangements for repurchase back up the distribution chain. Moreover, the advantages enumerated above, particularly, the advantage of having a final banning regulation in force without having to first provide for lengthy adjudicatory proceedings, appears to the Commission to be more beneficial to consumer health and safety than the refunds consumers would have under FHSA. In the matter of artificial emberizing materials, repurchase under the FHSA would have meant that many persons in the chain of distribution would have handled these materials rather than disposing of them quickly in order to avoid additional exposure.

Accordingly, the Commission finds that for the health and safety of consumers, it is in the public interest to regulate consumer patching compounds and artificial emberizing materials containing respirable free-form asbestos under the CPSA rather than the FHSA. Therefore, pursuant to section 30(d) of

the CPSA, Pub. L. 92-573, 86 Stat. 1231, as amended, 90 Stat. 510, 15 U.S.C. 2079(d), the Commission amends Title 16, Chapter II, Subchapter B, by adding new §§ 1145.4 and 1145.5.

§ 1145.4 Consumer patching compounds containing respirable free-form asbestos; risk of cancer associated with inhalation of asbestos fibers.

(a) The Commission finds that it is in the public interest to regulate the risk of cancer associated with inhalation of asbestos fibers from consumer patching compounds containing respirable free-form asbestos under the Consumer Product Safety Act (CPSA) rather than under the Federal Hazardous Substances Act (FHSA) because of the desirability of avoiding possibly lengthy resource-consuming, inefficient rulemaking proceedings under the FHSA and because of the availability of civil penalties under the CPSA for knowing noncompliance.

(b) Therefore, consumer patching compounds containing respirable free-form asbestos are regulated under CPSA.

§ 1145.5 Emberizing materials (embers and ash) containing respirable free-form asbestos; risk of cancer associated with inhalation of asbestos fibers.

(a) The Commission finds that it is in the public interest to regulate the risk of cancer associated with inhalation of asbestos fibers from artificial emberizing materials (embers and ash) containing respirable free-form asbestos under the Consumer Product Safety Act (CPSA) rather than under the Federal Hazardous Substances Act (FHSA) because of the desirability of avoiding possibly lengthy, resource-consuming, inefficient rulemaking proceedings under the FHSA, and because of the availability of civil penalties under the CPSA for knowing noncompliance.

(b) Therefore, artificial emberizing materials (embers and ash) containing respirable free-form asbestos are regulated under the CPSA.

Effective dates: Section 1145.4 becomes effective January 16, 1978. Section 1145.5 becomes effective December 15, 1977.

(Sec. 30(d), Pub. L. 92-573, 86 Stat. 1231 as amended, 90 Stat. 510 (15 U.S.C. 2079(d)).)

Dated: December 12, 1977.

SHELDON D. BUTTS,
 Assistant Secretary, Consumer
 Product Safety Commission.

[FR Doc. 77-35744 Filed 12-12-77; 11:32 am]

[6355-01]

**CONSUMER PATCHING COMPOUNDS AND
 ARTIFICIAL EMBERIZING MATERIALS
 (EMBERS AND ASH) CONTAINING
 RESPIRABLE FREE-FORM ASBESTOS**

**Establishment As Banned Hazardous
 Products**

AGENCY: Consumer Product Safety Commission.

ACTION: Final rules.

SUMMARY: In this document the Commission declares that the following products containing respirable free-form asbestos are banned hazardous products under the Consumer Product Safety Act: (1) Consumer patching compounds used to join or repair interior walls and ceilings (mixing of the product before it is applied, sanding of the product after it is dried, and cleanup after completion of the process, release asbestos fibers that can be inhaled); and (2) artificial emberizing materials (embers and ash) used in fireplaces to simulate live embers and ash (ordinary air currents in the household move asbestos fibers that can be inhaled). The Commission issues this ban in order to reduce or eliminate the unreasonable risk of injury from certain types of cancer that may result from inhaling asbestos fibers released during the use of these products.

EFFECTIVE DATES: (1) For consumer patching compounds containing respirable free-form asbestos, the regulation issued below at section 1304, applies to products manufactured or initially introduced into commerce on January 16, 1978, or after that date. For all other consumer patching compounds containing respirable free-form asbestos, no matter when manufactured or initially introduced into commerce, the regulation at section 1304 applies on June 12, 1978, and after that date. (2) For artificial emberizing materials containing respirable free-form asbestos, the regulation issued below at section 1305 applies to products in commerce on December 15, 1977, or after that date.

FOR FURTHER INFORMATION CONTACT:

Charles M. Jacobson, Consumer Product Safety Commission, Compliance and Enforcement Regulatory Management Division, Washington, D.C. 20207, 301-492-6400.

SUPPLEMENTARY INFORMATION:

BACKGROUND

On July 29, 1977, by publication of a notice in the *FEDERAL REGISTER* (42 FR 38783), the Commission proposed rules to declare that consumer patching compounds and artificial emberizing materials (embers and ash) containing respirable free-form asbestos, are banned hazardous products under the Consumer Product Safety Act (CPSA). These rules were proposed because the Commission preliminarily determined that an unreasonable risk of injury of certain types of cancer, such as mesothelioma and lung cancer, is associated with inhalable asbestos found in these products. The information on which the Commission's preliminary determination was based is set forth in the proposal. The data in the proposal are incorporated herein by reference. The bibliography of 50 references cited in the proposal are repeated in this preamble for convenience. Numbers 51 and over refer to additional information considered in issuing this rule.

On July 29, 1977, by publication of a notice in the *FEDERAL REGISTER* (42 FR 38782), the Commission also proposed a rule finding that it is in the public interest to regulate consumer patching compounds and artificial emberizing materials containing respirable free-form asbestos under the Consumer Product Safety Act (CPSA) rather than under the Federal Hazardous Substances Act (FHSA). Section 30(d) of the CPSA (15 U.S.C. 2079(d)) requires the Commission to make such a finding by rule, before regulating under the CPSA, a risk of injury which could be reduced or eliminated to a sufficient extent under the FHSA. The Commission issues this rule elsewhere in the *FEDERAL REGISTER*. The data in these proposals are incorporated herein, by reference.

Section 9(a)(2) of the CPSA requires that, in addition to providing an opportunity for making written submissions, the Commission shall provide interested persons with an opportunity to make oral presentations of data, views or arguments relating to proposals to ban. Oral presentations on the bans were heard by the Commission on August 15, 1977. Views on the bans are discussed below under Comments on Proposal.

In order to have sufficient time to review all the responses to the banning proposal, including late responses, on October 4, 1977 (42 FR 53970), the Commission extended until November 28, 1977, the time in which it must either publish a consumer product safety rule or withdraw the proposals to ban. This date was further extended until December 12, 1977, by notice published in the *FEDERAL REGISTER* on November 29, 1977 (42 FR 60752).

COMMENTS ON PROPOSAL

Oral views on the proposal were presented by 7 persons on August 15, 1977 with 3 representing consumer groups and 4 representing manufacturers. In addition, the Commission received 30 written comments which represented 17 manufacturers and 2 distributors; 4 federal agencies; 3 public interest groups; 2 concerned citizens; a supplier of raw materials; and a chemical research and development firm. Among the 10 commentators who expressed support for the ban were 5 manufacturers of patching compounds, 3 federal agencies and 2 public interest groups.

The significant issues raised by the oral and written comments are set forth below.

A. Scope and definition. The proposal states that consumer patching compounds are those that are customarily produced or distributed for sale to or for the personal use, consumption or enjoyment of consumers in or around a household or residence, a school, in recreation or otherwise. The Commission considered in the proposal that patching compounds for application in these consumer environments are either distributed for sale to consumers or are for the personal use or enjoyment of consumers. Moreover,

information available to the Commission indicated that most patching compounds for commercial/industrial use are distributed in such ways that consumers have access to these products (51) either by purchase or for their use and enjoyment. Therefore, the Commission concluded that these are consumer products subject to the Commission's jurisdiction unless such patching compounds are labeled as, marketed, and sold solely for industrial use.

1. Patching compounds as consumer products. (a) Several commenters requested a clearer definition of consumer patching compound and a manufacturer questioned the boundaries of the term "consumer product." The manufacturer states that the definition of consumer patching compounds in the ban has been improperly broadened to include jurisdiction over building materials. He believes that the CPSA permits regulation only of articles used within the home, not the structure of the home itself or the integral parts of the structure. He states that since consumers have access to patching compounds containing respirable free-form asbestos through most marketing channels, these products can be considered consumer products under the CPSA. Thus, he believes that it was inappropriate to cite a recent case, (*U.S.A. v. Anaconda Co., et al.*, Misc. No. 77-0024, (D.D.C.) June 15, 1977) which indicates that the presence of a product in a consumer environment can help decide whether that product is a consumer product under the CPSA. Therefore, the commenter urges "the Commission in its final regulation to delete" the paragraph on "Anaconda" case in order to "avoid the creation of an unnecessary conflict . . . within the regulation itself."

In response to this comment, the Commission notes that the paragraph which cites the case in question is not in the proposed regulation but in that part of the preamble which explains the regulation. In the preamble, the Commission cited "Anaconda" not in reliance on the case as a basis for regulation but to show how the case interprets the definition of consumer product at section 3(a)(1) of the CPSA which reads,

The term "consumer product" means any article, or component part thereof, produced or distributed (i) for sale to a consumer for use in or around a permanent or temporary household or residence, a school, in recreation, or otherwise, or (ii) for the personal use, consumption or enjoyment of a consumer in or around a permanent, or temporary household or residence, a school, in recreation, or otherwise;

Although courts have not yet reached a definitive decision on the coverage of the term "consumer product," the Commission believes that the statute and legislative history, by themselves, afford sufficient authority for Commission jurisdiction over the defined product and its use in consumer environments. It appears to the Commission that the definition of consumer patching compound in the proposal falls within section 3(a)(1)

of the CPSC and that the "Anaconda" case underscores the definition.

In order to minimize any confusion, a new subsection (c) has been added to § 1304.1 Scope and Application, to show the coverage permitted by the CPSC. That subsection reads:

(c) Only consumer products are subject to this regulation. Patching compounds which are consumer products are those which a consumer can purchase. Merely labeling a patching compound for industrial use would not exclude such articles from the ban. If the sale or use of the product by consumers is facilitated, it is subject to the ban. Patching compounds which are labeled as, marketed, and sold solely for industrial use in non-consumer environments are not subject to the ban. In addition to those products which can be sold directly to consumers, the ban applies to patching compounds containing respirable free-form asbestos which are used in residences, schools, hospitals, public buildings or other areas where consumers have customary access.

It is clear from this language that use of patching compounds in consumer environments determines their status as consumer products, whether the patching compounds are applied professionally or by consumers. And, although the hazard may be greater for professional users of patching compounds because of their repeated exposure, residual dust from sanding during construction or renovation is also a hazard to consumers who may not apply the patching compounds themselves (36).

(b) A manufacturer who supports the ban states that he would have no way of policing the sale of different size containers. Therefore, although he packages a 1-gallon size of patching compound for sale to consumers and a 5-gallon size for commercial-industrial use, he believes the ban should apply to all sizes.

Given the availability of patching compounds to consumers through most marketing channels, the Commission agrees that it would be burdensome for manufacturers and distributors to assure that large sizes of patching compounds, which they claim to be industrial products, are not sold to consumers. Moreover, as noted in the preceding response, merely labeling a patching compound for non-consumer use would not exclude such articles from the ban. Where a manufacturer, distributor or retailer fosters or facilitates the product's sale to or use by consumers, the product is considered a consumer product and is within the scope of this ban. This comment indicates that it may be exceedingly difficult to differentiate a patching compound that is a consumer product from one that might be termed a product for industrial use only. Nevertheless, as stated in section 1304.1(c) Scope and Application, "patching compounds which are labeled as, marketed, and sold solely for industrial use in non-consumer environments are not subject to the ban."

2. Regulation of patching compounds by OSHA. A manufacturer of dry-wall joint compounds states that the commercial and professional market for such compounds is already regulated by the

Occupational Safety and Health Administration of the Department of Labor (OSHA) and, since the consumer part of his business is small, the ban should not apply to compounds for commercial and industrial use.

As is indicated herein, any patching compound containing respirable free-form asbestos that consumers have access to in consumer environments or may purchase would be subject to the ban. Therefore, such products, although they may be for industrial/commercial use, are also considered to be consumer products.

On the subject of regulation of these products by OSHA, the Commission notes that section 31 of the CPSC provides that the Commission shall have no authority to regulate any risk of injury associated with a consumer product if such risk could be eliminated or reduced to a sufficient extent by actions taken under the Occupational Safety and Health Act of 1970. Under that Act, OSHA has issued regulations which specify the airborne concentrations of asbestos fibers to which any employee may be exposed (29 CFR 1910.93a). However, OSHA regulations apply only to workplaces and not to places where consumers would use the products themselves. Therefore, the Commission considers that actions to regulate this product which can be taken under the Occupational Safety and Health Act of 1970, cannot reduce or eliminate to a sufficient extent the unreasonable risk of injury to consumers that is associated with the product. Accordingly, the Commission regulates this product under the CPSC.

3. Type of patching compound covered by the ban. A manufacturer of caulking, sealing, glazing, adhesive and coating products believes the reputation of his product could be adversely affected by the ban. Although the Commission has stated that the banned product presents a hazard because it is mixed, sanded and moved about during cleanup operations, the commenter believes that the definition of the banned product should specifically exclude the above-listed products because they are designed to remain flexible and are, therefore, not generally sanded. Therefore, the commenter requests that the definition be amended to cover only those compounds, "which after drying are required to be or are normally sanded to a smooth finish."

In response to this comment, the Commission notes that the patching compounds subject to the ban are those that contain asbestos which can be inhaled as a result of mixing, sanding and cleanup operations. Therefore, patching materials such as those listed by the commenter which are not sanded after application because they are intended to remain flexible, would be exempt if they are not available in dry, ready-to-mix form. The Commission believes it is clear that only consumer patching compounds containing asbestos which can be inhaled when the product is in dry form or being sanded are subject to the ban and therefore declines in this case

to amend the definition of patching compound at § 1304.3(d).

4. Asbestos terminology for both products. (a) In discussing the proposed definition of "asbestos," a writer from a chemical research and development center states that "silica" is a chemical compound and as a compound is not a component of asbestos. He suggests that the word "silicon" be used to denote that it is a single element which is present in asbestos.

The Commission concurs that the term "silica" should not be used, but rather it should be "silicates," since asbestos is a generic term used to describe a number of naturally-occurring hydrated mineral silicates. Therefore, the word "silica" is deleted from the definition of asbestos in §§ 1304.3(b) and 1305.3(b) below and the term "hydrated silicates" is substituted therefor.

(b) A public interest group takes issue with the definition of asbestos used in the proposal and urges the Commission to adopt a definition of asbestos proposed by OSHA in 1975. The definition of asbestos used in the Commission proposal is based on the definition used by the Bureau of Mines (56). The commenter believes that the OSHA proposed definition could help resolve disputes over the presence or absence of asbestos in consumer products.

As the commenter pointed out, several federal agencies with responsibilities for regulating asbestos (EPA, FDA, OSHA, CPSC) are working toward a uniform definition of asbestos. At a recent workshop, July 18-20, 1977, at the National Bureau of Standards on asbestos definition and identification problems, it was agreed that there should be a uniform definition of asbestos which would be mineralogically correct as well as reflect health concerns. However, there was clearly a lack of agreement on a definition and an interagency agreement on a definition has not yet been reached.

The definition which the commenter urges the Commission to adopt was proposed by OSHA on October 19, 1975; it has not yet been finalized and is subject to change. The OSHA proposed definition reflects OSHA's concern for the health aspects of asbestos and is based on experimental findings associated with fiber morphology (size and shape). The Bureau of Mines also seeks to encourage uniform definition. Their definition which was used by the Commission is based on mineralogical composition. This has been adopted in final form by that agency.

The Commission has reviewed much of the available data on the characteristics of asbestiform mineral fibers and their nonasbestos 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 mineral fibers within the proposed dimension range that are not asbestos fibers. While the Commission is interested in arriving at an unambiguous uniform definition of asbestos, there is not

yet enough evidence to base a definition of "asbestos" on fiber morphology. Therefore, the Commission believes the proposed definition should not be changed in the final rule. As circumstances warrant, the definition could be amended at a later date.

5. Asbestos contamination in patching compounds. Several manufacturers expressed concern that all patching compounds would be subject to the ban rather than only those compounds to which asbestos has been intentionally added. They point out that asbestos is ubiquitous in the environment and that traces of asbestos may be present as a contaminant in other minerals that are mined in areas of serpentine rock. One commenter suggests that the Commission consider permitting patching compounds which contain such naturally occurring contaminants. Other commenters suggest that a percentage of asbestos contamination by weight be permitted. The lowest percentage suggested by one commenter is 1 percent because the Environmental Protection Agency (EPA) permits the presence of 1 percent asbestos by weight in spray-on asbestos insulation and fire proofing.

As noted in the proposal, the Commission is aware that asbestos is present in the environment. Further, the Commission does not wish to ban all consumer patching compounds in which traces of asbestos are present as a contaminant rather than as an intentionally added substance.

The suggestion that the Commission permit contamination of 1 percent by weight, however, appears to be inappropriate for consumer patching compounds because consumers would not be sufficiently protected. One percent by weight could mean a substantial number of small lightweight asbestos fibers, thus presenting a significant exposure to consumers of respirable free-form asbestos. Therefore, the Commission declines at this time to adopt a percentage by weight to define permissible contamination.

Industry experts do not agree as to the amount of asbestos that might be present in products without deliberately added asbestos. Nor is there agreement on the reliability of the techniques used to measure low levels (below 1 percent) of asbestos by weight. The Commission believes, however, that the use of appropriate quality control measures and careful selection of raw materials can serve to minimize contamination from unintentionally added asbestos (see the Commission's economic impact statement on file at the Office of the Secretary). In order to emphasize that only patching compounds with clearly unavoidable traces of asbestos contamination will be permitted, the Commission defines "intentionally-added asbestos" at § 1304.3(f) of the rule below to mean asbestos which is

- (1) added deliberately as an ingredient intended to impart specific characteristics; or
- (2) contained in the final product as a result of knowingly using a raw material contain-

ing asbestos. Whenever a manufacturer finds out that the finished product contains asbestos, the manufacturer will be considered as knowingly using a raw material containing asbestos unless the manufacturer takes steps to reduce the asbestos to the maximum extent feasible.

Therefore, the ban applies only to consumer patching compounds containing intentionally-added respirable free-form asbestos and will not apply to products having unavoidable trace amounts.

6. Artificial emberizing materials—exemption from ban. A manufacturer of electric artificial logs and electric fireplaces states that although the Commission proposed to ban only artificial emberizing materials containing respirable, free-form asbestos, references in the media to artificial logs and artificial fireplaces reflect adversely on his business. He asks, therefore, that his products, which use an artificial ash bed of vermiculite, be exempted from the ban.

As the commenter noted, the Commission ban applies only to emberizing materials containing respirable free-form asbestos and not to any artificial logs or artificial fireplaces with which they may be used. Since the banned product is used with artificial logs, it is understandable that questions are raised as to different kinds of artificial logs. The Commission does not believe it would be appropriate to exempt from the ban all electric logs coated with unidentified substances, or all artificial ash used in electric fireplaces, since some of these articles could include the banned product. However, in order to clarify the matter for consumers as well as producers, the Commission adds a statement to § 1305.3(d), the definition of emberizing materials, which reads, "electric artificial logs and artificial ash beds used in electric fireplaces which do not contain respirable free-form asbestos are not included in this definition."

B. Effective date. Six commenters discussed the proposed effective date of the ban of consumer patching compounds which was 30 days after publication of the final rule. Five manufacturers suggested a date later than 30 days after publication. A public interest group suggested that the effective date be the date of publication of the final rule.

(1) One commenter suggested that the Commission consider a series of effective dates for the ban on consumer patching compounds: 30 days for manufacturers, 90 for distributors and 180 days for retailers in order to clear inventories. Several commenters believe that a 30-day effective date might prove burdensome to small manufacturers because of the inventory problem.

The matter of inventories was considered in the July 29, 1977 proposal to ban and further discussed at the public meeting of August 15, 1977. The concern of those involved to clear their existing inventories of consumer patching compounds containing respirable free-form asbestos was considered. Information available to the Commission indicates that manufacturers are now maintain-

ing a relatively small inventory. Distributors report that they maintain a small inventory compared to their sales. Retailers have a much slower-moving inventory (51).

The Commission considered the possible adverse economic impact of a 30-day effective date on inventories of manufacturers, distributors and retailers. The Commission also considered the possible adverse effects of exposing consumers to inhalable asbestos by permitting the manufacture, distribution and sale to consumers of patching compounds until 180 days after publication of a ban. It appears to the Commission that early discontinuance of the manufacture of this product would be necessary in order to stop its continuing proliferation in the market. On the other hand, substantial adverse economic impacts could result from the freeing of distributors' and retailers' inventories at an early effective date. The Commission concludes therefore that the ban should become effective at two different points in time. For manufacturers, the effective date should be close to publication of the rule in order to stop the continuing manufacture of the product. For distributors and retailers, the effective date should be delayed to help ameliorate adverse economic impacts.

Therefore, the Commission declares below at § 1304.4 that consumer patching compounds containing respirable free-form asbestos which have been manufactured or initially introduced into commerce 30 or more days after publication of this rule are banned hazardous products. This means that a banned hazardous product, having been manufactured or initially introduced into commerce, retains its status as a banned hazardous product; thus, its subsequent sale, offering for sale, or distribution in commerce, is prohibited by any person in the chain of distribution. In addition, the Commission declares that all other consumer patching compounds containing respirable free-form asbestos, no matter when manufactured or initially introduced into commerce, are banned hazardous products 180 or more days after publication of this rule. (As stated below in § 1304.4(g) of the rule, initial introduction into commerce of this product occurs when the product is physically shipped from a manufacturer's facility to a distributor, retailer, consumer or to another person for application in a consumer environment.)

In summary, 30 days after publication of this rule, manufacturers will be prohibited from manufacturing or shipping the product to distributors, retailers, consumers, or to others for application in consumer environments. Further, 180 days after publication of this rule, distributors and retailers will be prohibited from selling, offering for sale, or distributing any of the described products, no matter when manufactured or initially introduced into commerce, to distributors, retailers, consumers or to others for application in consumer environments.

(2) The public interest group recommends that the effective date of the ban

on consumer patching compounds containing respirable free-form asbestos be the date of publication of the final rule, as it is for artificial emberizing materials.

The Commission proposed that the effective date of the ban on artificial emberizing materials be the date of publication although the Administrative Procedure Act (5 U.S.C. 553) which governs publication of consumer product safety rules, provides that a rule should be published 30 days before its effective date unless the Commission finds good cause to provide otherwise. Unlike patching compounds, where exposure to asbestos fibers is most prevalent during mixing, sanding and cleanup operations, although the fibers may remain suspended for a considerable duration of time, asbestos fibers in emberizing materials can be respired as long as such materials are in the home because they are always in dry form and ready to be moved about by ordinary household air currents. It appeared to the Commission, therefore, that these emberizing materials should be removed from commerce as quickly as possible and that there is good cause to have the ban effective on the date of publication. To assist persons who already had such materials in their homes, the Commission, on July 21, 1977, issued a press release on the impending ban which included a Consumer Alert advising consumers of the dangers associated with these emberizing materials and issuing instructions for their safe removal.

Economic advice to the Commission indicates, in addition, that no significant adverse economic impacts are anticipated as a result of the immediate effective date for emberizing materials (51). As is indicated in the foregoing discussion, the economic impact of a 30-day and even a 180-day effective date for patching compounds would be significant and therefore it appears that the economic impact of an immediate effective date would be more significant. Since no new information has been presented to show that an earlier effective date should be promulgated, the Commission declines the suggestion of the public interest group. Therefore, the effective date of the regulation on consumer patching compounds containing respirable free-form asbestos is 30 days after publication of this rule as to manufacture and initial introduction into commerce and 180 days after publication as to all other units of the defined product no matter when manufactured or initially introduced in commerce.

C. Product risks and risk assessment. Several commenters discussed the Commission's risk assessment for patching compounds and questioned other aspects of the hazard.

(1) A manufacturer suggests that use by the general public or by asbestos workers is not hazardous and that the greatest hazard is to a worker during sanding operations if he also smokes.

The Commission notes that 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 nonsmokers (17). Data also suggest that the high risk of mesotheliomas (cancers of the pleura and peritoneum) from asbestos exposure appears to be unrelated to smoking (18, 6).

(2) A distributor of fireplaces and fireplace equipment doubts there is a hazard associated with emberizing materials because the fibers used in emberizing materials are relatively large and fibers which would become airborne would 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 (57). 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 respired.

(3) A manufacturer states that since Commission data are based on occupational statistics, it is difficult to document the Commission's view, in the proposal that, "for many people the major exposure to inhalable asbestos is in the home."

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 patching compounds indicated that significant levels of respirable free-form asbestos fibers were detected in rooms adjacent to that where the actual patching and sanding operations had occurred so that other household members could be exposed as well as the individual performing the patching job (36). In many areas of the country (nonurban), there appears to be a relatively low background level of asbestos (52). Therefore, exposure in the home to asbestos fibers released from consumer products could represent the major exposure. As noted in the proposal, 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 the extent possible, exposure to respirable asbestos.

(4) A commenter questions Commission reliance on OSHA's proposed amendment of October 9, 1975 to occu-

pational exposure to asbestos as the basis for the Commission proposal. The commenter believes that portions of the OSHA review of October 1975 are scientifically inaccurate.

The Commission notes that most of the information on hazards associated with inhalation of asbestos is based on occupational exposure. It can be said that the body of scientific literature in the OSHA proposal has already been subjected to public scrutiny. During preparation of the Commission proposal, Commission staff conferred with OSHA. As a result, the Commission proposal deleted references to studies which OSHA termed to be of questionable validity.

As pointed out in the Commission proposal, 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.

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 tissues and from epidemiological studies.

(5) In assessing the degree and nature of the risk of injury to consumers from patching compounds, the Commission reviewed experimental data and human experience information. In addition, on the basis of data by Rohl on exposure to asbestos during the use of consumer patching compounds (36), the Commission's Health Sciences staff calculated an assessment of the risk which was described in the proposal. The calculations were based on the application of a theoretical model similar to that described by Enterline and Henderson (11). Several highly technical comments were received in response to the risk assessment. The significant issues raised in these comments are discussed below.

(a) Two commenters questioned the assumption in the risk assessment that exposure to asbestos is cumulative over the lifetime of a person, and whether intermittent exposure over several years has the same effect as if the same exposure had taken place in a single year. In reviewing the literature on asbestos exposure, the Commission finds that asbestos fibers are unlike many chemicals and other materials which the body may metabolize and excrete. Body clearance of asbestos fibers is much less effective. They have been found not only to remain in the body but to accumulate (55). Since the data tend to show that intermittent exposure can lead to cumulative buildup of asbestos fibers, it appears to the Commission that intermittent exposure over several years could have the same hazardous effect as if the total intermittent exposure had taken place within one year.

(b) Two commenters indicated that the hazard from applying patching compounds could differ in different circum-

stances. They indicate that persons of differing skills may release different amounts of inhalable asbestos into the air. Although these differences occur, a consumer would likely release more asbestos into the air because he or she may be less skilled in the process than a professional applicator. The Commission recognizes as these commenters point out that some products have a smaller percentage of asbestos than those which were used for exposure data in the Commission risk assessment. For example, one commenter submitted asbestos exposure data from a study he conducted using a compound that contained a smaller amount of asbestos. Based on this commenter's exposure data, another risk assessment was conducted. The results suggest that use of a patching compound containing less asbestos may reduce but does not eliminate an excess of deaths due to exposure to asbestos in patching compounds. The range is from 1 death per million persons exposed for the projected five years exposure using one model and up to 226 lifetime excess cancer respiratory deaths per million persons exposed during another model (53). It should be noted here that while asbestos levels may vary, they do not change the fact that there is no known level below which inhalable asbestos may be considered safe.

(c) Another commenter says that using a premixed compound reduces the consumer's exposure to asbestos. The commenter also thought that the Commission's estimate of consumer exposure was too high. The Commission's risk assessment analysis did take into consideration the exposure during the mixing of a patching compound. While exposure to asbestos fibers would be negligible during slight stirring of a premixed compound, the exposure during the sanding and cleaning operations involved would be the same as for the dry compound. Consequently, the risk assessment values would not be significantly reduced. As for the four-day, eight-hour exposure being too high an estimate, no data were submitted to substantiate that contention. As stated in the proposal, therefore, it appears to the Commission that although the exposure may be high, it is a reasonably foreseeable exposure.

D. *Substitutes for asbestos.* The July 29, 1977 proposal notes that substitutes for asbestos are already being used in patching compounds. One of the most common substitutes is attapulgite, a fibrous clay. Other substitutes of a fibrous nature are wollastonite, kaolinite, sepiolite and bentonite. Several comments express concern that materials used as substitutes for asbestos may also pose hazards.

The Commission shares this concern. Substitutes for asbestos have been under consideration for only a short time. Little data are available on which to evaluate the safety of substitute materials. Experimental findings of Stanton (58) indicate that many mineral fibers (in addition to asbestos) of small respirable di-

mentations are biologically active under experimental conditions.

According to correspondence dated July 26, 1977 from Dr. Paul Kotin of the Johns-Manville Co. with environmental consultant Barry Castleman, a Johns-Manville study is under way to assess the potential inhalation hazard of certain naturally-occurring or man-made mineral fibers such as ceramic fibers. Ceramic fibers are a potential substitute for artificial emberizing materials.

Human exposure data to substitutes are extremely limited. Occupational exposure data to certain clay mineral fibers which are proposed asbestos substitutes are scheduled to be presented at a Symposium on Occupational Exposure to Fibrous and Particulate Dust and their Extension into the Environment, in December 1977. These data are expected to indicate the extent of exposure, rather than human experience findings on results of such exposure. Data on the results of human exposure to asbestos substitutes will not, in all likelihood, be available in the near future.

(1) A commenter suggests that substitutes, since they would be fibrous, would present a risk.

In assessing asbestos substitutes, data available to the Commission indicates that a number of substances may be used which are not fibrous such as calcium carbonate, clay, resins and mica. For the fibrous clay minerals which may be used as asbestos substitutes such as wollastonite, kaolinite, sepiolite and bentonite, the Commission is aware that there is a lack of conclusive data on the hazard potential associated with these minerals. Additional study is needed to evaluate the risk of inhalation exposure to such small mineral fibers. Nevertheless, the Commission believes that the known risk from inhalable asbestos requires the banning of these products at this time.

(2) A comment questions a statement in the proposal that fibrous glass could be considered a substitute for chrysotile in emberizing materials.

The Commission concurs with this comment; it is currently unaware of any manufacturers or distributors who use or know of the use of fibrous glass for this purpose. In addition, from a technical viewpoint, glass fibers are not similar in size and shape to chrysotile. Unlike the rod-like glass fibers, chrysotile tends to be curved, or be of curly fibers or fiber bundles, comprised of extremely small-diametered fibrils. However, glass fibers are similar—at least in shape—to some 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. Additional study is needed to assess the pathologic effects of inhaled fibers, including fibrous glass.

E. *Economic considerations.* Six commenters expressed concern that the ban would have an adverse economic impact on the industry. Five of the six are manufacturers who commented on patching

compounds. The sixth is a distributor of gas fireplace logs.

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 or may be unable to obtain necessary raw materials by the effective date of the ban. Thus, some may cease production temporarily, until such reformulation is achieved. Some of the large manufacturers have indicated a willingness to license their asbestos-free formulations (or parts of them) to smaller firms.

Two commenters discussed potential cost effects of the ban on patching compounds other than those relating to the product itself. One patching compound producer estimated at 60 percent the increased "workload" associated with the professional application of non-asbestos formulations because of different performance characteristics. The Commission has investigated the potential increase in direct labor costs associated with existing asbestos and non-asbestos formulations; it estimates an initial 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 to the relatively poor shrink- and crack-resistance of some non-asbestos formulations. These increased costs are expected to diminish over time as formulations improve and as applicators become more accustomed to using non-asbestos formulations.

One company which may be adversely affected by the proposed ban reports that attapulgite, 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.

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. However, the addition of asbestos would be tantamount to manufacture of the banned product and would thus be prohibited. It appears that at least some existing non-asbestos formulations may be less desirable, from a performance standpoint, to professional contractors; most consumer applicators are not ex-

pected to perceive a significant difference in the product's performance.

As is indicated in the proposal, the Commission is aware that economic impacts of varying degrees will occur as a result of the ban on inhalable asbestos containing patching compounds and emberizing materials containing respirable free-form asbestos. Also, the Commission is aware that technology for producing asbestos-free patching-compound formulations is becoming more generally available. The economic impact will tend to be reduced over time as non-asbestos formulation technology becomes more widespread and as existing recent formulations are improved by manufacturers. The nature and extent of the effects on the industries are discussed in the Environmental and Economic Assessments now on file in the Office of the Secretary and were considered by the Commission during this rulemaking process.

F. Other comments. (1) Several commenters suggested that the Commission should investigate other products containing asbestos in order to determine the existence of possible hazards.

In the proposal, the Commission noted that information on other products containing inhalable asbestos would continue to be developed in order to determine whether further regulation is necessary. Accordingly, the staff has begun to develop plans for collecting such information.

(2) One commenter suggested that the Commission issue a rule that would prohibit stockpiling of the banned products.

Section 9(d)(2) of the CPSA provides that the Commission may, by notice and comment rulemaking, prohibit a manufacturer from stockpiling a product for which a consumer product safety rule has been promulgated. In this case, the ban on consumer patching compounds covers the manufacture and initial introduction of products into commerce 30 days after promulgation; the ban on artificial emberizing materials covers products in commerce on the date of promulgation. Therefore, in practical effect, there would not be time for manufacturers to stockpile; nor would there be time prior to these effective dates for notice and comment rulemaking.

(3) A commenter expressed concern that the banned products be kept out of international commerce.

The Commission notes that this comment is directed not to the proposed rule but to its enforcement. If this matter should become a problem it would be considered in the context of enforcement.

(4) Several comments suggested editorial changes in the proposal. These suggestions were considered and, where appropriate, have been included herein.

DESCRIPTION OF THE BAN

The banned products. Parts 1304 and 1305 declare, respectively, that consumer patching compounds and artificial emberizing materials (embers and ash)

containing respirable free-form asbestos are banned hazardous products under section 8 of the Consumer Product Safety Act.

Scope and application. The rules apply to the named consumer products that are customarily produced or distributed for sale to or for the personal use, consumption or enjoyment of consumers in or around a household or residence, a school, in recreation or otherwise. In addition to those products which can be sold directly to consumers, the ban applies to the named consumer products which are used and enjoyed by consumers, such as those used in residences, schools, hospitals, public buildings or other areas where consumers have customary access, whether the patching compounds are applied professionally or by consumers. Only consumer products are subject to this regulation. Patching compounds which are consumer products include those which a consumer can purchase. Merely labeling a patching compound for industrial use would not exclude such articles from the ban. If the sale or use of the product to consumers is facilitated, it is subject to the ban. Patching compounds which are labeled as, marketed, and sold solely for industrial use in non-consumer environments are not subject to the ban. The ban applies to patching compounds containing intentionally-added respirable free-form asbestos sold directly to consumers and to those which are used in residences, schools, hospitals, public buildings or other areas where consumers have customary access.

Effective dates. (1) The rule at Part 1304 below applies to consumer patching compounds containing respirable free-form asbestos that are manufactured or initially introduced into commerce on January 16, 1978, or after that date. For all other consumer patching compounds containing respirable free-form asbestos, no matter when manufactured or initially introduced into commerce the rule at Part 1304 applies on June 12, 1978, and after that date. This means that 30 days after publication of this rule, manufacturers are prohibited from manufacturing or shipping the product to distributors, retailers, consumers or to others for application in consumer environments. Further, 180 days after publication of this rule, distributors and retailers will be prohibited from selling, offering for sale or distributing in commerce the described products, no matter when manufactured or initially introduced into commerce, to distributors, retailers, and users.

(2) The rule at Part 1305 below applies to artificial emberizing materials (embers and ash) containing respirable free-form asbestos that are in commerce on December 15, 1977, or after that date. This prohibition applies to products in inventory as well as to those manufactured on or after the effective date.

The Administrative Procedure Act (5 U.S.C. 553) which governs the matter of effective date for banning rules under the

CPSA, provides that a rule should be published 30 days before its effective date unless the Commission provides otherwise for good cause found and published with the rule.

As described in the discussion above on effective date, the Commission is concerned that ordinary household air currents in homes that contain artificial emberizing materials, can cause continuing exposure of consumers to the respirable free-form asbestos in artificial embers and ash. It appears to the Commission, therefore, that these products should be removed from commerce as expeditiously as possible in order to avoid having additional numbers of consumers unwittingly purchase these materials. The Commission finds there is good cause to issue the rule on artificial emberizing materials effective on the date of publication.

FINDINGS

1. CPSA Section 8, Section 8 (1) and (2) of the CPSA require that, before issuing a consumer product safety rule declaring a product to be a banned hazardous product, the Commission must find (1) that the product presents an unreasonable risk of injury and (2) that no feasible safety standard can adequately protect the public from the unreasonable risk of injury associated with the product.

(a) *Unreasonable risk of injury.* The regulations are intended to reduce or eliminate the unreasonable risk of injury to the public from cancers such as lung cancer and mesothelioma. The risk is associated with asbestos fibers which are not tightly bound into or encapsulated in the composition of a product. The health risk occurs when asbestos fibers become airborne such as by mixing, sanding, or cleanup operations when using patching compounds, or by the effect of ordinary household air currents on artificial emberizing materials in fireplaces. Tests show that certain malignancies are related to asbestiform minerals; these can arise 20 or more years after occupational exposure. However, also reported are malignancies from indirect, non-occupational exposure. In a recent case, the court recognized a study on asbestos exposure cited by the Environmental Protection Agency at 40 FR 48295, showing "new biological evidence supporting the significance of single, short-term exposures . . . One-day inhalation exposures in animal experiments have produced an increase in the incidence of mesothelioma." *National Association of Demolition Contractors v. Environmental Protection Agency*, Civ. Nos. 74-1545, 75-2078, D.C. Cir., October 13, 1977.

The information on which the Commission made the determination of unreasonable risk consists primarily of data on exposure of industrial workers to respirable free-form asbestos. Information on exposure of the public to inhalable asbestos in individual consumer products is limited. However, as is evident from the extensive bibliography included herein there is general scientific

and medical agreement that there is no known threshold level below which it is safe for people to be exposed to respirable free-form asbestos.

As noted in the proposal, inhalable asbestos in the household from consumer patching compounds and artificial emberizing materials presents a great risk due to the presence in the household of persons, such as children, who may be particularly vulnerable to carcinogens. Because of the long latency period, exposure to inhalable asbestos in the home can be life shortening for children. The Commission notes that consumers are exposed to asbestos from sources other than the banned products. However, consumers who are exposed to asbestos fibers from patching compounds and artificial embers and ash receive additional doses of asbestos and can be assumed to face a greater risk than persons not so exposed, and a greater cumulative risk than if no asbestos were present in the general environment.

In determining that the risk of cancers is unreasonable, the Commission concludes that the degree and nature of the risk of injury and the probability that the risk will result in harm outweighs the rules' effect on the products' utility, cost and availability to the consumer.

(b) *No feasible safety standard.* The Commission is not aware of a technically feasible procedure for removing the hazards of cancer from respirable free-form asbestos in the named products. The Commission believes that not all patching compounds present an unreasonable risk of injury to the public, only patching compounds containing respirable free-form asbestos. The hazard associated with this product is caused by the free form in which the asbestos appears. A safe level of exposure to free-form asbestos is not known. Therefore, it does not appear that a standard for patching compounds containing respirable free-form asbestos is feasible.

The product artificial emberizing materials for fireplaces, containing respirable free-form asbestos is used only in dry form. Thus individual asbestos fibers are never bound together. If the asbestos fibers were coated by another material to bind the fibers, it would no longer be the same product and would not give the desired decorative effect. In considering the dry character of the product and the fact that a safe level of exposure to respirable free-form asbestos is not known, it does not appear that a standard for artificial emberizing materials containing respirable free-form asbestos is feasible.

The Commission believes that no standard can render the defined products non-hazardous and concludes that only banning these products can adequately protect the public from unreasonable risks of injury associated with them.

2. *CPSA Section 9(b).* Section 9(b) of the CPSA, 15 U.S.C. 2058(b), as amended, requires the Commission to consider and take into account in the promulgation of a rule the special needs of elderly and

handicapped persons to determine the extent to which such persons may be adversely affected by such rule. The Commission has considered these needs and has determined that no adverse effect on elderly or handicapped persons will result from this regulation. It is in the best interest of the entire public, including the elderly and handicapped, that these hazards be reduced.

3. *CPSA Section 9(c).* Section 9(c) of the CPSA requires that prior to promulgating a consumer product safety rule the Commission shall consider and shall make appropriate findings for inclusion in such a rule as to: (1) The degree and nature of the risk of injury the rule is designed to eliminate or reduce; (2) the approximate number of consumer products, or types or classes thereof, subject to such rule; (3) the need of the public for the consumer products subject to such rule, and the probable effect of such rule upon the utility, cost, or availability of such products to meet such need; (4) any means of achieving the effect of the order while minimizing adverse effects on competition or disruption or dislocation of manufacturing and other commercial practices consistent with the public health and safety; (5) that the rule is reasonably necessary to eliminate or reduce an unreasonable risk associated with such product; and (6) that the promulgation of the rule is in the public interest (15 U.S.C. 2058(c)).

The findings required by Section 9(c) of the act have been described generally in the preamble and are incorporated in §§ 1304.5 and 1305.5 of the rules below.

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CONCLUSION

Upon considering the published proposal, the oral and written responses to the proposal and other relevant material, the Commission bans consumer patching compounds and artificial emberizing materials (embers and ash) as set forth below.

Accordingly, pursuant to provisions of the Consumer Product Safety Act (sections 8 and 9, 86 Stat. 1215-17, as amended, 90 Stat. 506, 15 U.S.C. 2057, 2058), new Parts 1304 and 1305 are added to Title 16, Chapter II, Subchapter B, as follows:

PART 1304—BAN OF CONSUMER PATCHING COMPOUNDS CONTAINING RESPIRABLE FREEFORM ASBESTOS

Sec.

1304.1 Scope and application.

1304.2 Purpose.

1304.3 Definitions.

1304.4 Consumer patching compounds as banned hazardous products.

1304.5 Findings.

AUTHORITY: Sections 8, 9, 86 Stat. 1215-1217, as amended 90 Stat. 506, 15 U.S.C. 2057, 2058.

§ 1304.1 Scope and application.

(a) In this Part 1304 the Consumer Product Safety Commission declares that consumer patching compounds containing intentionally-added respirable free-form asbestos in such a manner that the asbestos fibers can become airborne under reasonably foreseeable conditions of use, are banned hazardous products under sections 8 and 9 of the Consumer Product Safety Act (CPSA) (15 U.S.C. 2057 and 2058). This ban applies to patching compounds which are (1) used to cover, seal or mask cracks, joints, holes and similar openings in the trim, walls, ceiling, etc. of building interiors, which after drying are sanded to a smooth finish and (2) are produced and distributed for sale to or for the personal use, consumption or enjoyment of a consumer in or around a permanent or temporary household or residence, a school, in recreation or otherwise.

(b) The Commission has found that (1) these patching compounds are being or will be distributed in commerce; (2) that they present an unreasonable risk of injury; and (3) that no feasible consumer product safety standard under the CPSA would adequately protect the public from the unreasonable risk of injury associated with these products. This rule applies to the banned hazardous products defined in section 1304.3 and described further in section 1304.4.

(c) Only consumer products are subject to this regulation. Patching compounds which are consumer products include those which a consumer can purchase. Merely labeling a patching compound for industrial use would not exclude such articles from the ban. If the sale or use of the product by consumers is facilitated, it is subject to the ban. Patching compounds which are labeled as, marketed, and sold solely for indus-

trial use in non-consumer environments are not subject to the ban. In addition to those products which can be sold directly to consumers, the ban applies to patching compounds containing respirable free-form asbestos which are used in residences, schools, hospitals, public buildings or other areas where consumers have customary access.

§ 1304.2 Purpose.

The purpose of this rule is to ban consumer patching compounds containing intentionally added respirable, free-form asbestos. These products present an unreasonable risk of injury due to inhalation of fibers which increase the risk of developing cancer, including lung cancer and mesothelioma, diseases which have been demonstrated to be caused by exposure to asbestos fibers.

§ 1304.3 Definitions.

(a) The definitions in section 3 of the Consumer Product Safety Act (15 U.S.C. 2052) apply to this Part 1304.

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

(c) "Free-form asbestos" is that which is not bound, or otherwise "locked-in" to a product by resins or other bonding agents, or which can readily become airborne with any reasonably foreseeable use.

(d) "Patching compounds" are mixtures of talc, pigments, clays, casein, ground marble, mica, or other similar materials and a binding material such as asbestos which are sold in a dry form ready to be mixed with water, or such combinations in ready-mix paste form.

(e) "Consumer patching compounds" are those that are customarily produced or distributed for sale to or for the personal use, consumption or enjoyment of consumers in or around a permanent or temporary household or residence, a school, in recreation or otherwise. The Commission considers that patching compounds for application in these consumer environments are either distributed for sale to or are for the personal use or enjoyment of consumers.

(f) "Intentionally-added asbestos" is asbestos which is (1) added deliberately as an ingredient intended to impart specific characteristics; or, (2) contained in the final product as the result of knowingly using a raw material containing asbestos. Whenever a manufacturer finds out that the finished product contains asbestos, the manufacturer will be considered as knowingly using a raw material containing asbestos, unless the manufacturer takes steps to reduce the asbestos to the maximum extent feasible.

(g) "Initial introduction into commerce" occurs when the manufacturer ships a product covered by this regulation from a facility of the manufacturer to a distributor, retailer, or user.

§ 1304.4 Consumer patching compounds as banned hazardous products.

On the basis that airborne asbestos fibers present the hazards of cancer, including lung cancer and mesothelioma to the public, consumer patching compounds containing intentionally-added, respirable free-form asbestos, which have been manufactured or initially introduced into commerce after January 18, 1978, are banned hazardous products. In addition, all other consumer patching compounds containing intentionally-added, respirable free-form asbestos, no matter when manufactured or initially introduced into commerce, are banned hazardous products after June 11, 1978.

§ 1304.5 Findings.

(a) *The degree and nature of the risk of injury.* The Commission finds that the risk of injury which this regulation is designed to eliminate or reduce is from cancer, including lung cancer and mesothelioma. In assessing the degree and nature of the risk of injury to consumers, the Commission has reviewed experimental data and human experience information. The Commission noted that in the scientific literature, there is general agreement that there is no known threshold level below which exposure to respirable free-form asbestos would be considered safe. Further on the basis of such scientific opinion, it appears to the Commission that children are particularly vulnerable to carcinogens because of their longer potential lifetime and their rapid rate of growth. In areas of the country where asbestos may not be prevalent in the environment, the major risk of exposure for children and others may occur in the household. In areas of the country where more asbestos fibers are present in the environment, the public is exposed to additional risks from the presence of asbestos fibers in households and other consumer environments, the Commission concluded on the basis of these factors that consumer patching compounds containing respirable free-form asbestos present an unreasonable risk of injury to the public. In addition, a risk assessment was made. For purposes of this assessment, the Commission considered the use of patching compounds by the consumer, for six hours a day four times a year, to be a high yet reasonably foreseeable exposure. The increased risk of death from respiratory cancer induced by this exposure is estimated at between 10 and 2,000 per million. For five years of exposure at these levels, the risk increases geometrically and is estimated at between 1,000 and 12,000 per million. The lower estimate of 10 per million is closer to the actual risk for a one-year exposure. Nevertheless, in view of the seriousness of the injury and the cumulative effects of asbestos exposure, even this minimum figure represents an unacceptable risk. The Commission believes that reducing exposure to respirable free-form asbestos in the home represents a substantial decrease in risk to consumers, since, for many people, the major ex-

posure to inhalable asbestos is in the home.

(b) *Products subject to the ban.* Consumer patching compounds as defined in § 1034.3 (d), (e), (f) include such products as drywall spackling compounds and tape joint compounds (commonly known as "joint cement" or "tape joint mud"). The Commission estimates annual shipments of patching compounds subject to the ban 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, were formulated with asbestos. Many others containing significant levels of asbestos contamination will also be affected by the ban.

(c) *Need of the public for the products and effects of the rule on their utility, cost and availability.* 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 either by consumers or professional applicators. 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 or lower property value. 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.

(1) *Utility.* 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 by professional contractors until such time as improved formulations are developed and available to end-users.

(2) *Cost.* Asbestos-free patching compound formulations 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. These increased costs are expected to diminish over time as formulations improve and as applicators become more accustomed to using non-asbestos formulations. 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. Producers, distributors, and retailers of patching compounds may also have to incur costs associated with the disposal of products in inventory. 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 economies of scale associated with production.

(3) *Availability.* The supply of asbestos substitutes, particularly attapulgite clay and relatively uncontaminated talc, 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.

(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 is reduced by

limiting the ban to intentionally added asbestos. Other alternatives such as limiting the scope of the ban only to products purchased and used by consumers or to issuing a ban with a later effective date, were considered by the Commission. However, none was found that would cause less disruption or dislocation of manufacturing and other commercial practices, consistent with public health and safety.

Conclusion. The Commission finds that this rule, including its effective date is reasonably necessary to eliminate or reduce the unreasonable risk of injury from cancers such as lung cancer and mesothelioma that are associated with the banned products described herein, that no feasible consumer product safety standard under the Consumer Product Safety Act can adequately protect the public from this risk, and that promulgation of this rule is in the public interest.

PART 1305—BAN OF ARTIFICIAL EMBERIZING MATERIALS (ASH AND EMBERS) CONTAINING RESPIRABLE FREE-FORM ASBESTOS

Sec.

1305.1 Scope and application.

1305.2 Purpose.

1305.3 Definitions.

1305.4 Artificial fireplace ash and embers as banned hazardous products.

1305.5 Findings.

AUTHORITY: Secs. 8, 9, 30(d), Pub. L. 90-573, as amended, Pub. L. 94-284; 86 Stat. 1215-17, as amended, 90 Stat. 506 (15 U.S.C. 2057, 2058).

§ 1305.1 Scope and application.

In this Part 1305 the Consumer Product Safety Commission declares that artificial emberizing materials (ash and embers) containing respirable free-form asbestos generally packaged in an emberizing kit for use in fireplaces, and designed for use in such a manner that the asbestos fibers can become airborne under reasonably foreseeable conditions of use are banned hazardous products under sections 8 and 9 of the Consumer Product Safety Act (CPSA) (15 U.S.C. 2057 and 2058). This ban applies to artificial emberizing materials available in separate kits or with artificial fireplace logs for use in fireplaces and sprinkled or coated by consumers on the artificial logs to simulate live embers and ashes and give a glowing appearance when subjected to high temperatures. Bags of material containing asbestos that are sold separately to be sprinkled on and under artificial logs to simulate burning and glowing ashes also come within the scope of this ban.

§ 1305.2 Purpose.

The purpose of this rule is to ban artificial emberizing materials containing respirable free-form asbestos. These products present an unreasonable risk of injury due to inhalation of fibers which increase the risk of developing cancers such as lung cancer and mesothelioma,

diseases which have been demonstrated to be caused by exposure to asbestos fibers.

§ 1305.3 Definitions.

(a) The definitions in section 3 of the Consumer Product Safety Act (15 U.S.C. 2052) apply to this Part 1305.

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

(c) "Free-form asbestos" is that which is not bound, woven, or otherwise "locked-in" to a product by resins or other bonding agents, or those from which fibers can readily become airborne with any reasonably foreseeable use.

(d) "Emberizing materials" means an asbestos-containing material generally packed in an "emberizing" kit to be placed under artificial logs in gas-burning fireplace systems or in artificial fireplaces for decorative purposes. The product is also glued to artificial logs, either at a factory or by a consumer using an emberizing kit. (Synthetic logs manufactured of cellulose products which are consumed by flames are not included in this definition. Electric artificial logs and artificial ash beds used in electric fireplaces, which do not contain respirable free-form asbestos are not included in this definition.)

§ 1305.4 Artificial fireplace ash and embers as banned hazardous products.

On the basis that airborne asbestos fibers present the hazards of cancer such as lung cancer and mesothelioma to the public, artificial fireplace ash and embers containing respirable free-form asbestos are banned hazardous products.

§ 1305.5 Findings.

(a) *The degree and nature of the risk of injury.* The Commission finds that the risk of injury which this regulation is designed to eliminate or reduce is from cancer, including lung cancer and mesothelioma. Measurements are not available of the amounts of asbestos in the air from asbestos-containing emberizing materials in homes. However, it appears that the amount of airborne asbestos in such homes would increase when air currents in the home are created by drafts from a fireplace chimney or other activities that stir air in any room. Since emberizing materials may contain up to 50 percent asbestos, which if not permanently bound into artificial fireplace logs would be in respirable form, the risk associated with emberizing materials is considerable, especially since it continues to exist 24 hours a day.

(b) *Products subject to the ban.* 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.

(c) *Need of the public for the products and effects of the rule on their utility, cost, and availability.* Artificial fireplace emberizing material serves a strictly decorative purpose and does not materially affect the actual performance of the fireplace gas system 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. Gas logs may be sold with artificial emberizing material attached at the factory (the log 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.

(1) *Utility.* 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.

(2) *Cost.* 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 the total price effect of the ban on consumers at under \$25,000.

(3) *Availability.* 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 nor on the availability of gas logs or emberizing kits to retail dealers and consumers is expected as a result of the ban.

(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 Commission believes that there will be minimal disruption to the market for artificial emberizing materials as a consequence of the ban and that no further reduction in adverse effects is feasible.

Conclusion. The Commission finds that this rule, including its effective date, is

reasonably necessary to eliminate or reduce the unreasonable risk of injury from cancers such as lung cancer and mesothelioma that are associated with the banned products described herein, that no feasible consumer product safety standard under the Consumer Product Safety Act can adequately protect the public from this risk, and that promulgation of this rule is in the public interest.

Effective Dates: Part 1304 becomes effective January 16, 1978.

Part 1305 becomes effective December 15, 1977.

Dated: December 12, 1977.

SHELDON D. BUTTS,
Assistant Secretary, Consumer
Product Safety Commission.

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**CONSUMER PATCHING
COMPOUNDS AND
ARTIFICIAL EMBERIZING
MATERIALS (EMBERS
AND ASH) CONTAINING
RESPIRABLE FREE-FORM
ASBESTOS**

SGP 0009431

ACTION: Final rules.

SUMMARY: In this document the Commission declares that the following products containing respirable free-form asbestos are banned hazardous products under the Consumer Product Safety Act: (1) Consumer patching compounds used to join or repair interior walls and ceilings (mixing of the product before it is applied, sanding of the product after it is dried, and cleanup after completion of the process, release asbestos fibers that can be inhaled); and (2) artificial emberizing materials (embers and ash) used in fireplaces to simulate live embers and ash (ordinary air currents in the household move asbestos fibers that can be inhaled). The Commission issues this ban in order to reduce or eliminate the unreasonable risk of injury from certain types of cancer that may result from inhaling asbestos fibers released during the use of these products.

EFFECTIVE DATES: (1) For consumer patching compounds containing respirable free-form asbestos, the regulation issued below at section 1304, applies to products manufactured or initially introduced into commerce on January 18, 1978, or after that date. For all other consumer patching compounds containing respirable free-form asbestos, no matter when manufactured or initially introduced into commerce, the regulation at section 1304 applies on June 12, 1978, and after that date. (2) For artificial emberizing materials containing respirable free-form asbestos, the regulation issued below at section 1305 applies to products in commerce on December 18, 1977, or after that date.

FOR FURTHER INFORMATION CONTACT:

Charles M. Jacobson, Consumer Product Safety Commission, Compliance and Enforcement Regulatory Management Division, Washington, D.C. 20207, 301-492-6400.

SUPPLEMENTARY INFORMATION:

Background

On July 29, 1977, by publication of a notice in the *Federal Register* (42 FR 38783), the Commission proposed rules to declare that consumer patching compounds and artificial emberizing materials (embers and ash) containing respirable free-form asbestos, are banned hazardous products under the Consumer Product Safety Act (CPSA). These rules were proposed because the Commission preliminarily determined that an unreasonable risk of injury of certain types of cancer, such as mesothelioma and lung cancer, is associated with inhalable asbestos found in these products. The information on which the Commission's preliminary determination was based is set forth in the proposal. The data in the proposal are incorporated herein by reference. The bibliography of 50 references cited in the proposal are repeated in this preamble for convenience. Numbers 51 and over refer to additional information considered in issuing this rule.

On July 29, 1977, by publication of a notice in the *Federal Register* (42 FR 38782), the Commission also proposed a rule finding that it is in the public interest to regulate consumer patching compounds and artificial emberizing materials containing respirable free-form asbestos under the Consumer Product Safety Act (CPSA) rather than under the Federal Hazardous Substances Act (FHSA). Section 30(d) of the CPSA (15 U.S.C. 2079(d)) requires the Commission to make such a finding by rule, before regulating under the CPSA, a risk of injury which could be reduced or eliminated to a sufficient extent under the FHSA. The Commission issues this rule elsewhere in the *Federal Register*. The data in these proposals are incorporated herein, by reference.

Section 9(a)(2) of the CPSA requires that, in addition to providing an opportunity for making written submissions, the Commission shall provide interested persons with an opportunity to make oral presentations of data, views or arguments relating to proposals to ban. Oral presentations on the bans were heard by the Commission on August 15, 1977. Views on the bans are discussed below under Comments on Proposal.

In order to have sufficient time to review all the responses to the banning proposal, including late responses, on October 4, 1977 (42 FR 53970), the Commission extended until November 28, 1977, the time in which it must either publish a consumer product safety rule or withdraw the proposals to ban. This date was further extended until December 12, 1977, by notice published in the *Federal Register* on November 29, 1977 (42 FR 60732).

Comments on Proposal

Oral views on the proposal were presented by 7 persons on August 15, 1977 with 3 representing consumer groups and 4 representing manufacturers. In addition, the Commission received 30 written comments which represented 17 manufacturers and 3 distributors; 4 federal agencies; 3 public interest groups; 2 concerned citizens; a supplier of raw materials; and a chemical research and development firm. Among the 10 commentators who expressed support for the ban were 5 manufacturers of patching compounds, 3 federal agencies and 2 public interest groups.

The significant issues raised by the oral and written comments are set forth below.

A. Scope and definition. The proposal states that consumer patching compounds are those that are customarily produced or distributed for sale to or for the personal use, consumption or enjoyment of consumers in or around a household or residence, a school, in recreation or otherwise. The Commission considered in the proposal that patching compounds for application in these consumer environments are either distributed for sale to consumers or are for the personal use or enjoyment of consumers. Moreover,

information available to the Commission indicated that most patching compounds for commercial/industrial use are distributed in such ways that consumers have access to these products (51) either by purchase or for their use and enjoyment. Therefore, the Commission concluded that these are consumer products subject to the Commission's jurisdiction unless such patching compounds are labeled as marketed, and sold solely for industrial use.

1. Patching compounds as consumer products. (a) Several commenters requested a clearer definition of consumer patching compound and a manufacturer questioned the boundaries of the term "consumer product." The manufacturer states that the definition of consumer patching compounds in the ban has been improperly broadened to include jurisdiction over building materials. He believes that the CPSA permits regulation only of articles used within the home, not the structure of the home itself or the integral parts of the structure. He states that since consumers have access to patching compounds containing respirable free-form asbestos through most marketing channels, these products can be considered consumer products under the CPSA. Thus, he believes that it was inappropriate to cite a recent case, ("U.S.A. v. Anaconda Co., et al.," Misc. No. 77-0034, (D.D.C.) June 15, 1977) which indicates that the presence of a product in a consumer environment can help decide whether that product is a consumer product under the CPSA. Therefore, the commenter urges "the Commission in its final regulation to delete" the paragraph on "Anaconda" case in order to "avoid the creation of an unnecessary conflict . . . within the regulation itself."

In response to this comment, the Commission notes that the paragraph which cites the case in question is not in the proposed regulation but in that part of the preamble which explains the regulation. In the preamble, the Commission cited "Anaconda" not in reliance on the case as a basis for regulation but to show how the case interprets the definition of consumer product at section 3(a)(1) of the CPSA which reads,

The term "consumer product" means any article, or component part thereof, produced or distributed (i) for sale to a consumer for use in or around a permanent or temporary household or residence, a school, in recreation, or otherwise, or (ii) for the personal use, consumption or enjoyment of a consumer in or around a permanent, or temporary household or residence, a school, in recreation, or otherwise;

Although courts have not yet reached a definitive decision on the coverage of the term "consumer product," the Commission believes that the statute and legislative history, by themselves, afford sufficient authority for Commission jurisdiction over the defined product and its use in consumer environments. It appears to the Commission that the definition of consumer patching compound in the proposal falls within section 3(a)(1)

yet enough evidence to base a definition of "asbestos" on fiber morphology. Therefore, the Commission believes the proposed definition should not be changed in the final rule. As circumstances warrant, the definition could be amended at a later date.

8. *Asbestos contamination in patching compounds.* Several manufacturers expressed concern that all patching compounds would be subject to the ban rather than only those compounds to which asbestos has been intentionally added. They point out that asbestos is ubiquitous in the environment and that traces of asbestos may be present as a contaminant in other minerals that are mined in areas of serpentine rock. One commenter suggests that the Commission consider permitting patching compounds which contain such naturally occurring contaminants. Other commenters suggest that a percentage of asbestos contamination by weight be permitted. The lowest percentage suggested by one commenter is 1 percent because the Environmental Protection Agency (EPA) permits the presence of 1 percent asbestos by weight in spray-on asbestos insulation and fire proofing.

As noted in the proposal, the Commission is aware that asbestos is present in the environment. Further, the Commission does not wish to ban all consumer patching compounds in which traces of asbestos are present as a contaminant rather than as an intentionally added substance.

The suggestion that the Commission permit contamination of 1 percent by weight, however, appears to be inappropriate for consumer patching compounds because consumers would not be sufficiently protected. One percent by weight could mean a substantial number of small lightweight asbestos fibers, thus presenting a significant exposure to consumers of respirable free-form asbestos. Therefore, the Commission declines at this time to adopt a percentage by weight to define permissible contamination.

Industry experts do not agree as to the amount of asbestos that might be present in products without deliberately added asbestos. Nor is there agreement on the reliability of the techniques used to measure low levels (below 1 percent) of asbestos by weight. The Commission believes, however, that the use of appropriate quality control measures and careful selection of raw materials can serve to minimize contamination from unintentionally added asbestos (see the Commission's economic impact statement on file at the Office of the Secretary). In order to emphasize that only patching compounds with clearly unavoidable traces of asbestos contamination will be permitted, the Commission defines "intentionally-added asbestos" at § 1304.3(f) of the rule below to mean asbestos which is

- (1) added deliberately as an ingredient intended to impart specific characteristics; or
- (2) contained in the final product as a result of knowingly using a raw material contain-

ing asbestos. Whenever a manufacturer finds out that the finished product contains asbestos, the manufacturer will be considered as knowingly using a raw material containing asbestos unless the manufacturer takes steps to reduce the asbestos to the maximum extent feasible.

Therefore, the ban applies only to consumer patching compounds containing intentionally-added respirable free-form asbestos and will not apply to products having unavoidable trace amounts.

9. *Artificial emberizing materials—exemption from ban.* A manufacturer of electric artificial logs and electric fireplaces states that although the Commission proposed to ban only artificial emberizing materials containing respirable, free-form asbestos, references in the media to artificial logs and artificial fireplaces reflect adversely on his business. He asks, therefore, that his products, which use an artificial ash bed of vermiculite, be exempted from the ban.

As the commenter noted, the Commission ban applies only to emberizing materials containing respirable free-form asbestos and not to any artificial logs or artificial fireplaces with which they may be used. Since the banned product is used with artificial logs, it is understandable that questions are raised as to different kinds of artificial logs. The Commission does not believe it would be appropriate to exempt from the ban all electric logs coated with unidentified substances, or all artificial ash used in electric fireplaces, since some of these articles could include the banned product. However, in order to clarify the matter for consumers as well as producers, the Commission adds a statement to § 1305.3(d), the definition of emberizing materials, which reads, "electric artificial logs and artificial ash beds used in electric fireplaces which do not contain respirable free-form asbestos are not included in this definition."

B. *Effective date.* Six commenters discussed the proposed effective date of the ban of consumer patching compounds which was 30 days after publication of the final rule. Five manufacturers suggested a date later than 30 days after publication. A public interest group suggested that the effective date be the date of publication of the final rule.

(1) One commenter suggested that the Commission consider a series of effective dates for the ban on consumer patching compounds: 30 days for manufacturers, 90 for distributors and 180 days for retailers in order to clear inventories. Several commenters believe that a 30-day effective date might prove burdensome to small manufacturers because of the inventory problem.

The matter of inventories was considered in the July 29, 1977 proposal to ban and further discussed at the public meeting of August 15, 1977. The concern of those involved to clear their existing inventories of consumer patching compounds containing respirable free-form asbestos was considered. Information available to the Commission indicates that manufacturers are now maintain-

ing a relatively small inventory. Distributors report that they maintain a small inventory compared to their sales. Retailers have a much slower-moving inventory (51).

The Commission considered the possible adverse economic impact of a 30-day effective date on inventories of manufacturers, distributors and retailers. The Commission also considered the possible adverse effects of exposing consumers to inhalable asbestos by permitting the manufacture, distribution and sale to consumers of patching compounds until 180 days after publication of a ban. It appears to the Commission that early discontinuance of the manufacture of this product would be necessary in order to stop its continuing proliferation in the market. On the other hand, substantial adverse economic impacts could result from the freezing of distributors' and retailers' inventories at an early effective date. The Commission concludes therefore that the ban should become effective at two different points in time. For manufacturers, the effective date should be close to publication of the rule in order to stop the continuing manufacture of the product. For distributors and retailers, the effective date should be delayed to help ameliorate adverse economic impacts.

Therefore, the Commission declares below at § 1304.4 that consumer patching compounds containing respirable free-form asbestos which have been manufactured or initially introduced into commerce 30 or more days after publication of this rule are banned hazardous products. This means that a banned hazardous product, having been manufactured or initially introduced into commerce, retains its status as a banned hazardous product; thus, its subsequent sale, offering for sale, or distribution in commerce, is prohibited by any person in the chain of distribution. In addition, the Commission declares that all other consumer patching compounds containing respirable free-form asbestos, no matter when manufactured or initially introduced into commerce, are banned hazardous products 180 or more days after publication of this rule. (As stated below in § 1304.4(g) of the rule, initial introduction into commerce of this product occurs when the product is physically shipped from a manufacturer's facility to a distributor, retailer, consumer or to another person for application in a consumer environment.)

In summary, 30 days after publication of this rule, manufacturers will be prohibited from manufacturing or shipping the product to distributors, retailers, consumers, or to others for application in consumer environments. Further, 180 days after publication of this rule, distributors and retailers will be prohibited from selling, offering for sale, or distributing any of the described product, no matter when manufactured or initially introduced into commerce, to distributors, retailers, consumers or to others for application in consumer environments.

(2) The public interest group recommends that the effective date of the ban

stances. They indicate that persons of differing skills may release different amounts of inhalable asbestos into the air. Although these differences occur, a consumer would likely release more asbestos into the air because he or she may be less skilled in the process than a professional applicator. The Commission recognizes as these commentators point out that some products have a smaller percentage of asbestos than those which were used for exposure data in the Commission risk assessment. For example, one commenter submitted asbestos exposure data from a study he conducted using a compound that contained a smaller amount of asbestos. Based on this commenter's exposure data, another risk assessment was conducted. The results suggest that use of a patching compound containing less asbestos may reduce but does not eliminate an excess of deaths due to exposure to asbestos in patching compounds. The range is from 1 death per million persons exposed for the projected five years exposure using one model and up to 226 lifetime excess cancer respiratory deaths per million persons exposed during another model (83). It should be noted here that while asbestos levels may vary, they do not change the fact that there is no known level below which inhalable asbestos may be considered safe.

(c) Another commenter says that using a premixed compound reduces the consumer's exposure to asbestos. The commenter also thought that the Commission's estimate of consumer exposure was too high. The Commission's risk assessment analysis did take into consideration the exposure during the mixing of a patching compound. While exposure to asbestos fibers would be negligible during slight stirring of a premixed compound, the exposure during the sanding and cleaning operations involved would be the same as for the dry compound. Consequently, the risk assessment values would not be significantly reduced. As for the four-day, eight-hour exposure being too high an estimate, no data were submitted to substantiate that contention. As stated in the proposal, therefore, it appears to the Commission that although the exposure may be high, it is a reasonably foreseeable exposure.

D. *Substitutes for asbestos.* The July 26, 1977 proposal notes that substitutes for asbestos are already being used in patching compounds. One of the most common substitutes is attapulgite, a fibrous clay. Other substitutes of a fibrous nature are wollastonite, kaolinite, sepiolite and bentonite. Several comments express concern that materials used as substitutes for asbestos may also pose hazards.

The Commission shares this concern. Substitutes for asbestos have been under consideration for only a short time. Little data are available on which to evaluate the safety of substitute materials. Experimental findings of Stanton (58) indicate that many mineral fibers (in addition to asbestos) of small respirable di-

mentions are biologically active under experimental conditions.

According to correspondence dated July 26, 1977 from Dr. Paul Kotin of the Johns-Manville Co. with environmental consultant Barry Castleman, a Johns-Manville study is under way to assess the potential inhalation hazard of certain naturally-occurring or man-made mineral fibers such as ceramic fibers. Ceramic fibers are a potential substitute for artificial emberizing materials.

Human exposure data to substitutes are extremely limited. Occupational exposure data to certain clay mineral fibers which are proposed asbestos substitutes are scheduled to be presented at a Symposium on Occupational Exposure to Fibrous and Particulate Dust and their Extension into the Environment, in December 1977. These data are expected to indicate the extent of exposure, rather than human experience findings on results of such exposure. Data on the results of human exposure to asbestos substitutes will not, in all likelihood, be available in the near future.

(1) A commenter suggests that substitutes, since they would be fibrous, would present a risk.

In assessing asbestos substitutes, data available to the Commission indicates that a number of substances may be used which are not fibrous such as calcium carbonate, clay, resins and mica. For the fibrous clay minerals which may be used as asbestos substitutes such as wollastonite, kaolinite, sepiolite and bentonite, the Commission is aware that there is a lack of conclusive data on the hazard potential associated with these minerals. Additional study is needed to evaluate the risk of inhalation exposure to such small mineral fibers. Nevertheless, the Commission believes that the known risk from inhalable asbestos requires the banning of these products at this time.

(2) A comment questions a statement in the proposal that fibrous glass could be considered a substitute for chrysotile in emberizing materials.

The Commission concurs with this comment; it is currently unaware of any manufacturers or distributors who use or know of the use of fibrous glass for this purpose. In addition, from a technical viewpoint, glass fibers are not similar in size and shape to chrysotile. Unlike the rod-like glass fibers, chrysotile tends to be curved, or be of curly fibers or fiber bundles, comprised of extremely small-diametered fibrils. However, glass fibers are similar—at least in shape—to some 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. Additional study is needed to assess the pathologic effects of inhaled fibers, including fibrous glass.

E. *Economic considerations.* Six commenters expressed concern that the ban would have an adverse economic impact on the industry. Five of the six are manufacturers who commented on patching

compounds. The sixth is a distributor of gas fireplace logs.

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 or may be unable to obtain necessary raw materials by the effective date of the ban. Thus, some may cease production temporarily, until such reformulation is achieved. Some of the large manufacturers have indicated a willingness to license their asbestos-free formulations (or parts of them) to smaller firms.

Two commenters discussed potential cost effects of the ban on patching compounds other than those relating to the product itself. One patching compound producer estimated at 60 percent the increased "workload" associated with the professional application of non-asbestos formulations because of different performance characteristics. The Commission has investigated the potential increase in direct labor costs associated with existing asbestos and non-asbestos formulations; it estimates an initial 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 to the relatively poor shrink- and crack-resistance of some non-asbestos formulations. These increased costs are expected to diminish over time as formulations improve and as applicators become more accustomed to using non-asbestos formulations.

One company which may be adversely affected by the proposed ban reports that attapulgite, 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.

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. However, the addition of asbestos would be tantamount to manufacture of the banned product and would thus be prohibited. It appears that at least some existing non-asbestos formulations may be less desirable, from a performance standpoint, to professional contractors; most consumer applicators are not ex-