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ECONOMIC IMPACT OF THE BAN OF CERTAIN PRODUCTS CONTAINING FREE ASBESTOS

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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 alternative 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 pressure of asbestos altogether (in the rule as proposed) would have substantially greater adverse effects.

Many manufacturers who do not have extensive technical reformualtion 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 professsional 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.

The utility derived from the product may be adversely affected: available substitutes for asbestos are said to be generally inferior in simulating the effect of glowing embers. No effect on the heating ability or efficiency of gas logs will occur as a result of the proposed ban.

Some health benefits may accrue to consumers and workers engaged in emberizing material production. The extent of these benefits is not known, but it is expected to be slight.

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.

Scope and Coverage

As proposed the ban will cover virtually all patching compounds on the market today. It will have a potential effect on products used in the consumer environment by professional contractors as well as on products actually purchased or available for purchase by consumers for their own use. This will probably lead to overall cost and price increases in the commercial market for patching compounds, and adverse effects on the direct labor cost of drywall finishing and on the utility of the product to drywall contractors and consumers, as discussed below in the Construction Industry section. Further, it may affect patching compounds used in non-consumer, i.e., industrial, environments to the extent that those same products may enter the consumer environment. Formulation changes that may be required for regulated products may be made to some industrial products as well.

Uncertainty currently exists as to whether contractors will be legally able to perform jobs with asbestos-containing compounds that they have on hand as of the effective date of the ban. If contractors are considered to be "selling" consumers the materials used in the renovation of a room, for example, then the patching compounds in contractors' inventories may be unusable.

The Commission could promulgate the ban so as to allow continued asbestos-containing compound use by professional contractors. If the ban is limited to patching compounds marketed to, or available for sale to, consumers, the adverse effects of the ban on small manufacturers and on the construction industry, as discussed below, would be greatly reduced. The potential health benefits of the ban to contractors would not be as great, however. The trend in formulation research away from

the use of asbestos would be expected to continue; however, the actual elimination of asbestos as an ingredient from all patching compound formulations would probably not occur in the foreseeable future. Asbestos-free formulations make up the vast majority of sales to consumers. The ban's effect on consumers would be minimized to the extent that those formulations now on the market are still available as currently produced after the effective date of the ban.

Other issues exist concerning the scope and coverage of the ban. There are likely to be substantial problems associated with the identification of asbestos-containing formulations, both for enforcement purposes and for consumer information. Since manufacturers generally have not ingredient-labeled patching compounds containing asbestos, ascertaining which products are banned may be difficult at first. This may lead to a general unwillingness to buy on the part of consumers and some retailers for a period of time, and may increase manufacturers' costs associated with the recall of banned products from the marketplace, if products are returned as a result of mistaken identity.

Regardless of the scope and coverage of the ban, there may be some adverse spillover effects on sales of products which are similar to patching compounds, but which are not covered by the proposed ban. These include concrete and roofing patch, driveway coatings, putty, caulking compounds, and other sealants. These may contain asbestos, but are not typically sanded, and, therefore, would probably not emit respirable asbestos fibers under reasonably foreseeable use. Some producers of these products have indicated that the proposal has had an adverse effect on their sales, and has generally led to uncertainty among wholesale and retail buyers and consumers concerning the safety of the products.

A class of products not covered by the ban which may contain asbestos and which may release fibers if sanded is textured coatings, including ceiling and wall decorative and soundproofing slurries and paints. These products are typically sanded only as a means of removal, which occurs infrequently (e.g., during demolition or as interior decorating

tastes change); thus, the hazard presented is different from, and probably lesser than, that presented by patching compounds. It appears that some of these products have asbestos-containing formulations identical to those of some patching compounds; thus, some products which could not be sold as patching compounds may be relabeled and sold as textured coatings after the effective date of the ban, subject to the circumstances discussed below.

Asbestos Contamination

The ban as proposed in the Federal Register, if interpreted literally, would prohibit the manufacture and sale of all patching compounds within its scope and coverage. This is because all patching compounds probably contain at least trace levels of asbestos through inadvertent contamination of raw materials, particularly talcs used in the production of some compounds (talc may constitute from 0.5 to 20 percent, by weight, of these compounds). As noted in the Environmental Assessment of the proposed ban*, asbestos is a ubiquitous substance that occurs naturally in the earth's crust. It may also be found in water used in the manufacture of wet patching compounds or used to mix dry patching compounds, which when sanded, would present the hazard associated with fiber inhalation. Tremolite asbestos and anthophyllite asbestos are likely to be especially present in and around some talc and other mineral deposits.

In addressing the issue of contamination, the Commission may choose to promulgate the ban as proposed, i.e., with no allowance for asbestos contamination; it may prohibit the presence of asbsestos contamination above a set level (as determined in part by some type of screening procedure) or it may prohibit the intentional use of asbestos or fibrous talc known to contain significant amounts of asbestos.

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* See "Environmental Assessment of a Ban on Consumer Patching Compounds and Artificial Emberizing Material Containing Free Asbestos," July 18, 1977, which is on file at the Office of the Secretary.

Our study indicates that due to the ubiquity of asbestos in raw materials, it would be technically infeasible to produce a totally asbestos-free patching compound. In the absence of these drywall finishing compounds, consumers would not have products available to perform minor maintenance on their homes. Alternative methods of interior finishing would also have to be employed or developed. These might include the use of unedged drywall with unfinished joints; the use of "predecorated" drywall; the use of veneer plaster on drywall; the use of plaster or wood paneling; and the use of substitute products for patching compounds, such as the textured coatings mentioned above. All but the last of these alternatives would entail serious potential disruptions of the industries involved, with total potential impacts of over $1 billion annually, and may result in unsatisfactory construction techniques from a performance and aesthetic standpoint.*

A likely interim screening procedure exists for enforcement purposes. This procedure would, with readily-available optical phase-contrast microscopy, detect fibers in prepared product samples. Samples which contain less than a certain number of fibers per thousand particles of material would be considered to contain negligible amounts of asbestos and would not be subject to further scrutiny. Samples found to contain more than that number of fibers per thousand particles would be selected for further, more quantitative analysis, such as x-ray diffraction or election microscopy, for positive identification and quantification of asbestos fibers. A level of one fiber per thousand particles has been suggested as a minimum practical level of contamination which can be detected by this method (see ESHS memo, J. Thompson and Joseph B. Pitkin, November 7, 1977).

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* While we do not believe it is the Commission's intent to ban all asbestos compounds, this report does not go into great detail on the impacts of the zero-asbestos-content rule. For a more detailed treatment, see attached A.T. Kearney research report excerpt in Appendix II. The remainder of this paper will focus on the impacts of the ban under the assumption that some asbestos contamination will be allowed.

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.

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*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 contian 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 fibesr 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.

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*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.

These products are used in new residential construction, residential remodeling, and in other commercial "consumer environments" described in Section 3(a)(1) of the Consumer Product Safety Act. About half of all patching compound shipments are used by professional contractors in new residential construction. Some 20 percent is used in residential renovation performed by professionals. Only about 5-8 percent of the total is sold to and used by consumers for repairs and renovation. Most of the remainder is used by professionals in institutional or other commercial construction and renovation. Less than 10 percent of all unit sales is believed to be marketed to, and used only by, industrial contractors; these products would not be subject to the ban. Most brands of patching compounds on the market, though intended primarily for sale to building contractors, are packaged or distributed such that consumers could purchase them from retail stores or from some building supply wholesalers.

"Consumer-market" packages are usually one gallon or less (wet) and five pounds or less (dry). Commercial packages are usually four gallon (50 pound) boxes or five gallon (62.5 pound) pails (wet) and 25 pounds or more (dry). The unit retail price range of products packaged for, and usually sold to, consumers is about $1.00-$4.00. Some patching compounds sold to professional users are shipped direct from local manufacture to job sites.

Over 90 percent of all patching compounds are used by professional contractors. There are some 12,000 drywall finishing contractors in the U.S. (including family businesses, sole proprietorships, etc.), virtually all of which are small. The estimated value of direct labor contributed by all drywall finishers in 1976 is about $1 billion.

About 50 patching compound manufacturers are known to the Commission, most of which are relatively small, single-plant operations with fewer than 100 employees, total company sales of $1-2 million, and limited

technical research capabilities. Most of their product lines are relatively homogenous: most patching compound formulas are quite similar to each other, with slight variations to accommodate special user needs or climatic conditions. Six producers are major corporations which produce wallboard and other related products. Three of these account for about 50 percent of the total patching compound market.

An estimated 10,000 tons of asbestos was used in patching compounds in 1976. Asbestos is added to some patching compounds to aid shrink- and crack-resistance. Patching compound manufacturers generally purchase asbestos (i.e., chrysotile) for addition to patching compound formulations from local wholesale suppliers rather than directly from the asbestos industry. Chrysotile in patching compounds constitutes a relatively insignificant percentage of all asbestos use.

Certain asbestos (amphibole) contaminants are present in some talcs used in the formulations of many compounds. They may also be found, to a much lesser extent, in other raw materials. There are approximately 10-12 talc mining firms in the U.S., the largest five of which account for over 95 percent of sales. Most talc suppliers are diversified: only one or two firms are reported to mine only talc. Some of these firms sell talc directly to patching compound manufacturers; others sell through local and regional industrial distributors. Some of these companies also supply other raw materials, such as wollastonite, for patching compound manufacturers whose products are formulated without talc. Sales of talc and other materials for use in patching compounds typically represents a very small percentage of the supply industry's annual sales.

Industrial-grade talc, in contrast to cosmetic grade talc (which is used in baby powder and other cosmetic products), may be fibrous or non-fibrous. Mineral (non-fibrous) talc may contain some asbestos contamination, but this variety of talc may often be virtually asbestos-free. Typical prices for this kind of talc range from about $50-100 per ton. Fibrous talc, on the other hand, generally contains much greater amounts of naturally-occurring asbestos (perhaps up to 50 percent by weight), and must be labeled under OSHA's 1974 asbestos regulation. Both fibrous and non-fibrous talc are used in patching compounds. [illegible]

the fibrous variety is often preferred; its price is reportedly around $150 per ton as of November, 1977. Though mineral talc may contain some inadvertent amphibole contamination, it is used as a partial substitute for fibrous talc in patching compounds in order to reduce asbestos content levels substantially. We know of only one major supplier of fibrous talc which contains high levels of asbestos.

Efforts to reformulate patching compounds with reduced asbestos content were initiated in the early 1970's. The largest manufacturers of tape joint compounds have now ceased formulating with asbestos altogether. It is conceivable that some asbestos-formulated products produced by these firms may still be found in retailers' and wholesalers' inventories. Manufacturers' and distributors' total current patching compound inventories are estimated to be about $15 million. Retail inventories are not precisely known, but may be larger than this figure.

Most spackling compound formulations currently do not include asbestos as an ingredient; many never have been formulated with asbestos. They may contain asbestos contamination. Spackling compounds, however, account for a minor portion of all patching compound sales and inventories.

Impacts of the Ban on the Patching Compound Industry

Cost Effects

About half the patching compounds sold in 1977 (mainly tape joint compounds) are assumed to be formulated with asbestos. These products will have to be reformulated without asbestos. As noted in the Environmental Assessment, asbestos is replaced in these compounds by not one, but a combination of mineral and organic substances which control viscosity

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 manufacurers 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.

In addition to reformulation costs, most firms will have to undergo other kinds of changes in their total cost structures associated with actual production, including change-over and start-up costs, and the cost of raw materials procurement. Some substitutes for asbestos as an ingredient are reportedly significantly more costly than asbestos. For formulations which switch from fibrous to non-fibrous talc in complying with the ban, some savings in raw materials costs may occur since non-fibrous talc is, on the average, about half the price of fibrous talc. We estimate the total percentage increase in the cost of patching compound production at 5-15 percent, depending on the extent of the changes necessary, the ability of firms to effect those changes, and the sales base across which such costs can be allocated.

Producers, distributors, and retailers of patching compounds may also have to incur costs associated with the disposal or recall of products in inventory, and, to a lesser extent, the recall of some merchandise in the hands of consumers and professional contractors. Though repurchase is not required under a Section 8 ban, this will probably occur to the extent that banned products can be identified and either returned physically for refund or credit, or disposed of after credit is claimed. It can be expected that a certain amount of the product in distribution as of the effective date will be mistakenly returned or destroyed, even if it is not banned; this tends to occur when uncertainty exists among consumers and in the chain of distribution.

We estimate manufacturers' current finished goods inventories at about $10 million, or about one month's worth of production. Raw materials inventories are reported to be negligible. This relatively low level of inventory, possible in general because the narrow product line permits tight production scheduling, is particularly low because of the active construction industry market for the product in mid-1977. Distributors' inventories are estimated at about $5 million, or, again, about one month's worth of sales. Some or all of these inventories may be affected by the ban. Retail inventories of products that would be banned are unknown; the wholesale value of these inventories is probably several million dollars. This includes non-talc-containing and other asbestos-free formulations that may not 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 attapulgite 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 attapulgite 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,

then the average price charged to professional contractors will tend to rise. This price rise may not be immediate in some cases, since contractors often order patching compounds up to a few months in advance of the anticipated need for the product on job-sites.

Drywall "mechanics" are often paid by the foot of wallboard joint they finish. As mentioned in the Utility Effects section below, some asbestos-free patching compounds may require significantly more time to apply. This would tend to increase the direct labor costs of residential and other construction and renovation. The expected increase associated with use of most non-asbestos reformulations is between 10 and 25 percent. The estimated annual labor cost of drywall finishing, exclusive of wallboard hanging, in consumer environments is on the order of $1 billion. The use of non-asbestos patching compound formulations in all such applications may increase this cost by $50-125 million for the year following the promulgation of the ban, assuming that roughly half the current labor costs (i.e., that portion now associated with the use of asbestos-containing formulations) are affected by the 10-25 percent increase. Some of the latest non-asbestos formulations are reported to be as efficient as older asbestos-containing ones; thus, the construction labor cost effect of the ban may be expected to lessen in successive years.

Utility Effects

Asbestos is used in patching compounds to aid "workability," or the ability of the material to be pliable and to be smooth upon application and troweling, and to help prevent shrinking and cracking of joints and other places that have been patched. Experience with past and some existing non-asbestos formulations indicates that most asbestos-containing compounds generally have better workability, and are significantly more shrink-and crack-resistant, especially under extreme temperature conditions. Thus, even though widespread knowledge of asbestos hazards exists, and favorable price arrangements may be available for non-asbestos formulated patching compounds, many drywall mechanics still prefer asbestos-containing compounds. This performance gap is said to be closing over time as

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 contractor 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 shrinkage 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 substitutes 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 disporportionately 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 asbsestos-free formulation technology become more widely available, and as price competition is increased because of market pressure and economies 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 purchasers 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.

Consumers

... is intended to protect consumers from the long-
... and death associated with respirable asbestos fibers
... Some benefit in the form of longer life may
... are heavy users of the product. For very infrequent
... is expected to accrue. As noted above, the primary
... proposed ban would accrue to drywall contractors.

... of some patching compounds and professional drywall
... consumers may be indirectly affected by the inability
... reformulate their products and by the potential shortage
... raw materials. Some regional patching compound
... This would amount mainly to some inconvenience
... of new home construction delays or the need for
... some drywall finishing jobs.

... reformulation on the utility derived from the product
... mainly to professional contractors, who use patching
... large scale on a continual basis. Consumers,
... product infrequently and in relatively small amounts.
... perceive any significant changes in the performance
... of those products that are reformulated to comply