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PLAINTIFF'S EXHIBIT GF-2446

Mrs. Joni T. Repasch
Record Clerk
Office of Toxic Substances (TS-793)
U.S. EPA
401 M St., S.W.
Washington, DC 20460

Office of the Secretary
Consumer Products
Safety Commission
Washington, DC 20207

RE: PROPOSED REGULATIONS OF COMMERCIAL & INDUSTRIAL USE OF ASBESTOS FIBERS
Docket No. 0TS-61005

Dear Sir or Madam:

GAF Corporation is a United States firm which produces a wide variety of industrial and consumer products, including chemicals and building materials. The corporation employs more than 16,000 persons in over 100 locations throughout the world.

Pursuant to the Toxic Substances Control Act and the Consumer Product Safety Act, on October 19, 1979, the EPA and the CPSC gave advance notice of proposed rulemaking to regulate exposure to asbestos. The following are comments by GAF, first generally directed to the issues raised in the ANPRM and then specifically addressed to the agencies' questions.

Some information contained in this submission is extremely confidential and should not be disclosed to any persons or governmental agency without the expressed permission of GAF Corporation.

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These comments are submitted pursuant to the request of the EPA and the CPSC to assist the agencies in assessing whether current exposure to asbestos presents an unreasonable risk to human health. It is GAF Corporation's position that where asbestos fibers are used in manufacturing in accordance with current OSHA rules, there is no unreasonable risk to worker health. Furthermore, GAF submits that as far as the GAF products containing asbestos are concerned, they present no unreasonable risk during their lifetime, to the user, including any removal or replacement process, if done under commonly accepted industry standards and recommendations.

Asbestos is a unique naturally-occuring reinforcing material with valuable characteristics, including ultra violet light, water, rot, heat and fire resistance, high tensile strength, chemical and dimensional stability, and insulation value. The regulatory options described in EPA's advance notice of rulemaking will remove these properties from many important products for which substitutes are, in most cases, either inferior, still in early research and development stage, or are so expensive as to be commercially impractical. Generally speaking, new asbestos substitute products are much more expensive, and many under consideration are petroleum derivatives, the development of which will lessen this country's energy independence. The proposed regulatory options will have a significantly adverse effect on industry, create additional unemployment and fuel inflation by increasing the cost of building, automotive and other products.

GAF strongly objects to those parts of EPA's advance notice of rulemaking under the subheading Health Effects of Substitutes where, without any support from scientific or medical documentation, EPA indicates that glass fibers of certain dimensions will not be considered suitable substitutes "unless appropriate testing indicates otherwise." There is no apparent legal authority for EPA to regulate glass fiber products under the instant proceeding.

Finally, GAF submits that asbestos fiber use is sufficiently regulated under the Occupational Safety and Health Act, the Clean Air and Water Acts, and the Consumer Product Safety and Federal Hazardous Substances Acts.

SPECIFIC COMMENTS

For convenience, GAF will, as far as possible, follow the numerical order set forth under the subheading "Questions & Information Needs" in the 10-17-79 advance notice of rulemaking. Obviously, GAF is not able to answer each question posed, and no implication should arise from any failure to comment.

1. Definitions;

Asbestos is a naturally occurring mineral of the fibrous amphibole family. Usual commercial forms include chrysotile, amosite and crocidolite. Other forms of little or no commercial significance are actinolite, anthophylite and termolite.

Encapsulated fibers are completely enveloped in a matrix of another substance so as not to be directly visible. Examples of GAF products using encapsulated fibers are floor tiles, bituminous roofing cements and coatings, and sound deadening membranes.

Locked-fibers are sufficiently bonded to one another by inorganic cements, thermo-set polymers, thermoplastic resins and elastomeric compositions, singly or in combination, and cannot be readily separated or removed from one another or the product, under normal handling or use conditions. Examples of GAF products using locked-fibers are specialty papers, gasket papers, sheet vinyl flooring, asphalt saturated roofing papers, and facing sheet felts on urethene insulation with high fire resistance.

Easily-released fibers have a relatively weak bond to one another and are easily separated or released by friction, pressure or abrasion.

Friable materials will crush, fragment or break under low order abrasion or pressure.

2.(a) One Hundred Thirty Two workers are employed in positions for which monitoring for asbestos exposure is required by OSHA, at six locations throughout the U.S. In all cases, exposure is well within OSHA regulations and is by the inhallation route. Duration and frequency varies considerably. Good work practices are actively encouraged, including showering after work, washing before meals and proper disposal and washing of work clothes. Respirator use is encouraged although exposure is below permissible levels. Engineering controls have been incorporated into GAF operations including improved bag-opening and handling equipment, hood and exhaust systems for dust control and enclosure of specific operations.

2.(b),(c),(d) Fiber "size distribution" could refer to either length or diameter. All fiber, regardless of length, can vary in diameter from a crude spicule to a

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submicron size. The degree of filamentation depends upon how much "opening" or milling and mechanical attrition the asbestos experiences in the course of mining, milling, opening, mixing, etc. in the various processing stages. Magnification shows that many individual fibers are partially separated into several finer filaments. All product categories listed, therefore, would contain a broad range of asbestos fiber diameters.

Fiber length distribution is also a rather meaningless value with respect to the product categories outlined. While fiber is classified by a screen test to designate grade, the normal method of length measurement does not truly reflect the actual lengths present. Even the so called long grades contain many very short entrapped fibers in longer feathered filaments.

Another reason why fiber length distribution (and content) is not meaningful when related to various products is that wide choices of different grades of asbestos can be employed for equivalency of effectiveness. For example, an asbestos cement formulation employing 10% of 4T grade fiber (long) could be substituted for a mix containing 20% of 6D grade asbestos (short). In fact, it is very common to employ blends of various grades rather than a single length classification of asbestos in the manufacture of the listed products.

In addition, there are significant differences between fibers from the various natural deposits. Some have better physical properties than other sources. Different amounts of an equivalent grade may be required to achieve the same product characteristics. This applies within one type of asbestos and also between types of fiber. The surface area per unit weight for single grades of chrysotile can vary more than severalfold. This has a pronounced effect, for example, on the amount employed in formulating floor tile, bituminous paints and coatings, friction products, etc.

2.(e) GAF only employs chrysotile fiber in the 5,6 and 7 grade classifications for manufacturing products.

3.(a) The following categories of GAF products contain asbestos fibers:

roofing felts	floor tiles
sheet vinyl flooring	class I fire resistant urethane insulation
specialty papers	gasket papers
bituminous roofing cements and coatings	automotive & industrial sound deadening membranes

3.(b) Purpose of asbestos in product:

- o roofing felts - fire, rot, water and ultra violet light degredation resistance.
- o sheet vinyl - heat, rot, moisture resistance, dimensional stability, tensile strength.
- o specialty papers - fire, rot, chemical, heat, ultra violet light resistance, strength.
- o bituminous roofing cements & coatings - consistency for application, fire, ultra violet light, moisture resistance, reinforcing, non-settling property in storage.
- o floor tile - heat resistance (processing), moisture chemical and penetration resistance, reinforcing strength dimensional stability.
- o gasket papers - heat, chemical, moisture and fire resistance; compression recovery strength
- o sound deadening membranes - fire and water resistance; flow control; reinforcement.

3.(c) During 1979, GAF purchased 70,811 tons of asbestos for use in manufacturing.

3.(d) GAF considers this information priorietary and cannot release same without assurances of confidentiality.

3.(e),(h) All worker exposure to asbestos fibers during manufacture is well below OSHA limits. GAF products present no excessive exposures during use or removal under standard recommended practices.

Specific Exposure Expected During Manufacture and Use Sheet Vinyl Flooring

The asbestos felt backing employed in the manufacture of sheet vinyl floor covering contains asbestos fibers which are thoroughly bonded by plastic resins which "lock in" or prevent the free release of the asbestos filaments during the course of manufacturing the product and its use.

In the production of the asbestos backing felt, the fiber is received in pressure-packed, pulpable paper bags that are stacked on pallets. The entire pallet is placed on top of a special conveyor that is mounted over a Hydropulper

or mixing unit which contains processed water. The bags are mechanically pushed from the pallet and completely submersed in the water without opening. The action of the impeller in the bottom of the tank disintegrates the bag and allows the pressure-packed fiber to wet-out into a slurry so that there is no exposure of dry fiber to the atmosphere.

Latex binders and other resins are added to the fiber slurry where deposition of the polymer on the asbestos filaments takes place. This stock is processed in the usual manner as on a paper machine, and the fiber web is formed with a moisture content of about 50% when it leaves the paper producing unit. It proceeds from there to drying drums, which set or cure the resin binders and the sheet is wound into large diameter rolls which then proceed to the floor covering fabrication stage.

In the first stage of flooring manufacture, one side of the felt is completely covered with impervious vinyl coatings that isolate the backing material from direct exposure to the environment. In the course of processing, the back of the sheet is not subjected to any abrasive or other forces that would liberate the bonded fibers into the atmosphere. Repeated fiber count measurements at various stages of production lines confirm this. In the course of application, the material is cut with sharp knives or scissors, and, again, no release of fiber is experienced. The sheet flooring is applied with adhesives, which further tends to isolate the fibers from the environment.

The top, vinyl wear layer, which has a vinyl foam and size coat underneath, is designed to be extremely resistant to abrasion. After prolonged wear of the top coat, the printed design on top of the foam layer would be worn away and the product would generally be replaced long before the vinyl foam layer or size coat were lost to expose the underlying felt.

When this type flooring is removed, the back of the felt generally is covered with adhesive. It is possible in some instances to have bonded felt pieces split and remain on the floor. The fiber in these residual pieces, however, is still bonded by the resin matrix, and ambient fiber count measurements show that fibers are not released during this stage of removal. In some instances, the practice of using an abrasive floor sander to remove the residual pieces of felt from the floor could liberate fibers to the immediate environment. This is avoided, however, by either scraping the material from the surface or wetting down the floor before sanding is employed.

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Floor Tile

In the manufacture of floor tile, the asbestos component is added to the resin batch after being weighed in a special, environmentally controlled station which is designed to control the emission of fiber to the atmosphere. The closed mixing operation yields a large dough-like mass in which the asbestos is completely encapsulated. From that point on, the fiber remains encapulated in the entire mass. Any fragments that break off in the course of manufacturing the tile are generally a combination of resin and the mineral components. In an increasing proportion of the tile marketed, the surface of the product is coated with a clear, extremely abrasive-resistant urethane finish. This also increases the isolation of the asbestos from the environment.

A large percentage of the tile sold for consumer application is coated on the back with a layer of pressure sensitive adhesive which, by its very nature, prevents any particles from escaping from the back of the tile unit. In all instances, the tile is cemented to the floor with tacky adhesives. Upon removal, a major portion of this adhesive remains on the back of the tile.

Vinyl asbestos tile is very resistant to abrasion, and the rate of wear is extremely low. The potential to liberate hazardous amounts of asbestos during the course of the service life is too low to be measured.

Asbestos Roofing Felt

Large rolls of asbestos paper which contains a starch and latex resin binder are unwound and immersed into molten asphalt which impregnates the felt to further bond and lock in the fiber filaments. The degree of bonding of the fibers is adequate to essentially eliminate any liberation of fiber prior to saturation.

In the application of the roofing rolls of saturated asbestos felt, the material is applied onto a layer of molten, coating grade asphalt. A series of layers are built up and finally the top felt is covered with a pour coat of asphalt, into which gravel is usually applied. There can be essentially no liberation of individual fibers to the atmosphere during the course of handling or applying the materials in the complete roofing system. Asbestos roofs are quite durable, and a life expectancy of at least 20 years is normally experienced. With a mineral aggregate surface application, the roof will reach a point of failure without any direct exposure of the encapsulated felt. Since the

composite membrane remains essentially intact as far as the content of asphalt and asbestos, there is no liberation of fiber during removal.

On older, smooth-surface specification, asbestos roofing, the top coating on the felt may weather to the point where asbestos is exposed. The top ply of asbestos felt will remain for a period of many years to that it is likely that the rate of any fiber liberation is at extremely low levels at any given time. There is also the probability that much of it would be eroded and washed away rather than released directly into the air.

Urethane Roof Insulation

Polyurethane roof insulation boards are customarily faced with asphalt impregnated felts. When the felt is normally of a cellulosic fiber base, these boards do not contain the highest fire resistance rating. Foam surfaces with asphalt-saturated asbestos felt, however, can achieve the Factory Mutual Class I degree of fire resistance. Attempts to do this with other surface skins such as glass mat have, to this date, not been successful. In the manufacture of urethane board, the asbestos felt is already saturated in large jumbo rolls. There is no liberation of asbestos fiber in the subsequent course of producing the foam panels or in its field application. In all cases, the material is covered by a suitable roofing system that includes several layers of felt and asphalt application. In any removal procedure, there is no reasonable expectation for release of the fiber in the felt skins.

Asbestos Gasketing Paper

Asbestos fiber employed in the manufacture of gasketing and a number of specialty papers is received in pressure-packed blocks which are encased in pulpable paper bags. The asbestos slurries used in the papermaking process are prepared by introducing these bags into the water so that the fiber is released under water and dispersed with the other ingredients of the furnish. Resin latex binders are added to the slurry and precipitated into the fiber. There is no reason to have fiber liberated to the environment during the batch preparation stage nor on the wet forming machine itself. The felt web passes over the drum briers. During this stage of the process, the latex which is normally of a curing type, binds the fibers together and by the time the sheet is dry, the asbestos is locked in and not dislodged by subsequent handling. The gasketing sheet is shipped in

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wrapped rolls and should subsequently be treated by a fabricator in a manner that would not liberate particles from the bonded mass. In any event, there is no reason why protective steps could not be taken to avoid any particulate matter released in the course of fabricating the variety of paper gasketings produced.

The nature of a gasket is to form a seal between two rigid elements and in service, the faces are completely isolated from the environment. They are designed to have good chemical stability and even the exposed edge, which is frequently covered by a metal, will not liberate any measurable quantity of fiber. Gasketings are generally treated so that they will release from the equipment face when it is necessary to remove or replace them. If any poriton should stick to the surface, it can be removed by a scraping tool and this action would not liberate fiber because the bonding material is still intact. If abrasive tools are employed, the liberation of fiber can be prevented by wetting down the remnants with oil or water.

Bituminous Cements and Coatings

Roofing cements and coatings are produced by mixing asbestos in solvent solutions or emulsions of asphalt. The fibers are completely encapsulated. These products are very durable and generally weather to a hard, brittle state after many years service. Any fiber exposure by erosion would be at a very low rate and only after prolonged periods of time.

3.(f),(g) All water discharges and waste disposal from GAF plants are in compliance with State and Federal regulations.

4. Thousands of businesses, both retail and manufacturing, of all sizes will be affected by the proposed regulations. The elimination of any category of product will necessarily lower competition and assist non-affected companies in controlling the marketplace. Although future substitutes may migigate unemployment, the regulation of asbestos will eliminate certain products, at least temporarily, and result in a net employment loss.

5. Substitutes for asbestos fibers in products manufactured by GAF are in early stages of research and development. An examination of substitute products follows:

o Roofing Felts

glass mat roofing felts - glass is a relatively new material for roofing felts and earlier commercial offerings have experienced failure. Conversion to glass mats will require

both manufacturing experience and applicator training.

o Plastic Roofing membranes - These products have had performance and application problems and require highly specialized and trained crews. They are generally less fire resistant and more sensitive to damage from the elements.

o Floor Tiles - Higher cost substitutes in limited product lines are now entering the market. Some laminated vinyl sheet forms lack wear resistance and have not demonstrated good durability. Processing refinements are required to improve dimensional stability and other design changes will require both time and high capital expenditure.

o Sheet Vinyl - No proven alternatives exist. Organic floor backings have proved unacceptable where moisture is present. They are not recommended "on or below grade" service. A relatively long period of research and development will be required before possible substitutes with required properties can be put into production. Glass fiber based supports are under consideration as well as special non-asbestos mineral felts. Cost for potential alternates are considerably higher.

o Specialty Paper Products

gasket paper - no alternatives with the fire, heat, chemical and physical property requirements of the current asbestos fiber products are known. Substitutes are in research and development but involve an extended period of development and testing in machinery, piping, etc. before production can be contemplated.

paper products - for cooling towers, metal cladding sheets, ovens, piping and heating stoves: no known substitutes exist with the heat, fire and rot resistance and product fabrication capability of asbestos, or with the strength, insulation value or resistance to ultra-violet light degradation. An extended period of research and development will be required to provide alternates for the many areas where specialty papers are employed.

urethane roof insulation - with asbestos paper/facings: no substitute exists with as high an insulation value per unit thickness and which has high fire resistance on both sides. One competitive foam surfacing is perlite board bonded to urethane foam which is only fire resistant from one side. The perlite board is sensitive to moisture and has poorer thermal insulating properties.

roofing cement and sealants - substitutes are in the early research and development stage. None has yet had sufficient exposure to demonstrate the long durability that is essential for this service.

Auto/Sound Deadening Membranes - Possible substitutes generally have less fire and heat resistance. One more inexpensive alternate is under development but does not yet meet all performance criteria.

In most cases, substitutes will result in significantly higher prices. More exact data is proprietary and cannot be released without assurances of confidentiality.

f. Conversion Time - GAF's present knowledge/experience indicates the following minimum conversion periods are necessary:

1. roofing felts	5 yrs.
2. sheet vinyl	10 yrs.
3. sound deadening material	5 yrs.
4. floor tile	10 yrs.
5. specialty paper products	10 yrs.
6. urethane roof deck insulation	5 yrs.
7. roofing cements	10 yrs.

g, h. An estimate whether GAF or any other manufacturer will change to substitutes for asbestos fibers varies from product to product. In the case of roofing felts, GAF has recently spent $15,000,000 to construct a glass mat plant in order to switch from asbestos roofing felts. On the other hand, in 1978, GAF decided to terminate an asbestos cement product line and close plants because the product could not support the cost of conversion. Future decisions must await the results of current research and development efforts.

i. Effect on Innovation - The proposed regulation of asbestos will bar the use of a unique, valuable reinforcing material in future products even if no real risk exists. Moreover, considerable technical effort and funds are being expended to maintain a technological status quo, since presently existing products must be replaced.

6. GAF believes that none of its present products pose a health hazard to users because the asbestos is either encapsulated or locked in.

7. GAF submits that these factors must be considered in a risk/benefit analysis of the following products:

a. Automotive gaskets - This specialty paper item is lightweight and generally ringed by metal, typically copper or steel. No fiber release can be expected during use and removal. Substitutes are heavier, and less heat and fire resistant.

b. Sound deadening material - Removal of this light-weight product would result in either more noise pollution or use of less fire resistant products or heavier metal.

c. Floor tile - Limited substitutes presently on the market are significantly higher in cost and will result in higher housing costs, fueling inflation and further depressing the building industry.

d. Sheet vinyl, bituminous roofing cements and sealants and most specialty paper products used for fire or heat resistance presently lack reasonable substitutes.

GAF submits that the proposed regulatory options now under consideration are both unnecessary and duplicative of current regulations. Should the agencies choose to ignore such industry opinion, any regulation should provide at least a 10-year period for industry to research and develop economically feasible alternatives to asbestos fibers and to phase out the existing products.

Please address any further inquiries to the undersigned.

Respectfully submitted,

Louis Blecher
Director
Materials Safety

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