

BEFORE THE
ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF TOXIC SUBSTANCES



A REPLY TO:

COMMERCIAL AND INDUSTRIAL USE OF
ASBESTOS FIBERS: ADVANCE NOTICE
OF PROPOSED RULEMAKING

Docket No.
OTS 61005

Comments of
CERTAINTED CORPORATION
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Lloyd C. Ambler
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A/C Pipe Division

A handwritten signature in dark ink, appearing to read "L C Ambler". The signature is written in a cursive, flowing style.

February 15, 1980

CTD033689

Mrs. Joni T. Repasch, Record Clerk
Office of Toxic Substances (TS-793)
U.S. Environmental Protection Agency
401 M. Street, S. W.
Washington, D.C. 20460

RE: Docket No. OTS-61005 - Commercial and Industrial Use of
Asbestos Fibers; Advance Notice of Proposed Rulemaking.

INTRODUCTION

CertainTeed Corporation submits the following comments to EPA's Advance Notice of Proposed Rulemaking (ANPRM) on Commercial and Industrial Use of Asbestos Fibers, 44 Fed. Reg. 60061 (Oct. 17, 1979), as Amended, 44 Fed. Reg. 73127 (Dec. 17, 1979).

CertainTeed Corporation is a leading producer and distributor of building materials, piping products and fiberglass reinforcements. These products include a complete line of asbestos-cement and polyvinyl chloride piping products for the water and wastewater industries, as well as for other vital uses such as mining, electrical construction and irrigation; residential, commercial and industrial fiberglass insulation; vinyl siding; asphalt and fiberglass-based shingles; built-up roofing materials; insulated heating and air conditioning duct systems; and fiberglass reinforcements for plastics applications.

The company operates four strategically located A/C pipe plants in the United States and is the country's second largest producer of this type of pipe. CertainTeed supplies A/C sewer pipe, which meets stringent EPA regulations regarding joint tightness, at considerable economies over traditional clay and concrete sewer pipe. The company also provides A/C water pipe at savings of up to 40 percent over ductile iron water pipe and has been an important supplier to the

government (through the Bureau of Reclamation) of large diameter fluid transmission pipe used in major irrigation projects.

CertainTeed is aware of potential hazards associated with excessive exposure to asbestos and is committed to providing a safe, healthy environment for its employees and people who live near its manufacturing plants, as well as for customers who install A/C pipe and the general public which enjoys the benefits of the products. CertainTeed shares with the Environmental Protection Agency the serious concern that "unreasonable risks" resulting from human exposure to asbestos must be eliminated and strongly supports such efforts that are based on scientifically founded and informed judgments.

REGULATORY STRATEGIES OPPOSED

CertainTeed strongly opposes the unwarranted and unauthorized use of EPA's authority under the Toxic Substances Control Act (TSCA) as proposed in this ANPRM. While the ANPRM purports to seek information to evaluate asbestos, it is abundantly clear in reading the ANPRM, plus the public statements 1/, 2/ attributed to EPA scientists and

1/ J. American Medical Assoc., Vol 243, No. 3, p. 219, Jan. 18, 1980: "'The EPA is convinced of the substantial risk with any asbestos exposure, even at very low levels,' says Richard Guimond of the Office of Chemical Control of the EPA."

2/ Business Week, Dec. 3, 1979, p. 98D: "Our ultimate goal is to displace asbestos, to displace it gradually, but to do it," says John P. DeKaney, the EPA's deputy assistant administrator for chemical control. 'This is a signal to industry to make long-range plans to phase out asbestos and a challenge to develop substitutes.'"

officials, that the Agency has already determined that asbestos presents an unreasonable risk of injury to health and the environment and should be banned from use in the United States. The effects of these official and private pronouncements are already being felt in the marketplace in reduced sales of asbestos-cement pipe, beyond what would be expected from any soft market conditions. CertainTeed believes that such irresponsible behavior threatens a vital industry and the availability of A/C pipe which has proven to be the most economically safe and least energy intensive product available for the uses it serves.

The Company strongly opposes the strategies in the ANPRM which would:

1. Regulate the availability of asbestos fiber.
2. Place quotas on the quantities of asbestos processed.
3. Unduly weight the desirability of substitutes per se in the evaluation of risk and the determination of least burdensome requirements.
4. Ban all uses of asbestos at some date in the future except for undefined "essential" uses.
5. Extend regulations, or expand on existing regulations which are already capable of preventing or reducing to a sufficient extent the risk of injury to health or the environment from exposure to asbestos.

6. Do irreparable harm through the removal from the marketplace of economically competitive and environmentally sound piping products.
7. Ignore the tremendous strides industry has already made in reducing exposure to asbestos to an insignificant risk.
8. Inaccurately presume that the use of asbestos per se presents a risk to health.
9. Purport that exposure to asbestos by any route and any quantity no matter how small, will impair health.

CertainTeed believes that the strategies proposed in the ANPRM reveal a complete lack of understanding by EPA of the realities of the marketplace.

The control option to ban the manufacture, processing, distribution in commerce and import of asbestos for all "nonessential" asbestos uses at some fixed date in the future is not practical in the reality of the marketplace. A product, by being designated as "nonessential" and thus by implication a potential hazard, will be placed in a severe competitive disadvantage which for all practical purposes will drive it out of existence in relatively short order. The use of this option is likely to be highly disruptive in the marketplace and even products subsequently determined to be "essential" by EPA's criteria, will probably be unable to overcome the stigma of an EPA interim classification.

The concept of establishing an exemption criterion by product places the burden of proof on the manufacturer with the implied assumption that all asbestos-bearing products are hazardous unless proven otherwise. In fact, the burden of proof should be more fairly balanced.

EPA's mandate to implement the Act "in a reasonable and prudent manner" and to "consider the environmental, economic and social impact of any action," (Section 2c) certainly, as a minimum, requires EPA to explore control options short of requiring industry to prove its products not only safe, but also "essential." EPA must determine if existing regulatory controls are adequate and, if not, why not. Section 9 of the Act further requires EPA to defer to other statutory authorities where they exist before TSCA can be invoked. Asbestos is certainly one of the most regulated materials today. Additional regulatory activities in EPA, OSHA, and other federal agencies are under way. EPA cannot ignore the strident efforts by industry and regulators alike to correct an historical problem.

CertainTeed, for one, and the asbestos industry, in general, have made herculean strides in controlling exposures to asbestos. To lightly dismiss the positive results of these regulatory controls and industry initiative is an unwarranted abuse of the regulatory process and an affront to industry intelligence. To CertainTeed's knowledge, there is no evidence to show that asbestos-containing products currently in the marketplace cause any risk to the public--both users or at large.

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As a manufacturer, we are intimately aware of the complexity of qualifying new materials and products. There is an infinitely varied environment that products can be subjected to, misused in, and abused by an unknowing public. The test of time contributes evidence and practices that minimize risk and permits study of the product in such a varied environment. The use of asbestos is probably a prime example of an extensive environmentally studied product material. An arbitrarily established EPA exemption criteria to limit public risk, balancing commercial availability of substitutes with reasonable economic impact, is beyond the capability of a regulatory agency. Such control options may well increase the risk through the introduction of untested or inadequately proven substitute materials or products.

The only reasonable approach that can be taken is one of partnership, in which the expertise of the manufacturer, the user, the public, and the regulator are blended. This approach is nothing more than an extension of existing practices that have satisfactorily contributed to the ever lengthening life span of the public at large. In a practical sense, it is based upon the need for the regulator to identify specific hazards, quantify dose response, and set realistic exposure limits. There is ample evidence that many hazardous materials have, in fact, highly beneficial and vitally necessary applications when properly used. In our judgment, this is the case for asbestos.

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With regard to the manner in which EPA proposes processing exemptions - either in a single or multiple step process - the delay required to arrive at a decision could, in fact, destroy the market for the product in question. Once a ban is established, some delayed implementation date is meaningless. For all practical purposes the market would be disrupted and the impact of the ban would be almost immediate. Once again it can be argued that the only effective way to limit public health risk is by setting specific standards for exposure. In this way, the common denominator - as with asbestos in EPA, OSHA, and MESA standards - is specifically identified and controlled.

As to industry's continued use of asbestos through the time of a ban, it is unrealistic to expect, even by regulatory sanction, that the business will continue. In effect, with a ban even at a future date, the market will be lost and almost immediately most employees will be laid off. It is CertainTeed's contention that A/C pipe is a superior product that in today's climate of high energy costs, concerns for clean environment, and high product life expectancy, should be a growth industry product. Unfortunately, a cloud hanging over A/C pipe for an unwarranted health concern has already placed us in a state of business decline despite overwhelming evidence supporting our superior product.

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CertainTeed is extremely disturbed because the proposed strategies are heavily weighted to eliminating the use of asbestos without adequate consideration of its benefits and the possibly equally cogent hazards associated with the use of substitutes and/or alternate products.

CertainTeed asbestos product production is limited to asbestos-cement pipe for water and wastewater services, but the company is deeply concerned that limitations on asbestos availability will have serious impact on the ability of A/C pipe to compete in the marketplace. There is no medical evidence to support regulation which would have the effect of destroying the competitiveness of this proven cost-effective product.

CertainTeed believes that asbestos is an invaluable material with unique properties that make it irreplaceable in numerous applications. We are strongly opposed to any strategy which unreasonably dictates substitutes for essential uses under the guise of environmental health risk reduction. We are firmly convinced that current techniques for dust, water and solid waste controls provide safe and effective use of asbestos. In addition, the company feels that there is already sufficient regulation at the federal, state and local levels to effectively control environmental exposure to asbestos. Any further regulation of asbestos, especially if based on EPA's life cycle approach, would require finding of risk at very low exposure levels and no such risk has been proven. There is, for example, no evidence to show that ambient air levels of asbestos or the ingestion of drinking water from A/C pipe systems, including the contributions of asbestos fibers from naturally occurring sources in such exposures, result in an unreasonable risk to health nor any risk to the environment.

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This is true despite many years of asbestos use and considerable search for such evidence. We are further unaware of any evidence to show that the ambient levels of asbestos are increasing; in fact, we strongly believe that current regulatory controls and industry practices are contributing to decreasing those levels. It is the company's opinion that further environmental regulation involving asbestos-cement pipe is not necessary or warranted under TSCA.

The balance of this document will describe the use of asbestos in making asbestos-cement water, sewer and irrigation pipe, and will show the vital need such pipe fills in the construction of environmentally acceptable water, sewer, and irrigation pipe systems at savings in both construction cost, tax dollars and energy conservation that are extremely beneficial to the public.

We will further show that A/C pipe is a safe product, is safe to use, safe to install, and safe to manufacture under current regulations and industry practices.

A discussion of proposed and alternative regulatory approaches will follow, with the conclusion that no additional regulation is indicated in the manufacture of A/C pipe; that we support the industry initiative recommending OSHA adopt work practice standards for asbestos in the construction industry; and we further support changes in the EPA drinking water standards to regulate corrosive water.

ASBESTOS CEMENT PIPE - AN ESSENTIAL PRODUCT

General Information

Asbestos is a unique, naturally occurring mineral fiber. Deposits are found in over one-third of the land area of the U.S. It occurs in commercial quantities in such places as Canada, Russia and Africa. Soft and silky, the fiber has a tensile strength five times greater than that of steel and has properties of flexibility, heat and chemical resistance unmatched by any other natural or man-made fiber. It reportedly is used in over 3,000 products.

World wide production of asbestos in 1978 was 5.9 million short tons. Annual growth of between 1 and 2% is predicted. U.S. production in 1979 was 102,500 short tons valued at about \$28,000,000. Annual asbestos consumption in the U.S. is about 652,600 tons, with Canada and South Africa being the major suppliers. (1)

The construction industry is the major consumer of asbestos in the U.S. Percentages of distribution, by end use are: 25% in asbestos-cement pipe; 21% in flooring; 14% in friction products; 10% in roofing; 5% each in asbestos-cement sheets, coatings and compounds and paper; 4% in packaging and gaskets; 2.5% in thermal insulation; 1% each in plastics and textiles; 0.5% in electrical insulation; and 6% in other materials. (2)

Forecasting U.S. asbestos demands in the year 2000, the U.S. Bureau of Mines projects 34% in asbestos-cement pipe, 28% in flooring, 19% in roofing, 9% in friction materials, 6% in paper, 4% in packaging and gaskets, and zero demand for asbestos-cement sheets, insulation and textiles.

The production of asbestos-cement pipe in the U.S. in 1979 was approximately 600,000 tons amounting to sales of approximately \$250 million. In 1979 CertainTeed sold approximately one-third of the A/C pipe sold in the U.S. Approximately 80% of our sales were for municipal water systems, 15% for municipal sewer systems, and 5% for industrial and irrigation systems.

With approximately \$250 million of A/C pipe installed annually in this country and a significant amount exported, the impact of A/C pipe manufacture alone is substantial on the economy. An estimate of the jobs related directly to the manufacture of A/C pipe within the 11 existing facilities in this country is 4,000 hourly and salaried employees.

The construction industry is also impacted by the design and installation of A/C pipe projects. An estimate of the direct impact on the construction industry is not available to CertainTeed, but is probably very substantial. Impact on the raw materials suppliers, the utility companies, the local municipal tax base, etc., is also considerable.

A/C pipe affects the total economy of the United States in that it provides a cost effective product which contributes to the balance in the supply and demand cycle of all piping products. Without the competition A/C pipe provides, the cost of other less efficient piping products could be expected to increase and thus impact the general economy.

Asbestos is beneficial to people in almost every part of the world because it is used in products such as roofing and flooring materials, plastics, textiles, insulation, fire-fighting and life-saving equipment and pipe.

Asbestos in A/C Pipe

Asbestos used in A/C pipe represents 15 to 20 percent by weight of the finished product. Asbestos contributes tensile strength to the product with a reinforcement power that is five times greater than that of steel and gives the product sufficient strength for its uses. A/C pipe is made by combining asbestos, silica and Portland cement, all naturally occurring minerals. The finished product is strong, durable and highly resistant to deterioration from both internal and external sources. A/C pipe is used by many municipalities for conveying potable water under pressure, for gravity and pressure sewer lines, and for storm drains. CertainTeed manufactures pipe ranging from 4 to 24 inches in diameter in standard lengths of up to 13 feet. Pipe ends (and couplings) are precision machined during manufacture to insure tight-fitting joints. Half and quarter-lengths are available as standard accessories to facilitate pipeline closures and proper placement of valves and hydrants without resorting to field fabrication. For non-pressure applications, tees, wyes, and other A/C fittings also are manufactured to meet field installation requirements. Because both standard A/C and metallic accessories are used widely, little field cutting or machining is required during installation.

Industry practices for controlling exposures during such operations have been established and widely disseminated and most recently presented to OSHA as a Recommended Standard for Asbestos Exposure in Construction and Other Non-Fixed Work Operations.(3)

A/C pipe is made by first blending controlled amounts of cement, silica, asbestos and water to create a slurry. From a continuous web, the slurry aggregate is wound under precise pressure onto a mandrel. The mandrel is removed after an intermediate curing stage. Then, the A/C pipe is fully cured in an autoclave at high temperature and pressure to create a chemically and dimensionally stable matrix within which the asbestos is bound permanently to provide tensile reinforcement. The cement, asbestos and silica have been made into a completely unified composite material, more stable and inert than any metallic water piping substance.

As discussed elsewhere in this document, all process water is recirculated and the entrapped fiber returned to the process, exhausted air is filtered and the entrapped fiber is recycled to the process. Virtually all scrap pipe is reground and recycled. The manufacture of A/C pipe in CertainTeed is essentially a closed cycle system with little waste or disposal to the environment.

No Known Substitutes

Despite considerable research and field experimentation on fiber reinforced cement pipe, none of the fiber substitutes studied have proven to be commercially acceptable.

Organic fibers lack the reinforcement strength for A/C pipe and structural uses. Commercially available ceramic fibers (being extremely brittle) do not possess adequate tensile strength and are not alkali resistant as required for cement autoclaving processes. Glass fibers continue to be investigated but the alkali resistant fibers have only about 60% of the tensile strength of asbestos and have not shown they can retain their reinforcing strengths over long periods of time. Fibers such as nylon flow and lose needed strength. Carbon fibers are only of academic interest in A/C pipe due to their extremely high price--approximately 30 times higher than asbestos. Steel fibers lack adequate tensile strength and have inferior corrosive characteristics. All of these substitute fiber candidates would also require extensive changes in existing manufacturing processes.

CertainTeed supports the search for equally effective materials that will eliminate or minimize health hazards. However, with every new material, the advantages and disadvantages must be very carefully considered. Little knowledge is available concerning the health hazards of potential substitute materials on products through their life cycle. It is quite clear, however, that life cycle risks from all competing products exist; for example lead, zinc, other metals,

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and coke oven gases in ductile iron production and use, polynuclear aromatic hydrocarbon in bitumen lined iron pipe, vinyl chloride in polyvinyl chloride pipe manufacture and use. An overwhelming body of epidemiological and animal test data refutes a health problem with the use of asbestos-cement pipe. To our knowledge, comparable studies on fiber substitutes or substitute products have not been made to evaluate the risk associated with their use in pipes. To exchange known reasonable risks for unknown dangers would be an unwise undertaking and an illegal application of TSCA authority.

On a price/performance basis, there is no substitute for asbestos-cement pipe. Removal of asbestos-cement as a competitive pipe product would eliminate from the marketplace the most cost efficient and energy efficient product offering the best life characteristics and demonstrated safety in use. The net result would be higher priced substitutes with poorer life characteristics and questionable safety.

A/C Pipe is Energy Efficient

From a manufacturing standpoint, A/C pipe is also one of the most energy-efficient piping materials available. Cast iron in pressure pipe consumes approximately eight times more total energy in manufacture than asbestos-cement pipe. PVC pipe uses approximately four times more total energy in manufacture than asbestos-cement pipe. For sewer pipe, cast iron pipe consumes approximately ten times as much energy as A/C, clay pipe uses approximately four times as much, and PVC pipe accounts for about three times more. (4)

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The federal government's (GSA) purchasing policy, effective May 15, 1978, requires that purchasing decisions take energy conservation and efficiency standards into preferential consideration. A/C pipe falls within this area of preferential treatment. The amount of energy savings to the taxpaying public is substantial because approximately 30 percent of all U.S. distribution water pipe and 15 percent of all U.S. sewer pipe installed today is A/C pipe.

A/C Pipe is Cost Effective

A/C pipe is the most effective product marketed for water or sewage systems. It costs from 20-50% less to install than ductile iron pipe and has been proven to be much less costly to maintain. Case histories abound that show maintenance savings up to 50% through elimination of corrosion problems, and up to 50% reduction in pipe breaks.

The corrosion problem from metallic pipe is considerable. The National Bureau of Standards (5) reports the total annual cost of corrosion in the U.S. for water and sanitary services is more than \$1.2 billion, with direct costs accounting for \$411 million and indirect costs for \$843 million. Being non-metallic, A/C pipe is not subject to electrolytic or galvanic corrosion and maintains its strength throughout its life cycle, unlike its metallic counterparts in water and sewage systems.

In addition to the installation and maintenance cost advantage of A/C pipe, financing cost savings for municipalities, i.e., the savings over the period of bonded indebtedness, are almost trebled for a typical 30 year, 8 percent general obligation bond issue.

For some areas of the country, such as the Southwest, A/C pipe is the only effective product to resist the effects of corrosive soils in those areas. In northern climates with low temperature frost problem, A/C pipe is found to be superior to other products in reducing winter pipe breaks. Experience has shown that savings for "winter breaks" over the life of the pipe can amount to as much as \$0.50 to \$1.50 per foot of installed A/C pipe compared to metallic piping systems.

The Commonwealth of Virginia Health Commissioner summarized the situation as follows: (6)

"The arbitrary banning of asbestos-cement pipe could indirectly cause health hazards in the Commonwealth by preventing the construction of needed projects. It could also, especially in many poor areas in the state, limit the needed replacement of inadequate water supplies. The monies generally used to finance these projects are grant funds with the local communities providing a small portion. With the banning of A/C pipe this small portion could get much larger. So much larger that the projects could not be financed. For example, Mr. David Feld, Engineer with Farmers Home Administration (FMHA), has been kind enough to provide us with an estimate of the increased cost of water projects if asbestos cement pipe was not a bid option. The estimate is a conservative 10 to 20 percent; 10 percent on actual cost differentials and up to 20 percent on ripple effects from not having the competition of asbestos-cement pipe as a bid option. These figures would hold true for water line construction throughout the state where A/C pipe is a legitimate bid option. As approximately eighty percent of all public water systems serve less than 500 people, the greatest costs will accrue to the smaller systems that can least afford any additional increases. These smaller systems are the ones that generally use smaller size pipes, and the cost differentials for alternative pipe materials are greater at smaller sizes. Using the 1979 Dodge Guide, figures show that to construct a section of six-inch pipeline of A/C pipe versus cast iron with slip-on joints results in a cost differential of 25 percent to use cast iron. To construct one mile of six-inch line would cost an additional \$8,450 - or another 1,330 feet (one quarter mile) of A/C pipe. If cast iron with mechanical joint was used, an additional 29 percent increase, i.e., \$9,660 or another 1,520 feet (one-third mile) of A/C pipe. FMHA has also informed us that severe state requirements or regulations have caused FMHA monies to be disallowed in the State of Kansas. This type of impact on our local communities must not be allowed unless a proven health hazard is evident."

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A/C sewer pipe, because it is cured at high temperatures, has higher resistance to acidic sewage than concrete pipe. In both water and sewage systems, A/C pipe can be expected to have much longer useful life and require less maintenance than metallic systems.

With over 1.6 million miles of A/C pipe installed world-wide (including 250,000 miles in the U.S.) and an annual rate of \$250 million installed in this country, the savings of taxpayers for installing, maintaining and financing needed, effective, safe drinking water and sewage systems is tremendous. Indeed, the needed expansion of these systems would be seriously impaired by removing this safe, cost effective product from the marketplace.

A/C PIPE - A SAFE PRODUCT

Safe to Use

The general prevalence of asbestos in soil results in its presence in almost all water sources. This fact has led to an extensive study of asbestos concentrations in drinking water and studies to determine if there is an association between gastrointestinal cancer and ingestion of asbestos in these waters. No such association has been found.

A most recent study by EPA (7) of over 1500 analyses of water supplies in 43 states, Puerto Rico and the District of Columbia found asbestos fiber concentrations up to 100 million fibers per liter in systems in the San Francisco Bay Area and Pacific Northwest Area. Of the 365 cities studied, 45.3% were reported to have significant concentrations of asbestos fibers in the drinking water. Samples of drinking water prior to 1977 in Duluth, Minnesota, have been found to contain amphibole fiber concentrations up to 644 fibers per liter.

Despite the fact that exposure to asbestos in water has occurred for all mankind and in very high concentrations in many areas of the world, there is no firm evidence that drinking of water causes any gastrointestinal cancer.

Duluth, Minn., has millions of asbestos-like fibers in its drinking water supply; Minneapolis/St. Paul has none. A comparison showed no statistical difference in the incidence of gastrointestinal cancer.(8)

Connecticut -- An extensive EPA study showed no correlation between the incidence of GI cancer and the use of asbestos-cement water pipe. (9)

National Cancer Institute: "NCI scientists have found no unusual cancer mortality patterns so far among persons residing where drinking water is contaminated by asbestos..." (10)

A select study committee of the American Water Works Association Research Foundation: "No firm evidence shows that the proper use of asbestos-cement pipe poses a hazard to health by reason of ingestion of asbestos fibers. The probability of risk to health from the use of such systems is small -- approaching zero." (11)

The National Academy of Sciences Panel on Asbestos concluded "...there is no evidence that the small numbers of fibers found in most member of the general population affect health or longevity." (12)

The extensive use of A/C pipe in water distribution systems has also lead to a number of studies to determine if the fiber in the pipe is contributing to the fiber concentration in the water and/or if there is an association between gastrointestinal cancer and the use of A/C pipe in water distribution systems.

In moderately and non-aggressive waters, field measurements confirm EPA laboratory results that A/C pipe does not contribute significant amounts of asbestos to drinking water.

An analysis of 15 public water systems in Northeast Illinois (13) containing A/C pipe of varying age, lengths and diameters found no significant release of asbestos from A/C pipe. A New Mexico study (14) in a water system containing 548 miles of A/C pipe found no evidence of asbestos pickup from the pipe. EPA studies (15) of A/C pipe systems in Texas, Ohio and Connecticut found fiber levels "not statistically significant" or "below detectable limits."

Aggressive waters are hungry waters; hungry not only for calcium and magnesium in cement, but for iron, lead, copper, zinc and cadmium in metallic pipe, organic residuals in plastic pipe and polynuclear aromatic hydrocarbons in organic coatings, among others.

An EPA study (7) reports that about 16.5% of U.S. water systems carry highly aggressive water, i.e., water that may have significant corrosion problems with any type of pipe used. Industry practice and the American Water Works Association standard recommends against the use of A/C pipe in highly aggressive water due to the release of asbestos fiber from such water.

Studies to specifically examine the incidence of GI cancer in municipalities with A/C pipe water distribution systems have also found no such association.

In Canada, a study of 22 municipalities with high concentrations of naturally occurring asbestos in the water supplies failed to reveal any excess cancer mortality. (16)

Switzerland has the highest per capita use of A/C pipe in Western Europe. From 1951, more than 20 years after A/C pipe was introduced, to 1976, the death rate from GI cancer dropped a significant 32 percent. (17)

The inability to relate a real-world disease response with a real-world dose indicates that the risk from ingesting asbestos must be infinitely small, if it exists.

False accusations and guilt by association have created a perception of risk about A/C pipe, but scientific measurements and common sense indicate that there is no basis in fact for this perception.

Of interest, also, is the fact that other pipe products such as ductile iron with bitumen coatings, plastic pipe and galvanized pipe all utilize materials that are either known or suspected carcinogens or possible health hazards. Included are the polynuclear aromatic hydrocarbons in bitumen and coal tar derivatives, vinyl chloride monomers in plastic pipe and heavy metals in galvanized and ductile iron pipe. CertainTeed is unaware of health effect studies on these water distribution systems comparable to the extensive studies which find no health hazard from using asbestos-cement pipe.

Asbestos-cement pipe for water system applications has been subjected to more studies than any other type of material. These studies all had the objective of finding the health hazards, if any, associated with its use, but not one has established a health hazard associated with asbestos in potable water.

CertainTeed has a commitment to quality water. Quality water demands conservation in use, diligence in treatment and economical reliability in distribution. A/C pipe is more cost-effective and as fully reliable and safe as any water pipe in use today.

Safe to Install

The A/C pipe industry has recognized the potential hazards of excessive exposures to asbestos from field installation of A/C pipe. The impracticalities of the OSHA General Industry Standard applied to the construction industry have been a matter of concern for a number of years. To overcome these difficulties, the A/C pipe industry under the aegis of the Association of Abestos-Cement Pipe Producers (AACPP) contracted with Equitable Environmental Health, Inc. to determine the effectiveness of industry practices in controlling exposure to airborne asbestos in typical field operations. The study found the Time Weighted Average (TWA) exposures to be generally less than 0.1 fiber/cc for most operations. Peak exposures up to 65 fiber/cc were observed for certain abrasive disc cutting operations and effective work practices were established to eliminate such operations.

Following completion of the EEH study, the AACPP published a field manual, "Recommended Work Practices for A/C Pipe" (18) setting forth recommendations based on the data developed and experience gained in the field. Nearly 85,000 copies of the field manual have been distributed. The American Water Works Association (AWWA) has adopted these same work practices in their manual M-16-1 "Work Practices for Asbestos-Cement Pipe" based on their wide acceptance in the industry.

CertainTeed is convinced that following the recommended work practices will result in no adverse health effects from asbestos. The asbestos industry, namely, the Asbestos Information Association/North America and the AACPP, has recommended to OSHA a "Work Practice

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Standard for Regulation of Asbestos in the Construction Industry" which would include these recommended practices for A/C pipe.

Safe to Manufacture

The control of asbestos fibers in the production of asbestos-cement pipe products has greatly improved within the last 15 years as a result of an industry awareness of the health hazard of asbestos and the installing of controls together with establishment of governmental regulations controlling workplace exposures and emissions to the biosphere.

A review of the average employee exposure in CertainTeed's four A/C pipe plants show a reduction from 8.5 to 0.5 fibers/cc since 1969. Significantly, no employees in our newest facilities have evidenced asbestos related disease in 19 years of operation in one plant and 15 years of operations in another.^{3/}

CertainTeed is exploring the feasibility of conducting scientifically based risk assessment for its asbestos-cement operations. Several medical sources have informed us that such a study would take at least one to two years. We are unable at this time to provide such a risk analysis.

To protect residents near manufacturing sites, EPA regulates the emission of asbestos fibers into both the air and water surrounding the plants. CertainTeed is in compliance with these regulations.

^{3/} CertainTeed's two other plants started manufacture in 1938 and 1953. Another plant (which closed in 1979) started manufacture in 1938. Sixty-three cases of asbestos related disease have been reported from those three plants.

CertainTeed's asbestos fiber control system includes local exhaust ventilation hoods at all emission points. The hoods are connected to air-cleaning devices meeting EPA specifications and emission standards. All fines collected in the air-cleaning equipment are recycled to the process. All process waters (i.e., water used in the asbestos-silica-cement slurry to form the pipe) are recycled to the process. Virtually all reject A/C pipe scrap is crushed, ground and recycled. With the installation of a larger crusher at one location in 1980, all reject pipe will be recycled by CertainTeed.

Solid wastes containing asbestos, namely empty fiber bags and a small amount of unrecycled pipe at one location, are disposed of in approved landfills.

The emptying of bags of asbestos fiber has received acute attention by CertainTeed because of the high potential for asbestos fiber exposure. The standard practice has been to use point source exhaust hoods for ventilating this work station. Despite the fact we were able to meet the OSHA exposure standard with local exhaust ventilation, CertainTeed pioneered the development of an automatic, completely enclosed system to open and empty bags of asbestos fiber in the manufacturing operation, because of the potential exposure from poor work practices and spillage in this manual operation.

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The Asbestos Fiber Bag Opener also automatically compacts the empty bag and places it in a sealed container for subsequent disposal to an approved landfill. Installation of the automatic bag opener has been completed in two of our plants, is under way in a third plant, with installation in the remaining plant programmed in 1980. (See Figure #1)

The company, together with asbestos suppliers, has strived to eliminate the potential for exposure to asbestos fiber from bags damaged in shipment. Bags are pressure-packed and all shipments soon will be palletized and over-wrapped--either by shrink wrapping or stretch wrapping.

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COMMENTS ON REGULATORY APPROACHES

Other Piping Materials

EPA is investigating "the cumulative effects of exposure to asbestos throughout its life cycle in commercial and industrial products (i.e., from mining and milling through processing, product manufacturing, use and disposal)." In a "life-cycle" approach to asbestos as related to asbestos-cement pipe, other piping materials would also have to be evaluated. All piping materials within their life cycles contain known carcinogens, which, in accordance with the EPA approach, would precipitate regulation. As a result, the public could be faced with the possibility of having no piping material suitable to the EPA for the conveyance of potable water.

Asbestos has been studied extensively from both an analytical and epidemiological viewpoint for years and an abundant bank of data has been established that still does not suggest any positive relationship between the ingestion of asbestos fiber in water and human health. It has been alleged that other piping materials contain known or suspected carcinogens or have other suspected human health impacts but far less scientific data has been developed. It seems logical to conclude that if other materials are being considered as substitutes for asbestos-cement pipe, the questions, real or perceived, of their carcinogenic effects must be just as stringently studied and documented before this substitution could or should be made.

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Aggressive Water

All water pipe is at the mercy of what is known as highly aggressive water, which is water that is very soft and highly acidic. Aggressive water damages all kinds of pipe and other water system components.

Asbestos-cement pipe is subject to attack by aggressive drinking waters -- as are other piping materials. The American Water Works Association's committee on asbestos-cement pipe pioneered work in this area by establishing an Aggressive Water Index. A numerical limit is placed on the aggressiveness of water transmitted through the A/C pipe, thereby preventing deterioration which could result in the release of asbestos fibers into the water system.

CertainTeed does not recommend the use of A/C pipe under highly aggressive water conditions. Over 55 million people are exposed to soft or aggressive water (less than 60 ppm CaCO_3) in the United States. Epidemiological research has shown that consumption of soft drinking water may be related to increased incidence of cardiovascular disease.

Studies show that an increase in toxic trace metals results from corrosion of copper, galvanized steel and lead pipes. These elements, particularly lead and cadmium, represent a potential health hazard. It is recognized, too, that aggressive water in distribution systems rapidly increases corrosion rates and thereby increases the rate of pipe replacement and the costs associated with it.

Aggressive water costs at least \$1 billion each year for system repair and replacement, because its corrosive action leads to pipe damage. This, in turn, causes higher power requirements because of decreased flow efficiencies in the piping.

The true solution is to neutralize the water chemically at the source, regardless of the type of pipe materials used. A major control technique is pH adjustment. By increasing the hardness by lime addition and decreasing acidity through pH adjustment, almost 14,000 lives could be saved annually in soft water areas. This equals a minimum annual health savings of approximately \$3.5 billion.(19)

Under the Safe Drinking Water Act (P.L. 93-523), EPA has the authority to regulate aggressive, soft water by including a minimum hardness requirement in the Interim Primary Drinking Water Standard. This authority should be exercised to protect the public health and to save corrosion-related pipe replacement cost.

Essential Product

In its ANPRM, EPA has acknowledged that many asbestos uses are essential and may well be irreplaceable because of the inherent characteristics of asbestos fiber. We would further add that fiber use provides a basic function by its inclusion in A/C pipe, is essential to that product, and the resulting product benefits man in his use and application of the product.

It must be recognized that the manner in which asbestos was ultimately specified in a product was a result of a lengthy, involved process, one that was initially a trial-and-error mechanism. The process is now based on engineering study and specifications based upon an established record of fiber characteristics. The result has been a natural selection mechanism by which the marketplace has determined which products are not only usable and beneficial but ultimately safe.

Degree of Risk

The question of product safety even within the life-cycle concept contained in the ANPRM must assess degree of risk. Debate on overregulation has frequently led to more attention being given to quantifying risk estimation. Science must be the foundation of the health and environmental regulations because scientific risk quantification offers the best way to relate expenditures to reduction of risk. It is now almost axiomatic that zero risk is a delusion; everything one does or doesn't do has a risk associated with it. The Natural Academy of Sciences explained in its report on drinking water that:

"Material should be assessed in terms of human risk rather than as 'safe' or 'unsafe.'"

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Developing an alternative via regulatory control is a complicated task, as the ANPRM suggests. In the ANPRM, EPA voices concern over the prohibition of manufacture, that voluminous exemption requests would result, and that there could be no assurances that available fiber would not be shifted to other uses. Problems associated with import limitations suggest that there is no guarantee that risks would be limited. Under both of these control options, the fundamental assumption is made that there are no safe applications. In CertainTeed's judgment, this is a fallacious assumption and the evidence illustrates that most products currently utilizing asbestos in the marketplace are free of unnecessary risk. Underlying the ANPRM appears to be the concept that there is no threshold below which the risk from exposure to asbestos is acceptable. This premise denies substantial evidence to the contrary.

As Becklake (20) summarized in her excellent review citing some 22 studies, a relationship of estimated dose to response has been a consistent finding in mining, manufacturing and secondary uses of asbestos. Furthermore, it applied to all the responses examined, i.e., lung fibrosis (as reflected by symptoms, lung function and radiographic changes), lung cancer (as reflected in mortality statistics) and mesothelioma (using fiber counts in the lungs at autopsy as a measure of exposure).

If the regulatory function ignores the scientific qualification of carcinogenic risk in humans and the need to quantify an estimation of human risk, there will be no way to set priorities for regulation

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nor any way to determine what steps to risk avoidance are reasonable and acceptable.

The President's Office of Science and Technology Policy (OSTP) underlined the need to separate the scientific and regulatory function. By identifying the scientific function as "Stage I" and regulatory function as "Stage II" of the regulatory process, an objective methodology can be followed drawing sound conclusion. It is not reasonable for the scientist to make the worst case assumptions and select conservative methodologies in order to derive the most extreme estimate of risk to humans. To use most likely values with the objective of developing the risk estimate which has the greatest probability of being accurate is required for sound decisions.

Proposed Rulemaking Intent

As we evaluate the intent of this AMPRM, it would seem that this is largely an overreaction belatedly taken to problems of the past when the risks were not well known and exposures to asbestos were very high compared to the levels being experienced today, most notably with insulation workers. As a result of this high level of exposure, many became victims of asbestos-related disease. Unfortunately, many years were required for the disease to manifest itself, but as the risk became known the application of asbestos insulation was discontinued and industry installed effective control. Workers are no longer being exposed to heavy concentrations of asbestos fiber. Under OSHA and other regulations, basic protection is now provided to workers in both manufacturing and mining.

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There is no current evidence that a comparable exposure problem with asbestos exists with any asbestos-bearing product today. On the contrary, the evidence indicates that at existing exposure levels, there are no health hazards.

We know of no new evidence to refute the conclusions drawn by the Advisory Committee on Asbestos Cancers to the Director of the International Agency for Research on Cancer, Lyon, France, 1972 (21) that:

1. Excess lung cancer is not detectable when occupational exposures are low. These low occupational exposures have almost certainly been much greater than that to the public from general air pollution.
2. There is no evidence of increased risk of mesothelial cancer at low levels of exposure to asbestos encountered by the general public.
3. Existing evidence does not indicate any increased risk of cancer from asbestos fibers present in water, beverages, food or fluids used for the administration of drugs. There is no evidence of lung damage by asbestos to the general public.

With the exception of workers and their families and people living in close proximity to asbestos emitting operations in the past, there is no evidence that today's workers or the general public are at risk from exposure to asbestos. We believe the current OSHA workplace standards and industry practices, along with EPA's air emission standards and DOT regulations, sufficiently protect these former at risk populations.

Alternate Proposal

The ANPRM contains an alternative proposal which would restrict availability of asbestos fiber and leave to industry the determination of which products are to be discontinued and how the use of asbestos fiber is to be allocated. Simply creating an artificial asbestos fiber shortage would only serve to increase the cost of needed products and reduce the competition among alternative materials. It is entirely possible, under such misguided "generic regulation", for safe products such as A/C pipe to be forced out of the competitive market, at unacceptable cost to the public. At the same time, unsafe products, if there truly are any, might continue in widespread use despite higher cost if, for example, acceptable substitutes remain still higher in price. The fact that there are no products currently being marketed, to our knowledge, for which there is a substantial risk of asbestos fiber exposure supports the argument that industry has already succeeded in designing out risk from asbestos fiber exposure. (Despite the notoriety given to the asbestos exposure from hair dryers, the evidence does not support the allegations nor the notoriety.)(22)

Substitute Life Cycle Evaluation

CertainTeed recognizes the need to eliminate unsafe products and appreciates the complicated and difficult processes required to assess relative risks and make judgments. The determination of what is an unsafe product, however, can only be effectively accomplished in an unemotional and scientific manner. Risk assessments based upon statistically reliable evidence of all aspects of each product and in

comparison with each viable alternative must be weighed. Any attempt to generalize cannot possibly balance related risks -- those which accrue because of the lack of a specific product or those associated with alternative products. If the life cycle approach to risk assessment is to be taken, it must automatically include the life cycle risk associated with each alternative and all the components (and raw materials) to establish fair and accurate risk comparisons.

Overreaction

It is apparent that EPA's concern for the risk of fiber exposure outside the jurisdiction of existing authority is a primary issue. With the long history of asbestos use and disposal, the significance of this problem should be quantifiable.

We are concerned that overreaction to a historical problem of excessive fiber exposure is clouding EPA's judgement in terms of what problems can accrue from today's products. Since there is little likelihood that a comparable risk exists today, it is not in the public interest to ban the use of asbestos and thus deny the benefits that asbestos products will provide. It would seem equally appropriate to make adequate determination of what disposal risks, if any, exist for special consideration.

The company feels that concern is equally exaggerated on the subject of how to divide the cost of fixing existing problems, particularly those associated with asbestos hazards in schools. Here again is a unique situation stemming from prior experience that asbestos fiber insulation provides superior fire protection. As a

result of several serious school fires, a mandated use of asbestos fiber resulted in applications of friable material subject to deterioration with time. Though CertainTeed has never been involved in this product area, it is not aware of any substantive evidence suggesting that real problems exist in terms of fiber exposure to students (real evidence, as determined by scientific measurement, indicating that there is an exposure hazard). CertainTeed does acknowledge a condition that generates emotional reaction.

It would seem that mechanisms which EPA has already instituted pursuant to its statutory authority have adequately addressed this problem. This problem is limited to a specific use and application of asbestos and it is unrealistic to think that we will have similar situations. However, it should be possible to review current uses to anticipate whether potential exists for similar problems.

It is the judgment of CertainTeed that many of the issues that have been raised about asbestos in connection with health are based on fiction. The extrapolation of health risk data has been fallacious and evidence is lacking that substantial exposure on a continuing basis to the populace poses a risk. Any rulemaking action that would attempt to limit or ban the use of a product without adequate evidence is a public disservice. The first order of business must be the quantification of the exposure risk so that proper corrective actions can be taken. The solution to this problem, which would suggest banning the use of asbestos either by broad product categories in total or by specific products, is an intolerable alternate to getting hard scientific facts concerning the real problem.

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CONCLUSION

CertainTeed shares EPA's concern that the commercial and industrial use of asbestos must not result in unreasonable risks to health and the environment. We are highly concerned, however, that EPA does not fully appreciate the many benefits that asbestos provides in products. Specifically, we are convinced that any scientifically, unbiased assessment of available facts will show that asbestos-cement pipe in all of its uses is a safe product to use, install and manufacture. It is also the premier product for water and wastewater uses with superior life characteristics and substantial economics in installation and maintenance, as well as being the most energy efficient piping material available.

In CertainTeed's opinion, to inhibit the use of A/C pipe would do irreparable public harm, because A/C pipe provides the most cost effective means available to meet stringent EPA regulations on sewer main construction, and A/C water and irrigation pipe provides safe, healthy drinking water at even greater savings in construction and operation of municipal water systems.

Considerable research has been devoted to identifying acceptable fiber substitutes. No feasible substitutes have been found.

CertainTeed supports additional standards under the Safe Drinking Water Act to regulate aggressive, soft water. We also support the industry initiative to have OSHA adopt the "Recommended Standard for Asbestos Exposure in Construction and Other Nonfixed Work Operations."

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Additional regulation is not, in our opinion, necessary to insure continuing safety in the manufacture and use of A/C pipe. We strongly oppose a life cycle assessment of A/C pipe without a corresponding life cycle assessment of possible substitutes.

Finally, we believe that the strategies in the ANPRM are an unwarranted and illegal use of EPA's authority under TSCA and are already having a negative effect on the A/C pipe market. We believe that EPA must exhibit a more unbiased and scientific approach to assessing the commercial and industrial use of asbestos and do this in a manner which will not have the effect of destroying a vital industry in the investigatory and assessment process.

CertainTeed is ready to assist the EPA with any relevant data we have in evaluation of those legitimate issues discussed in this document. 4/

CertainTeed also hopes that EPA is concerned with the negative publicity which has been precipitated by the proposed regulatory action on asbestos. This negative publicity is already manifesting itself in our lower A/C pipe sales. Effort taken on the part of EPA in minimizing any future negative impact would be most desirable.

4/ CertainTeed also wishes to comment upon question 10 in the ANPRM which inquires as to how EPA and CPSC should treat data for which a company claims confidentiality in light of (1) the intent of the two agencies to share information received, and (2) the potential statutory conflict regarding treatment of confidential business information. Given EPA's willingness to share confidential data with CPSC, and inasmuch as CPSC does not appear to be as restricted by restraints on disclosure of such information as EPA, CertainTeed is alarmed by the potential consequences which could arise as a result of EPA sharing data with CPSC. Accordingly, CertainTeed urges EPA to adopt a procedure by which requested data of a confidential nature would be submitted to an independent, impartial party capable of collating the underlying data and furnishing to EPA only aggregated data in such a format that information could not be identified as being furnished by or associated with any particular company.

DEFINITIONS

In response to EPA's request for certain definitions, the following are generally accepted within CertainTeed:

1. Asbestos - Asbestos is a broad term applied to numerous fibrous mineral silicates composed of silica, oxygen, hydrogen and metal cations such as sodium, magnesium, calcium or iron. There are two major groups of asbestos--serpentine (chrysotile) and amphibole (amosite, crocidolite, anthophyllite, tremolite and actinolite).
2. Encapsulated fibers - Products containing encapsulated fibers are those in which the asbestos fibers have been modified by a bonding agent, coating, binder or other material. This prevents the possibility of airborne concentrations of asbestos fibers being released (exceeding current or proposed OSHA limits) during any reasonable use, handling, storage, disposal, processing or transportation.
3. Locked fibers - These products have the asbestos fiber bound in a cement adhesive or plastic matrix. Normal handling and end-use of these products does not result in significant

exposure, but exposure may result during uncontrolled fabrication, machining or cutting.

Using recommended work practices, airborne concentrations of asbestos fibers can be maintained well below OSHA permissible exposure limits.

4. Easily released fibers - Synonymous with asbestos containing friable materials.
5. Friable materials - Products which are easily crumbled or pulverized and which may produce significant employee exposure during routine handling or use.

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CTD033730

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CTD033731