tile products are cost competitive and are suitable for most applications. There are also a number of products that can *substitute for asbestos-cement sheet as* a laboratory desk top and fume hood bench. However, it appears that comparably priced products may not fully match the qualities of asbestos-cement sheet in these applications.

b. *Asbestos-cement shingles.* There are substitutes for asbestos-cement shingles for both roofing and siding applications. The primary substitutes for asbestos-cement roofing shingles are asphalt-fiberglass composition shingles, cedar wood shingles, and various synthetic and natural tiles, such as Monray roofing tile and concrete tile. Asphalt-fiberglass composition shingles cost about half as much as asbestos-cement shingles in terms of purchase and installation costs but have only about half the operating life. Cedar wood shingles have a slightly greater cost than asbestos-cement shingles but have a greater operating life.

Substitutes for asbestos-cement shingle siding include wood, wood shingles, aluminum siding, PVC siding, stucco or concrete block, vinyl, and brick. Aluminum and PVC siding are both virtually identical to asbestos-cement shingles in terms of price and durability. Cedar shingle siding is also very competitive in terms of price, but it is somewhat less durable.

The total substitute market for both applications is approximately as follows:

Asphalt/fiberglass	50 percent
Wood products	30–35 percent
Aluminum siding	5–10 percent
PVC siding	5–10 percent
Brick, tile	5 percent

2. *Possible hazards of substitutes.* EPA has analyzed available data on the health effects of major substitutes for asbestos (Ref. 14). Some of the substitutes such as wood-based products (e.g., cellulose fiber products) and construction products made of brick and concrete appear to present little risk. While other substitutes present some risk, EPA has concluded that the available information suggests that none of the substitutes appear to present as great a potential for risk to human health as asbestos. EPA made extensive use of the work of the National Research Council and agrees with their conclusion that: "Current population risk from exposures to the various substances considered, including fibrous glass, attapulgite, and carbon fibers, appears to be much less than for risk from asbestos, especially chrysotile" (Ref. 6). The conclusions of EPA's analysis of *specific substitutes follows.*

a. Fibrous glass appears to be considerably less hazardous than asbestos based on (1) morbidity and mortality studies in workers, (2) *in vivo* and *in vitro* experimental data, (3) the order of magnitude lower exposure potential in the workplace, (4) the generally less respirable nature of the airborne fibers, and (5) the less durable nature of the fibers in the lungs.

b. Mineral wool does not appear to present the significant risks that asbestos does based on (1) limited animal data and morbidity and mortality studies for workers, and (2) the lower exposure potential in the workplace.

c. Ceramic fibers do not appear to present a comparable risk to that of asbestos based primarily on (1) the moderate workplace concentrations, and (2) the specialized applications which include its encapsulation or incorporation into products.

d. Carbon/graphite fibers are probably not a significant health risk based on the (1) use of coatings on the fibers which may reduce their respirability, and (2) low intrinsic respirability characteristics.

e. Aramid fibers appear to present relatively low risk because they are basically nonrespirable as currently produced and processed.

f. Polyethylene and polypropylene pulps and fibers appear to present relatively little risk since they appear to be relatively nontoxic and nonrespirable.

g. Attapulgite has large general exposure potential but available evidence suggests that attapulgite from U.S. mines may present little hazard. In addition, attapulgite is not a major substitute for asbestos.

h. Polyvinylcholoride does not appear to present a health hazard comparable to asbestos, although vinyl chloride, the monomer used to produce polyvinylchloride, is a carcinogen. The polyvinylchloride product itself presents little risk and workplace exposures are apparently adequately controlled.

i. Ductile iron pipe does not present a health hazard comparable to that of asbestos.

EPA recognizes that some asbestos substitutes may be new chemical substances for which a premanufacture notice (PMN) must be submitted under section 5 of TSCA. A goal of EPA's PMN review program is to encourage the development of new chemical substances that are less hazardous than the chemical substances they replace. EPA encourages the development of less hazardous new chemical substances as asbestos replacements. Potential *developers of new chemical substances* intended as asbestos substitutes may wish to discuss their plans with EPA during a premotice consultation. Such a *consultation can be arranged by* contacting the Premotice Communications Coordinator by telephone at (202–382–3745) or by writing to the Premotice Communications Coordinator, Chemical Control Division (TS–794), Environmental Protection Agency, 401 M St., SW., Washington, DC 20460. Through a premotice consultation, EPA can inform potential PMN submitters of legal requirements, possible EPA health concerns about the substance, and possible test data that EPA may believe necessary to evaluate the risk potential of the substance. During a premotice consultation and any PMN review of a new chemical substance that is intended as a substitute for asbestos, EPA will consider the relative risks presented by asbestos and potentially presented by the asbestos substitute. EPA will make every reasonable effort to provide prompt and clear information concerning the likely result of PMN review in view of EPA's policy of encouraging less hazardous substitutes for asbestos.

D. Economic Effects of Proposed Rule

This portion of the preamble presents EPA's determination of the "reasonably *ascertainable economic consequences of* the rule" as required by section 6(c)(1)(D) of TSCA.

EPA has prepared a "Regulatory Impact Analysis of Controls on Asbestos Products" (Ref. 3) which analyzes the potential economic impact of this proposed rule. The economic impact is summarized and explained below.

Estimated costs are mainly from 1981 data obtained under EPA's section 8(a) asbestos reporting rule (40 CFR 763.60). Some of the data were adjusted to reflect more current information on production of asbestos products. Specifically, EPA gathered more current information on the use of asbestos clothing and asbestos flooring felt and then adjusted the estimated costs and benefits of the rule to reflect declining use of these products. The sources of the information are noted in the record for this rule. The costs are presented as the net present value of costs incurred due to changes in asbestos product production between 1985 and 2001. Costs are likely to be overstated since the baseline production levels used in the cost model probably overstate production in the future. In addition, the cost estimation model assumes that the *relative prices of substitutes for*

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