

consistent with the limited 1983 exposure data submitted by Dr. Bragg as well as with the position of the AFL-CIO [Exhibit 335, p. 41].

Asbestos-Reinforced Plastics

Due to their heat-resistant qualities, asbestos-reinforced plastics are used in the electrical, electronic, automotive, and printing industries. In the manufacture of these plastics, raw asbestos fiber is introduced and dry mixed with catalysts and other additives. The mixture is heated into a resin in the form of pellet or powder preform. The preform may be further processed onsite or packaged and sold to other manufacturers. Based on the information provided in a 1984 report prepared by Versar for EPA [Exhibit

333], primary manufacturers process only 30 percent of the preform that they produce. The remaining 70 percent is shipped to secondary manufacturers who shape and finish the asbestos-based plastic resin. In the shaping process of the final plastic product, the preform is rolled, stamped, pressed, or molded. The product is then cured in an isolated area with a ventilation system. The strength and stiffness characteristics of the final product are partially controlled by the time and temperature conditions during curing.

OSHA's feasibility determination for asbestos reinforced plastics is based in part upon data obtained from two plants surveyed by RTI and from three OSHA MIS reports. These data are summarized in Table 17.

TABLE 17.—WORKER EXPOSURES DURING THE MANUFACTURE OF ASBESTOS-REINFORCED PLASTICS

Job classification/process	Mean 8-hr TWA exposure (f/cc)	Standard deviation	No. of observations	Source of data
Introduction.....	0.1	N/A	134	RTI survey, ³
Introduction.....	N/D	0.001	3	OSHA MIS.
Wet mechanical.....	0.01	N/A	12	RTI survey, ³
Dry mechanical.....	0.14-0.57	N/A	135	RTI survey, ³
Other ¹	0.04	0.047	13	OSHA MIS.

¹ Number of employees who were represented by average exposure was used since data on the number of samples were not given.

² Identified as plant "1."

³ Identified as plant "2."

⁴ Identified as plant "3."

N/A=Not available.

N/D=Not detectable.

Source: U.S. Department of Labor, OSHA, Office of Regulatory Analysis.

Since these data, especially the MIS data, do not represent plants using the best controls, OSHA's determination is also based upon the technologies currently available in the other primary sectors.

The data indicate that exposures at the fiber introduction and wet mechanical processes in this industry are below 0.2 f/cc and that the problem exposure areas during the manufacture of the plastics appear to be in dry finishing operations. These operations are similar to dry mechanical operations in other asbestos products manufacturing industries and include grinding and sanding, which OSHA has determined may not be feasible to achieve exposure levels below 0.2 f/cc without the use of respirators. Thus, OSHA believes it is technologically feasible for most operations to achieve a 0.2 f/cc TWA, but that respirators will be required during grinding and sanding.

Secondary Manufacturing

Secondary manufacturers modify or fabricate primary asbestos products to yield final products (e.g., impregnated roofing felt) or intermediate products

(e.g., asbestos textiles made into fire-resistant clothing). Receiving and handling these primary products do not pose exposure problems. Compared with the primary processing steps of fiber introduction, mixing, and conveying loose fibers, secondary fabrication takes place in a more controllable

environment. Exposures occur in this sector when stable asbestos products are altered by dry mechanical operations that release encapsulated fibers into the air. As supported by data, exposures resulting from these dry mechanical finishing operations can be controlled by shrouded tools and by wet methods in some cases. As with primary manufacturing, OSHA has determined that it is feasible for these industries to comply with the 0.2 f/cc PEL in all operations with the exception of some maintenance activities (e.g., repairing or servicing the controls that protect the other workers) and a limited number of dry mechanical operations. The basis for this determination is presented below.

A/C Sheet

The secondary manufacturing of A/C sheet prepares the product for specific installation requirements. This fabrication requires the same dry mechanical processes that were described for primary manufacturing processes, such as sawing, drilling, routing, beveling, and sanding. Some of the firms that responded to RTI's survey reported using wet spray during sawing and routing. As in other processes, tools are equipped with local exhaust systems. High exposures are likely to remain a problem during sanding, which is unique to A/C sheet production.

OSHA's determination of feasibility in this sector is based on data obtained in response to the RTI survey (see Table 18). As all of the exposures shown in the table are below 0.15 f/cc, and because the 1983 data [Exhibit 235-A, Table XXII] for a secondary user of A/C sheet are also all below 0.15 f/cc, OSHA has determined that it is feasible for this sector to comply with the 0.2 f/cc PEL, except for sanding, where respirators will be required.

TABLE 18.—WORKER EXPOSURES DURING SECONDARY MANUFACTURE OF ASBESTOS CEMENT SHEET

Plant designation	Annual production	Job classification	8-hr TWA exposure levels (f/cc)	No. of workers at operations
m.....	> 1 million lbs.	Dry mechanical.....	N/D 0.14	20
p.....	7,000 sq yds.	Wet mechanical.....	0.10	1
i.....	N/A	Wet mechanical.....	N/D	5
q.....	21,000 sq yds.	Other.....	< 0.10	15

N/D=Non-detectable.

N/A=Not available.

Source: U.S. Department of Labor, OSHA, Office of Regulatory Analysis, based on RTI survey [Appendix C of the RIA].

Friction Products

In this sector, manufacturers assemble automatic transmission parts, disk and drum brakes, and automotive clutches. Asbestos products undergo a final

forming process which may include grinding. The product is then assembled by means of a riveting operation. An example of this secondary fabrication of friction products is the assembly of disc brakes. The asbestos brake pad