

TABLE 21.—WORKER EXPOSURE DATA FOR AUTOMOTIVE BRAKE AND CLUTCH REMANUFACTURING

Job classification/proposal	Mean 8-hour TWA exposure (f/cc)	Standard deviation	Number of observations	Source of data
Dry mechanical	0.05	0.06	112	RTI survey ¹
Dry mechanical	.12	.11	23	OSHA MIS.
Other	.08	.10	56	Do.

¹ Data on the number of samples were not provided. This figure is the number of workers represented by the data.

² Plants designated as "TL," "LJ," "V," "OC," "Z," "GH," and "KL."

³ Data on 24 observations were available for the years 1979 through 1984. One outlier was omitted (1.6 f/cc) since all of the other observations were 0.5 f/cc or below.

⁴ Data on 58 observations were available. Two outliers were omitted (1.1 f/cc and 1.0 f/cc) since all of the other observations were 0.4 f/cc or below.

Source: U.S. Department of Labor, OSHA, Office of Regulatory Analysis, as derived from RTI survey.

Service Industries

Automotive Brake and Clutch Repair. Workers who repair brakes and clutches made with asbestos may be exposed because brakes and clutches deteriorate with wear, thereby resulting in friable asbestos. Asbestos dust present on these automotive parts is easily disturbed and becomes airborne during the repair and removal of the linings. Exposures above 0.2 f/cc are particularly prevalent when compressed air is used to clean the linings. These exposures can be significantly reduced, however, by using solvent mists on the linings and then wiping them off, or by using vacuums to remove the dust.

OSHA determined that it is feasible for this industry to meet the 0.2 f/cc. This determination is based primarily on data obtained from the OSHA MIS compliance data base and from a November 22, 1982, study by the National Institute for Occupational Safety and Health (NIOSH) [Report No. 32.4]. The OSHA data contained 47 observations from the period 1979 through 1984, with a mean 8-hour TWA exposure of 0.03 f/cc and a standard deviation of 0.14 f/cc. In addition, the NIOSH study demonstrated that average exposures were below 0.1 f/cc when using either the solvent mist or the high-efficiency particulate air (HEPA) vacuum systems. Thus, OSHA determined that the 0.2 f/cc is feasible in this sector.

Shipbuilding and Repair. Current shipbuilding activities should not generate any worker exposure to asbestos because the use of asbestos has been phased out of this type of construction. The greatest potential for asbestos exposure is during the removal, or "rip-out," of old asbestos material. Rip-out often requires sawing, tearing, cutting, and scraping to remove existing asbestos materials, and these activities frequently occur in confined spaces. Additional sources of asbestos exposure for a small number of shipyard workers occur during operations such as gasket-cutting. OSHA believes that these

additional exposures can be kept below the PEL of 0.2 f/cc through the use of ventilation and wet methods, which have been used successfully in other industries.

OSHA, however, anticipates problems in controlling exposures during major rip-out operations. These operations involve the removal of asbestos from large areas such as machinery rooms or engine rooms. The particular constraints of the shipbuilding/repair work environment limit the use of traditional engineering controls. Safety rules restrict the number of hoses, pipes, and other equipment that can pass through certain bulkhead openings below deck. The confined spaces in ships impede the use of even portable ventilation equipment in certain areas. In addition, wetting agents are not permitted for rip-out activity in nuclear reactor compartments because of the fear of contamination.

For example, in testimony at the formal hearings, Mr. James R. Thorton of the Newport News Shipbuilding Drydock Co. presented exposure data collected during major rip-outs of reactor compartments where the use of water and saturating agents was restricted. These data show that 41 percent of the exposures were greater than 2.0 f/cc, and another 32 percent were between 0.5 f/cc and 2.0 f/cc [Hearing Transcript of June 25, 1984, p. 79]. The Federal Employees Metal Trades Council [Exhibit 158-6] submitted to the record other monitoring results of major asbestos rip-outs in the reactor compartment of nuclear submarines. These data showed similar exposure levels, with 40 percent of the exposures greater than 2.0 f/cc and 10 percent between 0.5 f/cc and 2.0 f/cc. Thus, OSHA concludes that the 0.2 f/cc PEL is not feasible during asbestos rip-outs of nuclear components without the use of respirators.

According to Mr. Thorton, the exposure results for major asbestos rip-outs of non-nuclear components (where wetting agents can be used) show that 5

percent of the exposures are greater than 2.0 f/cc, and 28 percent are between 0.5 f/cc and 2.0 f/cc. One of the respondents ("QR") to the RTI survey reported exposures ranging from less than 0.02 f/cc to 0.5 f/cc for the wet removal of pipe wrap, wallboard, and gasket materials. The respondent stated that PEL of 0.2 f/cc can be attained during these small-scale or "minor rip-out" operations by using wet removal practices. OSHA has thus determined that the 0.2 f/cc PEL is feasible for certain minor rip-outs in non-nuclear vessels, but that respirators will be needed during major rip-outs in non-nuclear vessels.

Construction

New Construction. Although concerns about the potential health hazards of asbestos exposure have curtailed its use substantially in recent years, a number of asbestos materials are still used in new construction. These products include A/C pipe and sheet, vinyl/asbestos floor tile, and asphalt roofing felts and coatings.

A/C Pipe. In a study [Exhibit 84-279] performed in 1977 for the A/C Pipe Producers Association, Equitable Environmental Health, Inc., (EEH) collected short-term personal samples to evaluate exposure during various operations that might be performed in the field on A/C pipe, using different types of equipment. For example, while unloading pipe at the site and laying pipe in the trench, the highest TWA concentrations reported were 0.03 f/cc and 0.02 f/cc, respectively. These data suggest that there is little potential for exposure in these operations and that no specific controls are necessary to keep exposures below the 0.2 f/cc PEL.

When installing A/C pipe, however, it may be necessary to cut, machine, or tap the pipe at the work site, which may expose workers to airborne asbestos fibers. Although the current trend is for more of these activities to be performed by the manufacturer rather than in the field [Exhibit 333, Sections G.O.Q], cutting and machining are associated with potentially high exposures. Joe Jackson of the Association of A/C Pipe Producers (AACPP) noted, however, the feasibility of installing A/C pipe with exposures below the PEL of 0.2 f/cc. In pre-hearing written testimony he stated as follows:

Workers following AACPP's recommended work practices could almost always ensure that they would avoid peak exposures in excess of 0.75 f/cc over 15 minutes, while eight-hour time-weighted average exposures would remain at 0.1 f/cc or below. [Exhibit 91-16, Section O, p. 12.]