

brake and clutch repair, and shipyards. Model plant sizes were selected based on data obtained from the RTI survey [Exhibit 84-473]. After the model plants were developed for each industry segment, the total number of employees in the segment was used to compute the number of model plants needed to describe the segments (e.g., if total employment in a segment was 1,000 and average employment per plant was 100, then the estimated number of plants was 10). The distribution of sizes and all other attributes of the model plants were based on information contained in the RTI Phase I Report [Exhibit 84-473].

While none of the comments received by the Agency disputed the use of RTI's model plant approach, OSHA believes that some critical comments reflected a misunderstanding of RTI's methodology. For example, in their post-hearing comments, the Asbestos Information Association or North America criticized the estimates for the numbers of workers exposed for some model plants in the impacted sectors [Exhibit 312A, Tab N]. This misunderstanding appears to arise from the fact that the model plants do not represent typical plants in each sector. By design, the model plant approach describes the average state of the existing engineering controls and ancillary measures within a particular industry segment. Thus, in most cases, the number of model plants calculated by RTI to represent the industry does not equal the actual number of plants in the industry, and the number of workers at each model plant does not equal the typical number of workers at a typical plant. Although the number of model plants in an industry may differ from the actual number of plants, the aggregated compliance cost estimates that are based on the level of existing engineering controls present in a model plant should be accurate.

Other comments received by the Agency questioned the unit cost estimates used by RTI (see Exhibit 84-273, Table 4-1). OSHA has carefully reviewed these comments and has revised many of the unit cost estimates in the RTI model. Thus, although OSHA used a similar approach to the one presented by RTI, OSHA's industry cost estimates differ from those developed by RTI. Table 26 presents the unit cost estimates used by OSHA in its analysis.

From this information and the Agency's Technological Feasibility Analysis, OSHA developed a compliance strategy for each size and type of model plant. (Another source of differing cost estimates between OSHA and RTI are the differences in the feasibility analysis.) Finally, the costs

for each type of plant were calculated based on the estimated compliance levels, and the costs to each industry sector were estimated by aggregating the per plant costs. Table 27 presents OSHA's estimates of the annual compliance costs for the individual industry sectors.

Table 28 presents OSHA's estimates of the cost to revenue ratios for the 17 primary manufacturing, secondary manufacturing, and service sectors. The compliance costs for each sector were obtained directly from Table 27 and the revenues for each sector were obtained from Table 5-5 of the RTI report [Exhibit 84-473]. As can be seen from the Table V, the cost-to-revenue ratios for 14 of

the 17 sectors are below 2 percent with most below 0.5 percent. In three sectors (i.e., the manufacturing of primary and secondary asbestos friction products and the manufacturing of primary asbestos-reinforced plastics), the ratios are between 2 and 5 percent. Ratios of this magnitude indicate that these sectors may have some financial difficulty in complying with the requirements of the revised standard if the costs cannot be passed through to consumers in the form of higher prices. Nevertheless, OSHA believes these firms would avoid major disruptions by switching to the production of non-asbestos products.

TABLE 26.—ITEM COST ESTIMATES FOR CONTROL REQUIREMENTS IN PRIMARY MANUFACTURING, SECONDARY MANUFACTURING, AND SERVICE SECTORS

Item	Unit cost (1984 dollars)	Comments used to develop estimate
Local exhaust ventilation.	Related to CFM needed.	Exhibit 84-473 and 312A, Tab N, and transcript of July 9, 1984, page 204.
Lunch rooms, shower rooms and change rooms.	Related to Area needed.	Exhibit 84-473.
Caution tape.	\$6.00/sign.	Exhibits 84-473, 84-474, and 179.
Suits of protective clothing.	\$3.00/suit.	Exhibits 84-473, 84-474, and 179.
Half-Mask cartridge respirator:		
Units.	\$14.05/unit.	Exhibits 84-473, 84-474, 123A, 179 and 330.
Filters.	\$8.15/filter pair.	
Powered-Air purifying respirator:		
Units.	\$415.00/unit.	Exhibits 84-473, 84-474, 123A, 179 and 330.
Accessories (filter and battery).	\$25.00/set.	
Solvent spray.	\$1.75/can.	OSHA telephone survey.
HEPA vacuums:		
Units.	\$1,000.00/unit.	Exhibits 84-473, 84-474, 179 and 272.
Filter.	\$350.00/filter.	
Exposure monitoring:		
Sampling.	\$300.00/technician/day.	Exhibits 84-473, 84-474, 179, 312A, 256, and 272; hearing transcript of July 11, 1984, pages 898 and 892; hearing transcript of June 29, 1984, page 116.
Analysis.	\$30.00 per sample.	
Medical exams.	\$100.00 per exam.	Exhibits 84-473, 84-474, 179, 123A, and 272; hearing transcript of July 2, 1984, pages 53 and 253, and hearing transcript of June 29, 1984, page 117.
Training.	Based on wage rate and time.	Exhibits 84-473, and 84-474; transcript of June 20, 1984, page 179; transcript of June 29, 1984, page 201 and transcript of July 11, 1984, page 89.

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

TABLE 27.—ANNUAL COMPLIANCE COSTS

(No price or quantity changes)

Industry sector	Annual compliance costs (in thousands of 1984 dollars)	Most expensive provision	Annual cost of the most expensive provision as a percentage of annual compliance costs
Primary manufacturing:			
A/C pipe	68.2	Vacuums	97
A/C sheet	642.8	Ventilation	91
Friction materials	22,661.3	do	91
Textiles	811.2	do	96
Floor tile	305.1	do	75
Gaskets and packings	758.8	do	83
Paper	834.8	do	81
Coatings and sealants	1,223.9	do	55
Plastics	474.6	do	86