presented in Table 24. OSHA estimates that by reducing the PEL from the current 0.2 f/cc level to 0.5 f/cc, approximately 33 cancer deaths per year will be prevented, and by reducing the PEL to 0.2 f/cc, approximately 75 cancer deaths per year will be prevented. Estimates of the number of cancer deaths avoidable by reducing exposures to the 0.2 f/cc PEL in each major industry sector are presented in Table 25. These estimates were based on the revised employment and exposure estimates presented in Tables 22 and 23. The estimated 75 cancer deaths avoided by reducing the PEL from 2.0 f/cc to 0.2 f/cc understates the true benefits of the revised standard because these benefits do not include the reduced incidences of asbestosis-related disabilities nor the reduced incidence of asbestos-related diseases in groups indirecty exposed in the workplace.

Based on the analysis of existing studies, which are summarized in the Health Effects Section of this Notice, OSHA estimates that reducing the PEL to 0.2 f/cc would prevent 30 cases of disabling asbestosis. As these cases represent disabilities and not deaths, they were not included in the total estimated benefits. As such cases would result in potential costs to society (e.g., health care, lost worker productivity, and a decline in the quality of life to the affected individual), their prevention does have a positive value.

TABLE 24.—EXPECTED DEATHS ATTRIBUTABLE TO 1 YEAR OF OCCUPATIONAL ASBESTOS EXPOSURES AT 1984 LEVELS

Industry	Total cancer deaths
Primary manufacturing:	
A/C pipe	0.07
A/C sheet	.16
Textiles	4.00
Floor tile	.18
Gaskets and packings	.02
Paper	.13
Coatings and sealants	.06
Plastics	.48
Secondary manufacturing:	
A/C sheet	.18
Friction materials	.85
Gaskets and packings	.88
Textiles	.12
Plastics	.29
Automotive remanufacturing	.90
Services:	
Automotive repair	39.25
Ship repair	4.61
Construction:	
New construction	.61
Asbestos abatement	.76
Demolition	.23
Building renovation	22.49
Routine maintenance in commercial and residential buildings	11.23
Routine maintenance in general industry	.39
Total	87.80

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

TABLE 25.—EXCESS CANCER DEATHS AVOIDED DUE TO REDUCING THE PERMISSIBLE EXPOSURE LIMIT TO 0.2 F/CC FOR 1 YEAR

Industry	Total cancer deaths avoided
Primary manufacturing:	
A/C pipe	0.06
A/C sheet	3.14
Friction products	3.39
Textiles	3.16
Floor tile	.01
Gaskets and packings	.12
Paper	.04
Coatings and sealants	.39
Plastics	.09
Secondary manufacturing:	
A/C sheet	.16
Friction materials	.48
Gaskets and packings	.70
Textiles	.11
Plastics	.17
Automotive remanufacturing	.74
Services:	
Automotive repair	30.15
Ship repair	4.28
Construction:	
New construction	.36
Asbestos abatement	.66
Demolition	.23
Building renovation	22.15
Routine maintenance in commercial and residential buildings	9.80
Routine maintenance in general industry	.34
Total	74.72

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

Similarly, OSHA's analysis does not quantify benefits among those incidentally exposed. Many construction workers, for example, can be exposed to asbestos while present at sites where asbestos work is being done. Since OSHA's revised asbestos standard will reduce ambient asbestos levels at these sites, exposure among these workers will also be reduced. In addition, OSHA's analysis does not take into account any reductions in the exposures to the families of asbestos workers. For example, there have been reports of family members contracting asbestos-related diseases by laundering workers' clothing (Exhibit. 608X, pp. 8–10; 606X, p. 40). These types of exposures among family members would be reduced as a result of the final rule.

Summary of Estimated Costs Associated With the Revised Standard

Introduction

The revised OSHA asbestos standard will result in increased costs to society due to a number of factors. Suppliers of asbestos products (i.e., primary and secondary manufacturers) will generally experience increased costs to comply with the new regulation and they will attempt to pass on these higher costs in the form of higher product prices. Consumers should respond to the price increases by demanding fewer asbestos-related products which, in turn, will have a negative impact on the revenues of producers. Asbestos-consuming sectors, including construction and secondary fabricators, will incur higher operating costs both because they must comply with the standard, and because they must pay higher prices to purchase inputs produced by other sectors that also must comply with the standard. Some sectors may face lower prices for certain goods (e.g., asbestos fiber), because of declines in demand that are expected to occur as a result of the standard.

OSHA estimated the costs associated with these effects in three ways. First, the compliance cost for each industry sector was estimated without considering the impact from other sectors. Second, the resultant cost increases were then entered into a multimarket economic model, which simultaneously estimated the new equilibrium price and output levels across sectors. Third, the cost increases on affected producers and consumers were identified.

Compliance Costs (Assuming No Price or Quantity Changes)

OSHA estimated that the total annual compliance costs for all affected industries will be approximately $460 million. The compliance costs for each of the major industry groups are $27.8 million for primary manufacturers; $30.8 million for secondary manufacturers; $44.7 million for automotive repair, $3.9 million for ship repair; and $352.0 million for construction.

The preponderance (i.e., over 95 percent) of the compliance costs for general industry result from engineering controls (ventilation and solvent spray). In fact, the cost of engineering controls is the major cost item for all sectors except A/C pipe manufacturing and ship repair.

Over 60 percent of the compliance costs for construction result from vacuums and respirators. The respirators will be used to protect those employees performing the work, and the vacuum will be used to clean the work area so that others are not exposed after the job is completed. The specific methodology used to calculate these estimates is presented below.

Primary Manufacturing, Secondary Manufacturing, and Service Sectors

OSHA estimated the compliance costs for general industry and service sectors using a model plant approach. The models were developed by RTI for each major product line in primary and secondary manufacturing, automotive

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