equally important in showing *why* fluctuations occur.

OSHA believes, however, that an employer's demonstration that an inspector's one-day sample is unrepresentative, in most cases, should consist of a series of full-shift measurements of the exposure of the employee under consideration. These measurements should consist of all valid measurements of the employee under consideration taken within the last year and should show that on only relatively rare occasions could random fluctuations result in measured TWA concentrations above the PEL.

Where the OSHA inspection or other information shows that the employer's exposure control programs and equipment are broken or are poorly maintained, where housekeeping programs have not been instituted or are inadequate, or where training programs do not exist or do not meet the standard, it is likely that OSHA's one-day measurements accurately reflect high exposure conditions that are not due to random exposure fluctuations but that are the result of the inadequacies of the employer's protective program. Consequently, citation is appropriate in such circumstances and no reinspection will be performed regardless of the employer's past measurements results.

It should be noted that the calculations of probable overexposures referred to in the above discussion are based on data from measurements taken in 1983 and earlier. Evidence in the record shows a gradual decline in asbestos levels over the last 5 years although the same technology is being used (e.g., compare data on the fiber receiving process in Exhibit 84–442 against the more recent data in Exhibit. 225). OSHA anticipates that, in general, exposure levels and the probability of overexposures will decline as employers more conscientiously apply all the available controls and adopt whatever new technology may become available. In this regard OSHA points to a new technique for reducing dust during abatement activity. The details of which were submitted to OSHA after the record was closed (see CACOSH, Exhibit. 344–18). OSHA believes that even minor refinements of existing technology will help employers achieve lower asbestos dust levels and will demonstrate that the concern for possible unfair citations due to day to day variability is illusory.

Based on all these considerations, OSHA believes that AIA's concerns about the issuance of citations due to occasional excursions above the PEL, are greatly overstated.

Sampling Error

The second contention made by AIA is that the sampling and analytic method for monitoring asbestos is so imprecise at lower levels that employers cannot with confidence evaluate whether they are in compliance. As discussed in great detail in the measurement section, OSHA has determined that the revised phase contrast method set out in this standard can reliably measure asbestos exposures below the action level of 0.1 f/cc if the procedures and protocols set out in the appendix are conscientiously followed.

OSHA acknowledges, however, that this sampling and analytic method for measuring asbestos has the potential for error. OSHA, therefore, will add a value that is equivalent to the sampling and analytical error (SAE) of the method to the exposure level measured by an OSHA inspector and will not cite for overexposure unless the measurement exceeds the PEL plus the SAE. As discussed in the section on method of measurement, OSHA believes that the record supports retaining the former SAE of 25 percent [OSHA Industrial Hygiene Technical Manual, 1984, p. A–240; see discussion in method of measurement section, *infra*]. OSHA, therefore, will not cite an employer for overexposure unless the measured one-day's overexposure exceeds 0.25 f/cc—that is, the PEL of 0.2 f/cc plus the SAE of 0.05 f/cc. Since the sampling and analytical error potential can also result in measurements that are *lower* than the actual concentrations, the application of the SAE always will give the benefit of the doubt to the employer and assume that actual concentrations are less by 25 percent of the measured results. OSHA believes this additional margin will add to the assurance an employer has about his capability for compliance and will further reduce the possibility that he will be unfairly vulnerable to an OSHA citation.

OSHA has also required a number of practices that will standardize sample analysis. These include specifications of a procedure for analysis and laboratory quality control programs.

Summary

In summary, OSHA has determined that the 0.2 f/cc PEL is technologically feasible and will not result in an unfair issuance of a citation to the conscientious employer. OSHA's analysis of each affected industry sector is presented below. In this analysis, OSHA concentrated on the revised PEL of 0.2 f/cc. As stated above, most the comments received by the Agency agree that 0.5 f/cc is feasible. Some comments, including those of the AFL–CIO [Exhibit No. 335], argued that a PEL of 0.1 f/cc is feasible, but most of the "best" plant exposure data indicate that average exposures at many stations (e.g., most dry mechanical operations) are in excess of 0.1 f/cc and cannot be reduced using current controls and practices.

Tables 11 and 12 summarize OSHA's findings concerning the feasibility of reducing worker exposures to below the 0.2 f/cc PEL. They show that over 99 percent of the affected employees in general industry are expected to be below the PEL. Exposures for over one-half of the affected employees in construction sectors could be reduced to that level. OSHA, therefore, has determined that it is feasible for most industry sectors to comply with the 0.2 f/cc PEL most of the time.

TABLE 11.—FEASIBILITY SUMMARY TABLE FOR GENERAL INDUSTRY: PROJECTION OF WORKERS EXPOSED BELOW AND ABOVE 0.2 F/CC FOLLOWING THE PROMULGATION OF THE STANDARD AND THE ADOPTION OF ENGINEERING CONTROLS AND WORK PRACTICES

Industry sector	Total No. of asbestos-exposed workers	Projected No. of workers exposed to asbestos levels below 0.2 f/cc	Projected No. of workers exposed to asbestos levels above 0.2 f/cc*
Primary manufacturing:			
A/C pipe	512	409	103
A/C sheet	203	150	53
Textiles	414	123	290
Floor tile	276	276	0
Coatings	1,327	1,327	0
Friction	5,104	4,777	327
Paper	387	387	0
Gaskets	315	315	0
Plastics	324	278	46
Subtotal	8,861	8,042	819
Secondary manufacturing:			
A/C sheet	345	230	115
Textiles	172	143	29
Friction	1,504	1,003	501
Gaskets	9,972	9,972	0
Plastics	2,450	2,450	0
Auto remanufacturing	4,750	4,750	0
Subtotal	19,193	18,548	645
Service and repair:			
Ship repair	15,000	12,434	2,566
Auto repair	526,998	526,996	0
Subtotal	541,998	539,434	2,566
Grand totals	570,052	566,022	4,030

* Estimates derived from RTI survey data presented in Appendix D of the Final Regulatory Impact and Regulatory Flexibility Analysis (RIA).

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

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