

contained in the revised standard for general industry.

The first exception is based on paragraph (g)(2)(i) of the existing standard, which does not require that products be labeled if asbestos is bonded or modified in such a way that use of the product will not result in employee exposures that exceed the PEL. In the revised standard, OSHA has modified this exception by triggering the labeling requirement in cases where the use of such products may result in employee exposures above the action level rather than above the PEL. OSHA has made this change to be consistent with the use of an action level, which was not included in the existing standard, as a trigger for the employer to institute measures to protect workers from exposure to asbestos.

The second exception to labeling, which pertains to products and materials containing less than 0.1 percent asbestos, is based on OSHA's Hazard Communications rule (29 CFR 1910.1200), which specifies that a mixture shall be considered to be carcinogenic if a carcinogen is present in concentrations exceeding 0.1 percent. Although one commenter (Ex. 344-16) suggested that OSHA consider asbestos to be a trace contaminant if it is present at a concentration of 0.25 percent or less, OSHA found no record evidence that indicated that a higher degree of worker protection could be attained by using a percent concentration other than that specified by the generic standard.

Employee information and training. OSHA proposed training requirements for asbestos-exposed employees in the April notice, and these have been slightly modified in the final rule. The training requirements in the revised standard are patterned after those discussed in OSHA's Hazard Communication standard (29 CFR 1910.1200(h)(1) and (2)).

The revised asbestos standard for the construction industry requires affected employers to provide a training program for all employees exposed to airborne concentrations of asbestos in excess of the action level prior to or at the time of initial assignment (unless the employee has received equivalent training within the previous 12 months) and at least annually thereafter. Component areas to be covered in the training program include: (1) methods for recognizing asbestos; (2) the health effects associated with asbestos exposure; (3) the relationship between asbestos and smoking in producing lung cancer; (4) the nature of operations that could result in exposure to asbestos, the importance of necessary protective controls to minimize exposure including,

as applicable, engineering controls, work practices, respirators, housekeeping and protective clothing, and any necessary instruction in the use of these controls; (5) the purpose, proper use, fitting instructions, and limitations of respirators, as described in 29 CFR 1910.134; (6) the appropriate work practices for performing the asbestos job; and (7) the medical surveillance program requirements. The employer may design and implement its own training program that contains these elements, or rely on third-party training programs, such as EPA-sponsored courses on asbestos abatement.

OSHA strongly believes that informing and training employees can reduce the incidence of work-related diseases caused by exposure to hazardous workplace conditions. A large number of commenters supported the inclusion of information and training provisions in the final rule (Trs. 7/10, 6/29, 6/26, 6/20, 6/28) and many employers and/or states reported having established programs in place (Trs. 6/20, 6/29, 6/27). The BCTD, however, proposed a more elaborate employee certification program modeled after the program specified in Maryland and California laws governing occupational exposure to asbestos. The BCTD felt that general training requirements would be too difficult to enforce (Ex. 330). The BCTD recommended that employees be given precertification examinations in proper respirator use and general competency with regard to job-specific work procedures and practices for working with asbestos-containing materials, and that only employees certified by their employer would be allowed to perform most asbestos tasks (Ex. 330).

After careful consideration of the evidence in the record, OSHA has determined that the training requirements in the final rule will provide construction employees with an understanding of the hazards of asbestos and the necessary protective measures to permit them to participate actively in their employer's training and hazard control programs.

Paragraph (1)—Housekeeping

In the revised standard for the construction industry, OSHA has included a housekeeping provision stipulating that (1) when vacuuming is used for asbestos cleanup, only HEPA-filtered equipment may be used, and (2) all asbestos waste, scrap, debris, bags, containers, equipment, and contaminated clothing must be collected and disposed of in sealed impermeable bags or in other closed impermeable containers. The Agency believes that

these housekeeping practices reflect advances in vacuum filter technology and good hygiene practices, and are essential parts of any effective asbestos control program. OSHA believes that the use of HEPA-filtered vacuums and proper disposal practices will considerably diminish the risk of generating airborne asbestos during cleanup—a potentially high-exposure activity.

The required use of high-efficiency particulate air filters on vacuums employed for cleanup (paragraph (1)(i)) is not intended to preclude the use of other complementary cleanup methods, such as wet methods. However, this provision does preclude the use of conventional vacuums, which would simply redistribute the asbestos fibers. R. F. Boggs, Vice President of Organization Resources Counselors, stressed the importance of using HEPA-equipped vacuums for cleanup operations on construction sites: "In order to achieve good housekeeping, industrial asbestos vacuum cleaners are a necessity" (Ex. 123-A).

The waste disposal provision in paragraph (1)(2) is a restatement of a similar requirement in the asbestos standard adopted by OSHA in 1972. The objective of the requirement in the earlier standard was to impose bagging restrictions only in situations likely to produce airborne concentrations of asbestos in excess of the ceiling limit or the PEL. By requiring these precautions in the revised standard for the on-site transportation of all asbestos wastes for disposal, OSHA is seeking to prevent both the direct exposure of cleanup personnel and the incidental exposure of workers not directly involved in asbestos removal, installation, or renovation.

Support for a rigorous housekeeping program is amply provided in the record (e.g., Asbestos Information Association, Exs. 84-307 and 328; Associated General Contractors of America, Ex. 84-467; Organization Resources Counselors, Ex. 123-A; and the Building and Construction Trades Department, Ex. 330). Dr. Boggs also described the process used for disposing of asbestos-containing waste on construction sites:

As [asbestos] insulation is removed, it is immediately bagged in poly bags, on which are preprinted warning labels. The bags are removed from the structure to the designated storage area and are not allowed to remain in various parts of the work area. Housekeeping is of the utmost importance. (Ex. 123-A)

OSHA's requirements for waste disposal are designed to protect employees from exposure to asbestos