

(h)(4)(ii) of the revised standard the use of qualitative fit-test methods only for half-mask negative-pressure respirators, which can only be used for concentrations of asbestos fibers that do not exceed 10 times the PEL. Since qualitative methods do not appear to be adequate for ensuring proper fit for full-facepiece negative-pressure respirators, OSHA has required that such respirators be fit tested using quantitative methods. Fit testing is not required for positive-pressure respirators because the flow of air from the inside of the respirator to the outside effectively eliminates the possibility of asbestos contamination entering the respirator facepiece through the face seal.

The provision in the existing standard requiring employers to establish a respirator program in accordance with the requirements contained in 29 CFR 1910.134 (b), (d), (e) and (f) is essentially unchanged in the revised standard.

Finally, the revised standard stipulates that respirators required for protection from exposure to asbestos fibers shall be provided at no cost to the employee. OSHA views this allocation of costs to control employee exposure to asbestos fibers as being necessary to effectuate the purpose of the Act. The requirement is consistent with other health standards issued under section 6(b) of the Act.

Paragraph (i)—Protective Clothing

The existing standard for asbestos (29 CFR 1910.1001(d)(3)) required that employers provide "special clothing" for any employees exposed to airborne asbestos fiber concentrations in excess of the ceiling level (10 fibers/cc of air). This special clothing was to include "coveralls or similar whole body clothing, head coverings, gloves, and foot coverings." In addition, the existing asbestos standard required that asbestos-contaminated clothing be laundered using means that "prevent the release of airborne asbestos fibers in excess of the exposure limits." The standard stated that any employer who had asbestos-contaminated clothing laundered by another person "shall inform such person of the requirement . . . to effectively prevent the release of airborne asbestos fibers . . . [and that] contaminated clothing shall be transported in sealed impermeable bags, or other closed, impermeable containers, and [be] labeled."

In the April notice (49 FR 14130), OSHA questioned the appropriateness of applying the existing standard's protective clothing requirements to the construction industry, and in particular asked whether these requirements were

"adequate to protect" workers in this industry. Responses to this question and information about protective clothing used by construction workers who work with asbestos are discussed below, together with requirements for protective clothing mandated by the revised rule.

The revised standard for construction differs from the existing standard in that it requires, in paragraph (i)(1), that personal protective clothing be provided for employees exposed above the revised PEL of 0.2 fiber/cc, rather than restricting the use of such clothing to employees exposed above the ceiling level only. When nondisposable protective clothing is used, the employer is required by paragraph (i)(2) to launder the clothing in a manner that prevents the release of airborne asbestos fibers in excess of the PEL and to notify the person responsible for laundering. Paragraph (i)(3) requires employers to transport contaminated clothing in sealed impermeable bags or other impermeable containers. The requirements of paragraphs (i)(2) and (i)(3) are identical to the requirements of the existing standard and the revised standard for general industry.

In addition, a requirement for employees involved in asbestos removal, demolition, or renovation operations at paragraph (i)(4) requires that work suits being worn by employees working inside negative-pressure enclosures be examined periodically by a competent person to detect rips or tears, and that when rips or tears are detected in clothing while an employee is working in a negative-pressure enclosure, they "shall be immediately mended, or the worksuit shall be immediately replaced."

Most commenters supported the inclusion of requirements in a revised standard mandating that employers provide personal protective clothing to employees exposed to asbestos. In general, commenters raised the following issues concerning personal protective clothing:

- (1) When personal protective clothing is needed;
- (2) What types of personal protective clothing should be used, e.g., full body coverings, head coverings, gloves, boots;
- (3) What protective clothing materials are appropriate in various work situations;
- (4) How asbestos-contaminated protective clothing should be cleaned or disposed of; and
- (5) Concerns about heat stress and worker comfort.

Both NIOSH and Margaret Stasikowski of EPA stated that the standard should include the use of protective clothing

[Tr. 6/21, p. III-210]. D.M. Bradshaw, Director of Manpower Services for the Associated General Contractors of America (AGC), recommended that disposable protective clothing should be provided if a contractor foresees asbestos exposure at any level and stated that OSHA's personal protective clothing requirements should be followed when asbestos is being installed in new construction (Ex. 84-457).

However, other commenters did not feel that personal protective clothing should be required regardless of exposure level or work situation. Dr. Arthur Langer of Mt. Sinai Hospital, speaking on behalf of the AFL-CIO, recommended protective clothing "where appropriate" (Tr. 7/3, pp. 90-91). AIA-NA commented that employers should provide protective clothing to employees "exposed above 0.5 f/cc TWA [i.e., the PEL recommended by AIA/NA] because this is already a fairly common [practice] in manufacturing plants" (Ex. 328, p. III-43). AIA/NA also cited their article, "Asbestos Cement Products," which emphasizes the need for personal protective clothing when working with asbestos cement products (Ex. 312.A). Commenters from AIA/NA also pointed out that the Council Directive of the European Communities, Article 11, requires that workers be issued personal protective equipment and that the equipment be worn, and that Article 12 of the Directive requires that a plan specifying the provision of personal protective equipment be drawn up prior to demolition and/or removal work (Ex. 312.A). The only work situations in which commenters felt that protective clothing might not be necessary or should not be required were one-time removal or installation operations (Ex. 341), cutting and installation of asbestos cement sheet (Tr. 7/10), and cutting of asbestos cement pipe (Tr. 7/10).

In response to these comments, OSHA's revised standard requires personal protective clothing only for employees exposed to airborne asbestos concentrations in excess of the PEL, i.e., in a regulated area. Triggering the requirement for personal protective clothing at the PEL is consistent both with the revised asbestos standard for general industry and with past OSHA rulemakings (see, for example, inorganic arsenic, 29 CFR 1910.1018).

A number of commenters recommended the use of disposable worksuits (Exs. 123-A, 330, 298, 92-28, 92-25, 92-11, 84-457, Trs. 7/3, 6/29, 6/25), particularly during major asbestos removal and renovation projects. These