comments of Carl D. Richardson of Brown and Rost, Inc., who felt that heat stress may be a problem in the summer and that "in winter months the colder temperatures present problems with the wearing of disposable clothing" (Ex. 123-A, p. 5 of Appendix B). Nevertheless, he stated that "we insist that all personnel working in close proximity to asbestos removal, whether directly involved or not, wear full protective clothing" (Ex. 123-A).

Scott Schneider, Industrial Hygienist for the United Brotherhood of Carpenters and Joiners, quoted an EPA research report that stated that "heat stress experienced by asbestos workers who wear full body and permeable clothing and respirators and who are engaged in moderate to heavy work in an enclosed work space is a serious and frequently encountered problem in asbestos removal" (Tr. 6/27, p. 183). He went on to discuss EPA guidance for controlling asbestos materials in buildings and the use of negative-pressure systems for asbestos abatement, and quoted the EPA report that stated that "the increased air change rate in the work area, facilitated by the use of negative pressure systems, . . . reportedly reduced the temperature and humidity in the work area, improved worker comfort and increased productivity" (Tr. 6/27, pp. 183-184).

OSHA recognizes that heat stress is a concern when disposable protective clothing is used in hot environments. However, OSHA believes that the use of protective clothing is an essential element of programs for protecting employees from asbestos exposure that may result from contaminated clothing. In situations in which heat stress is a concern, OSHA believes that employers should use appropriate work-rest regimens and provide heat stress monitoring that includes measuring employees' heart rates, body temperatures, and weight loss. If such measures are used to control heat stress, OSHA believes that disposable protective clothing can be safely worn to provide the needed protection against asbestos exposure.

Paragraph (j)—Hygiene Facilities and Practices

Paragraphs 1910.1001(d)(4) (i) and (ii) of the existing standard required that change rooms and two separate clothes lockers be provided "at any fixed place of employment." Similar requirements are contained in paragraph (i) of the revised standard for general industry. Since construction industry worksites are usually nonfixed, the application of such provisions to construction worksites is complicated. In the April proposal, OSHA solicited comments from affected parties concerning appropriate hygiene facilities and practices to protect construction industry employees.

The provisions pertaining to hygiene facilities and practices (paragraph (j) of the revised standard) reflect the comments received in response to the questions raised in the April proposal and data and testimony received in connection with the informal rulemaking hearing. By tailoring the requirements for hygiene facilities and practices to differences in worksite conditions, this paragraph also reflects the Agency's understanding of the wide variation in exposure and work conditions prevalent in the construction industry. For example, the requirements in paragraph (j)(i) pertain to work in regulated areas other than those involving asbestos removal, demolition, and renovation. The operations addressed by the requirements in paragraph (j) might include the installation of new asbestos-containing products, the cutting of asbestos sheet or pipe, or the removal of floor tile where these operations caused levels of airborne asbestos sufficient to trigger the regulated area requirement, i.e., above the PEL. Paragraph (j)(2) of the revised standard specifically addresses the hazards of asbestos removal, demolition, and renovation work by requiring that employers engaged in such work provide their employees with decontamination, clean room, and shower facilities wherever feasible. This separation of provisions for hygiene facilities into those pertaining to work operations requiring only the establishment of a traditional regulated area demarcated by signs and those relevant to major asbestos abatement projects accords with evidence in the record about the differences in exposures, work operations, and hazards in these two types of construction work. The evidence, as it relates to each provision of the hygiene facilities and practices section of the final rule, is described below.

Many commenters argued that the standard should require clean change rooms and provisions for separate facilities for work and street clothes on all construction jobs, regardless of the type of work performed (Exs. 84-424, 92-11, 277, Trs. 6/19, 6/21, 6/26). OSHA concurs with the rationale for the view expressed by these commenters, which was perhaps best summarized in the remarks of Dr. William J. Nicholson, of the Mt. Sinai School of Medicine. In responding to a question about the importance of such measures as hygiene facilities, Dr. Nicholson answered:

> I think [such measures are] enormously important . . . one has to confine the fibers immediately at their source . . . . Hygiene facilities are certainly required. (Tr. 6/19)

The hygiene facilities requirements of the revised construction standard, the revised general industry standard, and the existing standard are similar in many respects. For example, exposure to asbestos at levels above the PEL acts as the trigger for all three provisions, and each standard requires that employees working in such areas have a place to change their street clothes and to store them separately from their work clothes.

Paragraph (j)(1) contains requirements for hygiene facilities for employers engaged in construction operations other than major asbestos removal, demolition, and renovation operations. Paragraph (j)(1)(i) of the revised construction standard modifies the language of the existing standard's hygiene requirements from change "room" to change "area," in recognition of the fact that the place where employees change from street clothing to work clothing and back again to street clothing is not always a separate room but may be merely a separate area of a larger space. This change recognizes that it may not be feasible at some construction sites to provide a separate room with physical barriers. In these instances, employers may provide change areas that are distant from the immediate location where asbestos-related work is being conducted, such as on a separate floor of a building.

A second language change has been made in the revised standard: the existing standard's use of the term "separate lockers" has been changed to "separate storage facilities" in recognition of the fact the employers must use portable storage facilities that can be transported from job to job. OSHA's intent in this provision is to ensure that street clothes are sufficiently separated from work and protective clothing and equipment in order to prevent contamination of employees' street clothing, and this can be accomplished by separate lockers, baskets, or other containers.

New language has been added in the revised standard to require the provision of clean areas, i.e., areas that have airborne concentrations of asbestos below the action level, where employees may consume food or beverages on site. This addition was recommended by CACOSH in its 1980 report (Ex. 84-233). CACOSH recognized that permanent

GLEASON-000970