

significant risks of asbestos-related cancer mortality and asbestosis morbidity are not eliminated at the exposure level that is permitted under the new standard; however, the reduction in the risk of asbestos-related death and disease brought about by promulgation of the new standard is both significant and dramatic.

The observation that significant risk is not eliminated under the new permissible exposure level of 0.2 f/cc led some rulemaking participants to urge OSHA to promulgate an even lower permissible exposure limit. For example, in its post-hearing brief, the Building and Construction Trades Department of the AFL-CIO agreed with OSHA's findings on the significance of risk:

... OSHA's estimates point to two conclusions. First, lowering the PEL from its present level will significantly reduce the risk of mortality from lung cancer, mesothelioma and gastrointestinal cancer. This is especially evident at the BCTD-recommended PEL of 100,000 fibers per cubic meter (0.1 f/cc) where 61 fewer deaths per 1,000 workers will occur. Second, while under... [the Benzene decision] it is unnecessary to find the existence of a significant risk at intermediate levels above the new PEL... a significant risk exists even at this lowest of potential PEL's. (Ex. 330, p. 11)

OSHA agrees with the BCTD that a significant risk of asbestos related disease would exist even under a standard having a permissible exposure limit of 0.1 f/cc. As OSHA explained in the April notice in the Summary and Explanation sections of the preamble to the final standards for asbestos for General Industry and Construction, OSHA's decision to promulgate a permissible exposure limit of 0.2 f/cc is not based on a determination that significant risk is eliminated at this level. Given that a significant risk of harm persists even at very low levels of lifetime exposure to asbestos, OSHA's decision to promulgate a PEL of 0.2 f/cc is based on a determination that this level is the lowest level that can feasibly be attained in operations in workplaces in both general industry and construction.

Some commenters, such as Organization Resources Counselors, Inc. (ORC) (Ex. 123-A) and the Asbestos Information Association of North America, (AIA/NA) (Ex. 328), argued that OSHA overstated the risk of disease from asbestos exposure. Specifically, they objected to the following:

• OSHA's use of past exposure levels, or the 2 f/cc PEL coupled with the assumption of lifetime exposure duration, as benchmarks for determining risk, rather than the lower

exposure levels and shorter durations typically found in industry today.

- Failure to account for differential risks posed by different types of asbestos fiber.
- Failure to distinguish between the cancer mortality risk for asbestos-exposed workers who smoke and those who do not.

Regarding the use of past exposure data or the current PEL of 2 f/cc to estimate risk levels, the ORC commented as follows:

... ORC recommends that estimates of risk be based on exposures... that are relevant to 1984 workplace conditions. It is important to know as accurately as possible what the actual risk is at today's exposure levels, but this is not possible unless we recognize the factors in the risk equation that have changed from 1944 to 1984. (Ex. 123-A, p. 12)

Similarly, the AIA/NA stated:

OSHA further errs toward over-prediction of risk by assuming, without substantiation, that workers will experience exposures at the level of the standard for up to 45 years. In fact, the record evidence indicates [that] exposures will average significantly below any standard. ... As would be predicted from accepted technological feasibility and industrial hygiene practice control, average workplace exposures to asbestos have been found to be one-fourth or less of a given standard [based on OSHA field monitoring results]. ... More detailed data from the United Kingdom confirm that under its former 2 f/cc standard, average exposures in all but textile manufacturing were but one-tenth the PEL, and in textile generation—the most difficult to control—exposures averaged one-fourth the standard. (Ex. 328, pp. 22-23)

ORC and AIA/NA also objected to the use of a 45-year exposure duration for estimating risks. ORC commented that "[t]he majority of 1984 exposure are intermittent, and 4-5 days per month would be on the high side for an industry-wide average" (Ex. 123-A, p. 14). The AIA/NA argued as follows:

OSHA's significant risk findings are also predicated on an assumed 45-year lifetime exposure. Although 45-year exposures are theoretically possible, the evidence in the record demonstrates that only a very small minority of workers will be exposed that long. The vast majority of asbestos-exposed workers will experience fewer than 10 years [of] exposure. As Dr. Nicholson notes at the hearing, approximately half of all workers leave an industry within six months, and the remaining half work in a given industry between eight and twelve years. (Ex. 328, p. 1-24)

The AIA/NA concluded that the actual risk to workers exposed to asbestos is approximately one-sixteenth that predicted by OSHA, because "... average exposures over and average working life will be for one-fourth the time at one-fourth the level of OSHA's lifetime exposure predictions" (Ex. 328, p. 1-25). For this reason, the AIA/NA

claimed that significant risk would be eliminated at a new PEL of 0.5 f/cc.

OSHA agrees that the record indicates that the actual exposure conditions and employment patterns of many workers today do not conform to the exposure and duration characteristics underlying the lifetime exposure assumption used in the Agency's risk assessment. However, when determining whether a hazardous substance poses a significant risk and that reduction of a PEL is warranted, OSHA must consider what degree of risk would be permitted by the existing standard, even though many workers may in fact be at lesser risk because their employers have chosen to reduce their exposures to levels below those required by that standard. It is for this reason that OSHA bases its determinations of significant risk on exposure to a PEL and not on reported exposure conditions. However, it should be noted that OSHA does analyze current exposure conditions in workplaces when assessing the potential benefits of new regulations, as required by Executive Order 12091. For example, in this rulemaking, OSHA has quantified the benefits of the new standard, taking into account current occupational exposure conditions (see Section VII).

The use of the lifetime exposure (45-year) assumption has also been standard in determining significant risk in previous OSHA rulemakings. OSHA has several reasons for using a lifetime exposure assumption. First, the use of a 45-year lifetime exposure duration is based on guidance given in the OSH Act. As specified in Section 6(b)(5): "The Secretary in promulgating standards dealing with toxic materials or harmful physical agents under this subsection, shall set the standard which most adequately assures to the extent feasible, on the basis of the best available evidence, that no employee will suffer material impairment of health or functional capacity even if such employee has regular exposure to the hazard dealt with by such standard for the period of his working life" (emphasis added). OSHA believes that it is reasonable to assume that a person begins work at age 20 and continues until the age of 65, a 45-year span of employment. Under Section 6(b)(5) of the Act, OSHA is compelled to promulgate standards that ensure that employees, even those exposed to the hazardous agent for their entire working lifetime, are at the lowest risk that can feasibly be attained. Therefore, OSHA's determinations of significant risk must take into account the fact that many