

Standard Interpretations / Clarification of OSHA's risk assessment and approach for setting the asbestos PEL.

▪ **Standard Number:** 1910.1001(c) ; 1926.1101(c)

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July 23, 1999

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Dear Dr. Dyson:

This is in response to your June 16, 1999, letter to Mary Carol Lewis, Associate Assistant Secretary for the Occupational Safety and Health Administration (OSHA), regarding OSHA's permissible exposure limits (PEL) for asbestos. In your letter, you request that OSHA clarify its May 13, 1999, interpretation of the asbestos PEL and respond to several questions that you have posed.

This response is based on OSHA's published views of these issues, which are, in turn, based on the evidence in the record of the asbestos rulemaking. We cannot comment, however, on the Federal government's definitions of Environmental Differential Pay or Hazardous Duty Pay. Your questions and our responses are presented below in the order in which they appear in your letter.

Question 1. Why did OSHA not choose to set a PEL below which significant risk does not occur?

Response: In OSHA's latest revision to its asbestos standards, the Agency acted under a remand order from the District of Columbia Circuit that required it to eliminate significant risk to workers to the extent feasible. **Building & Constr. Trades Dep't. v. Brock**, 838 F.2d 1258 (D.C. Cir. 1988). In responding to the remand order, OSHA found that significant risk remained at a PEL of 0.1 fiber/cc and that lower levels could be feasibly achieved. It did not set a lower PEL, however, because lower levels of asbestos cannot be reliably measured under workplace conditions. Instead of setting a lower PEL, OSHA took a different approach to reducing the risk that remained at the PEL. It mandated that employers who engage in operations that can generate airborne asbestos follow specific work practices, such as wetting the asbestos and using HEPA vacuums to clean up dust and debris, to minimize the release of asbestos fibers. The standards also require employers to take certain other precautions, such as training employees who work with or near asbestos and using respirators during certain operations, that will further reduce the risk to employees. OSHA stated:

[T]here would be remaining risk at this new 0.1 f/cc exposure limit if there were not other provisions to these standards. However, the exposure limit is accompanied by mandated work practice controls and requirements for hazard communication, training and other provisions. Together these will very substantially reduce that remaining significant risk, although the exact amount of that reduction cannot be quantified. In addition, it would be difficult to measure accurately in the industrial setting levels lower than those in these standards. OSHA believes its approach of setting a PEL which is reliably measurable, yet, imposing work practices and ancillary provisions for operations regardless of measured fiber levels will result in risk reduction well below that expected from just enforcing the 0.1 f/cc PEL (59 FR 40981-82; Aug. 10, 1994).

Question 2. What is the variability of the mathematical model used by OSHA to determine residual risk?

Response: OSHA does not understand what is meant by the variability of the mathematical model. The Agency did quantify the overall uncertainty in the lung cancer and mesothelioma risk estimates in the Final rule. OSHA's estimate of the slope factor used in the mathematical models to estimate these risks was based on the geometric mean of the slope factors calculated from individual human epidemiological studies. For the lung cancer risk estimate, OSHA concluded that a value of 0.01 represented the Agency's best estimate of the slope factor, but that "...the uncertainties around this estimate of ...[the slope factor] could lie between 0.003 and 0.3." (51 FR 22637). OSHA's best estimate of the slope factor for mesothelioma was 1.0×10^{-8} , which approximates the geometric mean of the slope factors calculated for each of six human studies (range from 0.07×10^{-8} to 12×10^{-8}) (51 FR 22639-22642).

Question 3. Has the theoretical risk shown by the mathematical model been confirmed by scientific observation?

Response: The mathematical model used to assess risk is based on scientific observation, i.e., on epidemiological studies of disease in cohorts of exposed workers. It cannot be considered to present "theoretical risk," since it is a real-world model, constructed from real-world studies of workers who were made ill and died from asbestos exposure. The studies support the use of a linear model. In view of such evidence, OSHA did not have the freedom to postpone action until an epidemiological study became available that confirmed OSHA's risk assessment through observation of excess deaths of exposed workers. Such an epidemiological study would entail following an extremely large cohort of employees, who are exposed at levels below the PEL, for the lengthy period of time necessary to account for the latency of cancer. It remains OSHA's responsibility to make practical inferences about occupational health risks on the basis of existing evidence.

Question 4. Is it OSHA's position that any asbestos exposure above ambient background levels presents a significant risk?

Response: OSHA did not assess the risks of exposure to asbestos at levels below 0.1 fiber per cubic centimeter of air because technological feasibility factors (i.e., the ability to reliably measure levels below 0.1 f/cc in the workplace) limited the Agency in setting the PEL. In addition, ambient background levels of asbestos vary widely. Therefore, the Agency cannot make the general statement that any exposure above ambient background levels presents a significant risk. OSHA's determination of the significance of risk must be based on the risks that would be permitted by a standard and not the actual risk of employees who are exposed below that standard (51 FR 22649). Unlike the Environmental Protection Agency, OSHA does not deal with risks associated with ambient exposures but deals with occupational exposures experienced in the workplace.

Question 5. At what level of exposure would OSHA consider the potential for illness and injury from airborne asbestos to have been practically eliminated?

Response: OSHA has not analyzed this issue because it is not necessary to do so for the Agency's purposes.

We hope that these answers clarify OSHA's position on the issues you have raised.

Sincerely,

Charles N. Jeffress
Assistant Secretary

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