



Asbestos in the Construction Industry

An Online Continuing Education Course for Engineers

Course Number: C-3030

Credit: 3 Hours / 3 PDH / 3 CPD

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Introduction

This course reviews and discusses the OSHA requirements regulating asbestos in the construction industry, which are contained in 29 *CFR* Part 1926.1101.

What is asbestos?

Asbestos is the generic term for a group of naturally occurring, fibrous minerals with high tensile strength, flexibility, and resistance to heat, chemicals, and electricity.

In the construction industry, asbestos is found in installed products such as sprayed-on fireproofing, pipe insulation, floor tiles, cement pipe and sheet, roofing felts and shingles, ceiling tiles, fire-resistant drywall, drywall joint compounds, and acoustical products. Because very few asbestos-containing products are being installed today, most worker exposures occur during the removal of asbestos and the renovation and maintenance of buildings and structures containing asbestos.

What are the dangers of asbestos exposure?

Asbestos fibers enter the body when a person inhales or ingests airborne particles that become embedded in the tissues of the respiratory or digestive systems. Exposure to asbestos can cause disabling or fatal diseases such as asbestosis, an emphysema-like condition; lung cancer; mesothelioma, a cancerous tumor that spreads rapidly in the cells of membranes covering the lungs and body organs; and gastrointestinal cancer. The symptoms of these diseases generally do not appear for 20 or more years after initial exposure.

What construction activities does this booklet cover?

The asbestos standard for the construction industry (29 *CFR* Part 1926.1101, see www.osha.gov) regulates asbestos exposure for the following activities:

- Demolishing or salvaging structures where asbestos is present.
- Removing or encapsulating asbestos-containing material (ACM).
- Constructing, altering, repairing, maintaining, or renovating asbestos-containing structures or substrates.
- Installing asbestos-containing products.
- Cleaning up asbestos spills/emergencies.
- Transporting, disposing, storing, containing, and housekeeping involving asbestos or asbestos-containing products on a construction site.

Note: The standard does not apply to asbestos-containing asphalt roof coatings, cements, and mastics.

Provisions of the OSHA Standard

OSHA has established strict exposure limits and requirements for exposure assessment, medical surveillance, recordkeeping, *competent persons*, regulated areas, and hazard communication.

What is work classification?

The OSHA standard establishes a classification system for asbestos construction work that spells out mandatory, simple, technological work practices that employers must follow to reduce worker exposures. Under this system, the following four classes of construction work are matched with increasingly stringent control requirements:

- **Class I** asbestos work is the most potentially hazardous class of asbestos jobs. This work involves the removal of asbestos-containing thermal system insulation and sprayed-on or troweled-on surfacing materials. Employers must presume that thermal system insulation and surfacing material found in pre-1981 construction is ACM. That presumption, however, is rebuttable. If you believe that the surfacing material or thermal system insulation is not ACM, the OSHA standard specifies the means that you must use to rebut that presumption. Thermal system insulation includes ACM applied to pipes, boilers, tanks, ducts, or other structural components to prevent heat loss or gain. Surfacing materials include decorative plaster on ceilings and walls; acoustical materials on decking, walls, and ceilings; and fireproofing on structural members.
- **Class II** work includes the removal of other types of ACM that are not thermal system insulation such as resilient flooring and roofing materials. Examples of **Class II** work include removal of asbestos-containing floor or ceiling tiles, siding, roofing, or transite panels.
- **Class III** asbestos work includes repair and maintenance operations where ACM or presumed ACM (PACM) are disturbed.
- **Class IV** work includes custodial activities where employees clean up asbestos-containing waste and debris produced by construction, maintenance, or repair activities. This work involves cleaning dust-contaminated surfaces, vacuuming contaminated carpets, mopping floors, and cleaning up ACM or PACM from thermal system insulation or surfacing material.

What is the permissible exposure limit for asbestos?

Employers must ensure that no employee is exposed to an airborne concentration of asbestos in excess of 0.1 f/cc as an 8-hour time-weighted average (TWA). In addition, employees must not

be exposed to an airborne concentration of asbestos in excess of 1 f/cc as averaged over a sampling period of 30 minutes.

Which asbestos operations must employers monitor and assess?

Employers must assess all asbestos operations for the potential to generate airborne fibers, and use exposure monitoring data to assess employee exposures. You must also designate a *competent person* to help ensure the safety and health of your workers.

What is the function of a *competent person*?

On all construction sites with asbestos operations, employers must designate a *competent person*—one who can identify asbestos hazards in the workplace and has the authority to correct them. This person must be qualified and authorized to ensure worker safety and health as required by *Subpart C, General Safety and Health Provisions for Construction (29 CFR Part 1926.20)*. Under these requirements for safety and health prevention programs, the *competent person* must frequently inspect job sites, materials, and equipment.

The *competent person* must attend a comprehensive training course for contractors and supervisors certified by the U.S. Environmental Protection Agency (EPA) or a state-approved training provider, or a complete a course that is equivalent in length and content.

For *Class III and IV* asbestos work, training must include a course equivalent in length, stringency, and content to the 16-hour *Operations and Maintenance* course developed by EPA for maintenance and custodial workers. For more specific information, see 40 *CFR Part 763.92(a)(2)*.

What is an initial exposure assessment?

To determine expected exposures, a *competent person* must perform an initial exposure assessment to assess exposures immediately before or as the operation begins. This person must perform the assessment in time to comply with all standard requirements triggered by exposure data or the lack of a negative exposure assessment and to provide the necessary information to ensure all control systems are appropriate and work properly. A negative exposure assessment demonstrates that employee exposure during an operation is consistently below the permissible exposure limit (PEL).

The initial exposure assessment must be based on the following criteria:

- Results of employee exposure monitoring, unless a negative exposure assessment has been made; and
- Observations, information, or calculations indicating employee exposure to asbestos, including any previous monitoring.

For *Class I* asbestos work, until employers document that employees will not be exposed in excess of the 8-hour TWA PEL and short-term exposure limit STEL, employers must assume that employee exposures are above those limits.

What is a negative exposure assessment?

For any specific asbestos job that trained employees perform, employers may show that exposures will be below the PELs (i.e., negative exposure assessment) through the following:

- Objective data demonstrating that ACM, or activities involving it, cannot release airborne fibers in excess of the 8-hour TWA PEL or STEL;
- Exposure data obtained within the past 12 months from prior monitoring of work operations closely resembling the employer's current work operations (the work operations that were previously monitored must have been conducted by employees whose training and experience were no more extensive than that of current employees, and the data must show a high degree of certainty that employee exposures will not exceed the 8-hour TWA PEL or STEL under current conditions); or
- Current initial exposure monitoring that used breathing zone air samples representing the 8-hour TWA and 30-minute short-term exposures for each employee in those operations most likely to result in exposures over the 8-hour TWA PEL for the entire asbestos job.

Are employers required to perform exposure monitoring?

Yes. Employers must determine employee exposure measurements from breathing zone air samples representing the 8-hour TWA and 30-minute short-term exposures for each employee.

Employers must take one or more samples representing full-shift exposure to determine the 8-hour TWA exposure in each work area. To determine short-term employee exposures, you must take one or more samples representing 30-minute exposures for the operations most likely to expose employees above the excursion limit in each work area.

You must also allow affected employees and their designated representatives to observe any employee exposure monitoring. When observation requires entry into a regulated area, you must provide and require the use of protective clothing and equipment.

When must employers conduct periodic monitoring?

For *Class I and II* jobs, employers must conduct monitoring daily that is representative of each employee working in a regulated area, unless you have produced a negative exposure assessment for the entire operation and nothing has changed. When all employees use supplied-air respirators operated in positive-pressure mode, however, you may discontinue daily monitoring. When employees perform *Class I* work using control methods not recommended in the standard, you must continue daily monitoring even when employees use supplied-air respirators.

For operations other than *Class I and II*, employers must monitor all work where exposures can possibly exceed the PEL often enough to validate the exposure prediction.

If periodic monitoring shows that certain employee exposures are below the 8-hour TWA PEL and the STEL, you may discontinue monitoring these employees' exposures.

Is additional monitoring ever needed?

Changes in processes, control equipment, personnel, or work practices that could result in new or additional exposures above the 8-hour TWA PEL or STEL require additional monitoring regardless of a previous negative exposure assessment.

Are employees who do not work in the area of the work being monitored employees?

It depends on the job duties of the employees who do not work in the area of the work being monitored. If the employees who do not work in the area of the work being monitored are not exposed to asbestos, they are not employees.

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In addition to the monitoring procedures, employers must also follow the procedures that you have established for monitoring.

Employers must follow the following procedures:

- Follow the procedures for monitoring that you have established.
- Wear the appropriate personal protective equipment (PPE) when monitoring.
- Wear the appropriate PPE when working in the area of the work being monitored.

If an employer is required to monitor, the employer must follow the criteria of the standard, but the employer is not required to monitor if the employer is not required to monitor.

Medical examinations

- Medical examinations must be conducted by a physician (see 29 *CFR* Part 1926.1101, Appendix D, Part 2);
- Physical examinations focusing on the pulmonary and gastrointestinal systems; and
- Any other exams or tests deemed necessary by the examining physician.

Employers must provide the examining physician with the following:

