

Standard Interpretations

/ Aggressive vs non-aggressive removal of asbestos-containing flooring material; negative exposure assessment methods for direct and indirect employee exposures.

- **Standard Number:** 1926.1101

OSHA requirements are set by statute, standards and regulations. Our interpretation letters explain these requirements and how they apply to particular circumstances, but they cannot create additional employer obligations. This letter constitutes OSHA's interpretation of the requirements discussed. Note that our enforcement guidance may be affected by changes to OSHA rules. Also, from time to time we update our guidance in response to new information. To keep apprised of such developments, you can consult OSHA's website at <http://www.osha.gov>.

May 7, 2003

Mr. Daniel C. Peders
Environmental Project Manager
Environmental Division
Construction and Maintenance Management, Inc.
3175 Independence Road, Station 86
Cleveland, OH 44105

Dear Mr. Peders:

This is a final response to your September 23, 2002 letter concerning aggressive removal of asbestos-containing flooring material. You ask some questions about the regulation of this process by the Occupational Safety and Health Administration's (OSHA's) Construction Asbestos Standard, 29 CFR 1926.1101. This letter constitutes OSHA's interpretation only of the requirements discussed and may not be applicable to any scenario or issue not delineated within your original correspondence. Your paraphrased issues are followed by our responses.

Question 1: Are "nonaggressive" control methods preferred for removing flooring materials (tile, sheet, and mastics) that contain asbestos?

Reply: Yes.

- Per 1926.1101(g)(8)(i)(G), "Tiles shall be removed intact, unless the employer demonstrates that intact removal is not possible"

- Per 1926.1101(g)(8)(i)(C), "Resilient sheeting shall be removed by cutting with wetting of the snip point and wetting during delamination. Rip-up of resilient sheet floor material is prohibited"; and
- Per 1926.1101(g)(8)(i)(A), the backing of flooring must not be sanded.

Question 2: Are shotblasting, use of a mechanical chipping device, a mechanical rotating blade, or any method other than manual scraping all aggressive techniques for removing flooring materials?

Reply: According to 1926.1101(b), "Aggressive method means removal or disturbance of building material by sanding, abrading, grinding or other method that breaks, crumbles, or disintegrates intact ACM." All three of the specific methods you mentioned break, crumble, or disintegrate the flooring materials. As to some method other than manual scraping for removing flooring materials, if the employer knows of a method that does not break, crumble, or disintegrate the flooring materials, then that method would not be considered an aggressive method for removing the materials.

Question 3: When "aggressive" techniques are used even though "nonaggressive" methods are feasible, are the "aggressive" methods considered "alternative" work practices that are regulated by 1926.1101(g)(8)(vi) as well as (g)(8)(i)(F)?

Reply: The standard does not permit using aggressive techniques to remove asbestos-containing flooring material if nonaggressive techniques are feasible. You may use an aggressive method only if it is the only feasible method.

The aggressive methods processes are covered by 1926.1101(g)(8)(vi), Alternative Work Practices and Controls. If mechanical chipping is the aggressive method used, then 1926.1101(g)(8)(i)(F) and (g)(8)(vi) apply. Mechanical chipping must be performed in a negative pressure enclosure which meets the requirements of 1926.1101(g)(5)(i).

Assumption: Procedures set forth at 1926.1101(f)(2)(iii) for producing a negative exposure assessment (NEA) may be used to provide employee exposure data required by 1926.1101(g)(8)(vi).

[Note: You assume that those procedures – 1926.1101(f)(2)(iii) – could be used to demonstrate that, under conditions that closely resemble the conditions under which different or modified engineering and work practice controls are to be used, employee exposure will not exceed the permissible exposure limits (PELs) under any anticipated circumstances.]

Reply: The objective data described at 1926.1101(f)(2)(iii)(A) is not relevant to the situation; it is meant to demonstrate that the **product or material** containing asbestos minerals or the activity involving such product or material cannot release airborne fibers in concentrations exceeding either PEL under those work conditions having the greatest potential for releasing asbestos. The 1926.1101(g)(8)(vi) requirements are what cover your questions and example. The data collected pursuant to 1926.1101(g)(8)(vi) is meant to establish that the different or modified **engineering and work practice controls** to be used will keep employee exposures below the asbestos PELs.

Subsection 1926.1101(f)(2)(iii)(B) sets forth the criteria that prior employee exposure monitoring data for specific asbestos jobs must meet in order to demonstrate that employee exposures will be below the asbestos PELs in current jobs. In a case where the different or modified engineering and work practice controls to be used in a current job are the same as in a previous job, then you are correct that, if the monitoring data meet the criteria set forth at (f)(2)(iii)(B), the employer may use the data from the previous job for demonstrating that employee exposures in the current job will not exceed the PELs for that previous job's circumstances. However, the employer must also determine that employee exposure will not exceed the PELs under any anticipated circumstances.

Before different or modified engineering and work practice controls are used, the employer must have a competent person evaluate the work area, the projected work practices, and the engineering controls, and certify in writing that the different or modified controls are adequate to reduce direct and indirect employee exposure to at or below the PELs under all expected conditions per 1926.1101(g)(8)(vi)(B). The monitoring strategy set out at 1926.1101(f)(2)(iii)(C) is the appropriate way to verify that the competent person was correct.

Question 4: What are the meanings of the terms "direct employee" and "indirect employee" in 1926.1101(g)(8)(vi)(B).

Reply: A "direct employee" is an employee of the employer performing the asbestos job or an employee of that employer who is working nearby. An "indirect employee" is employed by an employer other than the employer performing the asbestos job who works nearby and could be exposed.

Question 5: If an employer who will be performing a Class II asbestos job intends to use different or modified engineering and work practice controls per 1926.1101(g)(8)(vi), who is responsible for providing the data showing that "indirect employee" exposures will be below the asbestos PELs?

Reply: The employer performing the Class II asbestos job is responsible for providing the data showing that "indirect employee" exposures will be below the asbestos PELs.

Question 6: Is the employer who will be using different or modified engineering and work practice controls, per 1926.1101(g)(8)(vi), required to relate to the employer of the "indirect employees" that alternative controls are being used?

Reply: Yes. Per 1926.1101(k)(3)(ii) and (ii)(B), the employer must inform employers of employees, who work and/or will be working in areas adjacent to where the asbestos work takes place of the locations, of the asbestos and of the precautions necessary to ensure that airborne asbestos is confined to the designated area. Also, per 1926.1101(d)(1), *"On multi-employer worksites, an employer performing work requiring the establishment of a regulated area shall inform other employers on the site of ... the measures taken to ensure that employees of such other employers are not exposed to asbestos."*

Scenario: Acme Abatement, Inc. is performing mechanical removal of asbestos-containing floor tile and shotblasting of asbestos-containing mastic. These work methods were chosen based on efficiency, the large square footage of the work, etc., not on feasibility.

The mechanical removal and shotblasting is to be performed in an area where plant processes must remain uninterrupted. The removal area has been split into two work areas to accommodate the needs of the plant. The mechanical removal of floor tile and shotblasting of the mastic is performed under full containment with negative pressure.

The plant continues to operate in the other adjacent half of the space. The plant's employees work for AAA Paper Packing Company. Acme Abatement, Inc. has a legitimate negative exposure assessment (NEA) for its employee exposures for the asbestos work they are performing.

Question 7: Is this sufficient to proceed?

Reply: (Note: We will assume that the existence of, "a legitimate NEA for Acme Abatement, Inc. employees" means Acme Abatement, Inc. has complied with 1926.1101(g)(8)(vi)(A) and (B) with respect to its own employees.

Also, you have not identified the mechanical means used to remove the floor tile, but we will assume that it is aggressive.) No, Acme Abatement, Inc. may not proceed with the mechanical removal of the floor tile and the sandblasting of the mastic for the following reasons:

- It is feasible to remove the floor tile and mastic by nonaggressive means.
- Acme has not complied with 1926.1101(g)(8)(vi)(A) and (B) with respect to the AAA Paper Packing Company employees in that it has not established whether their exposures will be below the asbestos PELs.

Question 8: Because the NEA in the asbestos removal area is below the PELs, is it correct to say that the exposure outside the work area will be below the PELs?

Reply: (Note: Again, we will assume that the existence of, "a legitimate NEA for Acme Abatement, Inc. employees" means Acme Abatement, Inc. has complied with 1926.1101(g)(8)(vi)(A) and (B) with respect to its own employees.) In order for it to be correct to say that the exposure outside the work area will be below the PELs, Acme Abatement, Inc. must have complied with 1926.1101(g)(8)(vi)(A) and (B) with respect to the indirect employees.

It is the competent person's responsibility to determine whether complying with 1926.1101(g)(8)(vi)(A) and (B) with respect to Acme Abatement Inc. employees has also resulted in complying with 1926.1101(g)(8)(vi)(A) and (B) with respect to the indirect employees. Per 1926.1101(g)(8)(vi)(B), the competent person must certify in writing that the different or modified controls are adequate to reduce direct and indirect employee exposure below the PELs under all expected conditions of use.

Question 9: If the NEA from within the asbestos removal work area is not adequate to identify the exposure for "indirect" workers outside the removal area, whose responsibility is it to collect the necessary data (assuming air monitoring): Acme Abatement, Inc. or AAA Paper Packing Company?

Reply: You presented a scenario where Acme Abatement, Inc. is aggressively removing asbestos-containing floor tile and asbestos-containing mastic although it is feasible to remove these materials by nonaggressive means. As we indicated in our reply to Question 3, it is illegal to remove asbestos-containing flooring material by aggressive means when it can be removed by nonaggressive means.

Even if it were legal for Acme Abatement, Inc. to aggressively remove the flooring material because no nonaggressive method is feasible, it must not proceed with the operation until a qualified competent person provides information in writing indicating that AAA Paper Packing Company's employee exposures to asbestos will be below the PELs. Per 1926.1101(g)(8)(vi)(B), the competent person must certify in writing that the controls are adequate to achieve this result.

If Acme Abatement, Inc. violates the Construction Asbestos Standard and proceeds to remove the asbestos-containing flooring material without determining that AAA Paper Packing Company's employee exposures will be below the asbestos PELs, then AAA Paper Packing Company must implement whatever measures are necessary to protect its employees per (d)(3). Since your scenario indicates that AAA Paper Packing Company does not have the option of moving its employees from the area, AAA Paper Packing Company must produce its own assessment of its employees' exposures and provide them with whatever personal protective equipment they require for their level of exposure.

Scenario: Typical background (environmental, area, ambient) air sampling performed outside the asbestos work area is done with high volume pumps (8-16 liters) flowing through PCM cassettes set on a stand to be approximately the height of the breathing zone.

Question 10: If air monitoring data is required to establish "indirect" employee exposure, will this type of sampling satisfy this requirement or will monitoring need to be performed as personal samples on the "indirect" employee?

Reply: If the airborne asbestos concentrations at all points outside the asbestos work area are less than 0.1 fiber per cubic centimeter of air (f/cm^3) as determined by the method prescribed in Appendix A to the Construction Asbestos Standard, 1926.1101, then it might be possible to use the background air sampling apparatus you described to show this to be fact. It follows that if the airborne asbestos concentrations at all points outside the asbestos work area are less than 0.1 f/cm^3 as determined by the method prescribed in Appendix A, then the "indirect" employee exposures are below the asbestos PELs.

Establishing that the "indirect" employee exposures are below the asbestos PELs is the extent of Acme Abatement, Inc.'s obligation under 1926.1101(g)(8)(vi)(B). However, Acme Abatement, Inc. must establish that the background air sampling apparatus you described measures the same airborne asbestos concentrations as the method prescribed in Appendix A before there would be a possibility of using the apparatus to establish that the "indirect" employee exposures are below the asbestos PELs.

The method prescribed in Appendix A is called the OSHA Reference Method (ORM). Please note that OSHA has concerns about using flow rates above 10 liters per minute (L/min) for collecting samples of airborne asbestos. There are indications that sampling at flow rates above 10 L/min yields lower asbestos concentration results than the ORM.

The Construction Asbestos Standard does not include the procedure for establishing that the background air sampling apparatus measures the same airborne asbestos concentrations as the ORM. However, the procedure for establishing this equivalency is included in the General Industry Asbestos Standard at 1910.1001(d)(6)(iii). Per 1910.1001(d)(6)(iii):

If an equivalent method to the ORM is used, the employer shall ensure that the method meets the following criteria:

1910.1001(d)(6)(iii)(A): Replicate exposure data used to establish equivalency are collected in side-by-side field and laboratory comparisons; and

1910.1001(d)(6)(iii)(B): The comparison indicates that 90% of the samples collected in the range 0.5 to 2.0 times the permissible limit have an accuracy range of plus or minus 25 percent of the ORM results at a 95% confidence level as demonstrated by a statistically valid protocol; and

1910.1001(d)(6)(iii)(C): The equivalent method is documented and the results of the comparison testing are maintained.

If Acme Abatement, Inc. establishes that the background air sampling apparatus you described measures the same airborne asbestos concentrations as the method prescribed in Appendix A, it must then figure out how to position the apparatuses so that they can establish that the airborne asbestos concentrations at all points outside the asbestos work area are less than 0.1 f/cm^3 . Simply setting several of the apparatuses on stands located just outside the asbestos work area, with their filters at approximately the height of the breathing zone, will not necessarily show that the airborne asbestos concentrations at all points outside the asbestos work area are less than 0.1 f/cm^3 . As an example, such positioning of the apparatuses might not detect that the asbestos concentrations outside the asbestos work area were above 0.1 f/cm^3 if asbestos was escaping the asbestos work area at a concentration above 0.1 f/cm^3 at a height above the breathing zone.

Thank you for your interest in occupational safety and health. We hope you find this information helpful. OSHA requirements are set by statute, standards, and regulations. Our interpretation letters explain these requirements and how they apply to particular circumstances, but they cannot create additional employer obligations. This letter constitutes OSHA's interpretation of the requirements discussed. Note that our enforcement guidance may be affected by changes to OSHA rules. Also, from time to time we update our guidance in response to new information. To keep apprised of such developments, you can consult OSHA's website at <http://www.osha.gov>. If you have any further questions, please feel free to contact the Office of Health Enforcement at 202-693-2190.

Sincerely,

John L. Henshaw
Assistant Secretary

[Corrected 5/31/2005. See the 5/18/2005 letter to Mr. Gerald Jeong regarding using aggressive methods for removing asbestos-containing mastic.]

UNITED STATES DEPARTMENT OF LABOR

Occupational Safety & Health Administration
200 Constitution Ave NW
Washington, DC 20210
☎ 800-321-6742 (OSHA)
TTY
www.OSHA.gov

FEDERAL GOVERNMENT