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Chapter 12.12 Cleanup, Clearance Inspection, Air Sampling, and Release

12.12.1 General requirements

12.12.1.1 Determining the successful performance of individual asbestos-related jobs and projects is very important. Specific work practices and surveillance during the project are essential to the accomplishment of a successful job. You shall follow these general requirements:

- a. After you have completed all asbestos work, you shall clean the Regulated Area to remove any remaining residue that may have been left as a result of asbestos-related activities. The asbestos Regulated Area shall pass a clearance inspection, and, depending on the class of asbestos work, clearance air sampling may be performed. Clearance inspection and air sampling determine the effectiveness of work practices and surveillance. Do not remove work area controls (e.g., HEPA, barriers, enclosures, etc.) until the area is satisfactorily cleaned and passes the required level of inspection and air sampling.
- b. Critical barriers, where used, shall be the last control removed. When the Regulated Area passes the clearance inspection and air sampling, where required, release the area for return to other activities. Where clearance air sampling is required or used, only the Occupational Health Branch (OHB) contractor or his or her designee is authorized to release the Regulated Area to return to normal activities.
- c. Each of the steps for cleaning, clearance inspecting and air sampling, and final activities after release are outlined in paragraphs 12.12.2 through 12.12.7 below. These outlines list steps for large-scale work enclosures. Tailor them for smaller-scale activities. These outlines are not meant to provide a detailed "how-to" for each activity. Table 12.12-1 shows the steps for each type of containment system discussed in Chapter 12.9.
- d. If you perform any class of asbestos work, you are expected to follow industry-accepted practices and standards, based on OSHA and EPA regulations and procedures, for cleaning the Regulated Area(s).

12.12.2 Gross cleanup

12.12.2.1 You shall perform the following steps, in the order shown, to conduct a gross cleanup of the Regulated Area. The negative-pressure air filtration unit, if used, shall remain in place and operate for the remainder of the cleanup operation, except as noted below:

a. *Remove gross contamination from walls:*

- (1) The first cleaning task is the removal of any gross contamination from the walls. Do this by using HEPA vacuuming, for nonporous surfaces, and amended water to wet-wipe walls.
- (2) For enclosures with two or more layers of polyethylene on the walls, you may remove the topmost contaminated sheet at this point instead of cleaning. Lightly mist the contaminated sheet, and gently detach it and fold it inward to minimize airborne fiber release. Remove any visual debris behind the first layer of polyethylene with a HEPA-filtered vacuum or by wet-wiping.
- (3) The last polyethylene layer shall be free of all visible debris and residue to pass visual inspection and for subsequent clearance sampling. It is strongly recommended that you

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include at least two polyethylene layers in large-scale enclosures to minimize subsequent cleanup time.

- b. *Remove gross contamination from work area equipment:* Next, remove gross contamination from the exteriors of the equipment inside the work area. Give special attention to scaffolds and man-lifts. Clean using a combination of HEPA vacuuming or wet wiping. Change the filters on negative-pressure air filtration units that need replacement.
- c. *Remove gross contamination from floor covering:*
 - (1) HEPA-vacuum and wet-mop any plastic sheeting that has been used to cover the floor area to remove any visible contamination.
 - (2) At this point, for enclosures with two or more layers of polyethylene on the floors, remove the topmost contaminated sheet instead of cleaning it. Lightly mist the contaminated sheet, and gently detach it and fold it inward to minimize airborne fiber release. Remove any visual debris under the first layer of polyethylene with a HEPA-filtered vacuum or by wet-mopping.

12.12.3 Perform initial visual inspection

12.12.3.1 You shall inspect all surfaces for evidence of contamination according to ASTM E-1368-05e1, “Standard Practice for Visual Inspection of Asbestos Abatement Projects,” or most current version. The basic standard of cleanliness is “no visible debris.”

12.12.3.2 For large-scale Class I and Class II asbestos abatement work, the OHB will conduct this inspection. The assigned Competent Person may perform this inspection for small-scale, Class I and Class II spot removals and abatements, and for Class III asbestos work. Re-clean areas not passing inspection as necessary until they meet ASTM E-1368-05e1 standards.

12.12.4 Final cleanup

12.12.4.1 You shall perform the following steps, in the order shown, to conduct the final cleanup of the Regulated Area:

- a. *Perform final wipe-down of equipment and remove from work area:* After the Regulated Area passes the initial visual inspection, thoroughly clean all equipment including wet-wipe tools such as scrapers, brooms, utility knives, and brushes, and seal in plastic bags for the next job or discard as asbestos-contaminated waste. Remove equipment not needed for completion of the non-asbestos portions of the job from the work area.
- b. *Clean substrate and apply sealants:* After cleaning, spray all surface areas in the containment area with an encapsulant or sealant to fix any remaining fibers to the surfaces. Wait 12 to 24 hours before performing the next step. This time period allows the airborne materials to settle.
- c. *Remove polyethylene from walls:* The polyethylene draped over lighting fixtures and covering the interior walls of the work area can be misted and carefully taken down, folded inward to form a bundle, and packaged for disposal. All critical barriers on doors, windows, and vents shall remain in place.
- d. *HEPA vacuum walls:* HEPA-vacuum all uncovered walls and hard-to-reach places. Pay attention to window and door trim ledges, shelving, etc.

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- e. *Remove floor covering or carpet:* Mist and carefully fold polyethylene floor covering. If carpet is to be removed, cut, fold, and remove carpet and wrap in polyethylene.
- f. *HEPA-vacuum floor:* After floor area is uncovered, HEPA-vacuum the floor with special emphasis on corners and crevices.
- g. *Wet-wipe walls and wet-mop floors and HEPA-vacuum carpet:* Next, wet-wipe the walls and wet-mop the floors. If a carpet remains in the work area, thoroughly vacuum it with a HEPA-filtered unit. Treat wastewater from the wet-wiping and -mopping operations as asbestos-containing water and dump it in the shower drain or place it in a barrel for disposal.
- h. *Wait 12 to 24 hours and repeat subparagraph 12.12.4.g:* The next day, repeat the wet-wiping of the walls and wet-mopping of the floors. If carpet remains, HEPA-vacuum the carpet again and steam-clean it. Let area dry.

12.12.5 Perform final visual inspection

12.12.5.1 You shall inspect all surfaces for evidence of contamination according to ASTM E-1368-05e1, “Standard Practice for Visual Inspection of Asbestos Abatement Projects,” or most current version. The basic standard of cleanliness is “no visible debris.” Give special attention to pipes, beams, and irregular surfaces that may have corners and areas that are difficult to reach. Surfaces behind obstructions (e.g., pipes or ducts) are suspect areas and shall be checked. Re-clean as necessary until area passes a visual inspection.

12.12.5.2 For large-scale Class I and Class II asbestos abatement work, the OHB will conduct this inspection. The assigned Competent Person may perform this inspection for small-scale, Class I and Class II spot removals or abatements and for Class III asbestos work.

12.12.6 Clearance air sampling

12.12.6.1 The OHB will conduct clearance air sampling, when required, by the class and type of asbestos work. The air sampling determines the airborne concentration of asbestos fibers remaining in the work area. Visual inspection cannot determine the level of residual asbestos fibers in the air. Thus, air sampling is required with visual inspection to be sure the worksite is clean. The following requirements apply:

- a. You shall not conduct clearance air sampling until the worksite has passed a thorough visual inspection. Clearance air sampling is required for any major abatement activity for which a large-scale enclosure was erected, or when major fiber release occurs from an ACM spill and the APM or the OHB has declared an emergency cleanup. Where small-scale enclosures are required, the OHB will determine the need for clearance monitoring and will conduct this monitoring before the enclosure is taken down. Class III asbestos work does not normally require clearance air sampling. Use aggressive air sampling techniques where warranted. See additional information in Chapter 12.8 of this Handbook.
- b. The clearance air sampling results shall be less than the JSC “safe occupancy” level, 0.01 f/cc of air before the area may be released for re-occupancy. If the area does not pass the clearance level, re-clean the area and repeat clearance air sampling. Repeat this cycle until the air sampling results pass the clearance level.

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- c. The Chief, Occupational Health Branch, or his or her designee(s), and the OHB are the only parties at JSC who may declare an area safe for re-occupancy when clearance monitoring is conducted on asbestos abatement, repair, or emergency response activities. The decision will be based on the results of visual inspection and clearance monitoring. OHB will notify the job superintendent, the area supervisor, and facility manager, as appropriate.

12.12.7 Reestablish the area

12.12.7.1 Reestablishing the work area may only occur after completing all asbestos-related activities per these procedures, after clearance by visual inspection and air sampling, if required, and after the area has been released. To reestablish an area, you shall:

- a. Uncover any fixed items isolated before the start of activities and dispose of the plastic sheeting as asbestos-contaminated waste.
- b. Clean and disassemble the negative air filtration unit and the decontamination facility, if installed. Dispose of plastic sheeting as asbestos-contaminated waste.
- c. Remove any remaining critical barriers, if installed, from doors, windows, vents, etc.
- d. Reestablish any heating, ventilation, and air conditioning (HVAC) and electrical systems locked out at the start of activities, if needed.
- e. Complete all non-asbestos-related activities involving renovation or repair.
- f. Replace all items or equipment removed from the area.
- g. Call the work control center to dispose of asbestos waste (see Chapter 12.13 of this Handbook).

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Table 12.12-1 Cleaning, Inspection and Air Sampling Steps Required by Type of Regulated Area

Procedural Steps	Type of Regulated Area			
	Large Enclosure	Small or Mini-Enclosure	Barrier & Floor Covering	Glovebag
1. Remove gross contamination	X	X	X	X
2. Remove gross contamination from walls	X	X		
3. Remove gross contamination from equipment	X			
4. Remove gross contamination from floor	X	X		
5. Perform initial visual inspection	X	X	X	X
6. Final clean of equipment	X	X	X	X
7. Clean substrate and apply encapsulant	X	X	X	X
8. Remove polyethylene wall coverings	X	X		
9. HEPA-vacuum walls	X	X		
10. Remove polyethylene floor covering and carpeting	X	X	X	X
11. HEPA-vacuum floor	X	X	X	
12. Wet-wipe walls, wet-mop floors, and HEPA-vacuum carpeting	X	X		
13. Repeat – wet-wipe walls, wet-mop floors, and HEPA-vacuum and steam clean carpeting	X	X		
14. Perform final visual inspection	X	X	X	X
15. OHB will perform clearance air sampling	X	A/R*	A/R	
16. Clean and disassemble air filtration and decontamination units	X	A/R		
17. Remove critical barriers	X	X	X	
18. Reestablish normal work area	X	X	X	X
19. Call work control center to remove asbestos waste	X	X	X	X

*A/R = as required by procedure, OHB, or industry-accepted practices or procedures