

Asbestos Control - Construction Industry

MSC-RD-15097

Revision 1

Effective Date: February 4, 2013

Topic: Safety and Health

Approved for Public Release;
Further Dissemination Unlimited

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CHANGE SUMMARY

Rev. 1

Description of Change:

Remove references to MSC-PRO-120 which is being replaced with DOE-0352 "Hanford Site Respiratory Protection Program".

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1.0 PURPOSE AND SCOPE

This Level 2 Requirements Document (RD) establishes the requirements for the identification and control of asbestos hazards during construction activities, and is intended to assist the Mission Support Alliance (MSA) projects in achieving full compliance with the Occupational Safety and Health Act (OSHA) 29 CFR 1926.1101, *Asbestos (Construction)*. Asbestos hazards created by work activities not defined as construction activities under 29 CFR are governed by the OSHA 29 CFR 1910.1001, *Asbestos (General Industry)*, and by [MSC-RD-15245](#), *Asbestos Control - General Industry*.

This RD is applicable to Hanford Mission Support Contract (MSC) team employees performing the following construction related work, as specified in 29 CFR 1926.1101:

- Demolition or salvage of asbestos containing structures.
- Construction, repair, alteration, maintenance, or renovation of structures or substrates with Asbestos Containing Material (ACM) or Presumed Asbestos-Containing Materials (PACM).
- Cutting, grinding, abrading, or otherwise rendering ACMs or PACMs friable.
- Deactivation, decontamination, and decommissioning activities involving facilities containing ACMs or PACMs.
- Removal, encapsulation, or installation of ACMs or PACMs.
- Asbestos spill/emergency cleanup.
- Transportation, disposal, storage, and containment of ACMs or PACMs.
- Construction-related housekeeping activities involving ACMs or PACMs.

29 CFR 1926.1101 classifies asbestos-related construction activities into four categories; each category requires *different levels of worker training and protection*. See Table 1.

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Table 1
Construction Standard Work Classifications

Category	Description
Class I Asbestos Work	Activities involving removal of thermal system insulation (TSI) and surfacing ACMs or PACMs.
Class II Asbestos Work ¹	Activities involving removal of ACM or PACM that is not TSI or surfacing material (SM). This includes but is not limited to the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, some other roofing material types (see exception following this table) and construction mastics.
Class III Asbestos Work	Repair and maintenance operations where ACM, including TSI and surfacing ACM and PACM, is likely to be disturbed and the disturbed material fits into a 60-inch glove bag.
Class IV Asbestos Work	Maintenance and custodial activities during which employees contact but do not disturb ACM or PACM, and activities to clean up dust, waste, and debris resulting from Class I, II, and III activities.

Exceptions

The requirements in this RD do *not* apply to asbestos-containing asphalt roof coatings, cements and mastics. Other ACM roofing materials are covered. See Sections [D.4](#) and [F](#) in [Appendix A](#) for information regarding removal of covered roofing types.

Asbestos containing materials (ACMs)

OSHA separates typical ACMs into three categories:

- *Surfacing Material (SM)*: Spray-applied or troweled-on ACM surfacing treatments installed for the purposes of fireproofing, acoustical insulation, or architectural finishes. Examples include structural fireproofing, acoustical ceiling textures and various plasters.
- *Thermal System Insulation (TSI)*: ACM insulating materials associated with heating, ventilation, and air conditioning (HVAC) equipment that have the purpose of reducing heat gain or loss. Examples include insulation on piping, boilers, tanks, and ducts.
- *Miscellaneous Materials*: All remaining ACMs used in construction that are not characterized as surfacing materials or TSI. Common examples include floor tile, electrical insulators, cement-asbestos board materials, and gasket material.

PACMs, as defined in 29 CFR 1926.1101, are all TSI and surfacing material found in buildings constructed no later than 1980. Asphalt and vinyl flooring materials installed prior to 1980 shall also be treated as asbestos containing. Material/or product specifications, building material application/ installation dates, previous inspection results, or *Facility Condition Update Reports*

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(no longer required documents, but still available for some facilities) may provide information on age of materials. Designation of installed materials as PACM can only be rebutted by:

- Conducting an inspection pursuant to the requirements of EPA's Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763, Subpart E) which demonstrates the material is not ACM; or
- Performing tests of the PACM to demonstrate that no asbestos is present in the material. Such tests shall include Polarized Light Microscopy (PLM) analysis of bulk samples collected by an accredited inspector in the manner described in (40 CFR Part 763.86.

29 CFR 1926.1101, *Asbestos (Construction)* specifies, particularly for Class I asbestos work, detailed requirements for the following aspects of covered work activities: regulated areas, employee exposure assessments and monitoring, engineering controls and work practices, respiratory protection, protective clothing, hygiene facilities and practices, hazard communication, employee communications and training, housekeeping, medical surveillance and recordkeeping. Those requirements are addressed in [Section 2.0](#).

Applicable elements of 40 CFR Part 763, Appendix C to Subpart E, relative to the Environmental Protection Agency (EPA) Asbestos Model Accreditation Plan for training for personnel doing asbestos activities and asbestos work are also included in this RD where relevant.

Permissible Exposure limit (PEL)/Excursion Limit (EL)

29 CFR 1926.1101, *Asbestos (Construction)* establishes a PEL of 0.1 fiber/cc of air as an 8-hour Time-Weighted Average (TWA) and an EL of 1.0 fiber/cc of air as averaged over a sampling period of 30 minutes.

2.0 REQUIREMENTS

NOTE: *This section addresses the following requirements (navigation links are provided):*

Section 2.1	Hazard identification and Exposure Assessment
Section 2.2	Employee Exposure Monitoring During Asbestos Work
Section 2.3	Engineering Controls/Work Practices
Section 2.4	Hygiene Facilities and Practices
Section 2.5	Regulated Areas
Section 2.6	Respiratory Protection
Section 2.7	Protective Clothing
Section 2.8	Housekeeping
Section 2.9	Medical Surveillance
Section 2.10	Hazard Communication
Section 2.11	Employee Information and Training
Section 2.12	Multi-employer Workplaces

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NOTE: For the tables in this section under the requirement "type" column, "V" means verbatim and "I" means interpreted.

2.1 Hazard identification and Exposure Assessment

#	REQUIREMENT	TYPE V or I	SOURCE
1.	<p>As part of the work planning process, line management shall ensure that the presence, location, and quantity of ACM or PACM that may be disturbed or impacted by planned construction activities is identified by performing one or more of the following activities:</p> <ul style="list-style-type: none"> a. Obtain documentation describing the presence, location and condition of ACM and/or PACM in the building and/or associated structures. b. Request a suspect materials inspection be performed by an accredited asbestos inspector. c. Presume materials are asbestos-containing until proven otherwise, and manage accordingly. 	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
2.	As appropriate, line management shall ensure that PACMs which will not be treated as ACMs do not contain asbestos (see Section 1.0).	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
3.	<p>Line management, in consultation with an asbestos competent person (as defined in Appendix B) and the facility Safety & Health (S&H) professional, as necessary, shall determine the class of work to be performed, based on the class definitions contained Table 1. If more than one class of work occurs simultaneously or the activity is not in a work class, perform the work according to the highest hazard classification.</p> <p>NOTE: Certain activities are not classified in any of the 4 work classes and have separate requirements to comply with the PEL for employee exposures. (See Appendix A)</p>	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
4.	Line management shall designate a trained (per Table 3) asbestos competent person to supervise asbestos activities and perform assigned duties for the specific work classification.	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101

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5.	<p>Line management shall ensure the designated competent person, with assistance from the facility S&H professional as required, conducts an initial exposure assessment immediately before or at the initiation of any construction activity to determine expected exposures.</p> <p>NOTE: <i>Exception: Requirement 2.1.5 does not apply to Class IV activities.</i></p>	I	<p>10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101</p>
6.	<p>Line management shall ensure the initial exposure assessment is performed in time to comply with regulatory requirements (e.g. training and/or medical surveillance) triggered by exposure data or the lack of a negative exposure assessment, and to provide information necessary to assure planned controls are appropriate.</p> <p>NOTE: An initial exposure assessment must be based on jobsite monitoring until a negative exposure assessment has been made.</p>	I	<p>10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101</p>
7.	<p>Line management shall ensure that the initial exposure assessment is used to determine engineering controls, monitoring requirements, respiratory and protective clothing requirements.</p>	I	<p>10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101</p>
8.	<p>Line management shall ensure that employee exposures are demonstrated to be below the PEL for a specific asbestos job by producing a negative exposure assessment (NEA) as follows:</p> <ul style="list-style-type: none"> • Objective data demonstrating the activity and ACMs cannot release airborne fibers in concentrations exceeding the PEL and EL under work conditions having the greatest potential for release of asbestos; <i>or</i> • Monitoring data from within the past 12 months collected during a construction job under conditions closely resembling the present project, which demonstrate with a high degree of certainty that exposures for the current job will not exceed the PEL and/or EL; <i>or</i> • Results of initial exposure monitoring (representative 8-hour and/or 30-minute air sample) from the current job. <p>NOTE: <i>This assessment can be applied when data obtained resembles the work and environmental</i></p>	I	<p>10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101</p>

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	<i>conditions, controls methods and work practices in the current operations; and representative employees have similar training and work experience.</i>		
9.	Line management shall ensure that, for all Class I activities, employees are assumed to be exposed in excess of the PEL and EL unless a NEA is produced or until exposure data proves otherwise.	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
10.	Line management shall ensure employee exposure monitoring results and other observations or previous data indicating potential exposures for an activity, are included as part of this initial exposure assessment and included in the work documentation.	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
11.	Line management shall ensure that each affected employee's Employee Job Task Analysis (EJTA) is modified, as necessary, to reflect the results of the exposure assessment.	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
12.	Line management shall ensure that records of objective data are maintained with work control documentation. Include the products involved, testing protocol, source of data, and a description of how this data supports exemption from this program.	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
13.	<p>Line management shall ensure that the following work documentation is maintained:</p> <ul style="list-style-type: none"> • <i>Asbestos Work Permit</i> (Site form A-6003-118), for Class I and/or Class II work. • Job Hazard Analysis (JHA), if required. • Inspection or bulk sample results. • Initial or NEA results. • Other special instructions and associated records as applicable. <p>NOTE: <i>Project notification of certain asbestos renovation or demolition activities is required by National Emission Standards for Hazardous Air Pollutants (NESHAP) and enforced by the agreement with the Benton Clean Air Authority (BCAA) as specified by the agreement between DOE-RL and BCAA. This agreement stipulates annual or individual project notification for the reporting and disposal of asbestos materials.</i></p> <p><i>Requirements for filing "Notice of Intent to Remove Asbestos" with BCAA, reporting releases, transportation and disposal are identified in MSA Environmental procedures: MSC-PRO-15335,</i></p>	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101

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	<i>Environmental Permitting and Documentation Preparation and MSC-PRO-15333, Environmental Protection Processes.</i>		
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2.2 Employee Exposure Monitoring During Asbestos Work

1.	<p>Line management shall ensure that daily monitoring, representative of the exposure of each employee assigned to work within a regulated area performing Class I or II work, is conducted, unless a NEA has been made for the entire operation.</p> <p>a. Employees required to wear supplied air respirators operated in pressure demand mode, or other positive pressure mode respirators do not require daily monitoring if using controls listed in Appendix A.</p> <p>b. For class I work using modified or alternate controls other than those listed in Appendix A, daily monitoring is still required.</p>	I	<p>10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101;</p>
2.	<p>Line management shall ensure that periodic monitoring for employees involved in Class III or IV work who are reasonably expected to be exposed above the PEL or EL, is performed at intervals sufficient to document the validity of the exposure prediction.</p>	I	<p>10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101;</p>
3.	<p>Line management shall consult with the facility S&H professional and the assigned competent person, as appropriate; to determine the appropriate level of monitoring and to ensure exposure monitoring is performed by qualified S&H personnel.</p>	I	<p>10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101;</p>
4.	<p>Line management shall ensure that exposure monitoring, when required, is performed by collecting personal breathing zone samples, representing 8-hour TWAs and 30-minute ELs, in accordance with the OSHA Reference Method in Appendix A of 29 CFR 1926.1101, <i>Asbestos (Construction)</i>. Exposure records shall be collected and maintained as required by MSC-PRO-409, <i>Industrial Hygiene, Monitoring, Reporting and Records Management</i>.</p>	I	<p>10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101;</p>
5.	<p>Line management shall ensure that a representative number of employees performing each task comprising an operation or activity are monitored.</p>	I	<p>10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101;</p>

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6.	Line management shall ensure that employees or their representatives are provided the opportunity to observe exposure monitoring.	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101;
7.	<p>The facility/project Industrial Hygienist shall ensure that notification(s) of exposure monitoring results are provided to affected employees within 5 working days of receipt of laboratory results and according to requirements in MSC-PRO-409, <i>Occupational Medical Qualification and Monitoring</i>.</p> <p>NOTE 1: <i>Preliminary information may be used for this purpose, when followed by a final report.</i></p> <p>NOTE 2: <i>If monitoring results indicate employee exposures are below the EL and PEL, periodic monitoring may be discontinued for employees whose exposures are represented by the monitoring.</i></p>	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101;
8.	Line management shall ensure that exposure monitoring is re-instated whenever there is a change in process, control equipment, personnel or work practices that may result in new or additional exposures above the PEL/EL, until a new NEA representing the changed conditions has been completed.	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101;

2.3 Engineering Controls/Work Practices

1.	As part of work planning, line management shall ensure that engineering controls and work practices are chosen and implemented based on the class of work and available exposure data.	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
2.	Line management shall enlist the aid of an asbestos competent person and, as appropriate, the facility S&H professional, when selecting engineering control strategies and equipment.	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
3.	Appendix A shall be used to determine mandatory controls for all asbestos work and additional controls for the specific asbestos work classes.	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
4.	Line management shall ensure that job-specific controls and work practices are documented and maintained as part of the work package documentation.	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101

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	NOTE: <i>If there are adequate barriers between activities, as determined by the competent person, controls from more than one class may be used.</i>		
5.	Line management shall ensure that manufacturer's certification is procured and maintained to demonstrate HEPA vacuums are DOP-tested in accordance with MIL-STD 282, <i>Filter Units, Protective Clothing, Gas-Mask Components and Related Products: Performance Test.</i>	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
6.	Line management shall ensure that asbestos waste, scrap, debris, bags, containers, equipment, and contaminated clothing are collected and disposed of in sealed, labeled, impermeable containers or bags, per the requirements in 29 CFR 1926.1101, <i>Asbestos (Construction).</i>	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101

2.4 Hygiene Facilities and Practices

1.	Line management shall ensure that hygiene facilities are installed and used for the following: <ul style="list-style-type: none"> • Class I construction activities. • Class II and III construction operations where employee exposures exceed the PEL or EL or where there is no documented negative exposure assessment available. • Class IV operations in regulated areas or where ACM/PACM debris is cleaned up. 	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
2.	Line management shall ensure that the following hygiene facilities for Class I construction operations involving over 25 linear or 10 square feet of TSI or surfacing ACM or PACM are included: <ul style="list-style-type: none"> • Decontamination areas connected to the regulated area consisting of an equipment room, shower room, and clean room in series. • Adjacent shower facilities, if used, complying with 29 CFR 1910.141(d)(3). <p>NOTE: <i>The requirement for adjacent shower facilities does not apply to outdoor work.</i></p>	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
3.	Line management shall ensure that, for Class I construction work involving less than 25 linear or 10 square feet of TSI or surfacing ACM or PACM and for Class II and III construction work, the hygiene facilities include an equipment room adjacent to the regulated area sufficient in size to accommodate the	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101

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	cleaning of equipment and removal of Personal Protective Equipment (PPE) without spreading contamination beyond the area.		
4.	For Class IV work, line management shall ensure the following hygiene facilities are provided and used: <ol style="list-style-type: none"> a. <u>For Class IV work performed in a regulated area</u>, the hygiene facilities requirements are the same as those used by other employees within that area. b. <u>For Class IV work not performed in regulated areas, but including the clean up of TSI or surfacing ACM/PACM debris</u>, require the same hygiene facilities listed above for Class II and III work. 	.I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
5.	When hygiene facilities are required, line management shall: <ul style="list-style-type: none"> • Provide lunchroom facilities for employees where airborne asbestos exposures are below the PEL and EL, and • Ensure employee use of hygiene facilities to prevent asbestos debris from leaving the work area. 	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101

2.5 Regulated Areas

1.	Line management shall determine the need for a regulated area with the support of an asbestos competent person and facility S&H.	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
2.	Line management shall ensure that regulated areas are established whenever: <ul style="list-style-type: none"> • Class I, II, and III construction activities are performed and/or • Construction activities cause airborne concentrations of asbestos to exceed, or there is a reasonable possibility they may exceed the PEL or EL. 	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
3.	Line management shall ensure that asbestos competent person supervises work within all regulated areas, to include the following tasks. <ul style="list-style-type: none"> • Set up and control regulated areas, enclosures or containments. • Inspect job site, materials and equipment, according to the following schedule: 	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101

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	<ul style="list-style-type: none"> a. For class I jobs at least once during each work shift and as requested. b. For Class II, III, and IV jobs, inspect often enough to assess changing conditions. c. Upon employee request. • Examine PPE to be worn at least once per workshift. • Coordinate with facility S&H to ensure employee exposure monitoring is performed. 		
	<ul style="list-style-type: none"> • Ensure employees are wearing appropriate respiratory and dermal protective equipment. • Ensure implementation of appropriate, prescribed engineering controls, work practices, hygiene facilities and decontamination procedures, as specified in this RD. 		
4.	Line management shall ensure that regulated areas are demarcated to minimize the number of persons within the area, restrict access to authorized workers and protect persons outside the area from exposure to airborne asbestos.	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
5.	Line management shall ensure that warning signs that demarcate the regulated area are provided and displayed at each location where a regulated area is required and the signs shall be placed at such a distance from the regulated area so that an employee may read the signs and take necessary protective steps before entering the regulated area.	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
6.	<p>Warning signs shall be printed in large bold letters against a contrasting background and shall contain the following information:</p> <p style="text-align: center;">DANGER ASBESTOS CANCER AND LUNG DISEASE HAZARD AUTHORIZED PERSONNEL ONLY</p> <p>and, when the use of respirators and protective clothing is required in the regulated area, the sign shall also say:</p> <p style="text-align: center;">RESPIRATORS AND PROTECTIVE CLOTHING REQUIRED IN THIS AREA</p> <p>NOTE 1: <i>Critical barriers or negative pressure enclosures themselves may serve to demarcate the</i></p>	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101

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	<p><i>regulated area.</i></p> <p>NOTE 2: See MSC-PRO-15333, <i>Environmental Protection Processes</i>, for additional requirements for asbestos waste containers.</p>		
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2.6 Respiratory Protection

1.	<p>Line management shall ensure the selection, issuance, and control of the appropriate level of respiratory protection in accordance with DOE-0352, <i>Hanford Site Respiratory Protection Program</i> and 29CFR 1910.134, <i>Respiratory Protection</i>.</p>	I	<p>10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101</p>
2.	<p>Line management shall ensure that filtering facepiece respirators are not selected or used for respiratory protection against asbestos fibers.</p>	I	<p>10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101</p>
3.	<p>Line management shall ensure that respiratory protection is chosen and used for covered asbestos work whenever:</p> <ul style="list-style-type: none"> • The potential exposure associated with an activity cannot be reduced below the PEL or EL by the use of engineering controls. • During all Class I asbestos projects. • During all Class II projects where the ACM or PACM is not removed in a substantially intact state. • During all Class II and III dry removal work and/or for which a documented negative exposure assessment is not available. • During all Class III work where TSI or surfacing ACM or PACM materials are disturbed. • During all Class IV work performed in a regulated area where employees performing other work in the area are required to wear respirators. <p>EXCEPTION: <i>Roofing materials removed intact from a sloped roof where respirators are not required because of the NEA.</i></p>	I	<p>10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101</p>
4.	<p>Line management shall ensure that facility S&H professionals and the assigned asbestos competent person select respiratory protection. If radiological hazards are involved, seek assistance from radiological control personnel.</p>	I	<p>10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101</p>

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5.	<p>Line management shall ensure, and the assigned asbestos competent person shall verify, that respirator wearers receive a quantitative fit test for each style and type of respirator used, as specified in Table 2, and in accordance with DOE-0352 Hanford Site Respiratory Protection Program.</p> <p>a. Asbestos workers are fit tested annually, as required by 29 CFR 29 CFR 1910.134, <i>Respiratory Protection</i> and DOE-0352 Hanford Site Respiratory Protection Program.</p> <p>b. Daily use of respirators includes a positive and negative fit check each time an air-purifying respirator (APR) is donned or adjusted.</p> <p>NOTE: <i>Qualitative fit testing is permitted only for testing of half-mask APR and requires prior approval from the Respiratory Protection Program Administrator and an approved qualitative fit testing program.</i></p>	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
6.	Line management shall ensure the appropriate levels of respiratory protection for emergency response/cleanup are provided, based upon the exposure potential.	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
7.	<p>When respiratory protection is required line management and the asbestos competent person shall:</p> <p>a. Verify employees who are issued respiratory protection are medically qualified, fit tested and properly trained in respirator use and maintenance as required by DOE-0352 Hanford Site Respiratory Protection Program.</p> <p>b. Maintain appropriate doffing and field decontamination practices during respirator removal.</p> <p>c. Ensure asbestos contaminated respirators are placed into sealed bags and labeled with asbestos hazard warning labels before turning into the Respirator Maintenance Facility for decontamination and cleaning.</p>	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101

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Table 2
Respiratory Protection - Asbestos Construction

Airborne Asbestos/Conditions of Use	Required Respirator
<ul style="list-style-type: none"> • Not in excess of 1 f/cc (10 X PEL). • Class II and III jobs where no negative assessment is produced. • Class III jobs where TSI or surfacing ACM or PACM is disturbed. 	Half-mask APR, equipped with HEPA filter (other than filtering facepiece respirators)
<ul style="list-style-type: none"> • Not in excess of 5 f/cc (50 X PEL). 	<ul style="list-style-type: none"> a. Full-face APR, equipped with High-efficiency particulate air (HEPA) filter; or b. half-mask powered air-purifying respirator (PAPR)
<ul style="list-style-type: none"> • Not in excess of 10 f/cc (100 X PEL). 	<ul style="list-style-type: none"> a. Full-facepiece (PAPR), equipped with HEPA filter, or b. Supplied air respirator (SAR) or airline respirator operated in continuous flow mode c. SAR or airline respirator operated in pressure demand or other positive pressure mode
<ul style="list-style-type: none"> • All employees within regulated area when Class I work is being performed and a negative exposure assessment has NOT been produced and the exposure assessment of the area indicates that the exposure levels <u>will not exceed</u> 1 f/cc as an 8-hour TWA. 	<ul style="list-style-type: none"> a. Tight-fitting PAPR with HEPA filters, or b. Full-face SAR, operated in pressure demand mode, equipped with HEPA egress cartridges. Or c. Full-face SAR, operated in pressure demand mode, equipped with auxiliary positive pressure Self-contained breathing apparatus (SCBA).
<ul style="list-style-type: none"> • All employees within a regulated area when Class I work is being performed and a negative exposure assessment has NOT been produced and the exposure assessment of the area indicates that the exposure levels <u>will exceed</u> 1 f/cc as an 8-hour TWA. 	Full-face SAR, operated in pressure demand mode, equipped with auxiliary positive pressure SCBA.
<ul style="list-style-type: none"> • Not in excess of 100 f/cc (1000 X PEL). 	<ul style="list-style-type: none"> a. full-face PAPR with HEPA filters, or b. Full-face SAR or airline respirator, operated in continuous flow, pressure demand mode or other positive pressure mode.
<ul style="list-style-type: none"> • Greater than 100 f/cc (> than 1000 X PEL or unknown concentration). 	SCBA, operated in pressure demand mode or other positive pressure mode.

NOTE: Before each use, check MSC Docs Online to ensure this copy is current.

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NOTE ON USE OF PAPRS, SARs, AIRLINE RESPIRATORS OR SCBA WITH HELMETS/ HOODS: 29CFR 1910.134 specifies that PAPRs, SARs, airline respirators or SCBA with helmets/hoods have an assigned protection factor (APF) of 25 unless the employer (MSA, in this case) possesses evidence, provided by the respirator manufacturer, that testing of such equipment demonstrates performance at a level of protection equal to or greater than 1000 to merit an APF of 1000. Absent such testing, PAPRs, SARs, airline respirators and/or SCBA with helmets/hoods are to be treated as loose-fitting facepiece respirators and receive an APF of 25. Contact the MSA Respiratory Protection Program Administrator to ensure that MSA is in possession of necessary testing data before using PAPRs, SARs, airline respirators and/or SCBA with helmets/hoods in exposure situations where exposures could exceed 25 times the PEL.

NOTE: A tight-fitting PAPER must be provided in lieu of any APR whenever: (1) the employee chooses and (2) the respirator provides adequate protection.

1. This table is provided as a summary of the types of respirators acceptable for various types of asbestos construction work and for various employee exposure scenarios. Respirators with higher protection factors can be used during any of the specified work situations or employee exposure scenarios. Consult Table 1 in 29CFR 1910.134 for additional information regarding respirator assigned protection factors.

2.7 Protective Clothing

1.	Line management shall require employees to use at least the minimum levels of PPE required by the class of work performed.	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
2.	Line management shall require the use of protective clothing whenever: <ol style="list-style-type: none"> a. The potential exposure to airborne asbestos cannot be reduced to below the PEL or EL by the use of engineering controls, and/or b. The required negative exposure assessment is not produced or available, and/or c. Class I operations involving removal of over 25 linear or 10 square feet of TSI or surfacing ACM or PACM are performed, and/or d. The asbestos competent person or the facility S&H professional judge that the job requires the use of protective clothing. 	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101

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3.	Line management shall ensure that activity characteristics, available exposure data, additional hazards that the control itself may introduce (such as heat stress hazards) and other relevant data are considered when prescribing protective clothing. Involve the asbestos competent person and facility S&H professional in the selection of protective clothing.	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
4.	Line management shall ensure that the protective clothing requirements are specified on the <i>Asbestos Work Permit</i> (Siteform A-6003-118) or equivalent work planning documentation.	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
5.	Line management and/or the assigned asbestos competent person shall ensure that wearing of contaminated protective clothing is restricted to work areas and designated change areas and shall ensure that employees: a. Store contaminated work clothing in closed containers and label the containers as specified in Requirement 2.10.7 . b. Prohibit shaking or removal as a means to remove asbestos fibers from work clothing and other surfaces.	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
6.	Line management and/or the assigned asbestos competent person shall ensure that contaminated clothing or protective equipment is sealed and transported to prevent airborne release of asbestos fibers. Label or otherwise effectively communicate the hazards associated with the contents to anyone who handles or may come in contact with the clothing.	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
7.	Line management and/or the assigned asbestos competent person shall ensure that non-disposable asbestos-contaminated work clothing is cleaned with HEPA vacuums before it is removed.	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
8.	Line management and/or the assigned asbestos competent person shall ensure that, if work clothing or reusable (nondisposable) protective clothing becomes contaminated with asbestos, the clothing is either disposed of as asbestos waste or prior arrangements with a vendor providing this type of laundry service have been made.	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101

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2.8 Housekeeping

1.	When vacuuming methods are used, HEPA-filtered vacuuming equipment must be used. The equipment shall be used and emptied in a manner that minimizes the reentry of asbestos into the workplace	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
2.	Asbestos waste, scrap, debris, bags, containers, equipment and contaminated clothing consigned for disposal shall be collected and disposed of in sealed, labeled, impermeable bags or other closed, labeled impermeable containers, except in roofing operations where the practices/controls specified in Appendix A shall be followed.	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
3.	Unless flooring can be verified as non-ACM, all vinyl and asphalt flooring materials shall be maintained in accordance with the following provisions: <ul style="list-style-type: none"> • Sanding of flooring material is prohibited. • Stripping of finished shall be conducted using low abrasion pads at speeds lower than 300 rpm and via wet methods. • Burnishing or dry buffing may be performed only on flooring that has sufficient finish so that the pad cannot contact the flooring material. 	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
4.	Waste or debris and accompanying dust in an area containing accessible TSI or SM ACM/PACM or visibly deteriorated ACM: <ul style="list-style-type: none"> • Shall not be dusted or swept dry or vacuumed without using a HEPA filter; and • Shall be promptly cleaned up and disposed of in leak tight containers. 	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101

2.9 Medical Surveillance

1.	Line management shall ensure that employees who perform Class I, II or III asbestos work and/or perform Class IV asbestos work which results in asbestos exposures above the PEL and/or EL are scheduled for medical surveillance.	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
2.	Prior to the commencement of a work activity that will or is reasonably expected to expose employees to asbestos levels at or above the PEL and/or EL on any day, line management shall submit an initial or revised EJTA for each affected employee.	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101

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	<p>NOTE 1: For an employee not already enrolled in the Current Asbestos Workers Medical Program, revising their EJTA in a manner that indicates the need for enrollment in the program will trigger the scheduling of an initial asbestos medical exam for the employee. Annual asbestos exams are automatically scheduled for employees enrolled in the Current Asbestos Workers Medical Program.</p> <p>NOTE 2: If MSA subcontractor employees have potential for asbestos exposures, consult MSC-RD-11058, Occupational Medical Qualification and Monitoring.</p>		
3.	<p>Line management shall revise an employee's EJTA, document the reason for the revision and re-submit the EJTA whenever:</p> <ul style="list-style-type: none"> • The number of days on which the employee is occupationally exposed to asbestos at or above the PEL and/or EL changes from less than 30 days per year to equal to or more than 30/days per year; or • The number of days on which the employee is occupationally exposed to asbestos at or above the PEL and/or EL changes from equal to or more than 30 days per year to less than 30days per year; or 	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
	<ul style="list-style-type: none"> • An employee in the asbestos medical surveillance program will no longer be exposed to asbestos at or above the PEL and/or EL, or • An employee in the asbestos medical surveillance program leaves MSA or MSA subcontractor employment. 		
4.	<p>Prior to or upon completion of an employee EJTA revision indicating asbestos exposure at or above the PEL and/or EL, line management shall ensure that the employee is enrolled in the appropriate type of asbestos training, as detailed in Section 2.11.</p>	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
5.	<p>Project/facility S&H professionals shall notify line management of employees who need to be enrolled in the Current Asbestos Workers Medical Program as well as those who no longer meet the exposure criteria for continued enrollment. Such notifications shall be based on exposure monitoring data, hazard assessment results or other definitive means.</p>	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101

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6.	<p>Line management shall ensure that provisions of the Occupational Medical Service Provider (OMSP)'s (or other employee-designated physician) medical opinion are strictly adhered to (subject to applicable terms of an in-effect collective bargaining agreement), including, but not limited to, the following:</p> <ul style="list-style-type: none"> • Protective measures; • Work limitations; • Respirator use restrictions. <p>NOTE: <i>10CFR 851, Appendix A, Item 8, as implemented by DOE-RL for Hanford Site contractors, gives the Hanford OMSP the responsibility to conduct medical surveillance for MSA employees occupationally exposed to asbestos, according to the requirements in 29 CFR 1926.1101, Asbestos (Construction). the medical surveillance program is assumed to include the following activities:</i></p> <ul style="list-style-type: none"> • <i>Through the medical scheduling system, assisting line management in scheduling employees for baseline, periodic, and closeout asbestos medical surveillance exams, as per the contents of submitted employee EJTA's;</i> • <i>Medical surveillance and monitoring per the provisions of 29 CFR 1910.1101(m)(2).</i> 	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
	<ul style="list-style-type: none"> • <i>Informing both the employee and the employee's line management, of contents of the written medical opinion necessary to initiate compliance with protective measures, work limitations and/or respirator use restrictions.</i> 		
7.	<p>Project/facility S&H professionals shall assist line management in interpreting the Industrial Hygiene aspects of medical opinions and recommendations, and shall interface with the OMSP, as necessary.</p>	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101

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2.10 Hazard Communication

1.	<p>Line managers supervising asbestos construction projects or the assigned asbestos competent person shall ensure communication of asbestos hazards during construction activities to all affected employer and employees, including those on multi-employer work sites, contractor/subcontractor, facility/building owner and building occupants.</p> <p>NOTE: <i>Facility Manager/building owner requirements are specified in MSC-RD-15245, Asbestos Control - General Industry.</i></p>	I	<p>10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101</p>
2.	<p>Line managers supervising asbestos construction projects or the assigned asbestos competent person shall request from the facility manager documentation describing the presence, location, and condition of the ACM or PACM for the worksite.</p>	I	<p>10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101</p>
3.	<p>Prior to commencement of all construction activities, line managers supervising asbestos construction projects or the assigned asbestos competent person shall notify the facility manager (or designated building owner) and other managers of employees in the work area of planned activities that may disturb ACM or PACM, the engineering controls, work practices other measures taken to prevent asbestos exposure and the requirements of regulated areas, when established.</p> <p>NOTE: <i>A completed Asbestos Work Permit (Siteform A-6003-118) serves this purpose.</i></p> <p>EXCEPTION: <i>This notification does not apply to materials that have been proven to be asbestos-free by using the determination specified in Section 1.0.</i></p>	I	<p>10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101</p>
4.	<p>Line management shall promote the use of asbestos-free products for new or replacement applications. If new asbestos containing products are installed, such as in some roofing materials, obtain hazard communication information or Material Safety Data Sheets (MSDS) from the manufacturer. Prior to purchase, obtain approval from industrial hygiene.</p>	I	<p>10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101</p>

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5.	If new asbestos-containing products are installed (i.e., certain liquid roofing mastics and cements), line managements shall provide information on the location, quantity, and product specifications to the facility manager/building owner to ensure the facility assessment of asbestos is updated.	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
6.	<p>During the course of work, if ACM or PACM is newly discovered, line construction managers or the assigned asbestos competent person shall identify the quantity and material type, shall ensure affected employees and building occupants have been provided appropriate protective measures and contacted the facility manager or designated building owner within 24 hours.</p> <p>NOTE: <i>The project closeout section of the completed Asbestos Work Permit (AWP) (Siteform A-6003-118) can be provided to the facility manager/building owner to meet this requirement.</i></p>	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
7.	<p>Line managers and/or assigned asbestos competent persons shall ensure that labels are affixed to containers of asbestos, including waste containers. Ensure labels contain the following information, in accordance with 29 CFR 1910.1001 and 29 CFR 1926.1101, <i>Asbestos (Construction)</i>:</p> <p style="text-align: center;">DANGER CONTAINS ASBESTOS FIBERS AVOID CREATING DUST CANCER AND LUNG DISEASE HAZARD</p>	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
8.	<p>Line managers and/or assigned asbestos competent persons shall advise building/facility owner of unlabelled/undesigned installed ACMs, to assist them in meeting their building/ facility owner responsibilities to label ACMs under MSC-RD-15245, <i>Asbestos Control - General Industry</i>.</p> <p>NOTE 1: <i>For installed ACMs, signs may be posted in lieu of the use of labels, if the appropriate hazard communication information is available to employees.</i></p> <p>NOTE 2: <i>Labels are not required when:</i></p> <ul style="list-style-type: none"> • <i>Asbestos fibers have been modified by a bonding agent, coating or other material and</i> 	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101

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	<p><i>the manufacturer can demonstrate that during reasonable use and handling, the airborne concentration of airborne fibers will not exceed the PEL or EL, or</i></p> <ul style="list-style-type: none"> • <i>Asbestos is present in concentrations less than 1.0% by weight.</i> 		
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2.11 Employee Information and Training

1.	Line management shall ensure that initial training is provided, prior to job assignment to employees exposed or potentially exposed in excess of the PEL or EL and for employees performing Class I - IV work (see Table 3). The facility S&H professional shall be consulted to determine training requirements for specific activities.	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
2.	Line management shall ensure that annual refresher training is provided for employees exposed or potentially exposed in excess of the PEL or EL and for employees performing Class I - IV work.	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
3.	If the category of work is unclear, or there is a combination of activities, assume the higher, more restrictive category applies and line management shall ensure that the higher level of training is provided to affected employees.	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
4.	MSA training shall provide proof of an employee's successful completion of training to the employee and employee's manager as required.	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
5.	MSA training shall maintain all employee records of training required by this program for at least one year beyond the length of employment.	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101

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Table 3
Asbestos Construction Training Requirements

Role	Activity/Operation	Type of Training/Course
Asbestos Worker	Class I	Asbestos Abatement Worker ¹
	Class II	Asbestos Abatement Worker
	Other Class II	OSHA-specific (see below)
	Class III	Operations and Maintenance ²
	Class IV	Asbestos Awareness ³
Asbestos Competent Person	Class I and II	Asbestos Supervisor ⁴
	Class III and IV	Operations and Maintenance ²
Asbestos Inspector	Required for all persons who determine the presence/location or assess the condition of ACM/PACM by visual, physical exam or bulk sampling.	Asbestos Inspector ⁵
Asbestos Project Designer ⁶	Employees who design alternate control methods for Class I work.	Asbestos Project Designer ⁷
Facility S&H professional	Recommended minimum training for facility S&H professionals performing general support of asbestos projects.	Asbestos Awareness ¹
	Facility S&H professionals designated or functioning as Asbestos Project Designer, Asbestos Inspector, Asbestos Competent Person.	Training for specific roles ^{4,5,6}
RCT	RCTs provide radiological control as primary support and are not considered asbestos workers.	Asbestos Awareness (recommended)
"Non-Asbestos" Workers	<ul style="list-style-type: none"> • Workers performing incidental roof work. • Employees exposed at or above the PEL. 	<ul style="list-style-type: none"> • Asbestos Awareness or • <u>OSHA-Specific Training</u> (k)(9)(viii) elements & additional training on specific controls + hands-on.
¹ Course equivalent in curriculum, training method, and length as EPA Model Accreditation Plan (MAP) Asbestos Abatement Workers training, (40 CFR part 763, subpart E, appendix C, paragraph B, item 1).		
² Course consistent with EPA requirements for training of local education agency maintenance and custodial staff, as set forth in 40 CFR 763.92 (a)(2).		
³ Course consistent with EPA requirements for training of local education agency maintenance and custodial staff, as set forth in 40 CFR 763.92 (a)(1).		
⁴ Course meets criteria of EPA (MAP) for supervisors, 40 CFR part 763, subpart E, App. C,		

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Paragraph B, item 2.

⁵ Course meets criteria of EPA (MAP) for inspectors, 40 CFR part 763, subpart E, App. C, Paragraph B, item 3.

⁶ Other activities to be performed by AHERA accredited Asbestos Project Designers are specified in 40 CFR part 763, subpart E, App. C, Paragraph B, item 5.

⁷ Abatement project designer qualifications as specified by 40 CFR part 763, subpart E, App. C, Paragraph E.

2.12 Multi-employer Workplaces

1.	Line management shall be responsible for determining the status of compliance with all requirements in this RD for MSA subcontractors performing asbestos construction work on/at a facility under his/her jurisdiction and/or which potentially exposes employee he/she manages to asbestos and to implement measures to ensure the subcontractor comes into compliance, when necessary.	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
2.	Line management shall require daily verification of effectiveness of control methods or integrity of enclosures to prevent migration of asbestos fibers into non-regulated areas when asbestos construction work is being performed on/at a facility under his/her jurisdiction and/or which potentially exposes employee she/she manages to asbestos.	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
3.	On multi-employer work sites whose activities impact ACMs or PACMs, line management and/or the assigned asbestos competent person shall notify affected employers of work activities and planned measures to prevent asbestos exposure.	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
4.	When activities require the establishment of a regulated area, the asbestos competent person shall provide written notification of planned activities to the facility manager (or designated building owner) and other worksite employers. Include information on the nature of the work with ACMs or PACMs, the requirements related to the regulated area and the preventive measures to prevent exposure to others on the work site.	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101

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5.	If asbestos hazards are created, line management and/or the assigned asbestos competent person shall implement appropriate measures to abate the hazard and notify the facility manager or designated building owner and managers of other employees working in the area affected by the hazard.	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101
6.	Line management shall ensure protective measures are implemented for employees if they may be exposed to asbestos hazards created by other workforces.	I	10 CFR 851.23 and 10 CFR 851, App A, item 6; 29 CFR 1926.1101

3.0 FORMS

Asbestos Work Permit, Site form [A-6003-118](#).

4.0 RECORDS

Records generated by this procedure are processed and maintained in accordance with [MSC-PRO-10588](#), *Records Management Processes*.

Records Capture Table

Name of Document	Submittal Responsibility	Retention Responsibility
<i>Asbestos Work Permit</i>	Facility/Project Management	Facility/Project Management

5.0 REFERENCES

5.1 Source References

10 CFR 851, *Worker Safety and Health Program*
 29 CFR 1910.134, *Respiratory Protection*
 29 CFR 1910.141, *Sanitation*
 29 CFR 1910.1001, *Asbestos (General Industry)*
 29 CFR 1926.1101, *Asbestos (Construction)*
 40 CFR, Part 763, *Asbestos*

5.2 Working References

DOE-0352, *Hanford Site Respiratory Protection Program*
[MSC-PRO-409](#), *Exposure Monitoring, Reporting and Exposure Records Management*
[MSC-RD-11058](#), *Occupational Medical Qualification and Monitoring*
[MSC-RD-15245](#), *Asbestos Control - General Industry*
[MSC-PRO-15333](#), *Environmental Protection Processes*.
[MSC-PRO-15335](#), *Environmental Permitting and Documentation Preparation*

MIL-STD 282, *Filter Units, Protective Clothing, Gas-Mask Components and Related Products: Performance Test Methods*

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APPENDIX A Controls by Work Classification

A. Required/Prohibited Work Practices and Engineering Controls for All Classes of Asbestos Work Covered by this RD.

1. Regardless of the levels of exposure:
 - a. Vacuum cleaners equipped with HEPA filters to collect dust and debris containing ACM and PACM.
 - b. Wet methods or wetting agents during asbestos handling, mixing, removal, cutting, application and cleanup (except where not feasible due to other hazards, i.e. electrical).
 - c. Prompt cleanup and disposal of wastes and debris contaminated with asbestos in leak-tight containers.

NOTE: *Exceptions: Some roofing materials (see Parts [D](#) and [F](#))*

2. To maintain exposures below the PEL or EL:
 - a. Local exhaust ventilation equipped with HEPA filtered dust collection systems.
 - b. Enclosures or isolation of processes producing asbestos dust.
 - c. Ventilation of the regulated area to ensure movement of contaminated air away from the employee and towards a dust filtration or collection device equipped with HEPA filters.
 - d. Use of other controls/work practices, as feasible.

NOTE: *In all cases, specified engineering and work practice controls shall be utilized to reduce employee exposure levels to the lowest attainable levels. Use of respiratory protective equipment is required, as a supplemental control, whenever feasible engineering and work practice controls are not sufficient to reduce exposures below the PEL or EL.*

3. Prohibited practices, regardless of measure levels of exposure:
 - a. Use of high speed abrasive disc saws without point of cut ventilator or HEPA filtered enclosures.
 - b. Use of compressed air to remove ACM and/or PACM when the compressed air is not part of an enclosed system.
 - c. Dry sweeping, shoveling or cleanup of dust and debris.
 - d. Employee rotation as a means to reduce employee exposure.

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B. Class I Asbestos Work

In addition to following/observing all required/prohibited work practices and engineering controls specified in [Part A](#), the following is followed/observed for all Class I asbestos work covered by this RD.

1. Supervised by competent person, as defined by [Appendix B](#).
2. Critical barriers/isolation methods required to prevent migration of airborne asbestos from the regulated area if:
 - 25 linear or 10 square feet of TSI or SM removal.
 - <25 linear or 10 square feet of TSI or SM removal only if no "negative exposure assessment" where employees are working adjacent to the regulated area, while Class I work is being performed.
3. If isolation methods other than critical barriers are used for work specified in Item 2, a perimeter area surveillance is performed during each work shift at boundaries of the regulated area and perimeter area monitoring is conducted to ensure clearance levels specified in 40 CFR, Part 763, Part 763, Subpart E have been met or are no more than background level, representing the same area before asbestos work began. (per 29 CFR 1926.1101, *Asbestos (Construction)(g)(4)(ii)*)
4. HVAC isolation required. (per 29 CFR 1926.1101, *Asbestos (Construction)(g)(4)(iii)*)
5. Dropcloths required. (per 29 CFR 1926.1101, *Asbestos (Construction)(g)(4)(vi)* and (v))
6. Directed ventilation if no negative exposure assessment or > PEL. (per 29 CFR 1926.1101, *Asbestos (Construction)(g)(4)(vi)*)
7. One or more of the following controls must be used, as listed (per 29 CFR 1926.1101, *Asbestos (Construction)(g)(5)* and subject to the specifications/work practices in the referenced subsections of (per 29 CFR 1926.1101, *Asbestos (Construction)(g)(5)*).
 - Glove bag for straight runs of pipe, elbows and other connections (per 29 CFR 1926.1101, *Asbestos (Construction)(g)(5)(ii)*).
 - Negative-pressure glove bag for pipe runs. (per 29 CFR 1926.1101, *Asbestos (Construction)(g)(5)(iii)*).
 - Negative pressure glovebox system for pipe runs (per 29 CFR 1926.1101, *Asbestos (Construction)(g)(5)(iv)*).

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- Water spray process for cold line piping (per 29 CFR 1926.1101, *Asbestos (Construction)(g)(5)(v)*).
 - Mini-enclosures (per 29 CFR 1926.1101, *Asbestos (Construction)(g)(5)(vi)*).
8. For outdoor work:
- Perimeter monitoring or critical barriers not required, if using controls listed in 29 CFR 1926.1101, *Asbestos (Construction)(g)(5)* and there are no other employees working in the area adjacent to the regulated area.
 - NPE (negative pressure enclosures) and mini-enclosures are not required if other workforces not in the area.

C. Class I Alternate Controls

1. For < 25 linear or 10 square feet:
 - Competent person evaluates work area, work practices, and engineering controls to ensure exposure is < PEL.
 - Enclose, contain, or isolate, or capture or redirect away from employee's breathing zone.
 - Worst case employee exposure monitoring.
 - May omit perimeter or clearance monitoring for work completed outdoors where employees are not working in areas adjacent to regulated areas.
2. For > 25 linear or 10 square feet:
 - Enclose, contain, or isolate, or capture or redirect away from employee's breathing zone.
 - Certified industrial hygienist (CIH) or Professional engineer (PE), either of which must also be qualified and accredited as a "Project Designer", evaluates work area, work practices, and engineering controls, and certifies in writing that the control method is adequate to reduce direct and indirect exposures to below the PEL.
 - Use worst-case exposure monitoring.
 - Perimeter monitoring showing clearance levels of ≤ 0.01 f/cc or no more than background level before work began.
 - OSHA notification, (per 29 CFR 1926.1101, *Asbestos (Construction)(g)(6)(iii)*).

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D. Class II Asbestos Work

In addition to following/observing all required/prohibited work practices and engineering controls specified in [Part A](#), the following are followed/observed for all Class II asbestos work covered by this RD.

1. Supervised by competent person, as defined by [Appendix B](#).
2. For indoor work only:
 - a. Critical barriers/isolation methods required if:
 - No negative exposure assessment.
 - When, during the job, conditions indicate exposures are or may be above the PEL.
 - ACM not removed in a substantially intact state.
 - b. Perimeter monitoring/clearance sampling required if critical barriers, as required in a., above, are not used.
 - c. Drop cloths required on surfaces beneath removal activity.
3. For removal of vinyl and asphalt flooring materials containing ACM/PACM, as required by 29 CFR 1926.1101, *Asbestos (Construction)(g)(8)(i)*:
 - a. No sanding of flooring or floor backing.
 - b. HEPA vacuum used to clean floors.
 - c. Wet methods used during removal/de-lamination of resilient floor sheeting and for scraping of residual adhesives and/or backings.
 - d. *No* dry sweeping/scraping, ripping of material.
 - e. Mechanical chipping prohibited unless done in negative-pressure enclosure.
 - f. Intact removal of tiles, if possible.
 - g. May use dry heat removal of tiles and omit wetting if tiles are kept intact.
 - h. Assume flooring material, mastic and backing contains asbestos unless analysis proves otherwise.

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4. For removal of roofing materials containing ACM/PACM:
 - a. Intact removal, if possible.
 - b. Wet methods required for non-intact materials, unless a competent person determines wetting methods are not feasible because of additional safety hazards (not required for removal of INTACT materials).
 - c. Wet methods or respirators not required on sloped roof, based on negative exposure assessment and ACM removed is intact.
 - d. Wet methods and HEPA vacuum not required for removal of intact sections of ACM <25 sq ft in 1 day if manual methods of removal will keep material intact and no visible dust is created.
 - e. Continuous misting of cutting machine, unless a competent person determines the use will result in additional hazards.
 - f. HEPA vacuum dust and debris associated with non-intact sources of ACM.
 - g. Remove intact ACM from the roof as soon as practical or at end of work shift.
 - h. Dropping ACM roofing material to ground from roof is prohibited; carry by hand or by use of covered, dust-tight crane or hoist.
 - i. Non-intact material, once removed, are lowered to ground as soon as practical and by end of work shift. While non-intact materials remains on the roof it is kept wet, placed in waste bags or wrapped in plastic sheeting.
 - j. Bag, containerize, and label ACM dust and debris.
 - k. Unwrapped ACM materials are transferred to close receptacles.
 - l. Roof vent system air intakes sources isolated or HVAC shut down.
 - m. Use of power roof cutters to remove built up roofing with ACM roofing felts and aggregate surface requires HEPA; ACM felts with smooth surface can be HEPA or wet-swept.

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5. For removal of cementitious asbestos-containing siding, shingles, or transite panels on building exteriors (other than roofs):
 - a. Intact removal, unless can demonstrate that method less likely to result in asbestos fiber release cannot be used.
 - b. Spraying with amended water prior to removal.
 - c. Unwrapped, unbagged panels immediately lowered to ground via dust-tight chute, crane or hoist by day's end or placed in waste bag/plastic sheeting and lowered to ground no later than end of shift.
 - d. Cut nail heads.
6. For removal of gaskets:
 - a. Intact removal, if possible.
 - b. Use glove bags if intact removal unlikely.
 - c. Immediate disposal.
 - d. Wet scraping to remove residue.
7. For other Class II work for which specific controls are not listed above, see 29 CFR 1926.1101, *Asbestos (Construction)(g)(8)(v)*.

E. Class II Alternate Controls

1. Competent person evaluates work area, work practices, and engineering controls, and certifies in writing that the control method is adequate to reduce direct and indirect exposures to below the PEL.
2. Worst case exposure monitoring under similar work conditions, employee training and experience to demonstrate exposures < PEL under any anticipated circumstances.

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F. Alternate methods of compliance for installation, removal, repair and maintenance of certain roofing and pipeline coating materials

Provisions of 29 CFR 1926.1101, *Asbestos (Construction)(g)(11)* are complied with when installing, removing, repairing or maintaining intact pipeline asphaltic wrap, or roof flashings that contain asbestos fibers encapsulated or coated by bituminous or resinous compounds. If all provisions of 29 CFR 1926.1101, *Asbestos (Construction)(g)(11)* are not complied with or, if during the course of the job, the material does not remain intact, then the job is managed as a Class II asbestos activity and complies with the requirements for roofing materials noted in [Part D.4](#).

1. Prior to job, competent person inspects worksite to determine if material is intact and will remain intact.
2. Sanding, abrading, grinding is prohibited.
3. Wet methods must be used for removal of pipeline asphaltic wrap.
4. Manual methods of removal only, material remaining intact.
5. Dropping material to ground from roof is prohibited; carry by hand or by use of covered, dust-tight crane or hoist.
6. Material is removed from roof by end of work shift.
7. Employees are trained per requirements of 29 CFR 1926.1191 (k)(9)(viii)

G. Class III Asbestos Work

In addition to following/observing all required/prohibited work practices and engineering controls specified in [Part A](#), the following are followed/observed for all Class III asbestos work covered by this RD.

1. Supervised by competent person, as defined by [Appendix B](#).
2. Area containment using drop cloths and barriers or isolation using Class I controls system if:
 - No negative exposure assessment.
 - >PEL via monitoring results.
3. Local HEPA exhaust required, where feasible.
4. If TSI or SM is drilled, cut, abraded, sanded, sawed, chipped or broken, drop cloths required and isolation using mini-enclosures or glove bag systems is required.

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5. Wet methods.
6. Respiratory protective equipment in compliance with [Section 2.6](#) is required when TSI/SM is disturbed during Class III asbestos work or when there is not negative exposure assessment or there is or is anticipated to be an exceedance of the PEL.

H. Class IV Asbestos Work

In addition to following/observing all required/prohibited work practices and engineering controls specified in [Part A](#), the following is followed/observed for all Class IV asbestos work covered by this RD.

1. Supervised by a competent person, as defined by [Appendix B](#).
2. Employees cleaning up debris and waste in a regulated area where respirators are required wear respirators which are selected, used and fitted pursuant to provisions of [Section 2.6](#).
3. In areas where friable TSI or SM is accessible to employees and/or areas in which employees cleanup waste and debris, the waste and debris is assumed to contain asbestos.

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APPENDIX B Glossary

asbestos: Includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, actinolite, and any of these minerals that has been chemically treated and/or altered. For purposes of this document, "asbestos" includes PACM.

Asbestos-containing Material (ACM): Any material containing more than one percent asbestos.

authorized person: Any person required by work duties to be present in regulated areas.

Certified Industrial Hygienist (CIH): One certified in the practice of Industrial Hygiene by the American Board of Industrial Hygiene.

clean room: An uncontaminated room having facilities for the storage of employees' street clothing and uncontaminated materials and equipment.

competent person (asbestos): One who is capable of identifying existing asbestos hazards in the work place, selecting the appropriate control strategy, and has the authority to take prompt corrective measures, as specified in 29 CFR 1926.1101, *Asbestos (Construction)*. In addition, for Class I and Class II work, one who is specially trained in a course that meets the criteria of EPA's Model Accreditation Plan (40 CFR, Part 763, *Asbestos*) for supervisors, or its equivalent and, for Class III and Class IV work, who is trained in a manner consistent with EPA requirements for training of local education agency maintenance and custodial staff as set forth at 40 CFR 763.92(a)(2).

critical barrier: One or more layers of plastic sealed over all openings into a work area or any other similarly placed physical barrier sufficient to prevent airborne asbestos in a work area from migrating to an adjacent area.

decontamination area: An enclosed area adjacent and connected to the regulated area and consisting of an equipment room, shower area, and clean room, which is used for the decontamination of workers, materials, and equipment contaminated with asbestos.

demolition: The wrecking or taking out of any load-supporting structural member and any related razing, removing or stripping of asbestos products

disturbance: Activities that disrupt the matrix of ACM or PACM, crumble or pulverize ACM or PACM, or generate visible dust from ACM or PACM. Disturbance includes cutting away small amounts of ACM or PACM, no greater than the amount that can be contained in one standard sized glove bag or waste bag in order to access a building component. In no event shall the amount of ACM or PACM so disturbed exceed that which can be contained in one glove bag or waste bag which shall not exceed 60 inches in length and width.

employee exposure: That exposure to airborne asbestos occurring if the employee was not using respiratory protective equipment.

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equipment room (change room): A contaminated room located within the decontamination area supplied with impermeable bags or containers for the disposal of contaminated protective clothing and equipment.

excursion limit (EL): The maximum level of airborne asbestos fibers an employee may be exposed to when measured as a 30-minute peak exposure. The EL is 1.0 f/cc of air, averaged over a 30-minute sampling period.

fiber: A particulate form of asbestos, five micrometers or longer, with a length-to-diameter ratio of at least 3 to 1.

intact: An ACM that has not been crumbled, pulverized, or otherwise deteriorated so that the asbestos is no longer likely to be bound with its matrix.

negative exposure assessment: A demonstration, complying with the criteria in [Section 2.1.1](#), that employee exposure during an operation is expected to be consistently below the PEL/EL.

Permissible exposure limit (PEL): The maximum level of airborne asbestos fibers an employee may be exposed to when measured as an eight-hour time weighted average (TWA). The PEL is 0.1 f/cc. Also see **excursion limit**.

project designer: A person who has successfully completed the training requirements for an abatement project designer specified by 40 CFR 763.90(g). A PE or CIH serving in this role also participates in the AHERA training course.

qualified S&H professional: For the purposes of this RD, a qualified S&H professional is defined as an individual who, through appropriate and relevant education, training, knowledge and/or experience, can demonstrate the competence necessary for the adequate completion of tasks assigned to them and/or performed by them.

regulated area: An area established to demarcate areas where Class I, II, and III asbestos work is conducted, and any adjoining area where debris and waste from such asbestos work accumulates. Also, a work area within which airborne concentrations of asbestos exceed, or there is a reasonable possibility they may exceed, the PEL.

removal: All operations where ACM and/or PACM is taken out or stripped from structures or substrates including demolition operations.

renovation: The modification of any existing structure, or portion thereof

repair: Overhauling, rebuilding, reconstructing, or reconditioning of structures or substrates including encapsulation or other repair of ACM or PACM attached to structures or substrates.

Thermal System Insulation (TSI) ACM: TSI that contains more than one percent asbestos.