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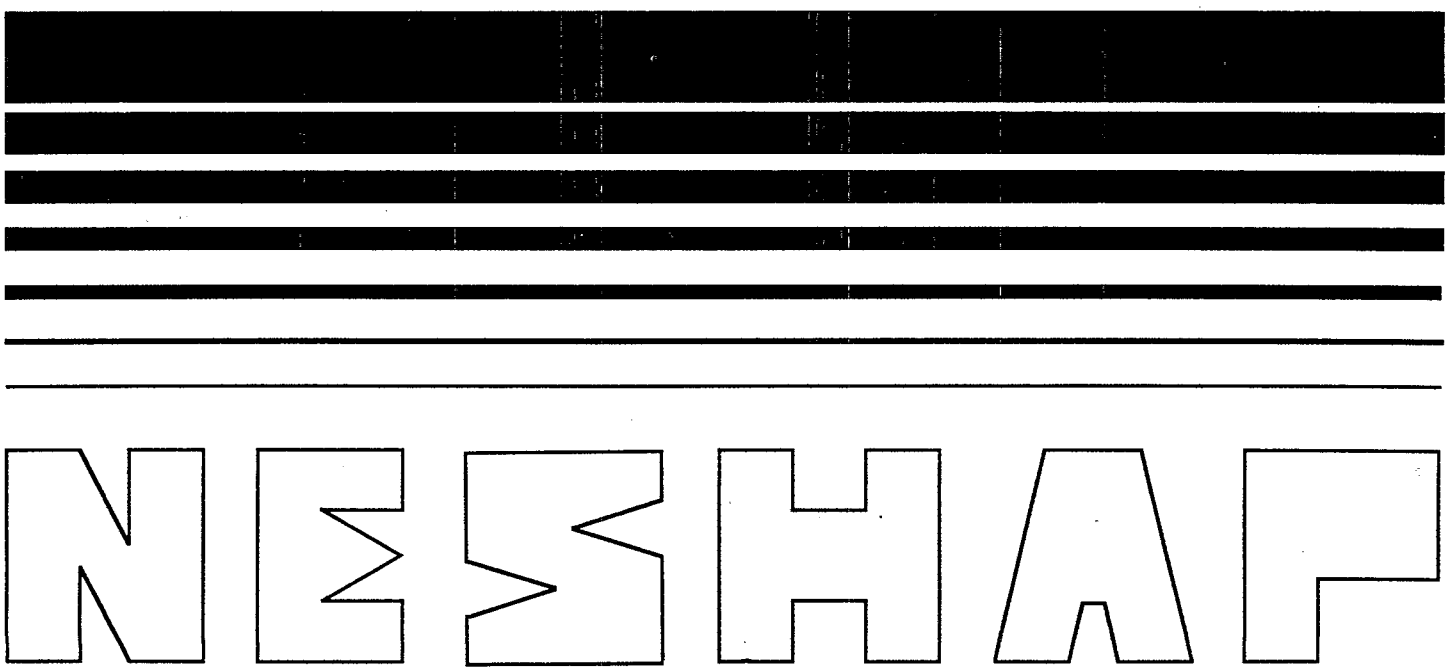
Guidelines For Asbestos NESHAP Demolition And Renovation Inspection Procedures



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Guidelines for Asbestos NESHAP Demolition and Renovation Inspection Procedures

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Stationary Source Compliance Division
Washington, DC 20460

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SECTION 1

INTRODUCTION

The EPA has identified a need for nationally consistent inspection guidelines to assist EPA, State and local air agency personnel in conducting asbestos NESHAP inspections specific to demolition and renovation (D/R) of buildings containing ACM. The primary purpose of this manual is to present clear, concise inspection procedures which individuals who are involved in enforcement of the asbestos NESHAP (40 CFR Part 61, Subpart M) may follow.

EPA first published guidance entitled *EPA Demolition and Renovation Inspection Procedures* in 1975 following the original promulgation of the asbestos NESHAP in 1973. Subsequently, EPA issued numerous policy memoranda providing additional guidance and clarification on the asbestos NESHAP to agency staff charged with enforcing the regulation.

Additionally, EPA developed two workshops for asbestos inspectors, *1988 NESHAP Asbestos Demolition and Renovation Inspection Workshop* and *Asbestos NESHAP Inspector Safety Workshop*. In 1989 these two workshops were consolidated to form the *Demolition and Renovation Inspection and Safety Procedures Workshop*, and a field manual, *Guidelines for Asbestos NESHAP Demolition and Renovation Inspection Procedures*, was produced.

This document is a revision of the 1989 field manual. It incorporates all pertinent information cited in the repromulgated asbestos NESHAP regulation (September 1990) and also includes revised health and safety recommendations detailed in the EHSD *Health and Safety Guidelines for EPA Asbestos Inspectors*.

Since EPA, State and local agencies are beginning to implement coordinated asbestos programs under the CAA and TSCA, asbestos NESHAP inspectors may be asked to evaluate compliance with certain provisions of the AHERA and WPR regulations. To support the integration programs, this manual includes basic guidelines for asbestos NESHAP inspectors to follow to determine compliance with these regulations as well as NESHAP.

Although the guidance in this manual is geared toward EPA asbestos NESHAP inspectors, it is also appropriate guidance for State and local regulatory inspectors (either in lieu of, or as a supplement to specific State and local program requirements).

PURPOSE OF INSPECTIONS

Inspectors are assigned at the EPA, State and local agency level to visit facilities involved in demolition and renovation activities. Where violations of the asbestos NESHAP are detected, observations made and evidence collected by the inspector form the foundation of subsequent compliance action.

The major objectives of a regulatory inspector are to:

- determine the need for immediate action in order to protect the public and the asbestos abatement worker (This may necessitate obtaining a temporary restraining order under Section 113 of the CAA or use of Section 303 of the CAA "imminent and substantial endangerment to public health" to seek a court order to stop work.);
- verify that the demolition and renovation operations are carried out according to all requirements of the asbestos NESHAP regulation;
- gather evidence of any violations of the asbestos NESHAP;
- determine whether a potential AHERA or WPR violation exists; and
- create a regulatory presence as a deterrent to potential violators.

The overall asbestos NESHAP inspection and compliance program follows a national strategy document entitled *Asbestos Demolition and Renovation Enforcement Strategy* (March 1988). The guidance contained in this manual is consistent with the national strategy document regarding inspector training, inspection criteria, and enforcement procedures. This guidance is also consistent with EPA policy to coordinate all asbestos program offices.

GLOSSARY OF TERMS

ACM	-	Asbestos-Containing Material.
ACWM	-	Asbestos-Containing Waste Material
AHERA	-	Asbestos Hazard Emergency Response Act. Requires schools to inspect for asbestos, implement response actions, submit asbestos management plans to states and re-inspect every three years. Specifies use of accredited inspectors, air sampling methods, and waste disposal procedures. 40 CFR 763, Subpart E.
Air Lock	-	A system of enclosures consisting of two polyethylene curtained doorways at least 3 feet apart that should permit air movement from clean to contaminated

areas. Air locks are usually part of a decontamination chamber attached to an abatement area which is under negative pressure.

Amended Water - Water to which a chemical wetting agent (surfactant) has been added to improve penetration into asbestos-containing materials that are being removed.

Asbestos NESHAP - The specific portion of Section 112 of the CAA that addresses asbestos. Specific regulations are contained in 40 CFR Part 61, Subpart M.

Atmosphere Supplying Respirators - Respiratory protection devices which exclude workplace air altogether and provide clean air from some independent source. (i.e., SCBA and Type C SAR).

CAA - Clean Air Act. The legislation that provides EPA with authority for the regulation of sources of air pollution.

Category I Nonfriable ACM - Asbestos-containing packings, gaskets, resilient floor covering, and asphalt roofing products, containing more than 1 percent asbestos as determined using polarized light microscopy according to the method specified in Appendix A, Subpart F, 40 CFR Part 763.

Category II Nonfriable ACM - Any material, excluding Category I nonfriable ACM, containing more than 1 percent asbestos as determined using polarized light microscopy according to the method specified in Appendix A, Subpart F, 40 CFR Part 763 that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

Clean Room/Area - The first stage or room of the decontamination enclosure system in which workers prepare to enter the work area.

Decontamination Enclosure System - A series of connected rooms with polyethylene curtained doorways for the purpose of preventing contamination of areas adjacent to the work area. Usually comprised of a clean room, shower and equipment (dirty) room.

EHSD - Environmental Health and Safety Division (formerly OHSS or Occupational Health and Safety Staff). The group within EPA that is responsible for developing health and safety guidance specific to EPA employees.

EPA - Environmental Protection Agency. The organization within the Federal government which is ultimately responsible for enforcing the asbestos NESHAP in order to protect people who work or live near potential asbestos release areas such as buildings undergoing demolition or renovation.

Equipment/Dirty Room - The last stage or room of the worker decontamination system before entering the work area.

Friable Asbestos Material (FAM) - According to the Asbestos NESHAP, any material containing more than 1 percent asbestos as determined by the method specified in Section 1, Polarized Light Microscopy (PLM) of Appendix A, Subpart F, 40 CFR Part 763 that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. If the asbestos content is less than 10 percent as determined by a method other than point counting by PLM, verify the asbestos content by point counting using PLM.

Full Facepiece Respirator - A respirator which covers the wearer's entire face from across the forehead, around the temples, along the cheek bones to below the chin.

Glovebag - A sealed compartment with attached inner gloves for the handling of asbestos-containing materials. Properly installed and used, glovebags provide a small work area enclosure used typically for small-scale asbestos stripping operations. Information on glovebag installation, equipment and supplies, and work practices is contained in the OSHA final rule on occupational exposure to asbestos (Appendix G to 29 CFR 1926.58).

Heat Cramps - A form of heat stress resulting in painful spasms of heavily-used skeletal muscles such as hands, arms, legs, and abdomen, sometimes accompanied by dilated pupils and weak pulse resulting from depletion of the salt content of the body.

Heat Exhaustion - A form of heat stress resulting from dehydration and/or salt depletion, or lack of blood circulation usually accompanied by fatigue, nausea, headache, giddiness, clammy skin, and a pale appearance.

Heat Stroke	-	The most severe form of heat stress disorders resulting from the loss of the body's ability to sweat; characterized by hot dry skin, dizziness, nausea, severe headache, confusion, delirium, loss of consciousness, convulsion, and possibly coma.
HEPA	-	High Efficiency Particulate Air filter rated capable of trapping and retaining 99.97% of all particles larger than 0.3 microns.
NIOSH	-	National Institute for Occupational Safety and Health. The organization within the Federal government which is responsible for research and development of worker safety equipment and work practices.
Nonfriable Asbestos-containing Material	-	Any material containing more than 1 percent asbestos as determined using the method specified in Appendix A, Subpart F, 40 CFR Part 763, Section 1, Polarized Light Microscopy, that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.
OPTS	-	Office of Pesticides and Toxic Substances. The group within EPA which is responsible for implementing and carrying out programs to enforce the TSCA regulations.
OSHA	-	Occupational Safety and Health Administration. The Federal organization which is responsible for enforcing regulations that protect the health of workers, including those removing asbestos from buildings.
Owner/Operator	-	Any person who owns, leases, operates, controls, or supervises any building, structure, facility, or installation which emits or may emit any air pollutant.
PAPR	-	Powered Air Purifying Respirator.
Personal Protective Equipment (PPE)	-	Any material or device worn to protect a worker from exposure to, or contact with, any harmful material or force. May include a respirator, coveralls, hard hat, steel toed shoes, safety glasses, etc.
PF	-	Protection factor as provided by a respirator; determined by dividing the airborne fiber concentration outside of the mask by the concentration inside the mask.

Phase Contrast Microscopy (PCM)	-	An optical microscopic technique used for counting fibers in air samples, but which does not distinguish asbestos fibers.
Polarized Light Microscopy (PLM)	-	An optical microscopic technique used to distinguish between different types of fibers based on their shapes and unique optical properties; commonly used to determine the presence of asbestos in bulk samples of suspected asbestos- containing materials.
Pressure Demand Airline Devices	-	A respiratory protection device which has a regulator and valve designed to maintain positive pressure in the facepiece at all times.
Regulated asbestos-containing material (RACM)	-	Means (a) friable asbestos material, (b) Category I nonfriable ACM that has become friable, or (c) Category II nonfriable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations regulated by the asbestos NESHAP.
Scanning Electron Microscopy (SEM)	-	A method of microscopic analysis which utilizes an electron beam directed at the sample and then collects the beams that are reflected to produce an image from which fibers can be identified and counted.
SCBA	-	Self Contained Breathing Apparatus. A respirator with air provided by a tank worn by the user; provides the highest level of protection. Can be used when a contaminant's concentration is unknown.
SSCD	-	Stationary Source Compliance Division. The group within EPA that is responsible for implementing and carrying out a program to assure that the regulated community complies with the asbestos NESHAP.
Transmission Electron Microscopy (TEM)	-	A method of microscopic analysis which utilizes an electron beam that is focused onto a thin sample. As the beam penetrates (transmits) through the sample, the difference in densities produces an image on a fluorescent screen from which samples can be identified and counted.

TSCA	-	Toxic Substances Control Act. Asbestos is regulated as a toxic substance under this legislation.
Visible Emissions	-	Any emissions (excluding condensed uncombined water vapor) visually detectable without the aid of instruments, coming from asbestos-containing material or asbestos-containing waste material or from any asbestos milling, manufacturing or fabricating operation.
Wetting Agents	-	Materials (such as surfactants) that are added to water which is used for wetting the asbestos-containing material in order for the water to penetrate more effectively.
WPR	-	Worker Protection Rule. TSCA regulation which protects public employees performing asbestos abatement work in states not covered by asbestos standards. 40 CFR 763, Subpart G.
260/160/35	-	260 linear feet (80 linear meters) of ACM on pipes, 160 square feet (15 square meters) of ACM on other facility components, or 35 cubic feet of ACM off facility components where the amount of ACM previously on pipes and other facility components is unknown. These figures form the basis of applicability in the asbestos NESHAP standard.

SECTION 2

IDENTIFYING ASBESTOS CONTAINING MATERIALS

In order to properly conduct NESHAP asbestos inspections, inspectors must be knowledgeable of the various commercial uses and applications of asbestos products and which of these are regulated under the asbestos NESHAP. Recognizing the various appearances, compositions, uses, and application techniques can assist the inspector in deciding if a violation has or has not occurred. The remainder of this section provides information that should assist inspectors in recognizing ACM, both in the intact and disturbed state.

IMPORTANT DEFINITIONS

Asbestos-containing Material (ACM)—friable asbestos material, Category I nonfriable ACM that is in poor condition, or Category II nonfriable ACM that has a high probability of becoming crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations regulated by this subpart.

Asbestos-containing Waste Materials (ACWM)—any waste that contains commercial asbestos and is generated by a source subject to the provisions of this subpart. This term includes filters that control devices, friable asbestos waste material, and bags or other similar packaging contaminated with commercial asbestos. As applied to demolition and renovation operations, this term also includes friable asbestos waste and Category II nonfriable ACM waste that becomes crumbled, pulverized, or reduced to powder by forces that acted on the material during the course of demolition and renovation operations regulated by this subpart, and materials contaminated with ACM including disposable equipment and clothing.

Category I Nonfriable ACM—asbestos-containing packings, gaskets, resilient floor covering, and asphalt roofing products, containing more than 1 percent asbestos as determined using polarized light microscopy according to the method specified in Appendix A, Subpart F, 40 CFR Part 763.

Category II Nonfriable ACM—any material, excluding Category I nonfriable ACM, containing more than 1 percent asbestos as determined using polarized light microscopy according to the method specified in Appendix A, Subpart F, 40 CFR part 763 that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

Friable Asbestos Materials—any material containing more than 1 percent asbestos as determined by the method specified in Section I, Polarized Light Microscopy (PLM) of

Appendix A, Subpart F, 40 CFR Part 763 that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. If the asbestos is less than 10 percent as determined by a method other than point counting by PLM, verify the asbestos content by point counting using PLM.

In Poor Condition—Means that the binding of the material is losing its integrity as indicated by peeling, cracking, or crumbling of the material.

ASBESTOS USES AND CHARACTERISTICS

Table 2-1 lists the types of application and associated trade names of asbestos products. Asbestos cement products (flat sheets or sidings, tiles, corrugated roofing sheets, rainwater pipers, gutters, and pressure piping) constitute approximately 66 percent of the total. These products generally contain 10 to 15 percent asbestos, which functions as a fibrous reinforcement in the cement. A list of specific uses of asbestos and associated binders in building materials along with the average percent asbestos appears in Table 2-2.

TABLE 2-1. TRADE NAMES

Type of application	Trade names		
Sprayed-on	Asbestos - Spray	Limpet	Spraycraft
	Monokote - MK III	Sabinite	Kilnoise Plaster
	Cafco - Soundshield	Spraydon	Cafco -Blaze Shield
	Audi - Cote	Cafco - Type D	Cafco - Heat Shield
	Cafco - Type I		
Pipe and Boiler Wrap	Johns-Manville (JM) and Hewells 85%	Magnesia Blocks, Pipe Coverings, and Cement	
	JM Suprex Blocks	JM and Atlas Sponge Felt Pipe Covering	
	JM Marinite	JM Thermo-Wrap and Thermo Tape	
	JM Asbestos Sponge	JM 302 and 352 Insulating Cements	
	JM Thermobestos Blocks	JM Asbestocell	
	JM Newtherm	JM Fibrofill	
	Atlas 650, 660, 250, 280, 18 Cold Water Paste	Atlasite, Caposite	
	Atlas Aircell and Finecell	JM and Atlas Rope Lagging	
	"Newalls" Newtembelt		

TABLE 2-2. SUMMARY OF ASBESTOS-CONTAINING PRODUCTS

Subdivision	Generic name	Asbestos (%)	Dates of use	Binder/sizing
Surfacing material	sprayed- or troweled-on	1-95	1935-1970	sodium silicate, portland cement, organic binders.
Preformed thermal insulating products	batts, blocks, and pipe covering			
	85% magnesia	15	1926-1949	magnesium carbonate
	calcium silicate	6-8	1949-1971	calcium silicate
Textiles	cloth			
	blankets (fire)	100	1910-present	none
	felts:	90-95	1920-present	cotton/wool
	blue stripe	80	1920-present	cotton
	red stripe	90	1920-present	cotton
	green stripe	95	1920-present	cotton
	sheets	50-95	1920-present	cotton/wool
	cord/rope/yarn	80-100	1920-present	cotton/wool
	tubing	80-85	1920-present	cotton/wool
	tape/strip	90	1920-present	cotton/wool
	curtains (theatre, welding)	60-65	1945-present	cotton
Cementitious concrete-like products	extrusion panels:	8	1965-1977	portland cement
	corrugated	20-45	1930-present	portland cement
	flat	40-50	1930-present	portland cement
	flexible	30-50	1930-present	portland cement
	flexible perforated	30-50	1930-present	portland cement
	laminated (outer surface)	35-50	1930-present	portland cement
	roof tiles	20-30	1930-present	portland cement
	clapboard and shingles:			
	clapboard	12-15	1944-1945	portland cement
	siding shingles	12-14	unknown-present	portland cement
	roofing shingles	20-32	unknown-present	portland cement
	pipe	20-15	1935-present	portland cement
Paper products	corrugated:			
	high temperature	90	1935-present	sodium silicate
	moderate temperature	35-70	1910-present	starch
	indented	98	1935-present	cotton and organic binder
	millboard	80-85	1925-present	starch, lime, clay
Roofing felts	smooth surface	10-15	1910-present	asphalt
	mineral surface	10-15	1910-present	asphalt
	shingles	1	1971-1974	asphalt
	pipeline	10	1920-present	asphalt

TABLE 2-2 (Continued)

Subdivision	Generic name	Asbestos (%)	Dates of use	Binder/sizing
Asbestos-containing compounds	caulking putties	30	1930–present	linseed oil
	adhesive (cold applied)	5–25	1945–present	asphalt
	joint compound		1945–1975	asphalt
	roofing asphalt	5	unknown–present	asphalt
	mastics	5–25	1920–present	asphalt
	asphalt tile cement	13–25	1959–present	asphalt
	roof putty	10–25	unknown–present	asphalt
	plaster/stucco	2–10	unknown–present	portland cement
	spackles	3–5	1930–1975	starch, casein, synthetic resins
	sealants fire/water	50–55	1935–present	caster oil or polyisobutylene
	cement, insulation	20–100	1900–1973	clay
	cement, finishing	55	1920–1973	clay
	cement, magnesia	15	1926–1950	magnesium carbonate
Asbestos ebony products		50	1930-present	portland cement
Flooring tile and Sheet Goods	vinyl/asbestos tile	21	1950-present	poly(vinyl)chloride
	asphalt/asbestos tile	26-33	1920-present	asphalt
	sheet goods/resilient	30	1950–present	dry oils
Wallcovering	vinyl wallpaper	6–8	unknown–present	—
Paints and coatings	roof coating	4–7	1900–present	asphalt
	air tight	15	1940–present	asphalt

Some forms of asbestos fibers have high tensile strength and thermal stability. In addition, asbestos is non-combustible and a good acoustical and thermal insulator. Asbestos is effective in condensate control and resistant to corrosion and friction.

Chrysotile use comprises approximately 93 percent of the total consumption of asbestos fibers. The remaining 7 percent comes from the amosite and crocidolite groups. Each may be used individually in asbestos products, but mixtures of chrysotile, crocidolite and amosite are commonly found.

Chrysotile is used in asphalt flooring, vinyl floor tiles, pavings, and road surfaces. It is also found in brake linings, clutch facings, gaskets, and reinforced plastics.

Amosite is less flexible but more heat and acid resistant than chrysotile. It has often been used in high temperature applications and may also be found in small amounts as filter aids in pressure piping products.

Crocidolite is very resistant to acids and to the effects of outdoor exposure and may be found in combination with chrysotile in asbestos cement pressure pipes, textiles, and filtration products.

Anthophyllite, actinolite, and tremolite are used primarily in adhesives and cements. They are too brittle for textile products or for use as fibrous reinforcement.

The following principle categories of asbestos use in buildings may be subject to the asbestos NESHAP if the building is renovated or demolished.

Typical Friable Asbestos Materials

- Spray applied materials (fibrous, fluffy)
  - fireproofing
  - decorative coatings
  - condensation control
- Hand troweled insulation (granular, cementitious)
  - acoustical insulation
  - thermal insulation (such as pipe lagging)
- Molded Insulation
  - thermal insulation (such as pipe wraps)

Typical Category I Nonfriable Asbestos Materials

- gaskets
- resilient floor covering
- asphalt roofing products
- packings

Typical Category II Nonfriable Asbestos Materials

- asbestos/cement sheet and piping
- coatings
- sealants

ASBESTOS SURFACING MATERIALS

Asbestos-containing surfacing materials are coatings which were spray-applied or troweled onto steel I-beams, decks, concrete ceilings and walls, and other surfaces. They were applied primarily as thermal insulation, fireproofing, soundproofing, and for decorative purposes.

Sprayed coatings are typically rough and fluffy in appearance, while troweled coatings have a smooth finish and may be covered with a layer of plaster or other non-asbestos material. Both sprayed and troweled asbestos coatings are friable in most applications. Most spray-applied asbestos coatings were banned for fireproofing/insulating in 1973 and for decorative purposes in 1978.

In its 1986 standard OSHA banned all applications of asbestos-containing products through spray techniques. However, the U.S. Court of Appeals for the District of Columbia reviewed this ban and concluded that "the support for the ban plainly fails to meet the 'substantial evidence' standard . . . (and stated that the) "ban cannot stand."

Effective January 19, 1990, OSHA amended the regulatory text of the final asbestos standard by deleting the prohibition regarding the spray application of asbestos-containing products. It is believed that deleting this prohibition will not significantly increase the risk to employees.

Condensation Control

Asbestos insulation was often applied to steel, concrete, or other building surfaces to minimize condensation. The low thermal conductivity of the applied asbestos prevented the cooling of such surfaces, thereby eliminating ceiling and wall "sweating" and reducing metal corrosion and rotting of wood components.

Fireproofing

Since high temperatures can result in a deterioration of ductility, tensile and compressive strengths in building materials, asbestos has been widely used by the construction industry to fireproof structural steel.

Acoustical

Since asbestos is fibrous in nature and thus lacks a reverberant surface, it has proved to be an excellent soundproofing material. It was used extensively in schools (hallways, stairwells, band rooms, gymnasiums), restaurants, hotels, and auditoriums for this purpose prior to the 1970's.

THERMAL SYSTEM INSULATION

Thermal system insulation includes materials applied to pipes, fittings, boilers, breechings, tanks, ducts, and other interior structural components to prevent heat transfer or water condensation. These materials are present in a wide variety of forms. The following examples of thermal insulation are based on product categories.

Pipe Insulation

Preformed pipe insulation with an asbestos content of about 50 percent has been used for thermal insulation of steam pipes in industrial, commercial, institutional, and residential applications. This product is usually white and chalky in appearance and typically was applied as 3-foot long, half-round sections, held onto the pipe by a covering of plaster-saturated canvas and metal bands. This insulation was applied on straight pipe sections, while wet-applied coatings were used on elbows, flanges, and other irregular surfaces. The installation of wet-applied and preformed asbestos insulations was banned in 1975.

Another type of pipe insulation is manufactured from asbestos-containing paper. Asbestos-containing paper products are manufactured on conventional papermaking equipment using asbestos fibers rather than cellulose. The raw asbestos paper produced in this process contains up to 85 percent asbestos. The final product is typically coated or laminated with other materials.

The typical asbestos-paper pipe covering, often referred to as air-cell insulation, looks and feels like corrugated cardboard and is generally rolled onto the pipe in several layers. It is medium gray in color and commonly held in place with a canvas wrap and metal bands.

Boilers and Hot Water Tanks

Asbestos-containing preformed block insulation has been used as thermal insulation on boilers, hot water tanks, and heat exchangers in industrial, commercial, institutional, and residential applications. The blocks are commonly chalky white, 2 inches thick and from 1 to 3 feet square. They are often held in place around the boiler by metal wires or expanded

metal lath. A plaster-saturated canvas was often applied as a final covering or wrap. The installation of this type of asbestos insulation was banned by EPA in 1975. Asbestos-containing fire brick and gaskets may also be found as heating system components.

Elbows, Valves and T-Fittings

Batch mixed ACM has been trowel-applied to irregular joints (elbows, valves, T-fittings, etc.) on thermal systems. The insulation is often covered with a canvas wrap or other covering similar to the adjacent pipe wrap which may make it difficult to distinguish from the material in the straight runs. It is not uncommon to find asbestos-containing "elbow mud" or "lagging" adjacent to straight-runs of non-asbestos pipe insulation. ACM may also be found in valve packings

MISCELLANEOUS BUILDING MATERIALS

Both friable and non-friable forms of other asbestos-containing building materials exist. Friable materials include ceiling tiles (such as the 2 ft x 3 ft drop-in types and the 1 ft x 1 ft glue-in panels), asbestos-containing paper (commonly found underneath wooden floor boards) and joint compound. It is estimated that 5 to 10 percent of currently installed ceiling tiles contain asbestos.

Typical non-friable miscellaneous asbestos materials include resilient floor covering, asbestos cement sheet (Transite), siding shingles, and asphalt roofing products. Generally, the asbestos in these products is tightly bound and nonfriable. However, with age, or during the course of demolition or renovation, such materials may become friable. Because of this, inspectors must evaluate such materials for their potential to become friable on a case-by-case basis.

SECTION 3

ASBESTOS INSPECTOR SAFETY GUIDANCE

Safety requirements and/or guidelines for government employees involved in asbestos inspection activities are addressed in one form or another in regulations and policies developed by four separate Federal government agencies/groups. Each approaches the subject differently, not always citing asbestos inspectors specifically, but contributing to the overall purpose.

The Occupational Safety and Health Administration (OSHA) and the U.S. Environmental Protection Agency (EPA) have each promulgated regulations pertaining specifically to workers involved in the asbestos industry. The OSHA standards (29 CFR 1910 and 1926) apply to workers involved in the removal, demolition, installation, repair, maintenance, transportation and disposal of asbestos-containing materials.

The National Institute for Occupational Safety and Health (NIOSH) and EPA, as part of a joint venture, were responsible for publishing respiratory protection safety guidance for persons who work in the asbestos abatement industry. This 1986 document, *A Guide to Respiratory Protection for the Asbestos Abatement Industry,* provides information on the hazards associated with airborne asbestos, a model respiratory protection program and recommendations concerning appropriate respirators for reducing asbestos exposure.

The EPA Worker Protection Rule (40 CFR 763) extends provisions of the OSHA asbestos standard to state and local asbestos workers not covered by the Federal OSHA standard.

Most applicable to EPA inspectors assessing compliance with the asbestos NESHAP regulation are the guidelines provided in the *Health and Safety Guidelines for EPA Asbestos Inspectors* prepared by EPA's Environmental Health and Safety Division (EHSD),formerly the Occupational Health and Safety Staff (OHSS). These guidelines are specific to EPA asbestos inspectors and incorporate many of the procedures and practices recommended or required by the previously mentioned regulations and policies.

PROTECTIVE CLOTHING

Protective clothing is necessary, and in most cases required, during asbestos inspections. Protective clothing for the inspector of asbestos abatement projects usually consists of disposable coveralls, foot and head coverings, and gloves. These items are available in many styles and are made of several types of materials. The advantages of a particular style depend on the type of inspection conducted.

Inspectors should be prepared to wear the following protective clothing when entering a removal, demolition, or renovation area:

- a disposable, full-body, hooded outer coverall (e.g., Tyvek® or equivalent). A coverall with an expanded back should be worn with an SCBA. In certain cases, an inspector may be required to use specialty coveralls such as Saranex-coated Tyvek® (chemical resistance) or Nomex (fire retardant).
- a bathing suit (or equivalent) or an inner disposable coverall. When possible, particularly when a changing or decontamination area is available, all street clothing should be removed before donning protective clothing. When clothing is removed, the inspector may choose to wear a bathing suit under the protective clothing. If it is not possible to remove street clothing, the inspector should roll-up pant legs and sleeves and don an inner disposable coverall.
- disposable gloves (PVC or equivalent) taped to coverall.
- disposable inner booties (e.g., Tyvek® or equivalent may be part of coverall).
- disposable outer booties (water-resistant material) taped to outer coverall.
- hard hats, safety glasses, safety shoes, hearing protection, when required by the situation or by the owner/operator.

The use of protective clothing during pre-removal, post-removal and outside inspection situations will be a discretionary decision on the part of the inspector. In general, protective clothing should be worn any time friable ACM is being disturbed or if there is any uncertainty as to the adequacy of cleanup of an area. Protective clothing should be worn whenever asbestos waste storage areas are inspected or if the inspector will be opening bags to determine if the asbestos is adequately wet.

RESPIRATORY PROTECTION

Classes of Respirators

The two major types of respiratory protection equipment available for use by asbestos inspectors are air-purifying respirators (APRs) and supplied-air respirators (SARs). Air-purifying respirators have filters through which air passes before it is breathed. APRs may be classified as positive or negative pressure respirators depending on whether the user creates the suction to draw air into the mask (negative pressure) or a fan propels filtered air to the facepiece (positive pressure). SARs deliver air through a hose or airline from a tank or compressor to the user. EPA's Environmental Health and Safety Division's (EHSD's) *Health and Safety Guidelines for EPA Asbestos Inspectors* details when each should be used at asbestos worksites. Specific information regarding the selection of appropriate respiratory protection can be found later in this section.

Air-Purifying Respirators

Negative-Pressure Respirators

Although several types of negative-pressure respirators exist (e.g., disposable, quarter-face, half-face, full-face) the EHSD *Health and Safety Guidelines for EPA Asbestos Inspectors* permits the use only of the full-face type which provides a protection factor of 50.

Full-face, air-purifying, negative-pressure respirators fit across the forehead, along the temples, and cheeks and under the chin. These devices are held onto ones' face by a 5- or 6-point suspension harness.

When a person wearing such a respirator inhales, the slight vacuum (negative pressure) created in the facepiece causes ambient air to be drawn through the filtration medium (HEPA filter) and into the facepiece. Expired air exits through an exhalation valve at the bottom of the facepiece.

Powered Air-Purifying Respirators

Powered air-purifying respirators function like negative-pressure respirators except that a battery-powered motor blows HEPA-filtered air into the facepiece. Since this creates a slight positive pressure in the facepiece, any breach in the facepiece seal should permit only the outward flow of air from the mask and thereby prevent inhalation of contaminated air.

PAPRs may have tight-fitting facepieces or loose-fitting hoods or helmets. However, the EHSD Guidelines permit EPA inspectors to use only the tight-fitting variety. Tight-fitting PAPRs must supply a minimum of 4 cubic feet of air per minute (4 CFM) to the facepiece.

Like full-face negative pressure respirators, tight-fitting PAPRs provide a protection factor of 50 and may be chosen for use by inspectors where minimal respiratory protection is required.

Supplied Air Respirators

Two types of supplied air respirators provide adequate protection for use in asbestos-contaminated environments: air-line respirators and self-contained breathing apparatus (SCBA).

Since agencies are unlikely to supply air-line equipment to inspectors because of its expense and impracticality, and because EHSD prohibits the use of contractor-supplied equipment, asbestos inspectors will typically use SCBAs instead of air-line respirators in situations where a supplied air respirator is required.

Self-Contained Breathing Apparatus (SCBA)

An SCBA consists of a full-facepiece, regulator, and a respirable compressed air supply. The SCBA allows the user to carry the air supply, thus eliminating the need for a stationary air supply. The SCBA must be operated in the pressure demand mode to be used in asbestos atmosphere.

Selection of Respirators

The following presents the criteria for respirator selection provided in the EPA Environmental Health and Safety Division (EHSD) *Health and Safety Guidelines for EPA Asbestos Inspectors*. The EHSD document addresses the use of known or expected fiber concentrations and the type of inspection activity as the principal criteria for determining respirator usage. The entire EPA guidelines document should be reviewed by anyone conducting asbestos inspections.

General Requirements

In general, inspectors should not wear respirators unless they have been deemed "medically fit" to wear such protection. The determination of whether the individual is medically fit is made by a physician relying on information obtained through a medical and work history questionnaire, a physical examination including a chest x-ray, pulmonary function tests and gastrointestinal exam, and other tests or information deemed necessary by the medical monitoring provisions of EHSD and OSHA regulations.

Inspectors should use only agency-owned respiratory protection equipment that they have been specifically trained and fit-tested to use. Inspectors should never use equipment offered by the abatement contractor. Supplied air respirators other than SCBAs probably will not be worn by inspectors since it is doubtful that their agencies will provide the equipment necessary for this type of system.

Respirator Selection Criteria

Ideally, respirators should be selected according to the actual or potential airborne asbestos concentrations present at the site. When an exposure level cannot be determined, an unknown exposure condition exists. Such a situation requires the use of SCBA. SCBA offers the maximum level of respiratory protection. The buddy system is required in situations where the SCBA user is in an atmosphere that is either oxygen deficient or highly toxic and would be life threatening in case of respirator failure. All activities covered by these guidelines which would not result in a life-threatening or permanent injury situation would not require using the buddy system.

Fortunately, much is known about the exposure conditions encountered at various worksites. In 1989, Alliance Technologies Corporation, under contract with EPA, reviewed PCM analytical data for over 4,000 air monitoring samples taken during renovation activities at schools, residential buildings, hospitals, offices and industrial buildings. The study

concluded that, when the OSHA asbestos standards for renovations were followed, no concentrations in excess of 0.82 f/cc were found in the removal areas during active abatement 95 percent of the time.

The OSHA permissible exposure limit (PEL) for asbestos is 0.2 f/cc and the NIOSH recommended exposure limit is 0.1 f/cc. The EPA, on the other hand, recommends that inspectors' exposures to asbestos be limited to below 0.01 f/cc as an 8 hour Time Weighted Average (TWA). Respirator selection criteria found in the Health and Safety Guidelines are based on this TWA.

If asbestos inspectors can make a determination of a project's OSHA compliance prior to entering containment, they can choose to use the lowest acceptable level of respiratory protection, a NIOSH-approved, full facepiece respirator with HEPA filtration or any approved tight-fitting (i.e. having a tight face to facepiece seal) powered air-purifying respirator (PAPR) with HEPA filtration. This conclusion is based on the following assumptions:

- exposures in renovation sites in compliance with OSHA do not exceed 2.0 95% of the time;
- full facepiece air-purifying respirators (and tight-fitting PAPRs) provide a protection factor of 50x;
- inspectors will not be in the asbestos enclosure envelope for more than two hours per day.

A 50x protection at an exposure level of 2.0 f/cc for two hours would result in an exposure of 0.01 f/cc TWA. Actually, most exposures would be far less than 0.01 f/cc, for most individuals attain greater than a 50x protection factor from full-face respirators and tight-fitting PAPRs and rarely will be in the envelope for two hours.

Air-purifying respirators include powered air purifying respirators (PAPR). These guidelines assume that PAPRs provide the same protection as other air-purifying respirators due to the possibility that overbreathing (i.e. inhaling at a rate that is greater than the air supplied to the facepiece, resulting in a negative pressure in the facepiece) can occur. This guideline is consistent with the NIOSH Respiratory Decision Logic of 1987 with respect to the protection offered by PAPRs. Additional PAPR studies are being planned by NIOSH; if PAPRs are shown to have higher protection factors in the future, appropriate changes will be made regarding selection of respiratory protection.

OSHA Asbestos Standard Compliance

An abatement project's compliance with the OSHA asbestos standards can be gauged by findings that:

1. Records on- or off-site show that all employees have been trained as required by OSHA standards. When records are kept off-site, the inspector should ask the supervisor to state that proper records exist and are available for later review. (Passing an approved AHERA class is desirable but not required for buildings not covered by the AHERA regulations. Compliance with state and local training requirements should be checked on a case-by-case basis.);

2. Records, either on- or off-site, show that project employees have been given medical exams, including a determination that they are fit to wear respirators;

3. Amended water is being used to wet the ACM. (Check to see that amended water is on-site outside the envelope.);

4. No power tools are being used to remove ACM;

5. The envelope is secure and no dust or debris appears to be coming from the removal area;

6. Warning signs are posted and adequately labeled containers are being used in the removal of ACM;

7. A permit for disposal has been obtained from the State or local government;

8. Employees are carefully removing ACM and not dropping materials on the floor;

9. Decontamination accommodations, including shower facilities, are in place;

10. Existing monitoring data indicate that asbestos fibers in the work area do not exceed 2.0 f/cc as an 8-hour TWA;

11. There is a written respiratory protection program and respirators are being used; and

12. A removal plan has been (or can be) made available for review.

The asbestos NESHAP inspector must exercise proper judgment in determining that air-purifying respirators will provide adequate protection. The capability to make such determinations must be obtained through both classroom and on-the-job training.

EPA inspectors entering a removal, demolition or renovation area should select the appropriate respiratory protection according to the following locations and conditions.

No Respiratory Protection Required

No respiratory protection is required *outside* of the asbestos area-enclosing envelope when:

- inspecting office areas and other locations outside the barrier. All barrier seals must be intact, and all envelope entrances must have at least a double barrier. No visible airborne dust or debris that is potentially asbestos-contaminated should be present on any surface in the area;
- secondary containment is in place during glove-bagging operations. The secondary containment enclosure must be complete, and, for all but small-scale, short-duration operations, must also be under negative pressure;
- materials removed from the envelope have been cleaned and the pathway for removal of bags and equipment is clear and clean;
- all ventilation systems in the envelope are off and sealed (This excludes negative pressure systems designed for the removal project.); and
- wet methods are being used.

No respiratory protection is required *inside* the envelope when:

- inspecting any restricted area has already passed an appropriate clearing test (e.g., minimum of aggressive sampling demonstrating a concentration below 0.01f/cc by PCM); or
- no removal work has begun and all ACM is intact, not disturbed, not damaged, no debris is present, and the inspection will not disturb any ACM.

Respiratory Protection Required

Respiratory protection will be required in many situations encountered by inspection personnel, both inside and outside the active removal area. For example, respiratory protection and personal protective equipment are required for inspections conducted outside the work area if all of the previously listed conditions have not been met. In addition, respirators and personal protective equipment are required whenever an inspector enters a work area that has not been cleared for reoccupancy.

To determine the type of respiratory protection required, an inspector must rely on available information and observations of the conditions at the work site. As a *minimum,* the EHSD document requires either a full-face, air-purifying, negative-pressure respirator with HEPA filters or a powered air purifying respirator (PAPR) with HEPA filters. An inspector can upgrade respirator selections at any time, but should never downgrade selection.

To determine the type of respirator to use, a number of conditions must be met. These conditions can be identified through a records review, pre-entry observations and interviewing site personnel. If adequate information is not available to document all of these conditions, an inspector must use his/her judgment to determine the level of respiratory protection to wear. If upon entering the work area enclosure the inspector determines that the conditions have not been met, he/she should immediately leave the work area and upgrade the level of respiratory protection.

Air-purifying Respirators

Full facepiece air-purifying respirators or tight-fitting PAPRs shall be worn by inspectors when:

- inspecting outside the barrier where workers outside the barrier are wearing air-purifying respirators;
- inspecting outside the barrier where the barrier is not complete and/or asbestos-containing debris is present;
- inspecting inside the envelope when an inspection of the operation shows it to be in compliance with the OSHA asbestos standard. If upon entering the envelope, visible emissions are seen or other evidence suggesting non-compliance is apparent, the inspector will **immediately** leave the area. Prior to returning to the removal area to document violations, the inspector shall don SCBA gear;
- inspecting inside the barrier and no active removal or disturbances have occurred in the past 24 hours and the inspection will not disturb any ACM.

Atmosphere-supplying Respirators

Atmosphere-supplying respirators are required when:

- performance of the asbestos abatement project is not in accordance with OSHA standards;
- materials are being removed which are not being properly wetted, or removal causes the generation of significant levels of dust;
- monitoring data at the site show levels in excess of 2.0 f/cc;
- the inspector will be spending more than 2 hours inside the containment envelope; and
- others at the site are wearing atmosphere-supplying respirators.

If the above conditions are not met, or if during the course of the inspection the conditions change, a self-contained breathing apparatus (SCBA) will be required. Supplied air respirators (SARs) may not be acceptable if this would require the inspector to use contractor equipment.

A Respiratory Protection Selection Checklist is provided for the convenience of inspectors as Appendix B of this inspection manual.

Other Medical/Physical Considerations in Respirator Usage

Medical Monitoring

- Wearing a respirator imposes a physical stress on the user. Air-purifying respirators require some effort during inhalation and exhalation to overcome the resistance of the filter media and valve seals. The physical weight of an SCBA may create a problem especially if extended work time and strenuous work are required. Air-line respirators impose some physical stress due to the weight of the attached air-line hose. OSHA regulations state that a person shall not be required to wear respiratory protective devices unless it has been determined that he/she is physically capable of doing so. A physician knowledgeable in the field of occupational health should assess one's pulmonary and cardiovascular status relative to respirator usage.
- Pulmonary considerations: the wearer should be examined for any respiratory impairment from disorders such as emphysema, obstructive lung disease, bronchial asthma, etc. Medical tests required are pulmonary function (PFT), FEV, FVC, and chest x-rays. This testing is preceded by the completion of a medical and work history questionnaire.
- Cardiovascular: the wearer must be evaluated according to one's medical history and current cardiovascular status. A stress test may be required for certain individuals in order to determine the absolute risk.

Miscellaneous Considerations

- Facial hair: OSHA standards prohibit the use of respirators if one has any growth of facial hair. The effect of facial hair on a respirator's performance (half-mask and full-facepiece respirator) depends upon the degree to which the hair interferes with the sealing surface of the respirator, the physical characteristics of the facial hair, the type of respirator worn in relation to the wearer's facial characteristics, etc. In all cases, however, the wearer cannot expect to obtain a face seal as satisfactory as those obtained by persons who are clean shaven.
- Scars, hollow temples, high cheekbones, deep skin creases, and the lack of teeth or dentures may cause respirator sealing problems. Full dentures should be worn when wearing a respirator, but partial dentures may or may not have to be removed. Full lower dentures may be a problem since the lower edge of the mask may unseat the dentures.
- An inspector may be deemed medically fit to wear a respirator; however, he/she may feel claustrophobic in one and therefore be considered "psychologically" unfit. Prior to using personal protective clothing and a respirator during an actual inspection, an inspector is advised to conduct a test run.

Field Inspection and Checkout Procedures

Immediately prior to use, a respirator must be thoroughly inspected by the individual who will be using it. As a minimum, OSHA standards require that the respirators be inspected for the following:

- tightness of all connections;
- integrity of the facepiece, valves, connecting tube, and canisters; and
- proper functioning of the regulator and warning devices on SCBA.

Specific to each respirator type, the following should be performed each time the respirator is used.

Air Purifying Respirator

- Examine the facepiece for scratches, cracks, tears, holes, distortion, excessive or residual lint, dirt, etc.
- Examine facepiece seal to ensure that it is flexible and that there are no cracks or tears.
- Examine filter cartridge holders for cracks, badly worn threads or missing gaskets.
- Check head straps and harness for breaks, loss of elasticity, broken or malfunctioning buckles, or excessively worn serrations.
- Determine the existence of inhalation and exhalation valves and examine them for wear, foreign particles, cracks, tears, improper seating or installation, or breaks or cracks in the valve body seating surface.
- Ensure that cartridges are the correct type. Cartridges must be from the same manufacturer as the respirator and must be approved for use in an asbestos atmosphere (type H, high efficiency filter, magenta color code).
- If the device has a corrugated breathing tube, examine for broken or missing end connectors, gaskets or o-rings, missing or loose hose clamps, or deterioration of the tubing.
- If respirator is a PAPR, determine whether the battery is fully charged, the cartridges are properly connected, the fan is functioning properly, and appropriate amounts of air are being delivered to the facepiece.
- Conduct a negative pressure test. With the respirator on and adjusted, block the flow into inhalation valves and inhale. The facepiece should collapse inward with no noticeable leaks.
- Conduct a positive pressure test. With the respirator on and adjusted, block the flow from the exhalation valve and exhale. The facepiece should balloon outward slightly with no noticeable leakage.

Self-Contained Breathing Apparatus (SCBA)

- Check the facepiece in a similar fashion as for air-purifying respirators.
- Check the air supply system for:
  - integrity and good condition of air supply lines and hoses, including attachments and end fittings;
  - correct operation and condition of all regulators, valves, and alarms; and
  - sufficient air charge in the high pressure cylinder for the use period. Preferably, the tank should be fully charged.

Respirator Maintenance

Cleaning and Disinfecting

Respirators should be cleaned after each use in accordance with the manufacturer's instructions. This cleaning is usually done by the wearer if respirators are individually assigned. If such is not the case, it is best to have one person responsible for daily cleaning and inspection of respirators.

OSHA regulations specify that a respirator must be cleaned and disinfected as frequently as necessary to insure that the wearer is provided proper protection. In asbestos abatement operations, it is recommended that respirators be rinsed after each inspection and thoroughly cleaned and inspected at the end of each days' use. Each worker should be briefed on the cleaning procedure and be assured that a clean and disinfected respirator will always be issued. This is of greatest significance when respirators are not individually assigned.

The following general instructions may be helpful in cleaning and disinfecting the respirator.

- Remove all cartridges, canister, filters and gaskets or seals not affixed to their seats.
- Remove headband assembly, straps, exhalation valve cover and cartridge holders.
- Remove speaking diaphragm or speaking diaphragm-exhalation valve assembly.
- Remove inhalation and exhalation valves.
- Wash components separately from the facemask.
- Wash facepiece and breathing tube in cleaner/sanitizer powder mixed with warm water, preferably at 120° to 140°F. Most respirator manufacturers market their own cleaners/sanitizers which are dry mixtures of a bactericidal agent and a mild detergent. One-ounce packets for individual use and bulk packages for quantity use are usually available. Remove heavy soil from surfaces with a hand brush.

- Remove all parts from the wash water and rinse twice in clean warm water.
- Air dry parts in a designated clean area.
- Wipe facepieces, valves, and seats with a damp, lint-free cloth to remove any remaining soap or other foreign materials. Reassemble respirator.

Storage

Follow the manufacturer's storage instructions. Instructions are always furnished with new respirators or affixed to the lid of the carrying case. In addition, these general instructions may be helpful:

- After inspection, cleaning and necessary repair, store respirators where they will be protected from dust, sunlight, heat, extreme cold, excessive moisture, or damaging chemicals. *Note:* Respirators should be thoroughly dried before being sealed in any container for storage.
- Store respirators in a convenient, clean, and sanitary location. The purpose of good respirator storage is to ensure that the respirator will function properly when used.
- Do not store respirators in clothes lockers, bench drawers, or tool boxes. Place them in wall compartments at work stations or in a work area designated for emergency equipment. Store them in the original carton or carrying case.
- Pack or store respirators so that the facepiece and exhalation valves will rest in the normal position. Respirators should not be hung by their straps. This will ensure that proper function is not impaired by distortion of the respirator or its straps.

OPERATIONAL PRACTICES FOR ENTERING AND EXITING SITES

The procedures for entering and exiting sites described in this section are a summary of those described in the Health and Safety Guidelines, and have been generalized to cover both the use of an air-purifying respirator and SCBA.

Entering and Exiting Site with a Three-Stage Decontamination System

A three-stage decontamination system consists of a clean room, shower room, and equipment room (sometimes referred to as a dirty room) contiguous with the active removal area. The OSHA asbestos Construction Industry Standard (29 CFR 1926.58) requires the use of this type of decontamination system for removal, demolition, and renovation projects (detailed in Appendix F of the OSHA standard).

- ***Prior to Entering the Clean Room***
  - Determine that the respirator is functioning properly.
  - Make sure that you have all materials and equipment necessary to conduct the inspection safely (e.g., protective clothing, respirator, extra plastic bags, spray bottle, disposable towels, flashlight, camera, etc.). All materials carried into the contaminated area should be sealed in a plastic bag to minimize contamination.
  - If you take a camera into the contaminated area, precautions must be taken to minimize contamination and to decontaminate the camera when exiting. Use of a waterproof camera or sealing a conventional camera in an impermeable clear camera box will facilitate a more complete decontamination.
- ***In the Clean Room***
  - Remove all street clothing including socks and underwear. If desired, wear a bathing suit (or equivalent), appropriate footwear (sneakers, steel toed shoes, etc.) and inner disposable footcoverings. The inspector should leave his/her clothes in a clean sealed plastic bag to protect against accidental contamination by abatement workers. Any equipment not taken into the contaminated area should also be placed in the plastic bag.
  - If an SCBA will be used, close the air flow valve and don the SCBA; let the respirator facepiece hang from the neck by the strap.
  - Don disposable, full-body, hooded coverall (e.g., Tyvek® or equivalent). If using an SCBA, wear a coverall with an expandable back or oversize (XXL) Tyvek® over the SCBA.
  - Don disposable outer boots and seal to outer suit with duct tape. (Tyvek® booties will rip quite easily once they become wet. The inspector may wear disposable rubber boots or reinforced rubber boots).
  - Fit respirator facepiece to face. Perform negative and positive pressure field checks for air-purifying respirator. For SCBA, open air valves and adjust facepiece straps.
  - Fit the coverall hood snugly around the respirator facepiece and zip up coverall. Use duct tape to close gap at neck if desired.
  - Don disposable gloves; use duct tape to seal them to the coveralls.
  - Proceed through the shower area and equipment room and into the work area; disposable towels and soap may be left behind in the shower area).
  - Conduct the inspection.

- ***Before Leaving the Contaminated Area***
  - HEPA vacuum (if possible) any visible debris from protective clothing and sample containers, sampling equipment, and any other items which are being taken out of the work area. Proceed to the equipment room.

- ***In the Equipment Room***
  - If possible, decontaminate all non-disposable equipment including footwear at the site. If not, seal all contaminated non-disposable materials in a plastic bag and take them with you to decontaminate at a later time.
  - While still wearing the respirator, carefully remove the outer booties and gloves and take off the coveralls, rolling them inside out in the process. Place all contaminated protective clothing in a properly labeled waste disposal container.
  - If a PAPR or an SCBA is worn, removal of protective clothing can be awkward since the respirator must continue to function. For a PAPR, remove the belt and harness on which the motor and filter mount and hold while removing coveralls and proceed to the shower. For an SCBA, carefully remove coveralls, lower the tank assembly to the ground or balance it between your legs and proceed to the shower.

- ***In the Shower Area***
  - For negative pressure respirators, take a deep breath and thoroughly shower your head with the respirator on; remove respirator and clean it. Dispose of HEPA filter cartridges as asbestos-containing waste.
  - For PAPRs or SCBA, hold battery and mechanical parts away from shower water while rinsing your head and the respirator facepiece. Remove the respirator facepiece and then wet-wipe the other components of the PAPR or SCBA. Dispose of HEPA filters as asbestos-containing waste.
  - If wearing a bathing suit, remove and thoroughly rinse it and place it in a plastic bag. Finish showering, thoroughly washing the entire body with soap and water.
  - Proceed to the clean room.

- ***In the Clean Room***
  - Dress in street clothes.

Entering and Exiting Sites Without a Three-Stage Decontamination System

Often inspections are required at sites where a three-stage decontamination system is not available. When confronted with such a site, the inspector must use his or her judgment regarding the safest method of conducting the inspection.

- ***Before Entering the Contaminated Area***
  - Make sure the respirator is operating properly.
  - Make sure you have all materials and equipment necessary to conduct the inspection safely (e.g., protective clothing, respirator, disposable towels, extra plastic bags, spray bottle, flashlight, camera etc.). Materials carried into the work area should be sealed in a plastic bag to minimize contamination.
  - If you take a camera into the contaminated area, precautions must be taken to minimize contamination or to decontaminate the camera. Use of a waterproof camera or sealing a conventional camera in an impermeable clear camera box will enable more complete decontamination.
  - Leave all street clothing on. Short-sleeve shirts and short pants are preferable. If you are wearing long pants or long sleeves, roll them up.
  - Don an inner disposable coverall and inner booties (e.g., Tyvek® or equivalent) over street clothes.
  - If an SCBA will be used, close the air flow valve and don the SCBA; let the respirator facepiece hang from the neck by the strap.
  - Don the PAPR.
  - Don outer disposable coverall. Wear coverall with an expandable back if an SCBA is used, but do not zip it up. (An oversize (XXL) Tyvek® suit may substitute for an expandable back suit).
  - Don disposable outer boots; use duct tape to attach the boots to the outer coverall. (Tyvek® booties will rip quite easily once they become wet. Disposable rubber boots or reinforced rubber boots may be used).
  - Fit the respirator facepiece to the face, open the air valve of the SCBA and tighten the facepiece straps. If an air-purifying respirator is used, conduct negative pressure and positive pressure field tests.
  - Fit the coverall hood snugly around the respirator facepiece and zip up the coverall.
  - Don disposable gloves; use duct tape to seal gloves to the outer coverall.

- Proceed into the work area.
- Conduct the inspection.

- **Before Leaving the Contaminated Area**
  - Standing near the exit, HEPA vacuum (if possible) and wet wipe all visible debris from the outer protective clothing (use a spray bottle containing water and disposable towels to wet wipe the suit; use plenty of water). Standing at the doorway inside the work area, remove outer protective clothing, role the coveralls inside out, and immediately step outside the area. Place the suit in a labeled waste container.

- **Outside the Contaminated Area**
  - Thoroughly wet wipe and mist spray the respirator and inner disposable coverall. Move away from the doorway and remove the inner protective clothing. Place the disposable coverall into a labeled waste container.
  - Wet and seal all contaminated non-disposable materials in a plastic bag and take them with you to decontaminate later.

DISPOSAL OF CONTAMINATED CLOTHING

Contaminated or potentially contaminated protective clothing worn during asbestos inspections should be discarded as asbestos-containing waste. These materials include the coveralls, disposable boots, disposable gloves, respirator cartridges, and any other miscellaneous materials such as paper towels or wet wipes. Usually, inspectors can discard their contaminated clothing in labeled, sealable waste containers provided by the owner/operator. Since the owner/operator must treat the waste disposed in this container as asbestos-containing, the inspector can assume that the material he or she discards will be disposed of properly. Although this procedure is generally acceptable, it is always a good idea to obtain permission from the owner/operator before discarding contaminated clothing.

There will be cases, however, when disposal of contaminated clothing will present a problem to the inspector. For example, the inspector may be conducting an inspection where the owner/operator is not properly disposing of waste or where permission to discard inspector waste is not granted. In such cases, proper handling and subsequent disposal of contaminated clothing becomes the responsibility of the inspector. It is important, therefore, that the inspector come to the site prepared for such instances and that policies exist within his/her agency to deal with asbestos-containing waste.

Contaminated clothing must be placed in sealed plastic bags before leaving the site. The inspector should carry disposal bags with him/her. Preferably, these bags should be pre-labeled, sealable waste containers, but plastic trash bags will serve the purpose provided

that they are eventually placed in labeled bags before final disposal. The exact procedures to follow in handling the bagged waste and ultimately disposing of the material is up to the policy of the regulatory agency.

OTHER SAFETY CONSIDERATIONS IN ASBESTOS WORK

Because inspections are often conducted in a building undergoing demolition or renovation, increased asbestos exposure is only one of the many hazards inspectors may encounter.

- **Heat Stress**—Due to the protective clothing and equipment worn and the often hot and humid conditions in which they work, inspectors are in jeopardy of developing heat stress.

  The loss of water via perspiration is the main factor responsible for various forms of heat stress which include heat cramps; heat exhaustion, and heat stroke.

  Since dehydration is the main contributing factor, heat stress can be prevented almost entirely by ensuring adequate fluid intake. Plain water is the best liquid, but fruit juices and other drinks which do not contain excessive amounts of salt, sugar, or caffeine may be drunk.

  Use of a PAPR, increased local exhaust ventilation and gradual acclimatization to the hot environment will also help prevent heat stress.

  For any inspection lasting more than 15-minutes in an atmosphere of 70°F or higher, inspectors should follow the recommendations found in the NIOSH interagency document *Health and Safety Guidelines for Hazardous Waste Workers*.

- **Climbing Hazards**—Inspectors may need to examine elevated surfaces during an inspection. Since wearing a respirator may reduce an inspector's vision and stairways, railings, scaffolding and ladders may not be in prime condition, great care must be taken.

  OSHA standards require that when free-standing mobile scaffolding is used, the height must not exceed four times the minimum base dimension. For mobile scaffolding, the base dimension must be one-half the height. Most safety precautions involving ladders and stairways require common sense. For example, inspectors should not stand on the top step of a ladder and should ensure the ladder is on solid footing.

- **Working Surfaces**—Polyethylene sheeting will be on the floors at most removal jobs. When wet, this floor covering is very slippery. Additionally, air lines, water lines, bags of waste, electrical cords, stripped asbestos and debris, and disposable boots worn by the inspector may present a tripping hazard.

- **Lighting**—Lighting may be unavailable for pre-removal or post-removal inspections. In these situations, an inspector must use a hand-held flashlight. Hazards of poor lighting include risk of head injury from suspended objects such as low hanging pipes, light fixtures, etc., and other injuries due to tripping or falling over objects on the floor.
- **Electrical Safety**—Due to the use of wet methods, electrical shock is a risk in the vicinity of electrical panels, conduits, light fixtures, alarm systems, junction boxes, computers, and transformers. Inspectors should ensure that the electrical system is ground-faulted (as required by OSHA). Common recommendations for electrical safety include use of non-conductive sample collection devices (wood, plastic, rubber) and avoidance of puddles of water near electrical wires or extension cords.
- **Falling/Fallen Objects**—Where there is a possibility of head injury from impact or from falling or flying objects, inspectors should wear head protection which meets ANSI Z89.1-1969 safety requirements for industrial head protection.
- **Biological Hazards**—Wild animals in abandoned buildings, rats, snakes, insects.
- **Chemical Hazards**—PCBs, spray poly (intense ammonia smell), solvents, dry ice.
- **Lack of Oxygen**—Crawl spaces or other areas with little or no ventilation.
- **Unsafe Structures**—Floors and stairs in old buildings may be unsafe and in danger of collapse. The inspector should take care when conducting inspections in old or partially demolished buildings.
- **Painted Skylights**—Stepping on such an area can cause serious injury.
- **Claustrophobia**—Panic induced by protective equipment and confined spaces can cause serous injury.
- **Noise**—Inspectors should carry hearing protection with them as standard equipment and use it when necessary.
- **Machinery Hazards**—Adequate safety precautions should be taken when visiting sites where power washers, shredders, or high-powered vacuum machines are in use.

SECTION 4

PRE-INSPECTION PROCEDURES

In-office activities of a NESHAP inspector prior to onsite inspections ensure smooth field inspections. Specific activities include reviewing notifications, tracking non-notifiers and preparing inspection equipment. Specific details are presented below.

Review Notification

The notification should be reviewed for completeness relative to the requirements of 61.145(b). When scheduling an inspection, an inspector should focus particular attention on the following details:

- Location of the facility;
- Schedule for demolition or renovation; and
- Quantity of friable, nonfriable having the potential to become friable, and nonfriable ACM (to determine applicability of the asbestos NESHAP).

Asbestos removal operations at schools should be coordinated with the Regional Asbestos Coordinator, if possible, to check for compliance with AHERA and WPR regulations.

Identifying Non-Notifiers

The worst-case violation of the notification requirements of 61.145(b) would be the complete failure to notify. The following techniques can be used by inspectors to identify non-notifiers:

- Respond to complaints from the general public, employees, or competitors who may have recognized a very low bid award. Also, use cross-referral information from other Federal, State and local agency inspectors.
- Drive by the site enroute to or from other inspections while the demolition/renovation appears to be in progress. The presence of a roll box for disposal of construction debris is strong evidence of demolition/renovation activities.
- Observe trucks entering a landfill and question their origin if suspected asbestos debris is on board. Regularly conducting inspections at landfills to review asbestos receiving records will also provide information on contractors who have notified.

- Review demolition or renovation permits written by the local building department.
- Review trade journals, newspapers, etc., for ongoing or past projects.

Preparation of Inspection Equipment

In order to ensure the most efficient and complete inspection possible, an inspector must gather and pack all equipment necessary for the inspection. A detailed list of equipment and explanations of the purpose of each item follows. A checklist is provided in Appendix C for the convenience of inspectors.

- ***Copy of Notification***—If notification has been provided, it should be available to verify the accuracy of information required to be included under 61.145.
- ***Protective Equipment***—The EHSD guidance recommends that the following items be used by asbestos inspectors (refer to Section 3 for further details):
  - respirator(s)
  - disposable full-body, hooded coveralls
  - disposable gloves
  - disposable inner and outer booties
  - hard hat
  - safety shoes
  - duct tape
  - liquid soap
  - disposal towels
  - bathing suit (or equivalent)
- ***Employee Identification***—Proper credentials to prove authority for performing the inspection, and any certification cards of respiratory fit-testing or medical monitoring.
- ***Copy of Asbestos NESHAP Regulation***—Helps resolve disagreements if the owner/operator is unfamiliar with regulations; it is advantageous to leave a copy with the owner/operator.
- ***Bound Notebook and Writing Implements***—Note that inspectors should take notes and fill out checklists to every extent possible before entering the removal area. (Note: in some situations, it may be critical to enter the work area quickly to assess potential violations; in these cases the checklist and notebooks can be filled out after the inspections). Where practical, leave the notebook and checklist outside the contaminated area and fill out immediately after decontamination. Alternatively, plastic clipboards, plastic transparency sheets and waterproof pens or divers' underwater writing materials, all of which can be decontaminated, may be used.

- ***Field Data Collection Checklists***—Checklists are useful as a reminder of the baseline information needed for all inspections. See Appendix C for a copy of a representative checklist.
- ***Camera (with flash)***—Take photographs of sample locations and visible emission sources. Waterproof cameras are convenient when wet removal is occurring, and decontamination is required.
- ***Flashlight***—Work may be conducted in areas with inadequate lighting such as basements, above drop ceilings, and buildings in which the electricity has been turned off.
- ***Binoculars***—Necessary for offsite observations.
- ***Tape Measure***—Inspectors should carry tape measures so that they may accurately quantify the amounts of friable ACM. As an alternative, an inspector may pace off distances and estimate distance based on a previously measured pace.
- ***Chain-of-Custody Forms and Labels***—These forms and labels allow inspectors to properly distinguish each sample and to maintain a record of sample possession and transfer.
- ***Shipping Supplies***—Samples may be sent to a laboratory from the field.
- ***Sampling Equipment***—The following equipment and materials are used for bulk sample collection (refer to Section 8 for further details):
  - sample containers
  - water spray bottle
  - adhesive tape
  - tools (knife, tweezers, coring device, etc.)
  - drop cloth
  - wet wipes
  - plastic bags
  - glovebag (for those situations where bags are opened outside the containment area)
  - disposable towels
- ***Extra fresh batteries*** - for camera and flashlight
- ***Business cards***
- ***Building diagrams (if available)***

SECTION 5

ONSITE FACILITY INSPECTIONS

Onsite facility inspections provide the foundation for all asbestos NESHAP enforcement actions for substantive violations and therefore are critical to enforcing NESHAP. Onsite inspections are also used to determine whether potential AHERA or WPR violations exist. (Field Inspection Checklists are included as Appendix C to this document.)

In most cases it is necessary for the inspector to enter active removal areas to determine compliance and to collect evidence of non-compliance. Due to irregularly scheduled asbestos removal, inspectors may find themselves conducting a pre-removal inspection if a job is delayed, or a post-removal inspection if a job is completed ahead of schedule. The following provides step-by-step inspection procedures common to pre-removal, active removal, and post-removal inspections. All inspections for the asbestos NESHAP are intended to be *unannounced.*

PRE-ENTRY REMOTE OBSERVATIONS

The pre-entry observations (which may be conducted remotely using binoculars) enable the inspector to determine the location and type of activities in progress. Additionally, pre-entry observations provide the inspector with information regarding the appropriate safety equipment to use. Upon arriving at the site, an asbestos inspector should do the following:

- Look for visible emissions to the outside air (from window, doors, etc.).
- Look for suspected asbestos-containing debris outside the removal area.
- Observe waste storage areas (dumpsters) and evaluate the quantity and condition of the waste created.
- Note land use surrounding the site in order to assess exposure liabilities. Are there residences, schools, playgrounds, etc. nearby? (Draw a land-use diagram in the field notes.)
- Attempt to establish the magnitude and location of the asbestos project within the facility.
- Sketch the general site layout and areas to be inspected. Verify that all pertinent locations are incorporated into the inspection plan.
- Check safety equipment. The EHSD *Health and Safety Guidelines for EPA Inspectors* states that EPA employees should use only EPA- owned respiratory equipment that they have been specially trained and fit-tested to use.

- Observe trucks being used to haul suspect ACWM. Are they properly marked?

PRE-ENTRY INTERVIEW

During the pre-entry interview, it is critical that discussions are properly documented. They may later be considered admissions of guilt if violations are detected. The following steps should be followed once an inspector arrives onsite:

- Request to see the owner/operator or site foreman.
- Show identification credentials and explain the authority and purpose of the inspection. (State and local agency inspectors may need to carry specific licenses or certifications.)
- Discuss the inspection procedure:
  - photographs
  - samples
- If denied entrance, do not be forceful. Simply explain that the authority for this type of inspection is explicitly given in Section 114 (a)(2) of the Clean Air Act which states that EPA inspectors shall:

  "...have a right of entry to, upon, or through any premises in which an emission source is located..."

  Also state that:

  - the agency's regulatory attorney will be informed and, if necessary,
  - the agency will apply for a warrant to gain entry.
- Show medical monitoring credentials. In some instances, a facility owner/operator may demand to see proof that an inspector is meeting the requirements of the OSHA medical monitoring program. Because this is a reasonable request, inspectors are advised to carry an agency medical monitoring credential. (Note: EPA personnel are not specifically subject to the OSHA standard; however, they are subject to the EHSD guidelines which stipulate similar requirements.)
- Review the notification.
- Sign no waivers. It is EPA's policy that liability waivers never be signed. Other inspectors should refer to the specific policies of their State or local agencies.
- Establish the identities of all responsible individuals, from the person being interviewed to the building owner. Also document the name and title (and address, if possible) of all parties interviewed during the inspection. (Collecting business cards of these individuals is a good practice.)

- Determine a logical sequence for the site inspection to promote its overall efficiency. Determine if there are any safety considerations in addition to those already anticipated.

Interview Questions

During the interview inspectors should attempt to gain an understanding of the procedures being employed onsite to minimize asbestos fiber release. Inspectors should ask both general and site- specific questions, examine on-site documents and observe work practice procedures outside the work area in order to choose appropriate personal protective equipment (pursuant to the EHSD Guidelines - see Section 3) and to determine preliminary compliance with NESHAP, AHERA and the WPR. Answers to the following may become valuable evidence in the event violations are detected.

General Questions

- Has the owner/operator ever engaged in removal of asbestos before?
- What formal training has the owner/operator or his staff had regarding the handling of asbestos?
- What is the owner/operator's understanding of the NESHAP requirements for the handling of asbestos during removal?

Site-specific Questions

- Has removal work begun? (If not, is all ACM intact, undisturbed and undamaged, and no debris present?)
- Is there a written respiratory protection program and are respirators being used?
- Is the work area completely enclosed with plastic sheeting or equivalent?
- Have all the ventilation systems that have components in the envelope been shut off?
- Are all vents in the work area taped shut?
- Are decontamination means, including shower facilities, in place?
- If glove bags are being used:
  - Is secondary containment which is under negative pressure in place? (OSHA 29 CFR 1926.58 requires that "wherever feasible, the employer shall establish negative pressure enclosures before commencing removal, demolition and renovation operations.)
  - Are the glove bags themselves under negative pressure? (A special attachment to a HEPA vacuum may be used to create a reduced pressure atmosphere within the bag while the removal takes place. Secondary containments most likely will not be used in this case.)

- What kind of asbestos is reing removed? (Is it capable of being adequately wetted?
- Are wet methods being used (i.e. no dry scraping, wire brushing of dry materials, nor sweeping or other handling of dry debris)?
- Is amended water being used to wet the ACM? (Check to see that amended water is onsite outside the envelope.)
- If wet methods are not being used, what emission control methods are being used?
- Are power tools being used to remove ACM?
- Are employees removing ACM appropriately (i.e., using dust-tight chutes, not dropping materials to the floor, etc.)?
- Has a waste disposal permit been received? (not required by NESHAP)

Document Examination

- Do existing monitoring data indicate that asbestos fibers in the work area do not exceed 2.0 f/cc?
- Do records on site show that all employees have been trained as required by OSHA, State and local authorities?
- Do records show that project employees have been given medical exams, including a determination that they are fit to wear respirators?
- Has the area already passed an appropriate clearing test (minimum of aggressive sampling with a concentration below 0.01 f/cc by PCM)?
- Is there information posted and available for inspection documenting that at least one on-site representative has received training in the provisions of the NESHAP regulation? (This requirement is effective 1 year after promulgation of the revised NESHAP.)

Pre-entry Worksite Observations

- Are warning signs posted?
- As a minimum, have all envelope entrances been constructed as a double entry system (usually two or three sheets of plastic draped between each stage of the entry system)?
- Are all barrier seals intact with no dust or debris coming from the removal area?
- Is there any dust or debris that is potentially asbestos- contaminated present on any surface in the area?
- Are adequately labeled containers being used in the disposal of ACM?
- Have materials removed from the envelope been cleaned?

- Is there a clear and clean pathway for the removal of bags and
- equipment?

PRE-REMOVAL INSPECTION

Facility inspections conducted prior to commencement of asbestos removal do not enable the inspector to fully evaluate the owner/operator's compliance with the asbestos NESHAP. However, if an inspector does arrive onsite prior to removal, useful information can be gathered. In this case, the principal objectives are to verify that the asbestos NESHAP is applicable, and to gain a sense of the owner/operator's ability to remove the asbestos appropriately.

As with any inspection, safety must be considered before the inspection begins. The specific safety requirements will be left to the discretion of the inspector. As a general rule, however, if any friable ACM or nonfriable ACM in poor condition is being disturbed, the inspector should treat the inspection as an active removal situation and follow the suit-up procedures in Section 3.

The following summarizes inspection activities relative to NESHAP requirements. The entire NESHAP text can be found in this manual as Appendix A.

Applicability (61.141, 61.145)

- Verify that the site meets the definition of a facility:

  "any institutional, commercial, public, industrial, or residential structure, installation, or building (residential buildings having four or fewer dwelling units are excluded); any ship; and any active or inactive waste disposal site."

- Determine whether the activity is classified as a demolition or renovation.
- Measure the amount of ACM that is scheduled to be disturbed to determine if the minimum quantity of 260/160/35 is exceeded.

Notification [61.145(b)]

- Determine whether a notification exists and, if it does, verify that the information conveyed verbally during the inspection agrees with the information provided in the notification.
- Determine if the amount of ACM designated by the owner/operator for removal is accurate relative to the amount that the inspector thinks will potentially be disturbed during the demolition or renovation.

Planned Emission Controls [61.145 (c)]

Observe equipment onsite and elicit verbal explanations of planned emission control procedures to ascertain whether the owner/operator is sufficiently equipped and knowledgeable to meet the wetting and handling requirements of 61.145 (c). Consider the following:

- Will water and wetting agents be available for wetting ACM before removal and maintaining it in a wet condition until it is collected for disposal?
- If wet methods will not be used, what emission control methods are planned?
- Will ACM be removed or stripped more than 50 feet above ground level? If so, how will it be brought down?

Be aware that the asbestos NESHAP allows exemptions from **removal, stripping, wetting, and packaging of ACM** in certain situations. A detailed description of these exemptions can be found in **"Emission Controls"** of the **ACTIVE REMOVAL INSPECTIONS** portion of this section.

Disposal Techniques (61.150)

Although several waste disposal options are delineated by the asbestos NESHAP, most owner/operators choose to remove ACM and package it for off-site transport. Inspectors should determine the following:

- Are leak-tight containers or wrapping available to package removed ACM?
- Do these containers or wrappings exhibit the required OSHA warning label?
- If the removed ACM is destined for off-site transport, are these containers or wrapping materials labeled with the name of the waste generator and the location at which the waste was generated?
- Where will the ACWM be deposited and how often will it be removed from the worksite?
- Has a permit for disposal been obtained? (not required by NESHAP)
- Are waste shipment record forms available for use?
- Is the owner/operator aware of the NESHAP requirements regarding their use?

Evidence Collection

In addition to the general information conveyed by the owner/operator, the following evidence should be collected by an inspector during a pre-removal inspection:

- Measurements of area, linear footage or volume of suspect ACM that has already been or will be removed during the project (Is 260/160/35 exceeded?)
- Samples of material which were stated in the notification to be ACM.

Collect these samples using techniques described in Section 8 and document (using sketches and photographs) their specific locations within the facility. If the owner/operator later states that the notification was misrepresentative (i.e., that the material removed did not contain asbestos), these samples may provide legal evidence to the contrary.

- Samples of suspect ACM (friable, nonfriable which has become friable during the demolition or renovation operation, and nonfriable ACM that the inspector feels will be disturbed during the demolition or renovation) **which were not listed by the owner/operator in the notification**

  Collect these samples using techniques described in Section 8 and document (using sketches and photographs) their specific locations within the facility.

ACTIVE REMOVAL INSPECTIONS

To fully evaluate compliance of the asbestos NESHAP, an inspector must be prepared to enter the active removal area. The inspector will follow the procedures discussed previously for pre-inspection observations and interview. The information gathered during pre-inspection activities will enable the inspector to select appropriate safety equipment and procedures to follow, as detailed in Section 3.

The inspector's principal objectives in entering the active asbestos removal area are to: (1) make first-hand observations of the adequacy of wetting and maintaining wetness until ACM is collected for disposal; (2) take samples of any suspect ACM to serve as evidence that a violation involved asbestos-containing material; and (3) accurately determine whether the quantity of suspect ACM exceeds the minimum regulated quantity of 260/160/35.

Removal Area Entry Preparation

Inspectors should prepare to enter the active site only after determining the safety equipment needed. The following steps summarize the procedures detailed in Section 10:

- If a three-stage decontamination unit is available, the inspector will enter the clean room, remove street clothes (except bathing suit), and suit-up in accordance with the procedures in Section 3. Street clothes should be stored in a plastic bag to ensure that no accidental contamination occurs.
- If there is no 3-stage decontamination unit, the inspector will suit-up with double disposable coveralls over his or her street clothes following the step-by-step procedures listed in Section 3.

Inspection/Sampling Equipment

Only items that can be washed or showered should be taken into the active removal area; all other items should be left outside. Critical inspection and sampling equipment to bring inside include:

- Pre-labeled sample containers (as described in Section 8);
- Waterproof camera - automatic 35mm with flash;
- Waterproof clipboard with a plastic sheet on which to write (white paper inside a zip-lock bag provides a good background);
- Indelible marker for taking notes on the plastic sheet; and
- Waterproof flashlight.

This equipment may be carried in a zip-lock bag taped to the side of the disposable coverall, or through which a belt is strapped.

Applicability [61.145(a)]

Violations of the asbestos NESHAP cannot be validated unless the inspector has sufficient evidence that the site of asbestos removal meets the applicability requirements of [61.145(a)] The following specific criteria must be met:

- For renovations - if the amount of ACM that will be stripped or removed from a facility exceeds 260/160/35, then all notification requirements of 61.145(b) and emission control requirements of 61.145(c) apply.
- For demolitions - if the amount of ACM in the facility exceeds 260/160/35, then all notification requirements of 61.145(b) and emission control requirements of 61.145(c) apply.
- For demolitions - if the amount of ACM in a facility that will be disturbed is less than 260/160/35 (even if no asbestos is present), only the notification requirements of 61.145(b) apply.

The definition of demolitions and renovations differ in that a demolition specifies that a load-supporting structural member is wrecked or removed. The term "demolition" also includes any related handling operations which could be interpreted as any asbestos removal prior to actual demolition, and intentional burning of a facility.

Notification [61.145(b)]

- Verify that a notification exists and, if so, verify that the information conveyed verbally during the inspection agrees with the information provided in the notification.
- Determine if the amount of ACM designated by the owner/operator for removal is accurate relative to the amount that the inspector thinks will potentially be disturbed during the demolition or renovation.

Emission Controls [61.145 (c)]

Each owner/operator of a demolition or renovation activity must comply with the provisions of 61.145 (c).

61.145 (c)(1)—Remove all ACM from a facility being demolished or renovated before any activity begins that would break up, dislodge, or similarly disturb the material or preclude access to the material for subsequent removal.

61.145 (c)(2)—When a facility component that contains, is covered with, or is coated with ACM is being taken out of the facility as a unit or in sections, adequately wet all ACM exposed during cutting or disjoining operations and carefully lower them to the floor or ground level. Do not drop, throw, slide or otherwise damage or disturb the ACM.

61.145 (c)(3)—Adequately wet ACM while it is being stripped from in-place facility components.

61.145 (c)(6)—For all ACM, including material that has been removed or stripped, adequately wet the material and ensure that it remains wet until collected and contained or treated in preparation for disposal. Carefully lower the material to the ground and floor without dropping, throwing, sliding or otherwise damaging or disturbing it. If the ACM has been removed or stripped more than 50 feet above ground level and it was not removed as units or in sections, transport it to the ground in leak-tight chutes or containers .

61.145 (c)(8)—Effective 1 year after promulgation of this regulation, no ACM shall be stripped, removed, or otherwise handled or disturbed at a facility unless at least one on-site representative, such as a foreman or management-level person or other authorized representative, trained in the provisions of this regulation and the means of complying with them is present. Every 2 years this individual must receive refresher training in the provisions of this regulation. Evidence that the required training has been completed must be posted and made available for inspection by the Administrator at the demolition or renovation site.

61.145 (c)(9)—When a facility is ordered to be demolished, keep the portion of it containing ACM adequately wet during the wrecking operation.

61.145 (c)(10)—If the facility is demolished by intentional burning, remove all ACM, including Categories I and II nonfriable ACM before burning.

61.145 (c)(11)—If Category I nonfriable ACM is sanded, ground, sawed or abraded, the owner or operator, discharge no visible emissions to the outside air during such operations; and adequately wet the material or use a local exhaust and ventilation and collection system designed and operated to capture the particulate asbestos material generated during such an operation.

Emission Control Exemptions

If the owner/operator is not following standard work practices relating to removal, strippping, wetting and packaging of ACM, the inspector must carefully evaluate whether activities seen are justified by the following exemptions in the asbestos NESHAP:

Removal of ACM is not required before demolition if it:

- 61.145 (a)(3) - is located in a building which has been ordered by a government authority to be demolished. Wetting of the portion of the facility that contains ACM is required during the wrecking operation [61.145 (c)(9)] and ACWM must be handled in accordance with waste disposal requirements (61.150).
- 61.145 (c)(1)(i) - is Category I nonfriable ACM in good condition.
- 61.145 (c)(1)(ii) - is on a facility component encased in concrete or other similarly hard material and is adequately wet whenever exposed during demolition. (Doubled concrete-block walls with risers inside do not meet the "encased in concrete" definition.)
- 61.145 (c)(1)(iii) - was not discovered until after demolition began and cannot be safely removed. The ACM must be adequately wet whenever exposed during demolition.
- 61.145 (c)(1)(iv) - is Category II nonfriable ACM and the probability is low that the material will become friable during demolition.

Stripping of ACM from facility components is not required:

- 61.145 (c)(4) - if the components have been taken out of the facility as a unit or in sections contained in leak-tight wrapping.
- 61.145 (c)(5) - if the ACM attached to certain large facility components (excluding beams) which are handled without disturbing the ACM, are appropriately labeled and wrapped leak-tight.

Wetting is not required in renovation operations if

- 61.145 (3)(i) - it causes unavoidable equipment damage or presents a safety hazard. Written approval from the Administrator must be obtained (and kept at the worksite) and either a local exhaust ventilation and collection system, glove-bag system or leak-tight wrapping prior to dismantlement must be employed.
- 61.145 (3)(ii) - the Administrator has given written approval to an alternate equivalent method. This approval must be kept onsite.
- 61.145 (c)(7) - the temperature at the point of wetting is below freezing.

Facility components must be removed as units or in sections to the maximum extent possible.

Packaging of ACWM prior to disposal is not required if the ACWM results from a government-ordered facility demolition (61.150). Wetting requirements still apply.

Determination of Adequately Wet

Adequately wet, as defined in 61.141 means to:

> "sufficiently mix or penetrate with liquid to prevent the release of particulates. If visible emissions are observed coming from asbestos-containing material, then that material has not been adequately wetted. However, the absence of visible emissions is not sufficient evidence of being adequately wet."

The inspector is responsible for the overall determination of "adequately wet" relative to the above listed citations from the asbestos NESHAP. It is important for an inspector to document whether or not material has been adequately wetted and how this determination was made. The following questions and procedures will help document compliance with this provision of the asbestos NESHAP:

- Is there a water supply in place?
- Is water or a wetting agent observed being sprayed onto the suspect ACM or ACWM both during stripping or removal and afterwards while the material awaits proper disposal? If yes, carefully note the method of application used (e.g., misting, fogging, spraying of surface area only or drenching to penetrate the ACM throughout).
- Does the equipment used to apply the wetting agent appear to be operating properly?
- If an aqueous solution is not being used, determine why it is not and document the reason. Possible (although not necessarily valid) reasons include:
  - prior permission obtained from the Administrator (safety hazard, potential equipment damage);
  - no water source at the facility;
  - temperature at the point of wetting below 32 degrees F;
  - portable water supply ran out and contractor continued to work; or
  - contractor prepared the area earlier, etc.
- Examine a stripped or removed piece of suspect ACWM or ACM which wets readily. Does it appear to be wetted throughout? If it does not, adequately wet the sample. Describe and photograph how the physical characteristics of the material change upon wetting (e.g., color, weight, texture, etc.). Take samples, as necessary, to document the presence of asbestos in the suspect material.

- When examining materials that do not readily absorb a wetting agent (e.g., premolded thermal system insulation, ceiling tiles, floor tiles) inspectors should note whether all exposed surfaces of these materials have been wetted as required.
- Is there visible dust (airborne or settled), or dry suspect ACWM debris in the immediate vicinity of the operation? Inspectors should collect samples of such materials for analysis of their possible asbestos content.

Inspection of Waste Containers

The presence of a regulatory inspector may often cause the owner/operator to quickly and vastly improve wetting procedures. However, inspectors can determine typical wetting procedures by evaluating the contents of waste containers found both inside containment and in other waste storage areas. The following protocol should be followed:

- Randomly select bags or other containers for inspection.
- Lift the bag or container to assess its overall weight. A bag of dry ACWM can generally be lifted easily with one hand whereas a bag filled with well-wetted material is substantially heavier.

If waste material is contained in a transparent bag:

- Visually inspect the contents of the unopened bag for evidence of moisture (e.g., water droplets, water in the bottom of the bag, change in color of the material due to the presence of water, etc.).
- Without opening the bag, squeeze chunks of debris to ascertain whether moisture droplets are emitted.

  Note: Squeezing cannot be used to determine adequate wetting of materials (such as ceiling tiles, floor tiles, or premolded TSI, etc.) which do not readily absorb a wetting agent. For these materials, determine whether exposed surfaces have been adequately wetted, document information and take samples as needed.

- If the material appears dry or not penetrated with water or a wetting agent, open the bag using steps described below and collect a bulk sample (using the procedures specified in Section 8) of each type of suspect material in the bag. Note, and document in the log book, variations in size, patterns, colors, and textures of adequately and inadequately wetted materials seen.

If the waste material is contained in an opaque bag or other container, or if the material in a transparent bag appears to be inadequately wetted:

- Carefully open the bag or other container (in the containment area, if possible). If there is no containment area, a glove bag may be used to enclose the container prior to opening it. This will minimize the risk of fiber release.

- Examine the contents of the container as noted above for evidence of moisture, document findings, take samples as needed, and carefully reseal the opened container.
- If inadequately wetted ACM stored outside is discovered upon arrival at a worksite, don protective gear and take samples before continuing the on-site inspection.

Evidence Collection

The following specific evidence should be collected by an inspector during an active removal inspection:

- Measurements of area, linear footage or volume of suspect ACM to accurately document that 260/160/35 is exceeded. (Document technique of measurement - tape measure, premeasured pace, etc.)
- Samples of material which were stated in the notification to be ACM.

Collect these samples using techniques described in Section 8 and document (using sketches and photographs) their specific locations within the facility.

If the owner/operator later states that the notification was misrepresentative (i.e., that the material removed did not contain asbestos), these samples may provide legal evidence to the contrary.

- Samples of suspect ACM (collected using techniques described in Section 8) to document violations of the work practice standards. Document specific sample location using photographs and sketches.
- Samples of suspect ACM (friable, nonfriable which has become friable during the demolition or renovation operation, and nonfriable ACM that the inspector feels will be disturbed during the demolition or renovation) *which were not listed by the owner/operator in the notification.*

Collect these samples using techniques described in Section 8 and document (using sketches and photographs) their specific locations within the facility.

Disposal Techniques (61.150)

Although several waste disposal options are delineated by the asbestos NESHAP, most owner/operators choose to remove ACM and package it for off-site transport. During an active removal inspection inspectors should determine whether:

- There are visible emissions to the outside air during the collection, packaging, or on-site transport of any ACWM (The inspector must determine the source

of the visible emission and sample the source to verify that the emission contains asbestos material. It is not necessary to be a certified visible emission observer to legally document whether a visible emission exists. The presence of asbestos in such dust constitutes a violation of 61.150.);

- ACWM is being adequately wetted;
- ACWM generated during ordered demolitions or demolitions where ACM is not required to be removed is kept adequately wet at all times after demolition and kept wet during handling and loading for transport to a disposal site. (Sealing in leak-tight containers or wrapping is not required - may be transported and disposed of in bulk)
- Leak-tight containers or wrapping are being used to package removed ACM;
- Containers or wrappings exhibit the required OSHA warning label;
- Containerized ACM destined for off-site transport is labeled with the name of the waste generator and the location at which the waste was generated;
- Vehicles used to transport ACWM are appropriately marked during loading and unloading; and
- The ACWM will be deposited at an appropriate waste disposal site as soon as is practical (excluding removed or stripped Category I ACWM in good condition). Inspectors should verify ACWM destination information reported in the notification. This information can provide the inspector with an opportunity to visit a disposal site and conduct an inspection while deposition of ACWM is taking place.

Waste Shipment Records [61.150 (d)]

Asbestos inspectors should examine whatever on-site records exist to ensure that the owner/operator is complying with the waste shipment recordkeeping requirements of the asbestos NESHAP.

TSCA Compliance

During the inspection, the inspector can also check for any evidence of apparent violations of the AHERA and WPR regulations. The appropriate asbestos program personnel should be contacted and informed about the possible violations noted. AHERA regulations apply to asbestos abatement work conducted at schools. WPR regulations apply to State and local government employees who take part in asbestos abatement work and are not covered by the OSHA asbestos standard. Abbreviated checklists for the AHERA and WPR regulations are included in Appendix C.

Exiting the Removal Area

The inspector will leave the active removal area when satisfied that the operation complies with the requirements of the asbestos NESHAP or has collected sufficient evidence

(observations, samples, photographs, owner/operator admissions) if potential violations exist. It is essential that the inspector properly decontaminate himself/herself and any items taken into the active removal area that will not be disposed of as asbestos contaminated waste. The following procedures summarize the detailed decontamination steps listed in Section 3.

- If a 3-stage decontamination unit is available, enter the dirty room, remove disposable clothes (keeping the respirator on), move into the shower area, quickly rinse head region and remove respirator. Dispose of filter cartridges. Finish showering and dry off using disposable towels. Move to clean room to dress in street clothes (see Section 3 for more specific decontamination procedures).
- If there is no three-stage decontamination unit, spray with water and then remove the outer layer of the doubled disposable coveralls just prior to exiting. Spray and remove the second layer just after exiting. Wet wipes can be used to clean potential asbestos fibers from the respirator and face area before removing the respirator and disposing of cartridges (see Section 3 for more specific decontamination procedures).

Inspectors should record observations and fill out chain-of-custody forms immediately upon departing from the contaminated area.

POST-REMOVAL INSPECTION

Inspection of a facility after asbestos removal has been completed is the least preferred option; any improper removal would already have released fibers to the ambient air. However, an inspector arriving onsite after removal is complete can still gather useful information.

Decisions regarding protective clothing and respiratory protection will be left to the discretion of the inspector. As a general rule, if an inspector has any doubt concerning whether the area is cleared for reoccupancy, he/she should treat the inspection as an active removal situation and follow the suit-up procedures in Section 3.

The following inspection procedures apply to most post-removal inspections relative to enforceable paragraphs of the asbestos NESHAP.

Applicability [61.145(a)]

- Interview the owner/operator to ascertain where ACM was removed from the facility and establish (measure or pace off) that the minimum quantity of 260/160/35 was exceeded.
- Verify that the site meets the definition of a facility under 61.141 "any institutional, commercial or industrial structure, installation, or building (excluding apartment buildings having no more than four dwelling units)."

- Determine whether the activity was classified as a demolition or renovation based on the definitions under 61.141.

Notification [61.145(b)]

- Verify that a notification was submitted and that the information conveyed verbally during the inspection agrees with the information provided in the notification.

Emission Controls [61.145 (c)]

- Verify that all ACM [excluding ACM described 61.145 (c)(1)(i-iv)] has been removed from a facility scheduled for complete demolition. Take samples as needed.
- Verify that *all* ACM, *including Category I and Category II nonfriable ACM,* has been removed from a facility scheduled to be demolished by intentional burning. Take samples as needed.
- Visually inspect all areas from which ACM is said to have been removed to verify that it has been done. No dust or debris should be left behind. Take samples as needed.
- Visually inspect other areas of the facility that will be disturbed during the impending demolition or renovation to determine if any other suspect ACM exists. Determine if *260/160/35* is exceeded and take samples as necessary, in accordance with procedures described in Section 8.

Waste Disposal (61.150)

If waste is still stored onsite at the time of a post-removal inspection, the inspector should inspect the containers to determine compliance with the 61.150. Use safety equipment and procedures detailed in Section 3 for active removal situations.

- Inspect for leaking or ripped bags, or other evidence of asbestos contamination.
- Lift bags or containers to assess their overall weight. A bag of dry ACWM can generally be lifted easily with one hand whereas a bag filled with well-wetted material is substantially heavier.

If waste material is contained in a transparent bag:

- Visually inspect the contents of the unopened bag for evidence of moisture (e.g., water droplets, water in the bottom of the bag, change in color of the material due to the presence of water, etc.).

- Without opening the bag, squeeze chunks of debris to ascertain whether moisture droplets are emitted.

  Note: Squeezing cannot be used to determine adequate wetting of materials (such as ceiling tiles, floor tiles, or premolded TSI, etc.) which do not readily absorb a wetting agent. For these materials, determine whether exposed surfaces have been adequately wetted, document information and take samples as needed.

- If the material appears dry or not penetrated with water or a wetting agent, open the bag using steps described below and collect a bulk sample (using the procedures specified in Section 8) of each type of suspect material in the bag. Note, and document in the log book, variations is size, patterns, colors, and textures of adequately and inadequately wetted materials seen.

If the waste material is contained in an opaque bag or other container, or if the material in a transparent bag appears to be inadequately wetted:

- Carefully open the bag or other container (in the containment area, if possible). If there is no containment area, a glove bag may be used to enclose the container prior to opening it. This will minimize the risk of fiber release.
- Examine the contents of the container (as noted above) for evidence of moisture, document findings, take samples as needed, and carefully reseal the opened container.

Evidence Collection

In addition to the general information conveyed by the owner/operator, the following specific evidence should be collected by an inspector during a post-removal inspection:

- Samples of any suspect ACM left behind as dust, debris or residue;
- Measurements of area, length, or volume where ACM was removed, in order to establish that the facility met the applicability requirements; and
- Samples of any dry ACM from the storage area if still available. Sketches and photographs are advisable to illustrate specific locations of samples.

POST-INSPECTION INTERVIEW

When the inspection is complete, the asbestos NESHAP inspector should conduct a quick, concise wrap-up interview to obtain any additional information necessary to complete the checklist and to convey to the owner/operator the findings of the inspection. However, conclusive compliance determinations cannot be made by the inspector in the field. In situations where potential violations are identified, it is important to document any response actions of the owner/operator observed or verbally communicated. This information becomes strong evidence in situations where a follow-up inspection is conducted and similar violations are identified.

If the inspection is of a school and subject to the AHERA regulations, the inspector should ask if the workers are accredited and check the accreditation certificate of the supervisory personnel onsite. If the workers are covered by the WPR, the inspector can ask if the environmental monitoring records have been maintained and if the workers' medical records have been maintained. Any apparent violations of AHERA or the WPR should be referred to the appropriate Federal or state agency.

EXIT OBSERVATIONS

As the inspector departs a site, he/she should resurvey the site and complete any site drawings not completed prior to or during the inspection. If possible, the inspector should observe the waste storage area and other areas to determine if any significant changes occurred since the inspection began. Any changes should be noted as they help to assess whether the inspection observations are representative of operations when a regulatory inspector is not present. Finally, chain-of-custody forms for any samples collected should be completed.

SECTION 6

POST-INSPECTION

No matter how blatant a violation or how thorough an inspection, a case cannot be supported without proper records and documentation. It is imperative that each delegated program office set up and implement a system whereby supporting documentation is properly taken, controlled, and maintained. Generated reports, checklists and sample analysis results must be clear and concise and accurately support the observations of the inspector. Finally, all records must be organized, properly maintained, and readily available for future access. The purpose of this section is to outline inspection followup procedures and general guidance to aid in the process of document control, report preparation, and record maintenance and storage.

INSPECTION FOLLOWUP

Once an inspection is completed, a decision will be made regarding how many and how quickly samples should be analyzed. When there are serious violations it may be necessary to have analysis completed within a day or less. Arrangements should be made ahead of time with an in-house laboratory or a commercial laboratory to facilitate such a request. Those samples which will provide the greatest proof of asbestos NESHAP violations should be analyzed; other samples taken need not be. However, samples should not be destroyed; they should be stored in a locked facility pending future litigation.

When violations are suspected (Remember, a violation cannot be confirmed until samples are analyzed.), the inspector should brief his/her supervisor and/or attorney to initiate the decision-making process concerning the (1) need for reinspection; (2) need for information request under Section 114 of the CAA; (3) enforcement options available, etc.

Another facility inspection followup item to be considered is a landfill inspection. Because the asbestos NESHAP regulates friable ACM from "cradle to grave", an inspector may consider inspecting a landfill to determine whether the waste from a facility was properly disposed of as indicated in the notification. Inspection of landfills may also be conducted independently of tracking waste from a specific facility. This will be discussed in Section 7.

DOCUMENTATION

Checklists and reports generated by an inspector may be the basis of affidavits for civil or criminal enforcement actions. They must be precise and legible. NESHAP inspections

ultimately involve the actions of several people: one or more inspectors, laboratory personnel, administrative, legal and clerical staff. Information must be collected and maintained within a system that allows for processing and expedient access. Additionally, this system must protect all records or potential evidence that may be required for enforcement actions. It is imperative that a comprehensive document control system be implemented during all phases of an investigation.

Document Control

The purpose of document control is to make certain that all project documents issued or generated during a NESHAP investigation are accounted for when the project is complete. A system which accounts for all investigation documents should include serialized document numbering, document inventory procedures, and an evidentiary filing system. Examples of accountable documents include:

- inspection checklists;
- field logbooks;
- sample data sheets;
- sample tags;
- chain-of-custody records and seals;
- laboratory notebook and reports;
- internal memoranda;
- phone memoranda;
- external written communications;
- photographs, drawings, maps; and
- quality assurance plans;.

Under ideal circumstances, each document is given a serialized number which is listed in a Document Inventory Logbook.

Corrections to Documentation

All documents generated during the course of an inspection are considered part of the permanent evidentiary file and should not be destroyed or thrown away, even if they become illegible or if inaccuracies are discovered. This is particularly important if serialized documents are used, for any gaps in the numbering system will be noted by legal staff. Errors in documents should be noted. If a document requires replacement, it should be noted or corrections made to the original document. Corrections may be made by simply crossing a line through the error, entering the correct information, and initialing and dating it.

If documents are lost or missing (a sample tag lost in shipment, or a chain-of-custody record improperly prepared), a written statement should be prepared detailing the circumstances. The statement should include all pertinent available information that may be used to support an observation or sample. This statement becomes part of the permanent case file.

RECORDS MAINTENANCE

Records need to be properly filed and maintained to allow for quick and easy access of all case documents. Records also need to be retained under storage conditions which minimize deterioration or loss of data files. With the current widespread use of micro-and personal computers, data management capabilities have improved handling, tracking, and manipulation of large quantities of information. However, these systems do not replace physical evidence such as tags, forms, and checklists. They do alleviate tedious record searching and sorting tasks and can provide quick and easy retrieval of information and cross-referencing capability.

Regardless of whether computer-based data management systems or manual procedures are used, responsible individuals within a program office must be able to access and trace the destination of project files. The inspector must be familiar with and use all filing procedures. Files should be signed out in such a manner as to indicate to others that the file is in the possession of an inspector. When returning the file to storage, the inspector should take care to return it to its proper place for future easy access.

INSPECTION REPORTS

Inspection reports and checklists clearly and concisely document observations and physical evidence from the inspection. A comprehensive and properly completed checklist can serve as the inspection report. A recommended inspection checklist that serves this purpose is included as Appendix C. An inspector may supplement the checklist with additional information such as:

- Inspector observations;
- Owner/operator admissions;
- Description of evidence collected (including techniques used); and
- Owner/operator response actions.

In cases where violations are observed an inspector should supplement the inspection checklist with an inspection report containing the above information. It may take several years before a lawsuit is filed so a detailed narrative of the inspection will prove beneficial in refreshing the inspector's memory and will provide strong evidence for the case.

SECTION 7

LANDFILL INSPECTIONS

The asbestos NESHAP provides emission control and work practice requirements from the time the asbestos is disturbed (potentially releasing airborne fibers) until it is interred in a landfill or converted into asbestos-free materials. However, since no conversion operations are currently licensed, demolition/renovation ACWM typically is transported to landfills for disposal. Regulatory agents should be prepared to conduct inspections of such sites and should follow the personal protective equipment and bulk sampling procedure recommendations found in the EHSD *Health and Safety Guidelines for EPA Asbestos Inspectors* and in Sections 3 and 8 of this manual.

It is important to recognize that *both* the owner or operator of a demolition or renovation operation *and* the owner or operator of the active waste disposal site where ACWM is brought are required to meet waste disposal provisions of the asbestos NESHAP.

Regulatory agents conducting inspections at demolition or renovation sites will determine generator compliance with the ***Standard for waste disposal for ..., demolition, renovation, ...operations, 61.150.*** These inspection activities have already been described in Section 5.

This section details the procedures an inspector should use to ascertain whether a landfill owner or operator is in compliance with ***61.154, Standard for active waste disposal sites.*** A sample inspection form for landfills is included in Appendix C.

REVIEW PERMIT CONDITIONS

Upon entering the site, contact the site operator to determine whether the landfill has a State-required permit to operate. If it does, check the expiration date of the permit and record pertinent information on the inspection form. (Although permits are not specifically required under NESHAP, most States have a permitting process for landfills.)

Verify that the landfill meets *one* of the following requirements of 61.154:

- No visible emissions are produced. Warning signs must be posted and fencing is required unless a natural barrier adequately deters access by the public.
- A 6-inch cover of compacted, non-asbestos material is provided within 24 hours of the time the waste is deposited. No sign posting or fencing is required.

- An effective resinous or petroleum-based (other than waste oil) dust suppressant is provided within 24 hours of the time the waste was deposited. Warning signs must be posted and fencing is required unless a natural barrier adequately deters access by the public.
- An alternative method previously approved by the Administrator is used. Warning signs must be posted and fencing is required unless a natural barrier adequately deters access by the public.

EVALUATE WASTE SHIPMENT RECORDS

For all ACWM received, the owner or operator of the active waste disposal site must comply with the following waste shipment recordkeeping provisions of 61.154 (e) of the asbestos NESHAP:

- Record and maintain the following information on forms similar to that noted in the regulation [61.154 (e)(1)]:

  - waste generator's name, address and telephone number;
  - transporter's name, address and telephone number;
  - quantity of ACWM received (cubic yards or meters);
  - presence of improperly enclosed or uncovered waste, or any ACWM not sealed in leak-tight containers; and
  - date of receipt.

- Send a copy of the signed waste shipment record to the waste generator as soon as possible but no longer than 30 days after receipt of the waste [61.154 (e)(2)].
- Attempt to reconcile differences in the amounts of ACWM received and that recorded on the waste manifest form brought by the transporter. If the discrepancy is not resolved within 15 days after receiving the waste, immediately submit a discrepancy report which details the discrepancy and attempts made to reconcile it to the governmental agency responsible for administering the asbestos NESHAP program for the *waste generator* (identified in the waste shipment record), *and, if different,* the governmental agency responsible for administering the asbestos NESHAP program for the disposal site [61.154 (e)(3)].
- Retain a copy of all records and reports required by this paragraph for at least 2 years [61.154 (e)(4)].

OTHER ACTIVE WASTE DISPOSAL SITE REQUIREMENTS

Landfill owners or operators must also comply with the following provisions of 61.154:

- Maintain, until closure, a map or diagram which contains the location, depth, area, and quantity of ACWM interred in the waste disposal site.

- Obtain written approval from the Administrator prior to conducting any activity that disturbs deposited ACWM.
- Furnish, upon request, and make available during normal business hours for inspection by the Administrator, all records required in 61.154.

SURVEILLANCE

In addition to determining landfill owner/operator compliance with the requirements of 61.154, Standard for active waste disposal sites, while at the site inspectors may note a number of other potential violations of the asbestos NESHAP. By asking the right questions and documenting appropriate information (photographs, samples, etc.) inspectors may be able to *identify non-notifiers* or determine other *generator non-compliance* with certain provisions of the NESHAP regulation.

Off-loading of Suspect ACWM Unaccompanied by a Waste Manifest

Inspectors should question the origin and determine the amount of any suspect ACWM material being offloaded which is not accompanied by a waste manifest. Document all information obtained from the transporter and landfill owner or operator and take photographs and samples as needed.

Attempt to determine the following:

- Has the suspect ACWM come from *one* or *multiple* sites? (For the NESHAP regulation to be applicable, ACWM must be generated at a site which meets the definition of a **"facility"** and meets the **260/160/35** quantity requirements.)
- Is the vehicle properly marked with an asbestos hazard warning sign?
- Is the suspect ACWM in properly labeled leak-tight containers?
- Is the suspect ACWM adequately wet?
- If the suspect ACWM is not wrapped or contained in leak-tight containers, has it come from a facility ordered demolished by a governmental agency?

Landfill Inspection

An inspector may notice improperly containerized, inadequately wetted or unlabeled suspect ACWM at the landfill. If a regulated amount of ACWM (260/160/35) is present, an inspector should attempt to determine the material's origin. Inspectors should note that the asbestos NESHAP is applicable only if the materials were generated at a **"facility"**, as defined in the NESHAP asbestos standard. For example, if the ACWM seen had been removed from a residential structure involving four or fewer dwelling units, the asbestos NESHAP would not apply. However, the disposal site may be in violation of local or state asbestos waste disposal regulations, so the inspector should notify the appropriate authority. Inspectors should question the landfill operator, examine records, take photographs and samples as needed and document all information obtained.

SECTION 8

ASBESTOS BULK SAMPLING AND ANALYSIS

The purpose of bulk sampling is to determine and document if friable material contains regulated amounts of asbestos. Samples should be collected whenever a violation is suspected or an enforcement action is anticipated for the results obtained serve as critical evidence that the material in question contains asbestos and is subject to regulation.

PROTECTIVE EQUIPMENT

The *EHSD Health and Safety Guidelines for EPA Asbestos Inspectors* specifies personal protective equipment to be used by EPA inspectors required to collect bulk samples under the Asbestos In Schools rule and the NESHAP. These recommendations are summarized below. For further details, refer to earlier sections regarding Inspector Safety.

- ***Protective Clothing***—Inspection personnel should wear the following protective clothing when collecting bulk samples in active abatement environments.

  - bathing suit;
  - disposable, full-body, hooded coverall (e.g., Tyvek® or equivalent);
  - disposable inner and outer booties;
  - disposable gloves; and
  - hard hat, safety glasses, safety shoes, and ear protection, as needed.

Inspectors collecting bulk samples in non-contaminated areas should use their professional judgment in determining whether or not to wear protective clothing. Inspectors may choose not to wear protective clothing when samples can be taken without any significant chance of releasing fibers or may decide to wear disposable coveralls and shoe coverings over their street clothes.

- ***Respiratory Protection***—At a minimum, inspectors collecting bulk samples should wear full-face, air-purifying respirators with HEPA filter cartridges. These include NIOSH-approved, tight-fitting PAPRs equipped with HEPA filters. Cartridges must be NIOSH-approved for asbestos environments. More stringent protection should be used if necessary.
- ***Disposable Towels***—For use after showering.

SAMPLING EQUIPMENT

The following items are recommended for use by asbestos NESHAP inspectors:

- ***Lightweight Carrying Case***—for storage and transport of sampling materials.
- ***Sample Containers***—any dry, sealable and clean container such as a 35mm film canister, plastic vial, or whirlpak bag.
- ***Water Spray Bottle***—for wetting a surface prior to sampling to prevent generation of dust (may use a surfactant).
- ***Adhesive (Duct) Tape***—to temporarily repair a sampled area, such as pipe wrap.
- ***Postal Tape***—to seal sample containers; can be written on to identify sample.
- ***Tools***—metal tweezers, pen knife, coring device, scissors, etc.
- ***Wet Wipes***—to clean tools between samples as well as to decontaminate equipment, sample containers, etc., when leaving the sampling area.
- ***Plastic Bags***—to store contaminated waste generated during the sampling exercise. The bags should be properly sealed and disposed of as ACM. Zip-lock bags are useful for packaging sample containers for delivery or shipment to the laboratory.
- ***Documentation Material***—notebook or clipboard, inspection checklist, sample labels, chain-of-custody forms, waterproof pens, plastic sheets (overhead transparencies).
- ***Spray Paint***—for identification of sample sites on photographs.

The above items are considered essential and should be included in every sampling kit. Other items such as specialty corers, hammer and chisel, and vinyl tile knives may be helpful during the inspection. Appendix C provides a comprehensive inspection equipment checklist.

COLLECTION TECHNIQUES

The asbestos NESHAP regulation does not provide any specific recommendations for collecting bulk samples. Procedural guidelines for sample collection can be found in the EHSD *Health and Safety Guidelines for EPA Asbestos Inspectors* and in the TSCA publications entitled *Guidance for Controlling Asbestos-Containing Materials in Buildings (purple book) and Asbestos in Buildings: Simplified Sampling Scheme for Friable Surfacing Material* (pink book). The TSCA guidelines are geared towards environments which are neither contaminated nor disturbed, such as those encountered during asbestos school inspections, pre-abatement inspections, and pre-demolition inspections. Asbestos NESHAP inspectors will inspect both non-abatement situations and abatement inspections.

Non-Abatement Inspections

Non-abatement inspections are conducted less frequently than abatement inspections. Extensive guidance is available through the TSCA Asbestos-in-Schools program. The most direct sources of information on non-abatement inspections are the two references cited above.

Abatement Inspections

The samples collected during active abatement inspections usually include materials which have been stripped, removed or still in place. The environments in which these samples are collected are usually not conducive to formal random sampling approaches such as those used during pre-abatement and TSCA inspections. The representativeness of bulk samples is usually based on the judgment of the inspector. Because the goal of collecting bulk samples is to determine and document whether materials associated with a violation contain greater than 1 percent asbestos, this subjective approach is warranted and appropriate. This approach does not exempt the inspector from following some general rules when collecting samples, including:

- Identify homogeneous thermal system insulation, surfacing and miscellaneous materials.
- Wear proper safety equipment, including disposable coveralls, overshoe boots, gloves and a properly selected respirator. A hard hat, safety shoes, protective glasses and ear protection may also be necessary.
- Collect samples of materials where a violation or suspected violation is observed.
- Understand that different types of friable ACM may be removed at the same abatement project. Collect representative samples of each different type of suspect material associated with a violation or suspected violation.
- Collect multiple samples if possible. A minimum of three samples should be taken from each homogeneous area of suspect material encountered.
- Collect a complete core or cross-section of the material.
- Spray the area to be sampled with a water mist or encapsulant mist to minimize fiber release. This is done primarily to reduce inspector exposure. (If the material is dry and the inspector believes there is a wetting violation, the field notes should reflect the dry sample and the inspector should note that he/she wet the sample prior to collecting it).
- Use sampling equipment listed in Appendix C checklist.
- After sampling is completed, wipe the outside of the container with a wet wipe or damp cloth. Wipe tools between sampling points.
- Record a unique I.D. number on a label and affix to the container. Tape the label to prevent it from peeling off and tape the lid shut.

- Never reuse sample containers.
- Photograph the sampling location(s). If necessary, take a second photograph with a reference point. The inspector can also use bright spray paint to indicate the sampling point.
- Make a drawing of the inspection site, noting where samples and photographs were taken. Indicate angles of photographs and written descriptions of materials sampled.
- Complete all documentation including checklist entries and chain-of-custody form. A sample chain-of-custody form is shown in Figure 8-1. Samples must be secured if more than one inspection is planned.
- Dispose of all sampling waste as asbestos-containing material.
- Not all samples must be analyzed. It is advisable to collect extra samples and only analyze enough to satisfy the evidence requirements. Samples may be analyzed at a later time if necessary.

BULK SAMPLE ANALYSIS

Bulk sample analysis determines the quantity (percent by area/volume), as well as the specific type of asbestos for each sampled area. The NESHAP standard contains no specific method for the analysis of bulk samples for asbestos. However, in no case should asbestos field test kits be used to confirm the presence or absence of asbestos. The solutions deteriorate with age and may indicate false negative results.

EPA's policy has been to adopt the procedure published in 40 CFR Part 763 Appendix A to Subpart F entitled *Interim Method for the Determination of Asbestos in Bulk Insulation Samples*. In this document polarized light microscope (PLM) is recommended for the analysis of bulk samples. Based on optical crystallographic properties, the PLM method must be performed by a microscopist with formal training in optical mineralogy. PLM gives a qualitative differentiation between asbestos and non-asbestos fibers along with a quantitative estimate of percent asbestos by area/volume.

Results from PLM analysis are interpreted as follows:

- If one or more samples from a homogeneous suspect ACM contains greater than 1 percent asbestos, the entire material is considered to contain asbestos.
- If a doubt exists, or if further information is needed, samples should be reanalyzed or additional samples collected.

QUALITY ASSURANCE

Sample I.D. Numbers

Assign a unique sample I.D. number to each sample. A non-systematic (random) numbering scheme is recommended, for this helps eliminate a microscopist's potential bias. For example, if a numbering system indicates that seven samples are from the same room, a microscopist may not be objective about each individual sample.

Chain-of-Custody Forms

In order to ensure that the samples are properly identified and tracked from the point of sample collection through receipt by the analytical laboratory, EPA requires that a chain-of-custody (COC) form be completed and accompany the samples. Figure 17-1 is a sample chain-of-custody form. It contains essential items such as identification number, date, name of sampler and signature of recipient. Some laboratories request that COC forms they supply be used. These forms must be completed in the field and accompany the samples when they leave possession of the inspector. Inspectors should fill in a new COC form if mistakes have been made (i.e., incorrect information transferred from sample containers to COC form).

Quality Control (QC) Samples

Collection of side-by-side duplicates are recommended at the rate of 1 QC sample/building or 1 QC sample/20 samples, whichever is larger. The laboratory should analyze duplicates without knowing which are the QC samples. The results of duplicates are compared to determine sampling and analytical precision. For additional QC, split side-by-side duplicates with a second laboratory to confirm the results of the first analyses. Any disagreements generated by the QC effort must be investigated; samples should be reanalyzed, or additional samples collected.

Accredited Laboratories

To diminish the likelihood of challenges to the accuracy of laboratory results during litigation, it is suggested that only accredited laboratories be used for the analysis of bulk samples (per AHERA 40 CFR Part 763, Subpart E). A listing of accredited laboratories published by EPA twice a year is available through the EPA Regional Asbestos Coordinator or the TSCA Hotline (202)-554-1404.

CHAIN OF CUSTODY RECORD

Project Code	Project Name			
SAMPLERS (Signature)				
I.D. NO.	DATE	TIME	LOCATION	REMARKS

Relinquished by (Signature)	Date/Time	Received by (Signature)	Relinquished by (Signature)	Date/Time	Received by (Signature)
Relinquished by (Signature)	Date/Time	Received by (Signature)	Relinquished by (Signature)	Date/Time	Received by (Signature)
Relinquished by (Signature)	Date/Time	Received for Laboratory by. (Signature)	Date/Time	Remarks	

Figure 8-1. Representative chain-of-custody record.

APPENDIX A

NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

(SUBPART M - NATIONAL EMISSION STANDARD FOR ASBESTOS)

federal register

Tuesday
November 20, 1990

Part III

Environmental Protection Agency

40 CFR Part 61

National Emission Standards for Hazardous Air Pollutants; Asbestos NESHAP Revision; Final Rule

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 61

[AD-FRL-3814-7]

RIN 2060-AC57

National Emission Standards for Hazardous Air Pollutants; Asbestos NESHAP Revision

AGENCY: Environmental Protection Agency.

ACTION: Final rule.

SUMMARY: This Federal Register notice promulgates rules under section 112 of the Clean Air Act (CAA) for asbestos emissions and is based on the Administrator's determination that asbestos presents a significant risk to human health as a result of air emissions from one or more source categories and is therefore a hazardous air pollutant (*see* 36 FR 3031, March 31, 1971). The purpose of the revisions promulgated today is to enhance enforcement and promote compliance with the current standard without altering the stringency of existing controls. On January 10, 1989 the Environmental Protection Agency (EPA or the Agency) proposed amendments to the asbestos National Emission Standard for Hazardous Air Pollutants (NESHAP) that would require control device and fugitive emission monitoring, recordkeeping, and reporting for asbestos milling, manufacturing, and fabricating operations. For planned demolitions and renovations, revisions to the notification requirements were proposed, and safety was added as a reason for exemption from the use of wet removal methods. Recordkeeping requirements were proposed for asbestos waste disposal. Clarifying revisions to several definitions and provisions were also proposed. Numerous comments were received on the proposed revisions, and today's notice responds to those comments, and incorporates changes as a result of those comments.

EFFECTIVE DATE: November 20, 1990. Under section 307(b)(1) of the Clean Air Act, judicial review of the actions taken by this notice is available only by filing a petition for review in the United States Court of Appeals for the District of Columbia Circuit within 60 Days of today's publication of these rules. Under section 307(b)(2) of the Clean Air Act, the requirements that are the subject of today's notice may not be challenged later in civil or criminal proceedings brought by EPA to enforce these requirements.

ADDRESSES: *Background information document.* The background information document (BID) for the promulgated revisions may be obtained from the U.S. EPA Library (MD–35), Research Triangle Park, North Carolina, 27711, telephone no. (919) 541–2777. Please refer to "Background Information for Promulgated Asbestos NESHAP Revisions," (Publication No. EPA 450/3–90/017). The BID contains a summary of all the public comments made on the proposed revisions and the Administrator's responses to the comments.

Dockets. Docket No. A–88–28 contains supporting information used in developing the final revisions to the asbestos NESHAP and is available for public inspection and copying between 8:30 a.m. and 3:30 p.m., Monday through Friday, at EPA's Air Docket (LE–131), Room M–1500, 1st Floor, Waterside Mall, 401 M Street, SW., Washington, DC 20460. A reasonable fee may be charged for copying.

FOR FURTHER INFORMATION CONTACT: For further information and official interpretations of applicability, compliance requirements, and reporting aspects of the promulgated revisions, contact the appropriate Regional, State or local office contact as listed in 40 CFR 61.04. For further information on the background of the regulatory decisions in the promulated revisions, contact Mr. Sims Roy, Standards Development Branch, Emission Standards Division (MD–13), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, telephone no. (919) 541–5263. For further information on the technical aspects of the promulgated revisions, contact Mr. Ronald Myers, Industrial Studies Branch, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, telephone no. (919) 541–5407.

SUPPLEMENTARY INFORMATION:

I. The Standards

The promulgated revisions implement section 112 of the Clean Air Act (CAA) and are based on the Administrator's determination that asbestos presents a significant risk to human health as a result of air emissions from one or more source categories and is therefore a hazardous air pollutant (*see* 36 FR 3031 (March 31, 1971)). The revisions promulgated today amend the asbestos NESHAP to enhance enforcement and promote compliance with the current standard without altering the stringency of existing controls.

Milling, Manufacturing and Fabricating

The revisions to the standards require asbestos milling, manufacturing and fabricating sources to conduct daily monitoring for visible emissions. While the absence of visible emissions does not mean there are no asbestos fibers being emitted, the presence of visible emissions does indicate a serious control device malfunction. Because visible emissions monitoring is intended primarily to detect serious control device malfunctions, weekly inspections of air cleaning devices are also required. In addition, the revisions promulgated require these sources to maintain records of the results of visible emissions monitoring and control device inspections, and to submit quarterly a copy of visible emissions monitoring records of visible emissions occurred during the quarter. The revision requires owners or operators who install fabric filters after the effective date of this rule to provide for easy inspection of the bags.

Demolition and Renovation

The revisions require the owner or operator of a demolition or renovation activity to provide additional information in notifications, and to renotify EPA if the start date of a demolition or renovation changes from that given in the original notification. Another revision requires owners or operators to give a 10-day notice for renovations. A person trained in the provisions of this rule and the means of complying with them is required to be on site when asbestos-containing material (ACM) is stripped, removed or disturbed. When wetting is suspended due to freezing temperatures, owners or operators are required to measure air temperature in the work area three times during the workday and keep daily temperature records for at least 2 years. The revisions also clarify EPA's position regarding the handling and treatment of nonfriable asbestos materials such as resilient floor covering, including vinyl asbestos floor tile, and roofing material.

Waste Disposal

The revisions require vehicles used to transport asbestos-containing waste material to be marked with the sign prescribed by the Occupational Safety and Health Administration during loading and unloading to warn people of the presence of asbestos. For all asbestos-containing waste material transported offsite, the revisions require that a waste shipment record (WSR) be provided to the waste site owner or operator at the time that the waste is

delivered to the waste disposal site. If a copy of the WSR signed by the waste site owner or operator is not received within 35 days of the date the waste was accepted by the initial transporter, the revisions direct the waste generator to contact the transporter and/or disposal site owner or operator to determine the status of the waste shipment. The revisions further direct the waste generator to submit an exception report to EPA if a signed copy of the WSR is not received within 45 days of the date the waste was accepted by the initial transporter. Labels are required on containers of asbestos-containing waste material from manufacturing, fabricating, demolition and renovation activities indicating the name of the waste generator and the location where the waste was generated.

Inactive Waste Disposal Sites

The revisions require the owner or operator of an inactive waste disposal site for a milling, manufacturing or fabricating operation to notify the Administrator in writing prior to excavating or otherwise disturbing asbestos-containing waste material that has been deposited at the disposal site and to record on the deed to the property a notation that will inform future purchasers of the property that it has been used for the disposal of asbestos-containing waste material and that the survey plot and record of the location and quantity of such waste material are on file with the Administrator.

Active Waste Disposal Sites

The revisions require the owner or operator of an active waste disposal site to maintain WSRs and report in writing the receipt of a significant amount of improperly enclosed or uncovered waste to EPA by the following working day. The owner or operator of an active waste disposal site is required by the revisions promulgated today to send a signed copy of the WSR back to the waste generator no more than 30 days after receipt of the waste, to attempt to reconcile any discrepancy between the quantity given on the WSR and the quantity actually received and, failing to do so within 15 days after receiving the waste, to report the discrepancy and any attempts to reconcile it to the Administrator. The revisions promulgated today also require the owner or operator of an active disposal site to maintain records of the location, depth and area, and volume of asbestos-containing waste material within the disposal site on a map or diagram of the disposal area. Upon closure, the owner or operator must comply with all the rules promulgated for inactive waste disposal sites. A revision requires the owner or operator of an active waste disposal site to notify the Administrator in writing prior to excavating or otherwise disturbing asbestos-containing waste material that has been deposited at the disposal site and covered.

Asbestos Conversion Processes

A section is promulgated to clarify that operations that convert asbestos-containing waste material into nonasbestos (asbestos-free) material are covered by the NESHAP. The provisions promulgated require the owner or operator of such an operation to obtain prior written approval of the Administrator to construct the facility, and conduct a start-up performance test using specified analytical methods and procedures. Requirements for continuous monitoring during and after the initial 90 days of operation, emissions control, maintenance of records of test results on site, and reports to the Administrator are also promulgated today.

II. Environmental, Energy and Economic Impacts

The environmental, energy, and economic impacts of the revisions for demolition and renovation, including waste disposal, were estimated from two baselines. One is full compliance with the NESHAP, and the other is current use of engineering controls and work practices. Enforcement experience indicates that many asbestos removal operations related to demolition and the subsequent waste disposal operations are performed out of compliance with the NESHAP. The lack of compliance with the NESHAP removal provisions leads to the improper disposal of some waste, especially demolition waste, with the result that emissions from the disposal of demolition waste greatly exceed other emissions, including process emissions from milling, manufacturing, and fabricating. Liability and other considerations generally lead the owners of buildings being renovated to follow or even exceed the requirements of the NESHAP. Thus, the appropriate baseline for demolition is current use of work practices rather than full compliance. At asbestos milling, manufacturing, and fabricating facilities, the required air pollution control devices are generally in place. Thus, for milling, manufacturing, and fabricating, full compliance with the NESHAP, including the waste disposal requirements, is assumed for the baseline.

Few emission measurement data exit for asbestos sources. Thus, emissions were estimated using engineering methods and assumptions, which resulted in substantial uncertainty. A detailed description of the approaches used to estimate emissions is found in "Asbestos Emission Estimates for Milling, Manufacturing, Fabricating, Demolition, Renovation, and Waste Disposal," which is contained in Docket A-88-28. Estimated process emissions under the current NESHAP at full compliance for milling, manufacturing, and fabricating are approximately 7,400 kg/yr. Based on current practices, estimated emissions from the removal activities associated with demolition and renovation are approximately 1,300 kg/yr and estimated waste disposal emissions from all sources are 227,000 kg/yr. If demolition and renovation were in full compliance, estimated emissions from asbestos removal activities associated with demolition and renovation would be about 700 kg/yr. Estimated emissions from waste disposal, assuming full compliance with the NESHAP by all sources, would be about 600 kg/yr.

The costs of the revisions are expected to be small relative to normal operating costs for these industries. The revisions are intended to promote compliance and enhance enforceability. Small additional costs are associated with the recordkeeping and reporting requirements of the revisions. Economic impacts of the promulgated alternatives are expected to be minimal. Adverse impacts of the promulgated revisions on water, noise, and energy were considered. Due to the nature of the revisions, no significant adverse impacts on water, noise, or energy are anticipated.

III. Public Participation

The revisions were proposed and published in the Federal Register on January 10, 1989 (54 FR 912). The preamble to the proposed standards revisions noted the availability in the docket of the supporting information used in developing the proposed revisions. Public comments were solicited at the time of proposal.

To provide interested persons the opportunity for oral presentation of data, views, or arguments concerning the proposed revisions, a public hearing was held on February 8, 1989, at Research Triangle Park, North Carolina. The hearing was open to the public, and 6 persons presented comments.

The public comment period specified in the Federal Register notice was from January 10, 1989 to March 7, 1989. One

hundred comment letters were received in response to the Federal Register proposal. The comments have been carefully considered and, where determined to be appropriate by the Administrator, changes have been made to the proposed revisions.

IV. Significant Comments and Changes to the Proposed Revisions

Comments on the proposed revisions were received from industry, trade associations and regulatory agencies. A detailed discussion of these comments and responses can be found in the promulgation BID, which is referred to in the ADDRESSES section of this preamble. The comments and responses summarized in the BID serve as the basis for the changes that have been made to the revisions between proposal and promulgation. The major comments and responses are summarized in this preamble. Most of the comment letters contained multiple comments. Significant comments have been divided into the following areas: demolition and renovation, and waste disposal.

Demolition and Renovation

Nonfriable ACM

Comment: Several commenters argued that the rule should be modified to clarify that certain products are nonfriable and, therefore, not regulated. Asbestos cement (A/C) products, including transite and exterior shingles, should be included among nonfriable products according to commenters IV-D-49, IV-D-72, and IV-D-93. Asbestos-containing flooring products, such as tile and sheet vinyl flooring, were considered by several commenters (IV-D-15, IV-D-47, IV-D-48, IV-D-55, IV-D-84, and IV-D-95) to always be nonfriable and exempt from the rule, with the exception of flooring that was being sanded (IV-D-47, IV-D-48). Another commenter, IV-D-48, in reference to asbestos roofing products, argued that there is no basis in the record for saying that severely weathered asphaltic material could become brittle. Commenters IV-D-21, IV-D-31, IV-D-48, IV-D-49, and IV-D-93 recommended that the rule be clarified to exempt all nonfriable materials as the rule is currently understood. Commenter IV-D-93 argued that in present day ACM, the asbestos fibers are locked in cement or bituminous or resinous binders and that the materials can be removed and disposed of without any significant release to the environment.

Response: In 1973 when the asbestos NESHAP rules were first promulgated for the demolition of buildings, EPA's intention was to distinguish between materials that would readily release asbestos fibers when damaged or disturbed and those materials that were unlikely to result in the release of significant amounts of asbestos fibers. To accomplish this, EPA labeled as "friable" those materials that were likely to readily release fibers. Friable materials, when dry, could easily be crumbled, pulverized, or reduced to powder using hand pressure. The term "reduced to powder" is readily understood to mean that the affected material is changed to a dust or powder that can become airborne. "Pulverized" indicates that the resulting material will include dust as well as a large number of small pieces of the original material. The term "crumbled" indicates that the affected material is easily (i.e., using hand pressure) broken into a large number of small pieces. Although dust is likely to be produced as a result of crumbling, it is possible that there are some types of materials that can be crumbled without producing dust. It is also understood that crumbling refers to an action that occurs essentially in one effort and not to repeated attempts to crumble the material. For example, floor tile in good condition can be broken by hand into a few large pieces, but it is not easily broken in one effort into many small pieces. On the other hand, floor tile that has lost its structural matrix is in poor condition and can be broken into many small pieces in one effort.

Later, EPA realized that, in some instances, nonfriable materials that were subjected to intense forces, such as the intense mechanical forces encountered during demolition, could be crumbled, pulverized, or reduced to powder. In these instances, certain materials which had been considered nonfriable appeared capable of releasing significant amounts of asbestos fibers to the atmosphere. Examples of practices that were observed by EPA to reduce otherwise nonfriable asbestos material to dust capable of becoming airborne included the breaking of nonfriable insulation from steel beams by repeatedly running over the beams with a crawler tractor. In view of the damage done to these otherwise nonfriable materials and the resulting increased potential for fiber release, these and other similar practices involving nonfriable asbestos material were considered to render nonfriable ACM into dust capable of becoming airborne.

As a result, EPA issued a policy determination in 1985 regarding the removal of nonfriable asbestos material that was consistent with EPA's intent to distinguish between material that could release significant amounts of asbestos fibers during demolition and renovation operations and those that would not. This policy determination stated in essence that any ACM, whether originally friable or nonfriable that become (or are likely to become) crumbled, pulverized, or reduced to powder are covered by the NESHAP. Specifically, the determination stated that

> * * * even though the regulations address only material that is presently friable, it does not limit itself to material that is friable at the time of notification. Rather, if at any point during the renovation or demolition, additional friable asbestos material is * * * created from nonfriable forms, then this additional friable material becomes subject to the regulations from the time of creation * * *

The issuance of this determination did not alter the intent of the NESHAP, but was consistent with the intent of the standard that was written to prevent significant emissions of asbestos fibers. The intent of the policy determination was that it apply narrowly to specific instances where otherwise nonfriable materials would be damaged during demolition or renovation to the extent that significant amounts of asbestos fibers would be released to the atmosphere. A statement in the determination to the effect that some nonfriable materials may remain nonfriable throughout demolition and renovation is evidence that this determination was intended to be narrowly interpreted and not used to require removal of all nonfriable materials. For example, materials such as resilient floor covering, asphalt roofing products, packings, and gaskets would rarely, if ever, need to be removed because, even when broken or damaged, they would not release significant amounts of asbestos fibers. But, just as it is important to recognize that some nonfriable materials do not have to be removed prior to demolition, it is also important to recognize that some nonfriable materials should be removed prior to demolition if, as a result of the forces of demolition, nonfriable material is likely to become crumbled, pulverized, or otherwise reduced to powder. For example, the A/C siding on a building that is to be demolished using a wrecking ball is very likely to be crumbled or pulverized with increased potential for the release of significant levels of asbestos fibers. Such material in this instance should be removed prior to demolition.

Since this policy determination was made, there has been some confusion in

its application. As a result, contractors operating in more than one enforcement jurisdiction have encountered different interpretations for similar demolition operations. For example, there have been instances in which contractors are required, prior to demolition, to remove floor tile in one enforcement jurisdiction but not in another. Contractors and/or building owners and operators are unsure as to what materials must be removed and what materials can be left in place and are often hesitant to proceed without a ruling from EPA, which can involve significant delays.

As a consequence, EPA received a number of requests from State and regional enforcement agencies to clarify what is required under the NESHAP in dealing with nonfriable materials since the 1985 policy determination was issued. In response to these requests, a clarification of the nonfriable issue was included in the revisions proposed on January 10, 1989. These revisions were intended to clarify the intent of the original rule. Basically, EPA stated in the January 10, 1989, Federal Register notice that certain nonfriable materials, such as floor tile, roofing products, and packings and gaskets that are in good condition, can be left in buildings being demolished because fiber release from these materials, even if the materials are damaged, is relatively small compared to the fiber release from friable materials. Other nonfriable products such as A/C products have a greater potential to release asbestos fibers when heavily damaged and may have to be removed prior to demolition.

In response to the revisions proposed on January 10, 1989, numerous comments were submitted to EPA. Many of the commenters argued that EPA was attempting to regulate nonfriable materials, which were explicitly exempted in previous asbestos NESHAP rulemakings. Many comments stated that the proposed revisions did not help to clarify EPA's position on nonfriable material and may have made matters more confusing.

In responding to the comments, a literature survey was conducted to determine if it was possible to quantify the fiber release potential of nonfriable materials when they are damaged during demolition. All of the available data on fiber release from floor tile, roofing products, gaskets, packings, and A/C products was reviewed. In some instances, the fiber release data were measured during actual removal operations, while other data were from simulated removal activities in laboratory settings. For the materials evaluated, the potential for fiber release appeared minimal and substantially lower than for friable materials. These findings, while uncertain, support EPA's original argument that there is a basis for making a distinction between materials that readily release fibers and those that do not.

As a result of the comments received on this issue and the additional information gathered in response to comments, EPA has been able to compile a list of nonfriable ACM that, under normal conditions, do not have to be removed prior to demolition operations. These ACM are not expected to release significant amounts of asbestos fibers to the outside air during demolition and, consistent with the intent of the existing standards, are not being regulated. A definition of "category I nonfriable ACM" is added to the final rule, which lists resilient floor covering, roofing products, gaskets, and packings. However, if these materials are in poor condition and are friable or they are subjected to sanding, grinding, cutting, or abrading, they are to be treated as friable asbestos material. Category I nonfriable ACM that is in poor condition, but is not friable and will not be subjected to sanding, grinding, cutting, or abrading, is not subject to the NESHAP. "In poor condition" has been defined to mean that the binding of the material is losing its integrity as indicated by peeling, cracking, or crumbling of the material. Other nonfriable materials are identified as Category II nonfriable ACM and have to be evaluated on a case-by-case basis. Category II materials that become crumbled, pulverized, or reduced to powder during removal or during demolition are covered by the NESHAP.

Broken ACM

Comment: Commenters IV-D-47, IV-D-89, IV-D-93, and IV-D-95 explained that use of the term "broken" to describe materials that are subject to the rule is inconsistent with the current NESHAP and expands coverage of the NESHAP. These commenters stated that merely breaking nonfriable material does not equate to fiber release. One commenter, IV-D-89, noted that noncompliance may increase where nonfriable material is broken during demolition or renovation, but is not controlled or reported according to the NESHAP.

Response: After considering this issue, EPA agrees with commenters that retaining the word "broken" could be interpreted as substantially increasing the scope of the standard and, therefore, has removed it from the definition. Most nonfriable materials can be broken without releasing significant quantities of airborne asbestos fibers. It is only when the material is extensively damaged, *i.e.*, crumbled, pulverized, or reduced to powder, that the potential for significant fiber release is greatly increased. Also, in the definitions of "asbestos-containing waste material," "friable asbestos material," and elsewhere, the word "broken" is deleted. The EPA is planning to issue additional information in the future on this and other aspects of the NESHAP to help enforcement officials and the regulated community interpret and apply the NESHAP provisions.

Inspections

Comment. Three commenters argued that EPA should include mandatory asbestos surveys in the rule. Commenter IV-D-4 stated that EPA should require surveys for all buildings prior to and separate from any demolition or renovation activity. Commenter IV-D-4 stated that such building surveys could become part of a public record, making the absence of a survey a violation. Commenter IV-D-4 noted that, if the survey indicated that a structure was asbestos free, all notification and enforcement costs would be eliminated. Also, commenter IV-D-4 explained that a demolition without proper notification could be easily established later.

Commenters IV-D-57 and IV-D-84 stated that EPA's requirement to survey buildings prior to demolition and renovation is implicit and should be made explicit and require that surveys be performed by an accredited asbestos inspector. Commenter IV-D-57 also noted that OSHA requires a building survey by a competent person and stated that EPA should similarly require a site-specific survey before demolition, with details on how the building will be demolished and how the asbestos will be controlled.

Response: The EPA currently requires that a facility be inspected for asbestos prior to demolition or renovation. As a result of the survey, information on the asbestos material present, the nature of the demolition or renovation, and measures that will be taken to control emissions of asbestos must be reported to EPA. Commenters IV-D-57 and IV-D-84 are correct in saying that it is an implicit requirement and that it is not stated explicitly in the rule. The final rule expressly requires a facility survey for asbestos prior to demolition or renovation. Although previously implied, this revision clarifies EPA's position on the requirement to perform building surveys.

The EPA also considered the suggestion to require that surveys be

performed by an "accredited" inspector or by a "competent" person as required by OSHA. OSHA's requirement to have a competent person perform an engineering survey prior to demolition (29 CFR 1926.850) is to ensure that the structural integrity of a structure is sufficient to prevent worker injury caused by the unplanned collapse of any portion of the structure; a search for asbestos is not required. An accredited inspector or competent person can perform the survey although using such individuals is not required. Using an accredited inspector and following the AHERA requirements for building inspections would help ensure a thorough inspection of the facility as required by the NESHAP. However, EPA has not had this requirement before and did not propose such a requirement. The EPA will consider a requirement to use accredited inspectors in future amendments to the rule.

Commenter IV-D-4's suggestion to require the survey of all buildings in advance of demolition or renovation would increase the stringency of the regulation by requiring all owners and operators to survey their facilities for asbestos even when no demolition or renovation operations were planned. The revisions proposed on January 10, 1989, are intended to clarify the rule and promote compliance. The need for a revision that would affect stringency may be considered at a later date. However, such a requirement would require a substantial commitment of resources to perform surveys of all existing buildings. In addition, it is not clear that it would always negate the need for pre-demolition inspections in the future.

Friable Asbestos Material—Analytical Method

Comment: Commenters IV-D-17, IV-D-35, and IV-D-70 supported the proposed changes to the definition of "friable asbestos material," specifically the change to percent by area. Commenter IV-D-69 argued that to go from percent weight to percent area may have a major impact on coverage because there may be wide discrepancies in the results reported by the two methods. Commenter IV-D-69 provided an example of this, stating that a cement-based fireproofing that contained 30 percent asbestos by area contained less than 1 percent by weight. Commenter IV-D-70 felt that the definition of "friable asbestos material" was appropriate; however, the method referenced should not be limited to point counting in view of 47 FR 1982, p. 38535, which clarifies the acceptability of "an equivalent estimation method."

Commenter IV-D-78 stated that the definition would require asbestos content to be determined by transmission electron microscopy (TEM) analysis, and that the high cost of TEM should be considered. Commenter IV-D-78 recommended that the current method continue to be accepted with TEM specified over other methods.

Response: The revisions to the asbestos NESHAP proposed on January 10, 1989 would have changed the definition of "friable asbestos material" from "greater than 1 percent weight" to "greater than 1 percent area" and referenced a method for the analysis. Because the method referenced actually contains two analytical methods—polarized light microscopy (PLM) which currently measures area, and x-ray diffraction (XRD) which measures weight—EPA has modified the definition to specify the PLM method to avoid possible confusion as to which method is referenced. Because the PLM point counting method measures percent area, the phrase "by area" is not necessary and has been taken out of the definition. The difference between percent area and percent weight depends on the density and volume of materials in the sample. These relationships are described in Asbestos Content in Bulk Insulation Samples: Visual Estimates and Weight Composition (EPA-560/5-88-011, September 1988). However, the fact remains that the PLM procedure used to determine the amount of asbestos in building materials (Interim Method for the Determination of Asbestos in Bulk Insulation Samples (EPA-600/M4-82-020, December 1982) measures percent area and not percent weight. PLM laboratories polled at meetings of the National Asbestos Council admitted that percent area is what they measure and report. Accordingly, there should be no impact on the standard from the proposed change.

Point counting is not required for the PLM procedure. An equivalent visual estimation technique may be used. Visual estimation may be made during macroscopic examination with a stereobinocular microscope, resulting in a volumetric estimation of components. For most samples, quantitation by macroscopic examination is preferred. Visual estimation may also be made during polarized light microscopy (PLM) examination, resulting in a projected area estimation of components. However, if the asbestos content is estimated to be less than 10 percent by a method other than point counting, such as visual estimation, EPA has revised the definition to require that the determination be repeated using the point counting technique with PLM. Point counting, a systematic technique for estimating concentration, may also be useful in quality assurance activities, especially in establishing a relationship between point counts and visual estimation procedures.

The accuracy of quantitative data from either technique of estimation is dependent upon several factors, including: sample homogeneity, asbestos content, asbestos fiber size, the presence of interfering matrix/binder material, and the skill of the microscopist. It is suggested that the quantitation skill of the microscopist may be improved and concurrently verified through the use of calibration standards. These standards may include well-characterized bulk materials or in-house calibration standards formulated by mixing known weights of commonly available fibrous (asbestos, cellulose, glass, *etc.*) and nonfibrous (plaster, clay, vermiculite, calcium carbonate, *etc.*) materials.

For some materials, experience has shown that gravimetry (gravimetric sample reduction) is a viable technique to aid in the determination of asbestos content. The technique involves the systematic removal (and determination of the resulting weight loss) of interfering components, and the concentration of asbestos in a residue, the components of which are identified by PLM. EPA is currently conducting research to develop procedures that will help determine the appropriate analytical procedure to use based on the type of material, the level of asbestos present in the material, as well as other factors.

TEM is not recommended for routine analysis of bulk samples. TEM may be useful in the analysis of special materials containing finely divided asbestos particles. The EPA is currently reviewing procedures for analyzing bulk samples for asbestos. Under investigation are procedures that would determine what analytical techniques are appropriate for bulk samples of different materials and different asbestos contents. For example, a simple visual estimation technique may be appropriate for the initial screening of bulk samples of friable material. If the visual estimation technique indicates that the asbestos content is less than 10 percent, additional quantitation by point counting would be required. If the material to be analyzed contains asbestos fibers below the limit of resolution for PLM, which is often true of floor tile, then analysis by TEM is appropriate.

Method of Notification

Comment: Several comments were received on the requirement to use certified mail for notifying EPA. Most of the commenters objected to the use of certified mail to the exclusion of other methods.

Commenters IV-D-23, IV-D-24, IV-D-25, IV-D-42, IV-D-78, IV-D-59, and IV-D-65 considered the certified mail requirement to be unnecessary for EPA to achieve the intended purpose of the notification process. It was stated that certified mail would require a trip to a post office, which is a deterrent to timely notification. Commenters IV-D-23, IV-D-24, IV-D-41, and IV-D-78 argued that notification by telefax machine may be more practical than certified mail. Commenters IV-D-25, IV-D-65, and IV-D-83 suggested that notification by telephone or telefax be allowed, followed by a written notification. Commenters IV-D-24, IV-D-25, IV-D-42, and IV-D-65 observed that regular mailing of notices works satisfactorily and should be allowed. Commenters IV-D-28 and IV-D-66 favored allowing the use of overnight mail.

Commenter IV-D-59 argued that, if a State agency has jurisdiction, the method of notification should be left up to the State agency.

Commenter IV-D-32 argued that all notifications should be in writing because telephone notification does not result in a legally enforceable written record. Also, commenter IV-D-32 stated that allowing the use of telephones would promote schedule changes for minor reasons that would not otherwise be considered.

Response: Several of the commenters objected to the required use of certified mail even though EPA proposed the use of certified mail as a way of ensuring that owners/operators had proof of notification. In view of the negative comments and after reconsidering the issue, the EPA has decided not to require certified mail although its use would be allowed. The use of the regular mail system, *i.e.*, U.S. Postal Service, has worked satisfactorily in the past and will continue to be allowed. Also, because the rule specifies postmark "* * * or deliver * * *," private overnight mail delivery is permitted.

Regarding the use of telephone facsimile (fax) machines to transmit notices, EPA does not consider these systems to be sufficiently reliable, at this time, to allow their use. Often, it is difficult to know whether a transmission was successful. Disadvantages associated with their use include occasional incomplete transmissions and transmissions of poor quality requiring faxed messages to be followed by telephone contact to confirm proper transmission. More than one transmission may be required. In some instances, quality cannot be improved. Also, because of competing messages, it often requires a long time before a fax can be properly transmitted and verified. The EPA may consider the use of facsimile machines in the future when their reliability has been improved.

The EPA does not consider it necessary to allow the use of the telephone for the original notification of a demolition or renovation activity covered by this standard. The notification must be in writing.

Where States or local authorities enforce their own asbestos regulations, they may choose the notification procedures. But if a State is delegated authority for enforcing the NESHAP, then they must adhere to the NESHAP's requirements.

The EPA is in agreement with the commenter who favors written notifications over telephone notifications and the final rule continues to require the former.

It should be noted that OSHA has recently proposed notification requirements (55 FR 29712, July 20, 1990) similar to those in the NESHAP. The EPA is coordinating with OSHA during their rulemaking to determine the most efficient mechanism to avoid duplication and ensure that both EPA and OSHA receive adequate notice without unduly burdening industry.

Renotification

Comment: Numerous comments were received on the proposed renotification requirements. Although a few favored the requirements as proposed and a few thought the requirements should be more stringent, most of the commenters favored the use of telephone renotification. The comments were as follows:

Commenter IV-D-28 disagreed with the NADC comment in the proposal preamble that renotification by telephone should be allowed; commenter IV-D-28 recommended a 10-day written notice for all projects.

Commenter IV-D-21 suggested that the renotification provisions be made more flexible by allowing the actual start date to vary by a couple of days for projects lasting longer than 5 days before requiring the owner/operator to renotify.

Commenters IV-D-21, IV-D-25, IV-D-26, IV-D-36, IV-D-37, IV-D-41, IV-D-42, IV-D-45, IV-D-46, IV-D-49, IV-D-50, IV-D-58, IV-D-59, IV-D-60, IV-D-61, IV-D-62, IV-D-65, IV-D-69, IV-D-71, IV-D-73, IV-D-74, IV-D-76, IV-D-87, IV-D-88, and IV-D-94 suggested that EPA allow the use of some other means besides certified mail for renotification, such as same day telephone or telefax messages, when a 5-day written notice would further delay the project. This would be simpler and less time-consuming. Commenter IV-D-41 also suggested that, when it is feasible to provide a 5-day written notice, i.e., delays are known at least 5 days in advance, then such notice would be provided. Also, as commenters IV-D-46, IV-D-49, IV-D-50, IV-D-58, IV-D-60, IV-D-62, IV-D-69, and IV-D-73 suggested, a telephone notice could be followed by a written notice.

According to commenters IV-D-23, IV-D-24, IV-D-36, IV-D-37, IV-D-41, IV-D-42, IV-D-43, IV-D-45, IV-D-46, IV-D-49, IV-D-50, IV-D-51, IV-D-58, IV-D-59, IV-D-63, IV-D-64, IV-D-73, IV-D-75, IV-D-76, IV-D-78, IV-D-87, IV-D-88, and IV-D-94, there are numerous unforeseen factors, such as equipment mobilization problems, personnel availability, weather, or other project difficulties, that can cause a removal project to start on a date other than the one submitted in the original notification. These commenters explained that the proposed renotification requirements, with their additional waiting requirements, could result in unreasonable project delays and significantly increased project costs. Several of these commenters and commenter IV-D-84 suggested that EPA allow a project to start within some reasonable period of time, such as a couple of days, of the original start date without having to renotify EPA in writing. The EPA should provide for some flexibility in predicting the exact start date. In the experience of one of the commenters, jobs usually start within a day or two of the scheduled date.

Response: The EPA agrees that a 10-day advance notice is appropriate for demolitions and renovations that can be planned for and scheduled. In some situations, however, such as emergency renovations or government-ordered demolition of buildings that are in danger of imminent collapse, EPA considers shorter notification periods appropriate. For renotification, a 10-day additional waiting period would be excessively burdensome.

The EPA has considered the suggestion that telephone renotification be permitted and has determined that providing for the use of the telephone, followed by a written notice, would provide the necessary flexibility and would be in the best interests of both

the regulated community and EPA. The EPA does not want to interfere with commerce by requiring a 5-day waiting period for a written renotification when a telephone call followed by a written renotification would suffice. Nor does EPA wish to make useless visits to jobs that have been rescheduled because a written renotification of a change in start date was not received in time.

Emergency Renovation

Comment: Commenters IV-D-9, IV-D-14, IV-D-41, IV-D-42, and IV-D-49 stated that the scope of the term "emergency renovation operation" should not be limited to events resulting in "unsafe conditions," but should include events such as fires, ruptured pipes, boiler failures, and other situations that could present potential public health or safety hazards if not immediately attended to. Commenter IV-D-18 asked if the definition would include the release of asbestos into the air. Commenter IV-D-63 recommended that the definition include operations necessary to protect equipment from significant damage.

Response: Events that would necessitate an emergency renovation include those that may produce immediately unsafe conditions as well as those that, if not quickly remedied, could reasonably be foreseen to result in an unsafe or detrimental effect on health. For example, a boiler in an apartment building that suddenly malfunctions during the winter would need to be repaired immediately. To protect equipment from significant damage and to avoid imposing an unreasonable financial burden by requiring sources that experience a sudden unexpected equipment failure to wait 10 days, the final rule includes equipment damage and financial burden as additional reasons for emergency renovations, and the definition of emergency renovation is revised accordingly.

Definition of Facility

Comment: Several commenters argued that the exclusion of residential facilities having four or fewer dwelling units should be eliminated. Commenter IV-D-89 asserted that residential demolition and renovation and associated waste disposal involve significant quantities of asbestos and should be regulated. Commenter IV-D-54 argued that residential buildings having four or fewer units should not be exempt from the work practices provisions even if they are exempt from the notification requirements. Commenter IV-D-94 recommended that only facilities with one dwelling unit be excluded because renters of apartments are frequently exposed as a result of asbestos work performed by untrained workers.

Response: The recommendation to remove the exemption for residential facilities having four or fewer dwelling units would expand the scope of the rule. Revisions that alter stringency may be considered during a later rulemaking. However, EPA does not consider residential structures that are demolished or renovated as part of a commercial or public project to be exempt from this rule. For example, the demolition of one or more houses as part of an urban renewal project, a highway construction project, or a project to develop a shopping mall, industrial facility, or other private development, would be subject to the NESHAP. Nor would the conversion of a hotel or large apartment building to a condominium, a cooperative, or a loft exempt the structure from the NESHAP. To clarify that condominiums, cooperatives, and lofts which exceed four dwelling units are subject to the NESHAP, the definition of facility has been modified accordingly. The owner of a home that renovates his house or demolishes it to construct another house is not to be subject to the NESHAP.

Definition of Installation

Comment: Commenter IV-D-83 argued that the definition of "installation" needs clarification and asks whether a group of residential buildings would be excluded. The commenter argued that a group of residential buildings at one location being demolished or renovated by one developer should be covered.

Response: A group of residential buildings under the control of the same owner or operator is considered an installation according to the definition of "installation" and is, therefore, covered by the rule. As an example, several houses located on highway right-of-way that are all demolished as part of the same highway project would be considered an "installation," even when the houses are not proximate to each other. In this example, the houses are under the control of the same owner or operator, i.e., the highway agency responsible for the highway project.

Training

Comment: Commenters IV-D-18 and IV-D-66 recommended that a refresher course be attended every 2 years.

Response: Regarding the commenters who recommended that refresher courses be taken every 2 years, EPA agrees and has modified the rule to require refresher courses. The EPA considers such additional training important to maintain familiarity with the NESHAP as well as to keep abreast of any changes in the standards.

Sanding, Grinding, or Abrading Nonfriable ACM

Comment: Commenters IV-D-15, IV-D-47, IV-D-48, IV-D-55, IV-D-84, and IV-D-85 considered asbestos-containing flooring products, such as tile and sheet vinyl flooring, to always be nonfriable and exempt from the rule, with the exception of flooring that was being sanded (Commenters IV-D-47 and IV-D-48.)

Response: The EPA considers the deliberate sanding, grinding, or abrading (including drilling, cutting, and chipping) of all nonfriable materials, including resilient floor covering, asphalt roofing material, packings, and gaskets to be sources of asbestos emissions and the revisions require otherwise nonfriable ACM to be treated as if it were friable when it is sanded, ground or abraded.

Also, a definition of "grinding" is added to clarify the types of activities, especially those involving nonfriable asbestos materials, that are subject to the regulation. For example, typical floor tile removal methods, such as mechanical chipping, result in the floor tile being broken up into numerous small fragments. This removal method is subject to the NESHAP provisions. Other floor tile removal methods are available that do not result in the material being so severely damaged. Such methods include the use of heat from heat guns or electric heat machines, the use of infrared machines, flooding with water or amended water, and the use of dry ice or liquid nitrogen. These methods when properly utilized allow the tiles to be removed with a minimum of damage to the tiles and would not be subject to the NESHAP.

Definition of Nonfriable Asbestos Material

Comment: Commenters IV-D-15 and IV-D-69 asserted that the meaning of "nonfriable" is unclear because it was not defined in the revisions proposed on January 10, 1990. A problem may result if it is considered the opposite of friable. Commenter IV-D-39 also argued for a definition of "nonfriable" and asserted that, like "friable," the threshold of at least 1 percent by area should apply.

Response: The EPA agrees that the meaning of "nonfriable" needs to be clarified. A definition of "nonfriable asbestos material" has been added to the final rule. The EPA considers nonfriable asbestos material to be material containing more than 1 percent

asbestos by area that cannot be crumbled, pulverized, or reduced to power by hand pressure. However, some nonfriable asbestos materials can be crumbled, pulverized, etc., in the course of demolition/renovation operations leading to asbestos emissions and are, therefore, subject to control under the NESHAP.

Waste Disposal

Marking

Comment: Commenters IV-D-61 and IV-D-98 asserted that the term "placard" is inappropriate because it has a specific application under DOT regulations for hazardous waste transport, and that the proposal should be revised to maintain the distinction between "marking" and "placarding" as was done in RCRA and TSCA rulemakings.

Response: The EPA has modified the final rule to replace the term "placard," a term used by the DOT in its regulation of the transportation of hazardous materials, with the term "mark" as suggested by the commenters. This should help avoid confusing DOT requirements with requirements under the NESHAP.

Labeling

Comment: Commenters IV-D-18, IV-D-28, IV-D-41, and IV-D-84 recommended that EPA in Section 61.150, and perhaps elsewhere, cite only OSHA labels and delete references to other labels because OSHA requires the use of their labels in all cases.

Response: The EPA agrees with the commenters who suggest that only OSHA labels be required on containers and has revised the final rule accordingly.

Offsite Disposal

Comment: Two commenters were concerned with placarding and other requirements of § 61.149(d). Commenter IV-D-22 stated that his company moves tailings from the mill by dump truck or earth-moving equipment to a disposal site on company property and would like the requirements for placards, etc., in § 61.149(d) changed so that they would apply only to transport to an offsite disposal facility.

Commenter IV-D-93 also suggested that the requirements of § 61.149(d) should apply only to vehicles transferring waste offsite.

Response: Although company personnel may not require a warning that asbestos waste is being transported, others who are on site and who are not company employees, e.g., vendor and construction personnel, clearly do. Further, OSHA requires that workers be informed of hazards to which they are exposed. Accordingly, EPA believes the provisions of § 61.149(d) are appropriate as proposed and should not be changed as suggested.

EPA Identification Number

Comment: Several comments addressed the proposal to assign identification numbers to generators of asbestos waste. Most of the commenters found the requirement confusing. Commenters IV-D-9 and IV-D-49 stated that the system of using EPA identification numbers is confusing and misleading and should be subject to public comment rather than tacked onto the final version of the amendments. Commenter IV-D-25 wondered how the system is to operate and whether they would use the number they already have for hazardous waste. Commenter IV-D-26 was unclear as to who the generator would be and suggested that the abatement contractor be considered the generator. Commenter IV-D-28 thought that this requirement would generate a list of one-time generators, and that it should be deferred for further study. Commenter IV-D-41 asked if RCRA hazardous waste identification numbers were going to be assigned to asbestos waste generators. As explained by commenter IV-D-61, not all generators will have an EPA identification number as required in § 61.150(d) (1)(i) and (4)(i). Commenters IV-D-62 and IV-D-63 expressed confusion over the proposed identification number and urged that a single number be assigned to an entire company, rather than to each building or facility. Commenter IV-D-18 asked how the identification numbers are to be determined and assigned; is it to be done now; and, if the program is delegated to a State or local program, would this require a State identification number?

Response: Because of the confusion expressed by all the commenters over how a system of assigning identification numbers to asbestos waste generators would work, EPA has reconsidered this revision and has decided to delete the requirement for an identification number. The EPA is confident that, even without such a unique numbering system, it will be possible to track waste shipments for the purpose of pursuing enforcement actions.

Semiannual Reports

Comment: Commenter IV-D-4 opposed semiannual reporting by generators or disposal sites but recommended exception reporting by both. Commenter IV-D-9 noted that semiannual reporting is also redundant in view of the Superfund Amendments and Reauthorization Act (SARA) Title III regulations. Commenters IV-D-28, IV-D-39, IV-D-41, IV-D-75, and IV-D-83 asserted that EPA should delete the semiannual reporting requirement in § 61.150(d)(4) because it is redundant since the information is also provided on the waste tracking form and will just add more paperwork. Commenter IV-D-94 was concerned that small, rural landfills will use the proposed recordkeeping requirements as an excuse to refuse to accept asbestos waste, which could increase illegal dumping. Commenter IV-D-94 stated that the regulation in effect prior to the January 10, 1989, proposal should be retained.

Commenters IV-D-24, IV-D-61, and IV-D-62 noted that most waste shipment reporting now occurs on an annual basis and that they preferred annual to semiannual reporting. Commenter IV-D-41 recommended that EPA adopt the biennial reporting used by EPA's Office of Solid Waste (OSW). Commenter IV-D-65 stated that, if necessary, EPA should supplement the existing biennial RCRA report.

Commenter IV-D-63 asserted that it is unnecessary for the generator to submit semiannual waste disposal reports. Commenter IV-D-81 stated that the proposal imposes redundant reporting requirements on owners/operators due to § 61.150(c)(4).

Commenter IV-D-51 argued that industrial landfills on site that are subject to RCRA and State statutes should be exempt from the reporting and recordkeeping requirements of § 61.150(d). Commenter IV-D-55 stated that § 61.150(d) does not define adequately who keeps disposal records and who submits semiannual reports. Commenter IV-D-55 felt that building owners are unfamiliar with the report called for in § 61.150(d)(4).

Response: Upon additional consideration of this provision, EPA has decided to omit the requirement for semiannual reporting from today's rule. This decision is based in part on several comments opposing semiannual reporting as unnecessary. In addition, because of the large commitment of enforcement resources that would be required for such a system to properly function, EPA believes that the proposal is overly ambitious at this time. The EPA believes, however, that enforcement can use the available information and adequately identify violators by comparing the waste records that are required to be kept by waste generators and waste disposal sites. At this time, a more workable

solution will be to require disposal sites to report to EPA whenever there is a discrepancy between the amount of waste received and the amount reported on the waste shipment papers. The discrepancy report should be submitted to the same agency that was notified of the demolition or renovation and, if different, to the agency responsible for administering the NESHAP program for the disposal site. In addition, new and existing disposal sites will be required to comply with the general reporting provisions of 40 CFR part 61. Specifically, new disposal sites will be required to comply with the requirement to apply for approval to construct (§ 61.07), and the requirements to notify EPA of startup dates (§ 61.09). Existing disposal sites that will accept asbestos waste after the effective date of the rule will be required to supply EPA with certain information concerning their operations (§ 61.10). This information will assist enforcement in tracking asbestos waste.

Excepted Waste Shipment Report

The proposed revisions included a requirement for waste generators to indicate, as part of a semiannual report to the Administrator, waste shipments for which 35 days or more have elapsed since the waste was shipped without the waste generator having received a copy of the WSR signed and dated by the disposal site owner or operator. While EPA has determined that semiannual reports are not necessary, it considers this requirement a vital part of the asbestos waste tracking system and a provisions for excepted waste shipment reports is included in the final rule.

Waste Conversion Processes

Comment: Commenter IV–D–21 asked that procedures for sample preparation for TEM be clarified; that comminution size of particle reduction be specified; that the standard or interim method of analysis that is acceptable be identified; and that laboratory qualifications meeting requirements of the National Institute of Standards and Technology (NIST) and AHERA be identified.

Response: Currently EPA has no protocol for TEM analysis of output materials. The final rule requires the owner or operator of waste conversion processes to submit a protocol for sampling and analysis by TEM for approval by EPA.

V. Administrative

The docket is an organized and complete file of all the information considered by EPA in the development of this rulemaking. The docket is a dynamic file, since material is added throughout the rulemaking development. The docketing system is intended to allow members of the public and industries involved to readily identify and locate documents so that they can effectively participate in the rulemaking process. Along with the statement of basis and purpose of the proposed and promulgated revisions and EPA responses to significant comments, the contents of the docket, except for interagency review materials, will serve as the record in case of judicial review (section 307(d)(7)(A)).

The effective date of this regulation is November 20, 1990. Section 112 of the Clean Air Act provides that standards of performance or revisions thereof become effective upon promulgation except that in the case of an existing source, the standard shall not apply until 90 days after its effective date.

As prescribed by section 112, the promulgation of these standards was preceded by the Administrator's determination that asbestos presents a significant risk to human health as a result of air emissions from one or more source categories and is therefore a hazardous air pollutant (36 FR 3031, dated March 31, 1971). In accordance with section 117 of the Act, publication of these promulgated standards was preceded by consultation with appropriate advisory committees, independent experts, and Federal departments and agencies.

Section 317 of the Clean Air Act requires the Administrator to prepare an economic impact assessment for any new standard promulgated under section 112 of the Act. Since the costs of the revision will be small, an economic impact assessment was not considered necessary for this regulation.

Information collection requirements associated with this regulation (those included in 40 CFR part 60, subpart A and subpart XXX) have been approved by the Office of Management and Budget (OMB) under the provisions of the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.* and have been assigned OMB control number (2060–0101).

Under Executive Order 12291, EPA is required to judge whether a regulation is a "major rule" and therefore subject to the requirements of a regulatory impact analysis (RIA). The Agency has determined that this regulation would result in none of the adverse economic effects set forth in section 1 of the Order as grounds for finding a regulation to be a "major rule." The Agency has, therefore, concluded that this regulation is not a "major rule" under Executive Order 12291.

The Regulatory Flexibility Act of 1980 requires the identification of potentially adverse impacts of Federal regulations upon small business entities. The Act specifically requires the completion of a Regulatory Flexibility Analysis in those instances where small business impacts are possible. Because these standards impose no adverse economic impacts, a Regulatory Flexibility Analysis has not been conducted.

Pursuant to the provisions of 5 U.S.C. 605(b), I hereby certify that this rule will not have a significant economic impact on a substantial number of small entities.

List of Subjects in 40 CFR Part 61

Asbestos, Beryllium, Benzene, Hazardous substances, Mercury, Reporting and recordkeeping requirements, Vinyl chloride, Blast furnaces, Steel mills.

Dated: October 29, 1990.

William K. Reilly,

Administrator.

40 CFR part 61 is amended as follows:

PART 61—[AMENDED]

1. The authority citation for 40 CFR part 61, subpart M, is revised to read as follows:

Authority: 42 U.S.C. 7401, 7412, 7414, 7416, 7601.

2.–3. Section 61.140 is revised to read as follows:

§ 61.140 Applicability.

The provisions of this subpart are applicable to those sources specified in § 61.142 through 61.151, 61.154, and 61.155.

4. In § 61.141, the following definitions are revised: "Asbestos-containing waste materials," "Commercial asbestos," "Demolition," "Emergency renovation operation," "Fabricating," "Facility," "Facility component," "Friable asbestos materials," "Inactive waste disposal site," "Manufacturing," "Outside air," "Particulate asbestos material," "Planned renovation operation," "Remove," "Renovation," "Roadways," "Strip," and "Visible emissions."

The following definitions are added: "Adequately wet," "Category I nonfriable ACM," "Cutting," "Category II nonfriable ACM," "Fugitive sources," "Glove bag," "Grinding," "In poor condition," "Installation," "Leak-tight," "Malfunction," "Natural barrier," "Nonfriable asbestos-containing material," "Nonscheduled renovation operation," "Owner or operator of a demolition or a renovation activity," "Regulated asbestos-containing material," "Resilient floor covering," "Waste generator," "Waste shipment record," and "Working day."

The definitions, "Adequately wetted" and "Asbestos material," are removed.

§ 61.141 Definitions.

* * * * *

Adequately wet means sufficiently mix or penetrate with liquid to prevent the release of particulates. If visible emissions are observed coming from asbestos-containing material, then that material has not been adequately wetted. However, the absence of visible emissions is not sufficient evidence of being adequately wet.

* * * * *

Asbestos-containing waste materials means mill tailings or any waste that contains commercial asbestos and is generated by a source subject to the provisions of this subpart. This term includes filters from control devices, friable asbestos waste material, and bags or other similar packaging contaminated with commercial asbestos. As applied to demolition and renovations operations, this term also includes regulated asbestos-containing material waste and materials contaminated with asbestos including disposable equipment and clothing.

* * * * *

Category I nonfriable asbestos-containing material (ACM) means asbestos-containing packings, gaskets, resilient floor covering, and asphalt roofing products containing more than 1 percent asbestos as determined using the method specified in appendix A, subpart F, 40 CFR part 763, section 1, Polarized Light Microscopy.

Category II nonfriable ACM means any material, excluding Category I nonfriable ACM, containing more than 1 percent asbestos as determined using the methods specified in appendix A, subpart F, 40 CFR part 763, section 1, Polarized Light Microscopy that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

Commercial asbestos means any material containing asbestos that is extracted from ore and has value because of its asbestos content.

Cutting means to penetrate with a sharp-edged instrument and includes sawing, but does not include shearing, slicing, or punching.

Demolition means the wrecking or taking out of any load-supporting structural member of a facility together with any related handling operations or the intentional burning of any facility.

Emergency renovation operation means a renovation operation that was not planned but results from a sudden, unexpected event that, if not immediately attended to, presents a safety or public health hazard, is necessary to protect equipment from damage, or is necessary to avoid imposing an unreasonable financial burden. This term includes operations necessitated by nonroutine failures of equipment.

Fabricating means any processing (*e.g.*, cutting, sawing, drilling) of a manufactured product that contains commercial asbestos, with the exception of processing at temporary sites (field fabricating) for the construction or restoration of facilities. In the case of friction products, fabricating includes bonding, debonding, grinding, sawing, drilling, or other similar operations performed as part of fabricating.

Facility means any institutional, commercial, public, industrial, or residential structure, installation, or building (including any structure, installation, or building containing condominiums or individual dwelling units operated as a residential cooperative, but excluding residential buildings having four or fewer dwelling units); any ship; and any active or inactive waste disposal site. For purposes of this definition, any building, structure, or installation that contains a loft used as a dwelling is not considered a residential structure, installation, or building. Any structure, installation or building that was previously subject to this subpart is not excluded, regardless of its current use or function.

Facility component means any part of a facility including equipment.

Friable asbestos material means any material containing more than 1 percent asbestos as determined using the method specified in appendix A, subpart F, 40 CFR part 763 section 1, Polarized Light Microscopy, that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. If the asbestos content is less than 10 percent as determined by a method other than point counting by polarized light microscopy (PLM), verify the asbestos content by point counting using PLM.

Fugitive source means any source of emissions not controlled by an air pollution control device.

Glove bag means a sealed compartment with attached inner gloves used for the handling of asbestos-containing materials. properly installed and used, glove bags provide a small work area enclosure typically used for small-scale asbestos stripping operations. Information on glove-bag installation, equipment and supplies, and work practices is contained in the Occupational Safety and Health Administration's (OSHA's) final rule on occupational exposure to asbestos (appendix G to 29 CFR 1926.58).

Grinding means to reduce to powder or small fragments and includes mechanical chipping or drilling.

In poor condition means the binding of the material is losing its integrity as indicated by peeling, cracking, or crumbling of the material.

Inactive waste disposal site means any disposal site or portion of it where additional asbestos-containing waste material has not been deposited within the past year.

Installation means any building or structure or any group of buildings or structures at a single demolition or renovation site that are under the control of the same owner or operator (or owner or operator under common control).

Leak-tight means that solids or liquids cannot escape or spill out. It also means dust-tight.

Malfunction means any sudden and unavoidable failure of air pollution control equipment or process equipment or of a process to operate in a normal or usual manner so that emissions of asbestos are increased. Failures of equipment shall not be considered malfunctions if they are caused in any way by poor maintenance, careless operation, or any other preventable upset conditions, equipment breakdown, or process failure.

Manufacturing means the combining of commercial asbestos—or, in the case of woven friction products, the combining of textiles containing commercial asbestos—with any other material(s), including commercial asbestos, and the processing of this combination into a product. Chlorine production is considered a part of manufacturing.

Natural barrier means a natural object that effectively precludes or deters access. Natural barriers include physical obstacles such as cliffs, lakes or other large bodies of water, deep and wide ravines, and mountains. Remoteness by itself is not a natural barrier.

Nonfriable asbestos-containing material means any material containing more than 1 percent asbestos as determined using the method specified in appendix A, subpart F, 40 CFR part 763, section 1, Polarized Light Microscopy, that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

Nonscheduled renovation operation means a renovation operation necessitated by the routine failure of equipment, which is expected to occur within a given period based on past operating experience, but for which an exact date cannot be predicted.

Outside air means the air outside buildings and structures, including, but

not limited to, the air under a bridge or in an open air ferry dock.

Owner or operator of a demolition or renovation activity means any person who owns, leases, operates, controls, or supervises the facility being demolished or renovated or any person who owns, leases, operates, controls, or supervises the demolition or renovation operation, or both.

Particulate asbestos material means finely divided particles of asbestos or material containing asbestos.

Planned renovation operations means a renovation operation, or a number of such operations, in which some RACM will be removed or stripped within a given period of time and that can be predicted. Individual nonscheduled operations are included if a number of such operations can be predicted to occur during a given period of time based on operating experience.

Regulated asbestos-containing material (RACM) means (a) Friable asbestos material, (b) Category I nonfriable ACM that has become friable, (c) Category I nonfriable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or (d) Category II nonfriable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations regulated by this subpart.

Remove means to take out RACM or facility components that contain or are covered with RACM from any facility.

Renovation means altering a facility or one or more facility components in any way, including the stripping or removal of RACM from a facility component. Operations in which load-supporting structural members are wrecked or taken out are demolitions.

Resilient floor covering means asbestos-containing floor tile, including asphalt and vinyl floor tile, and sheet vinyl floor covering containing more than 1 percent asbestos as determined using polarized light microscopy according to the method specified in appendix A, subpart F, 40 CFR part 763, Section 1, Polarized Light Microscopy.

Roadways means surfaces on which vehicles travel. This term includes public and private highways, roads, streets, parking areas, and driveways.

Strip means to take off RACM from any part of a facility or facility components.

* * * * *

Visible emissions means any emissions, which are visually detectable without the aid of instruments, coming from RACM or asbestos-containing waste material, or from any asbestos milling, manufacturing, or fabricating operation. This does not include condensed, uncombined water vapor.

Waste generator means any owner or operator of a source covered by this subpart whose act or process produces asbestos-containing waste material.

Waste shipment record means the shipping document, required to be originated and signed by the waste generator, used to track and substantiate the disposition of asbestos-containing waste material.

Working day means Monday through Friday and includes holidays that fall on any of the days Monday through Friday.

5. Section 61.142 is revised to read as follows:

§ 61.142 Standard for asbestos mills.

(a) Each owner or operator of an asbestos mill shall either discharge no visible emissions to the outside air from that asbestos mill, including fugitive sources, or use the methods specified by § 61.152 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air.

(b) Each owner or operator of an asbestos mill shall meet the following requirements:

(1) Monitor each potential source of asbestos emissions from any part of the mill facility, including air cleaning devices, process equipment, and buildings that house equipment for material processing and handling, at least once each day, during daylight hours, for visible emissions to the outside air during periods of operation. The monitoring shall be by visual observation of at least 15 seconds duration per source of emissions.

(2) Inspect each air cleaning device at least once each week for proper operation and for changes that signal the potential for malfunction, including, to the maximum extent possible without dismantling other than opening the device, the presence of tears, holes, and abrasions in filter bags and for dust deposits on the clean side of bags. For air cleaning devices that cannot be inspected on a weekly basis according to this paragraph, submit to the Administrator, and revise as necessary, a written maintenance plan to include, at a minimum, the following:

(i) Maintenance schedule.

(ii) Recordkeeping plan.

(3) Maintain records of the results of visible emissions monitoring and air cleaning device inspections using a format similar to that shown in Figures 1 and 2 and include the following:

(i) Date and time of each inspection.

(ii) Presence or absence of visible emissions.

(iii) Condition of fabric filters, including presence of any tears, holes, and abrasions.

(iv) Presence of dust deposits on clean side of fabric filters.

(v) Brief description of corrective actions taken, including date and time.

(vi) Daily hours of operation for each air cleaning device.

(4) Furnish upon request, and make available at the affected facility during normal business hours for inspection by the Administrator, all records required under this section.

(5) Retain a copy of all monitoring and inspection records for at least 2 years.

(6) Submit quarterly a copy of visible emission monitoring records to the Administrator if visible emissions occurred during the report period. Quarterly reports shall be postmarked by the 30th day following the end of the calendar quarter.

BILLING CODE 6560-50-M

Date of inspection (mo/day/yr)	Time of inspection (a.m./p.m.)	Air cleaning device or fugitive source designation or number	Visible emissions observed (yes/no), corrective action taken	Daily operating hours	Inspector's initials

Figure 1. Record of Visible Emission Monitoring

1. Air cleaning device designation or number _____

2. Date of inspection _____ _____ _____ _____

3. Time of inspection _____ _____ _____ _____

4. Is air cleaning device operating properly (yes/no) _____ _____ _____ _____

5. Tears, holes, or abrasions in fabric filter (yes/no) _____ _____ _____ _____

6. Dust on clean side of fabric filters (yes/no) _____ _____ _____ _____

7. Other signs of malfunctions or potential malfunctions (yes/no) _____ _____ _____ _____

8. Describe other malfunctions or signs of potential malfunctions. _____

_____

_____

9. Describe corrective action(s) taken. _____

_____

_____

10. Date and time corrective action taken _____ _____ _____ _____

11. Inspected by

_____ _____ _____ _____
(Print/Type Name) (Title) (Signature) (Date)

_____ _____ _____ _____
(Print/Type Name) (Title) (Signature) (Date)

Figure 2. Air Cleaning Device Inspection Checklist

BILLING CODE 6560-50-C

6. Section 61.143 is revised to read as follows:

§ 61.143 Standard for roadways.

No person may construct or maintain a roadway with asbestos tailings or asbestos-containing waste material on that roadway, unless, for asbestos tailings,

(a) It is a temporary roadway on an area of asbestos ore deposits (asbestos mine); or

(b) It is a temporary roadway at an active asbestos mill site and is encapsulated with a resinous or bituminous binder. The encapsulated road surface must be maintained at a minimum frequency of one per year to prevent dust emissions; or

(c) It is encapsulated in asphalt concrete meeting the specifications contained in section 401 of Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP–85, 1985, or their equivalent.

7. In § 61.144, paragraph (a)(9) and paragraphs (b) (1) and (2) are revised, and paragraphs (b)(3) through (b)(8) are added to read as follows:

§ 61.144 Standards for manufacturing.

(a) * * *

(9) The manufacture of chlorine utilizing asbestos diaphragm technology.

* * * * *

(b) * * *

(1) Discharge no visible emissions to the outside air from these operations or from any building or structure in which they are conducted or from any other fugitive sources; or

(2) Use the methods specified by § 61.152 to clean emissions from these operations containing particulate asbestos material before they escape to, or are vented to, the outside air.

(3) Monitor each potential source of asbestos emissions from any part of the manufacturing facility, including air cleaning devices, process equipment, and buildings housing material processing and handling equipment, at least once each day during daylight hours for visible emissions to the outside air during periods of operation. The monitoring shall be visual observation of at least 15 seconds duration per source of emissions.

(4) Inspect each air cleaning device at least once each week for proper operation and for changes that signal the potential for malfunctions, including, to the maximum extent possible without dismantling other than opening the device, the presence of tears, holes, and abrasions in filter bags and for dust deposits on the clean side of bags. For air cleaning devices that cannot be inspected on a weekly basis according to this paragraph, submit to the Administrator, and revise as necessary, a written maintenance plan to include, at a minimum, the following:

(i) Maintenance schedule.

(ii) Recordkeeping plan.

(5) Maintain records of the results of visible emission monitoring and air cleaning device inspections using a format similar to that shown in Figures 1 and 2 and include the following.

(i) Date and time of each inspection.

(ii) Presence or absence of visible emissions.

(iii) Condition of fabric filters, including presence of any tears, holes and abrasions.

(iv) Presence of dust deposits on clean side of fabric filters.

(v) Brief description of corrective actions taken, including date and time.

(vi) Daily hours of operation for each air cleaning device.

(6) Furnish upon request, and make available at the affected facility during normal business hours for inspection by the Administrator, all records required under this section.

(7) Retain a copy of all monitoring and inspection records for at least 2 years.

(8) Submit quarterly a copy of the visible emission monitoring records to the Administrator if visible emissions occurred during the report period. Quarterly reports shall be postmarked by the 30th day following the end of the calendar quarter.

8. Sections 61.146 and 61.147 are removed, and § 61.145 is revised to read as follows:

§ 61.145 Standard for demolition and renovation.

(a) *Applicability.* To determine which requirements of paragraphs (a), (b), and (c) of this section apply to the owner or operator of a demolition or renovation activity and prior to the commencement of the demolition or renovation, thoroughly inspect the affected facility or part of the facility where the demolition or renovation operation will occur for the presence of asbestos, including Category I and Category II nonfriable ACM. The requirements of paragraphs (b) and (c) of this section apply to each owner or operator of a demolition or renovation activity, including the removal of RACM as follows:

(1) In a facility being demolished, all the requirements of paragraphs (b) and (c) of this section apply, except as provided in paragraph (a)(3) of this section, if the combined amount of RACM is

(i) At least 80 linear meters (260 linear feet) on pipes or at least 15 square meters (160 square feet) on other facility components, or

(ii) At least 1 cubic meter (35 cubic feet) off facility components where the length or area could not be measured previously.

(2) In a facility being demolished, only the notification requirements of paragraphs (b)(1), (2), (3)(i) and (iv), and (4)(i) through (vii) and (4)(ix) and (xvi) of this section apply, if the combined amount of RACM is

(i) Less than 80 linear meters (260 linear feet) on pipes less than 15 square meters (160 square feet) on other facility components, and

(ii) Less than one cubic meter (35 cubic feet) off facility components where the length or area could not be measured previously or there is no asbestos.

(3) If the facility is being demolished under an order of a State or local government agency, issued because the facility is structurally unsound and in danger of imminent collapse, only the requirements of paragraphs (b)(1), (b)(2), (b)(3)(iii), (b)(4) (except (b)(4)(viii)), (b)(5), and (c)(4) through (c)(9) of this section apply.

(4) In a facility being renovated, including any individual nonscheduled renovation operation, all the requirements of paragraphs (b) and (c) of this section apply if the combined amount of RACM to be stripped, removed, dislodged, cut, drilled, or similarly disturbed is

(i) At least 80 linear meters (260 linear feet) on pipes or at least 15 square meters (160 square feet) on other facility components, or

(ii) At least 1 cubic meter (35 cubic feet) off facility components where the length or area could not be measured previously.

(iii) To determine whether paragraph (a)(4) of this section applies to planned renovation operations involving individual nonscheduled operations, predict the combined additive amount of RACM to be removed or stripped during a calendar year of January 1 through December 31.

(iv) To determine whether paragraph (a)(4) of this section applies to emergency renovation operations, estimate the combined amount of RACM to be removed or stripped as a result of the sudden, unexpected event that necessitated the renovation.

(5) Owners or operators of demolition and renovation operations are exempt from the requirements of §§ 61.05(a), 61.07, and 61.09.

(b) *Notification requirements.* Each owner or operator of a demolition or

renovation activity to which this section applies shall:

(1) Provide the Administrator with written notice of intention to demolish or renovate. Delivery of the notice by U.S. Postal Service, commercial delivery service, or hand delivery is acceptable.

(2) Update notice, as necessary, including when the amount of asbestos affected changes by at least 20 percent.

(3) Postmark or deliver the notice as follows:

(i) At least 10 working days before asbestos stripping or removal work or any other activity begins (such as site preparation that would break up, dislodge or similarly disturb asbestos material), if the operation is described in paragraphs (a) (1) and (4) (except (a)(4)(iii) and (a)(4)(iv)) of this section. If the operation is as described in paragraph (a)(2) of this section, notification is required 10 working days before demolition begins.

(ii) At least 10 working days before the end of the calendar year preceding the year for which notice is being given for renovations described in paragraph (a)(4)(iii) of this section.

(iii) As early as possible before, but not later than, the following working day if the operation is a demolition ordered according to paragraph (a)(3) of this section or, if the operation is a renovation described in paragraph (a)(4)(iv) of this section.

(iv) For asbestos stripping or removal work in a demolition or renovation operation, described in paragraphs (a) (1) and (4) (except (a)(4)(iii) and (a)(4)(iv)) of this section, and for a demolition described in paragraph (a)(2) of this section, that will begin on a date other than the one contained in the original notice, notice of the new start date must be provided to the Administrator as follows:

(A) When the asbestos stripping or removal operation or demolition operation covered by this paragraph will begin after the date contained in the notice,

(1) Notify the Administrator of the new start date by telephone as soon as possible before the original start date, and

(2) Provide the Administrator with a written notice of the new start date as soon as possible before, and no later than, the original start date. Delivery of the updated notice by the U.S. Postal Service, commercial delivery service, or hand delivery is acceptable.

(B) When the asbestos stripping or removal operation or demolition operation covered by this paragraph will begin on a date earlier than the original start date,

(1) Provide the Administrator with a written notice of the new start date at least 10 working days before asbestos stripping or removal work begins.

(2) For demolitions covered by paragraph (a)(2) of this section, provide the Administrator written notice of a new start date at least 10 working days before commencement of demolition. Delivery of updated notice by U.S. Postal Service, commercial delivery service, or hand delivery is acceptable.

(C) In no event shall an operation covered by this paragraph begin on a date other than the date contained in the written notice of the new start date.

(4) Include the following in the notice:

(i) An indication of whether the notice is the original or a revised notification.

(ii) Name, address, and telephone number of both the facility owner and operator and the asbestos removal contractor owner or operator.

(iii) Type of operation: demolition or renovation.

(iv) Description of the facility or affected part of the facility including the size (square meters [square feet] and number of floors), age, and present and prior use of the facility.

(v) Procedure, including analytical methods, employed to detect the presence of RACM and Category I and Category II nonfriable ACM.

(vi) Estimate of the approximate amount of RACM to be removed from the facility in terms of length of pipe in linear meters (linear feet), surface area in square meters (square feet) on other facility components, or volume in cubic meters (cubic feet) if off the facility components. Also, estimate the approximate amount of Category I and Category II nonfriable ACM in the affected part of the facility that will not be removed before demolition.

(vii) Location and street address (including building number or name and floor or room number, if appropriate), city, county, and state, of the facility being demolished or renovated.

(viii) Scheduled starting and completion dates of asbestos removal work (or any other activity, such as site preparation that would break up, dislodge, or similarly disturb asbestos material) in a demolition or renovation; planned renovation operations involving individual nonscheduled operations shall only include the beginning and ending dates of the report period as described in paragraph (a)(4)(iii) of this section.

(ix) Scheduled starting and completion dates of demolition or renovation.

(x) Description of planned demolition or renovation work to be performed and method(s) to be employed, including demolition or renovation techniques to be used and description of affected facility components.

(xi) Description of work practices and engineering controls to be used to comply with the requirements of this subpart, including asbestos removal and waste-handling emission control procedures.

(xii) Name and location of the waste disposal site where the asbestos-containing waste material will be deposited.

(xiii) A certification that at least one person trained as required by paragraph (c)(8) of this section will supervise the stripping and removal described by this notification. This requirement shall become effective 1 year after promulgation of this regulation.

(xiv) For facilities described in paragraph (a)(3) of this section, the name, title, and authority of the State or local government representative who has ordered the demolition, the date that the order was issued, and the date on which the demolition was ordered to begin. A copy of the order shall be attached to the notification.

(xv) For emergency renovations described in paragraph (a)(4)(iv) of this section, the date and hour that the emergency occurred, a description of the sudden, unexpected event, and an explanation of how the event caused an unsafe condition, or would cause equipment damage or an unreasonable financial burden.

(xvi) Description of procedures to be followed in the event that unexpected RACM is found or Category II nonfriable ACM becomes crumbled, pulverized, or reduced to powder.

(xvii) Name, address, and telephone number of the waste transporter.

(5) The information required in paragraph (b)(4) of this section must be reported using a form similiar to that shown in Figure 3.

(c) *Procedures for asbestos emission control.* Each owner or operator of a demolition or renovation activity to whom this paragraph applies, according to paragraph (a) of this section, shall comply with the following procedures:

(1) Remove all RACM from a facility being demolished or renovated before any activity begins that would break up, dislodge, or similarly disturb the material or preclude access to the material for subsequent removal. RACM need not be removed before demolition if:

(i) It is Category I nonfriable ACM that is not in poor condition and is not friable.

(ii) It is on a facility component that is encased in concrete or other similarly

hard material and is adequately wet whenever exposed during demolition; or

(iii) It was not accessible for testing and was, therefore, not discovered until after demolition began and, as a result of the demolition, the material cannot be safely removed. If not removed for safety reasons, the exposed RACM and any asbestos-contaminated debris must be treated as asbestos-containing waste material and adequately wet at all times until disposed of.

(iv) They are Category II nonfriable ACM and the probability is low that the materials will become crumbled, pulverized, or reduced to powder during demolition.

(2) When a facility component that contains, is covered with, or is coated with RACM is being taken out of the facility as a unit or in sections:

(i) Adequately wet all RACM exposed during cutting or disjoining operations; and

(ii) Carefully lower each unit or section to the floor and to ground level, not dropping, throwing, sliding, or otherwise damaging or disturbing the RACM.

(3) When RACM is stripped from a facility component while it remains in place in the facility, adequately wet the RACM during the stripping operation.

(i) In renovation operations, wetting is not required if:

(A) The owner or operator has obtained prior written approval from the Administrator based on a written application that wetting to comply with this paragraph would unavoidably damage equipment or present a safety hazard; and

(B) The owner or operator uses of the following emission control methods:

(*1*) A local exhaust ventilation and collection system designed and operated to capture the particulate asbestos material produced by the stripping and removal of the asbestos materials. The system must exhibit no visible emissions to the outside air or be designed and operated in accordance with the requirements in § 61.152.

(*2*) A glove-bag system designed and operated to contain the particulate asbestos material produced by the stripping of the asbestos materials.

(*3*) Leak-tight wrapping to contain all RACM prior to dismantlement.

(ii) In renovation operations where wetting would result in equipment damage or a safety hazard, and the methods allowed in paragraph (c)(3)(i) of this section cannot be used, another method may be used after obtaining written approval from the Administrator based upon a determination that it is equivalent to wetting in controlling emissions or to the methods allowed in paragraph (c)(3)(i) of this section.

(iii) A copy of the Administrator's written approval shall be kept at the worksite and made available for inspection.

(4) After a facility component covered with, coated with, or containing RACM has been taken out of the facility as a unit or in sections pursuant to paragraph (c)(2) of this section, it shall be stripped or contained in leak-tight wrapping, except as described in paragraph (c)(5) of this section. If stripped, either:

(i) Adequately wet the RACM during stripping; or

(ii) Use a local exhaust ventilation and collection system designed and operated to capture the particulate asbestos material produced by the stripping. The system must exhibit no visible emissions to the outside air or be designed and operated in accordance with the requirements in § 61.152.

(5) For large facility components such as reactor vessels, large tanks, and steam generators, but not beams (which must be handled in accordance with paragraphs (c)(2), (3), and (4) of this section), the RACM is not required to be stripped if the following requirements are met:

(i) The component is removed, transported, stored, disposed of, or reused without disturbing or damaging the RACM.

(ii) The component is encased in a leak-tight wrapping.

(iii) The leak-tight wrapping is labeled according to § 61.149(d)(1)(i), (ii), and (iii) during all loading and unloading operations and during storage.

(6) For all RACM, including material that has been removed or stripped:

(i) Adequately wet the material and ensure that it remains wet until collected and contained or treated in preparation for disposal in accordance with § 61.150; and

(ii) Carefully lower the material to the ground and floor, not dropping, throwing, sliding, or otherwise damaging or disturbing the material.

(iii) Transport the material to the ground via leak-tight chutes or containers if it has been removed or stripped more than 50 feet above ground level and was not removed as units or in sections.

(iv) RACM contained in leak-tight wrapping that has been removed in accordance with paragraphs (c)(4) and (c)(3)(i)(B)(*3*) of this section need not be wetted.

(7) When the temperature at the point of wetting is below 0 °C (32 °F):

(i) The owner or operator need not comply with paragraph (c)(2)(i) and the wetting provisions of paragraph (c)(3) of this section.

(ii) The owner or operator shall remove facility components containing, coated with, or covered with RACM as units or in sections to the maximum extent possible.

(iii) During periods when wetting operations are suspended due to freezing temperatures, the owner or operator must record the temperature in the area containing the facility components at the beginning, middle, and end of each workday and keep daily temperature records available for inspection by the Administrator during normal business hours at the demolition or renovation site. The owner or operator shall retain the temperature records for at least 2 years.

(8) Effective 1 year after promulgation of this regulation, no RACM shall be stripped, removed, or otherwise handled or disturbed at a facility regulated by this section unless at least one on-site representative, such as a foreman or management-level person or other authorized representative, trained in the provisions of this regulation and the means of complying with them, is present. Every 2 years, the trained on-site individual shall receive refresher training in the provisions of this regulation. The required training shall include as a minimum: applicability; notifications; material identification; control procedures for removals including, at least, wetting, local exhaust ventilation, negative pressure enclosures, glove-bag procedures, and High Efficiency Particulate Air (HEPA) filters; waste disposal work practices; reporting and recordkeeping; and asbestos hazards and worker protection. Evidence that the required training has been completed shall be posted and made available for inspection by the Administrator at the demolition or renovation site.

(9) For facilities described in paragraph (a)(3) of this section, adequately wet the portion of the facility that contains RACM during the wrecking operation.

(10) If a facility is demolished by intentional burning, all RACM including Category I and Category II nonfriable ACM must be removed in accordance with the NESHAP before burning.

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NOTIFICATION OF DEMOLITION AND RENOVATION

Operator Project #	Postmark	Date Received	Notification #

I. TYPE OF NOTIFICATION (O=Original R=Revised C=Cancelled):

II. FACILITY INFORMATION (Identify owner, removal contractor, and other operator)

OWNER NAME:		
Address:		
City:	State:	Zip:
Contact:		Tel:
REMOVAL CONTRACTOR:		
Address:		
City:	State:	Zip:
Contact:		Tel:
OTHER OPERATOR:		
Address:		
City:	State:	Zip:
Contact:		Tel:

III. TYPE OF OPERATION (D=Demo O=Ordered Demo R=Renovation E=Emer.Renovation):

IV. IS ASBESTOS PRESENT? (Yes/No)

V. FACILITY DESCRIPTION (Include building name, number and floor or room number)

Bldg Name:		
Address:		
City:	State:	County:
Site Location:		
Building Size:	# of Floors:	Age in Years:
Present Use:	Prior Use:	

VI. PROCEDURE, INCLUDING ANALYTICAL METHOD, IF APPROPRIATE, USED TO DETECT THE PRESENCE OF ASBESTOS MATERIAL:

VII. APPROXIMATE AMOUNT OF ASBESTOS, INCLUDING: 1. Regulated ACM to be removed 2. Category I ACM Not Removed 3. Category II ACM Not Removed	RACM To Be Removed	Nonfriable Asbestos Material Not To Be Removed		Indicate Unit of Measurement Below	
		Cat I	Cat II	UNIT	
Pipes				LnFt:	Ln m:
Surface Area				SqFt:	Sq m:
Vol RACM Off Facility Component				CuFt:	Cu m:

VIII. SCHEDULED DATES ASBESTOS REMOVAL (MM/DD/YY) Start: Complete:

IX. SCHEDULED DATES DEMO/RENOVATION (MM/DD/YY) Start: Complete:

Continued on page two

Figure 3. Notification of Demolition and Renovation

NOTIFICATION OF DEMOLITION AND RENOVATION (continued)

X. DESCRIPTION OF PLANNED DEMOLITION OR RENOVATION WORK, AND METHOD(S) TO BE USED:

XI. DESCRIPTION OF WORK PRACTICES AND ENGINEERING CONTROLS TO BE USED TO PREVENT EMISSIONS OF ASBESTOS AT THE DEMOLITION AND RENOVATION SITE:

XII. WASTE TRANSPORTER #1

Name:

Address

City:	State:	Zip:
Contact Person:		Telephone:

WASTE TRANSPORTER #2

Name:

Address:

City:	State:	Zip:
Contact Person:		Telephone:

XIII. WASTE DISPOSAL SITE

Name:

Location:

City:	State:	Zip:

Telephone:

XIV. IF DEMOLITION ORDERED BY A GOVERNMENT AGENCY, PLEASE IDENTIFY THE AGENCY BELOW:

Name:	Title:

Authority:

Date of Order (MM/DD/YY):	Date Ordered to Begin (MM/DD/YY):

XV. FOR EMERGENCY RENOVATIONS

Date and Hour of Emergency (MM/DD/YY):

Description of the Sudden, Unexpected Event:

Explanation of how the event caused unsafe conditions or would cause equipment damage or an unreasonable financial burden:

XVI. DESCRIPTION OF PROCEDURES TO BE FOLLOWED IN THE EVENT THAT UNEXPECTED ASBESTOS IS FOUND OR PREVIOUSLY NONFRIABLE ASBESTOS MATERIAL BECOMES CRUMBLED, PULVERIZED, OR REDUCED TO POWDER.

XVI. I CERTIFY THAT AN INDIVIDUAL TRAINED IN THE PROVISIONS OF THIS REGULATION (40 CFR PART 61, SUBPART M) WILL BE ON-SITE DURING THE DEMOLITION OR RENOVATION AND EVIDENCE THAT THE REQUIRED TRAINING HAS BEEN ACCOMPLISHED BY THIS PERSON WILL BE AVAILABLE FOR INSPECTION DURING NORMAL BUSINESS HOURS. (Required 1 year after promulgation)

_____ _____
(Signature of Owner/Operator) (Date)

XVII. I CERTIFY THAT THE ABOVE INFORMATION IS CORRECT.

_____ _____
(Signature of Owner/Operator) (Date)

Figure 3. Notification of Demolition and Renovation

BILLING CODE 6560-50-C

9. Section 61.148 is redesignated as § 61.146 and is amended by revising paragraphs (a), the introductory text of (b), paragraph (b)(2), and paragraph (d) to read as follows:

§ 61.146 Standard for spraying.

* * * * *

(a) For spray-on application on buildings, structures, pipes, and conduits, do not use material containing more than 1 percent asbestos as determined using the method specified in appendix A, subpart F, 40 CFR part 763, section 1, Polarized Light Microscopy, except as provided in paragraph (c) of this section.

(b) For spray-on application of materials that contain more than 1 percent asbestos as determined using the method specified in appendix A, subpart F, 40 CFR part 763, section 1, Polarized Light Microscopy, on equipment and machinery, except as provided in paragraph (c) of this section:

* * * * *

(2) Discharge no visible emissions to the outside air from spray-on application of the asbestos-containing material or use the methods specified by § 61.152 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air.

* * * * *

(d) Owners or operators of sources subject to this paragraph are exempt from the requirements of §§ 61.05(a), 61.07 and 61.09.

10. Section 61.149 is redesignated as § 61.147, paragraphs (b) (1) and (2) are revised, and paragraphs (b)(3) through (b)(8) are added to read as follows:

§ 61.147 Standard for fabricating.

* * * * *

(b) * * *

(1) Discharge no visible emissions to the outside air from any of the operations or from any building or structure in which they are conducted or from any other fugitive sources; or

(2) Use the methods specified by § 61.152 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air.

(3) Monitor each potential source of asbestos emissions from any part of the fabricating facility, including air cleaning devices, process equipment, and buildings that house equipment for material processing and handling, at least once each day, during daylight hours, for visible emissions to the outside air during periods of operation. The monitoring shall be by visual observation of at least 15 seconds duration per source of emissions.

(4) Inspect each air cleaning device at least once each week for proper operation and for changes that signal the potential for malfunctions, including, to the maximum extent possible without dismantling other than opening the device, the presence of tears, holes, and abrasions in filter bags and for dust deposits on the clean side of bags. For air cleaning devices that cannot be inspected on a weekly basis according to this paragraph, submit to the Administrator, and revise as necessary, a written maintenance plan to include, at a minimum, the following:

(i) Maintenance schedule.

(ii) Recordkeeping plan.

(5) Maintain records of the results of visible emission monitoring and air cleaning device inspections using a format similar to that shown in Figures 1 and 2 and include the following:

(i) Date and time of each inspection.

(ii) Presence or absence of visible emissions.

(iii) Condition of fabric filters, including presence of any tears, holes, and abrasions.

(iv) Presence of dust deposits on clean side of fabric filters.

(v) Brief description of corrective actions taken, including date and time.

(vi) Daily hours of operation for each air cleaning device.

(6) Furnish upon request and make available at the affected facility during normal business hours for inspection by the Administrator, all records required under this section.

(7) Retain a copy of all monitoring and inspection records for at least 2 years.

(8) Submit quarterly a copy of the visible emission monitoring records to the Administrator if visible emissions occurred during the report period. Quarterly reports shall be postmarked by the 30th day following the end of the calendar quarter.

11. Section 61.150 is redesignated as § 61.148 and revised to read as follows:

§ 61.148 Standard for insulating materials.

No owner or operator of a facility may install or reinstall on a facility component any insulating materials that contain commercial asbestos if the materials are either molded and friable or wet-applied and friable after drying. The provisions of this section do not apply to spray-applied insulating materials regulated under § 61.146.

12. Section 61.151 is redesignated as § 61.149 and is amended by revising paragraphs (a), (b), introductory text of (c), (c)(1) (ii) and (iii), and (c)(2), and adding new paragraphs (d) through (f) to read as follows:

§ 61.149 Standard for waste disposal for asbestos mills.

* * * * *

(a) Deposit all asbestos-containing waste material at a waste disposal site operated in accordance with the provisions of § 61.154; and

(b) Discharge no visible emissions to the outside air from the transfer of control device asbestos waste to the tailings conveyor, or use the methods specified by § 61.152 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air. Dispose of the asbestos waste from control devices in accordance with § 61.150(a) or paragraph (c) of this section; and

(c) Discharge no visible emissions to the outside air during the collection, processing, packaging, or on-site transporting of any asbestos-containing waste material, or use one of the disposal methods specified in paragraphs (c) (1) or (2) of this section, as follows:

(1) * * *

(ii) Discharge no visible emissions to the outside air from the wetting operation or use the methods specified by § 61.152 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air.

* * * * *

(iii) Wetting may be suspended when the ambient temperature at the waste disposal site is less than −9.5 °C (15 °F), as determined by an appropriate measurement method with an accuracy of ± 1°C (± 2 °F). During periods when wetting operations are suspended, the temperature must be recorded at least at hourly intervals, and records must be retained for at least 2 years in a form suitable for inspection.

(2) Use an alternative emission control and waste treatment method that has received prior written approval by the Administrator. To obtain approval for an alternative method, a written application must be submitted to the Administrator demonstrating that the following criteria are met:

(i) The alternative method will control asbestos emissions equivalent to currently required methods.

(ii) The suitability of the alternative method for the intended application.

(iii) The alternative method will not violate other regulations.

(iv) The alternative method will not result in increased water pollution, land pollution, or occupational hazards.

(d) When waste is transported by vehicle to a disposal site:

(1) Mark vehicles used to transport asbestos-containing waste material during the loading and unloading of the waste so that the signs are visible. The markings must:

(i) Be displayed in such a manner and location that a person can easily read the legend.

(ii) Conform to the requirements for 51 cm × 36 cm (20 in × 14 in) upright format signs specified in 29 CFR 1910.145(d)(4) and this paragraph; and

(iii) Display the following legend in the lower panel with letter sizes and styles of a visibility at least equal to those specified in this paragraph.

Legend
DANGER
ASBESTOS DUST HAZARD
CANCER AND LUNG DISEASE HAZARD
Authorized Personnel Only
Notation
2.5 cm (1 inch) Sans Serif, Gothic or Block
2.5 cm (1 inch) Sans Serif, Gothic or Block
1.9 cm (¾ inch) Sans Serif, Gothic or Block
14 Point Gothic

Spacing between any two lines must be a least equal to the height of the upper of the two lines.

(2) For off-site disposal, provide a copy of the waste shipment record, described in paragraph (e)(1) of this section, to the disposal site owner or operator at the same time as the asbestos-containing waste material is delivered to the disposal site.

(e) For all asbestos-containing waste material transported off the facility site:

(1) Maintain asbestos waste shipment records, using a form similar to that shown in Figure 4, and include the following information:

(i) The name, address, and telephone number of the waste generator.

(ii) The name and address of the local, State, or EPA Regional agency responsible for administering the asbestos NESHAP program.

(iii) The quantity of the asbestos-containing waste material in cubic meters (cubic yards).

(iv) The name and telephone number of the disposal site operator.

(v) The name and physical site location of the disposal site.

(vi) The date transported.

(vii) The name, address, and telephone number of the transporter(s).

(viii) A certification that the contents of this consignment are fully and accurately described by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations.

(2) For waste shipments where a copy of the waste shipment record, signed by the owner or operator of the designated disposal site, is not received by the waste generator within 35 days of the date the waste was accepted by the initial transporter, contact the transporter and/or the owner or operator of the designated disposal site to determine the status of the waste shipment.

(3) Report in writing to the local, State, or EPA Regional office responsible for administering the asbestos NESHAP program for the waste generator if a copy of the waste shipment record, signed by the owner or operator of the designated waste disposal site, is not received by the waste generator within 45 days of the date the waste was accepted by the initial transporter. Include in the report the following information:

(i) A copy of the waste shipment record for which a confirmation of delivery was not received, and

(ii) A cover letter signed by the waste generator explaining the efforts taken to locate the asbestos waste shipment and the results of those efforts.

(4) Retain a copy of all waste shipment records, including a copy of the waste shipment record signed by the owner or operator of the designated waste disposal site, for at least 2 years.

(f) Furnish upon request, and make available for inspection by the Administrator, all records required under this section.

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Generator	1. Work site name and mailing address	Owner's name	Owner's telephone no.
	2. Operator's name and address		Operator's telephone no.
	3. Waste disposal site (WDS) name, mailing address, and physical site location		WDS phone no.
	4. Name, and address of responsible agency		
	5. Description of materials	6. Containers No. Type	7. Total quantity m^3 (yd^3)
	8. Special handling instructions and additional information		
	9. OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations.		
	Printed/typed name & title	Signature	Month Day Year
Transporter	10. Transporter 1 (Acknowledgment of receipt of materials)		
	Printed/typed name & title Address and telephone no.	Signature	Month Day Year
	11. Transporter 2 (Acknowledgment of receipt of materials)		
	Printed/typed name & title Address and telephone no.	Signature	Month Day Year
Disposal Site	12. Discrepancy indication space		
	13. Waste disposal site owner or operator: Certification of receipt of asbestos materials covered by this manifest except as noted in item 12.		
	Printed/typed name & title	Signature	Month Day Year

(Continued)

Figure 4. Waste Shipment Record

INSTRUCTIONS

Waste Generator Section (Items 1-9)

1. Enter the name of the facility at which asbestos waste is generated and the address where the facility is located. In the appropriate spaces, also enter the name of the owner of the facility and the owner's phone number.

2. If a demolition or renovation, enter the name and address of the company and authorized agent responsible for performing the asbestos removal. In the appropriate spaces, also enter the phone number of the operator.

3. Enter the name, address, and physical site location of the waste disposal site (WDS) that will be receiving the asbestos materials. In the appropriate spaces, also enter the phone number of the WDS. Enter "on-site" if the waste will be disposed of on the generator's property.

4. Provide the name and address of the local, State, or EPA Regional office responsible for administering the asbestos NESHAP program.

5. Indicate the types of asbestos waste materials generated. If from a demolition or renovation, indicate the amount of asbestos that is

   - Friable asbestos material
   - Nonfriable asbestos material

6. Enter the number of containers used to transport the asbestos materials listed in item 5. Also enter one of the following container codes used in transporting each type of asbestos material (specify any other type of container used if not listed below):

   DM - Metal drums, barrels
   DP - Plastic drums, barrels
   BA - 6 mil plastic bags or wrapping

7. Enter the quantities of each type of asbestos material removed in units of cubic meters (cubic yards).

8. Use this space to indicate special transportation, treatment, storage or disposal or Bill of Lading information. If an alternate waste disposal site is designated, note it here. Emergency response telephone numbers or similar information may be included here.

9. The authorized agent of the waste generator must read and then sign and date this certification. The date is the date of receipt by transporter.

NOTE: The waste generator must retain a copy of this form.

(continued)

Figure 4. Waste Shipment Record

Transporter Section (Items 10 & 11)

10. & 11. Enter name, address, and telephone number of each transporter used, if applicable. Print or type the full name and title of person accepting responsibility and acknowledging receipt of materials as listed on this waste shipment record for transport. Enter date of receipt and signature.

NOTE: The transporter must retain a copy of this form.

Disposal Site Section (Items 12 & 13)

12. The authorized representative of the WDS must note in this space any discrepancy between waste described on this manifest and waste actually received as well as any improperly enclosed or contained waste. Any rejected materials should be listed and destination of those materials provided. A site that converts asbestos-containing waste material to nonasbestos material is considered a WDS.

13. The signature (by hand) of the authorized WDS agent indicates acceptance and agreement with statements on this manifest except as noted in item 12. The date is the date of signature and receipt of shipment.

NOTE: The WDS must retain a completed copy of this form. The WDS must also send a completed copy to the operator listed in item 2.

Figure 4. Waste Shipment Record

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13. Section 61.152 is redesignated as § 61.150 and is revised to read as follows:

§ 61.150 Standard for waste disposal for manufacturing, fabricating, demolition, renovation, and spraying operations.

Each owner or operator of any source covered under the provisions of §§ 61.144, 61.145, 61.146, and 61.147 shall comply with the following provisions:

(a) Discharge no visible emissions to the outside air during the collection, processing (including incineration), packaging, or transporting of any asbestos-containing waste material generated by the source, or use one of the emission control and waste treatment methods specified in paragraphs (a) (1) through (4) of this section.

(1) Adequately wet asbestos-containing waste material as follows:

(i) Mix control device asbestos waste to form a slurry; adequately wet other asbestos-containing waste material; and

(ii) Discharge no visible emissions to the outside air from collection, mixing, wetting, and handling operations, or use the methods specified by § 61.152 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air; and

(iii) After wetting, seal all asbestos-containing waste material in leak-tight containers while wet; or, for materials that will not fit into containers without additional breaking, put materials into leak-tight wrapping; and

(iv) Label the containers or wrapped materials specified in paragraph (a)(1)(iii) of this section using warning labels specified by Occupational Safety and Health Standards of the Department of Labor, Occupational Safety and Health Administration (OSHA) under 29 CFR 1910.1001(j)(2) or 1926.58(k)(2)(iii). The labels shall be printed in letters of sufficient size and contrast so as to be readily visible and legible.

(v) For asbestos-containing waste material to be transported off the facility site, label containers or wrapped materials with the name of the waste generator and the location at which the waste was generated.

(2) Process asbestos-containing waste material into nonfriable forms as follows:

(i) Form all asbestos-containing waste material into nonfriable pellets or other shapes;

(ii) Discharge no visible emissions to the outside air from collection and processing operations, including incineration, or use the method specified by § 61.152 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air.

(3) For facilities demolished where the RACM is not removed prior to demolition according to §§ 61.145(c)(1)(i), (ii), (iii), and (iv) or for facilities demolished according to § 61.145(c)(9), adequately wet asbestos-containing waste material at all times after demolition and keep wet during handling and loading for transport to a disposal site. Asbestos-containing waste materials covered by this paragraph do not have to be sealed in leak-tight containers or wrapping but may be transported and disposed of in bulk.

(4) Use an alternative emission control and waste treatment method that has received prior approval by the Administrator according to the procedure described in § 61.149(c)(2).

(5) As applied to demolition and renovation, the requirements of paragraph (a) of this section do not apply to Category I nonfriable ACM waste and Category II nonfriable ACM waste that did not become crumbled, pulverized, or reduced to powder.

(b) All asbestos-containing waste material shall be desposited as soon as is practical by the waste generator at:

(1) A waste disposal site operated in accordance with the provisions of § 61.154, or

(2) An EPA-approved site that converts RACM and asbestos-containing waste material into nonasbestos (asbestos-free) material according to the provisions of § 61.155.

(3) The requirements of paragraph (b) of this section do not apply to Category I nonfriable ACM that is not RACM.

(c) Mark vehicles used to transport asbestos-containing waste material during the loading and unloading of waste so that the signs are visible. The markings must conform to the requirements of §§ 61.149(d)(1) (i), (ii), and (iii).

(d) For all asbestos-containing waste material transported off the facility site:

(1) Maintain waste shipment records, using a form similar to that shown in Figure 4, and include the following information:

(i) The name, address, and telephone number of the waste generator.

(ii) The name and address of the local, State, or EPA Regional office responsible for administering the asbestos NESHAP program.

(iii) The approximate quantity in cubic meters (cubic yards).

(iv) The name and telephone number of the disposal site operator.

(v) The name and physical site location of the disposal site.

(vi) The date transported.

(vii) The name, address, and telephone number of the transporter(s).

(viii) A certification that the contents of this consignment are fully and accurately described by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations.

(2) Provide a copy of the waste shipment record, described in paragraph (d)(1) of this section, to the disposal site owners or operators at the same time as the asbestos-containing waste material is delivered to the disposal site.

(3) For waste shipments where a copy of the waste shipment record, signed by the owner or operator of the designated disposal site, is not received by the waste generator within 35 days of the date the waste was accepted by the initial transporter, contact the transporter and/or the owner or operator of the designated disposal site to determine the status of the waste shipment.

(4) Report in writing to the local, State, or EPA Regional office responsible for administering the asbestos NESHAP program for the waste generator if a copy of the waste shipment record, signed by the owner or operator of the designated waste disposal site, is not received by the waste generator within 45 days of the date the waste was accepted by the initial transporter. Include in the report the following information:

(i) A copy of the waste shipment record for which a confirmation of delivery was not received, and

(ii) A cover letter signed by the waste generator explaining the efforts taken to locate the asbestos waste shipment and the results of those efforts.

(5) Retain a copy of all waste shipment records, including a copy of the waste shipment record signed by the owner or operator of the designated waste disposal site, for at least 2 years.

(e) Furnish upon request, and make available for inspection by the Administrator, all records required under this section.

14. Section 61.153 is redesignated as § 61.151 and is amended by revising the introductory text, paragraphs (a)(2), (a)(4), and (b)(3), and adding paragraphs (d) and (e) to read as follows:

§ 61.151 Standard for inactive waste disposal sites for asbestos mills and manufacturing and fabricating operations.

Each owner or operator of any inactive waste disposal site that was operated by sources covered under

§§ 61.142, 61.144, or 61.147 and received deposits of asbestos-containing waste material generated by the sources, shall:

(a) * * *

(2) Cover the asbestos-containing waste material with at least 15 centimeters (6 inches) of compacted nonasbestos-containing material, and grow and maintain a cover of vegetation on the area adequate to prevent exposure of the asbestos-containing waste material. In desert areas where vegetation would be difficult to maintain, at least 6 additional centimeters (3 inches) of well-graded, nonasbestos crushed rock may be placed on top of the final cover instead of vegetation and maintained to prevent emissions; or

* * * * *

(4) For inactive waste disposal sites for asbestos tailings, a resinous or petroleum-based dust suppression agent that effectively binds dust to control surface air emissions may be used instead of the methods in paragraphs (a)(1), (2), and (3) of this section. Use the agent in the manner and frequency recommended for the particular asbestos tailings by the manufacturer of the dust suppression agent to achieve and maintain dust control. Obtain prior written approval of the Administrator to use other equally effective dust suppression agents. For purposes of this paragraph, any used, spent, or other waste oil is not considered a dust suppression agent.

(b) * * *

(3) When requesting a determination on whether a natural barrier adequately deters public access, supply information enabling the Administrator to determine whether a fence or a natural barrier adequately deters access by the general public.

* * * * *

(d) Notify the Administrator in writing at least 45 days prior to excavating or otherwise disturbing any asbestos-containing waste material that has been deposited at a waste disposal site under this section, and follow the procedures specified in the notification. If the excavation will begin on a date other than the one contained in the original notice, notice of the new start date must be provided to the Administrator at least 10 working days before excavation begins and in no event shall excavation begin earlier than the date specified in the original notification. Include the following information in the notice:

(1) Scheduled starting and completion dates.

(2) Reason for disturbing the waste.

(3) Procedures to be used to control emissions during the excavation, storage, transport, and ultimate disposal of the excavated asbestos-containing waste material. If deemed necessary, the Administrator may require changes in the emission control procedures to be used.

(4) Location of any temporary storage site and the final disposal site.

(e) Within 60 days of a site becoming inactive and after the effective date of this subpart, record, in accordance with State law, a notation on the deed to the facility property and on any other instrument that would normally be examined during a title search; this notation will in perpetuity notify any potential purchaser of the property that:

(1) The land has been used for the disposal of asbestos-containing waste material;

(2) The survey plot and record of the location and quantity of asbestos-containing waste disposed of within the disposal site required in § 61.154(f) have been filed with the Administrator; and

(3) The site is subject to 40 CFR part 61, subpart M.

15. Section 61.154 is redesignated as § 61.152 and amended by removing paragraph (a)(1)(i), redesignating paragraphs (a)(1)(ii)–(iv) as paragraphs (a)(1)(i)–(iii), redesignating paragraph (b)(2) as paragraph (b)(3), revising the introductory text of paragraph (a) and paragraphs (b)(1) and (b)(3), and adding paragraphs (a)(3) and (b)(2) to read as follows:

§ 61.152 Air cleaning.

(a) The owner or operator who uses air cleaning, as specified in §§ 61.142(a), 61.144(b)(2), 61.145(c)(3)(i)(B)(1), 61.145(c)(4)(ii), 61.145(c)(11)(i), 61.146(b)(2), 61.147(b)(2), 61.149(b), 61.149(c)(1)(ii), 61.150(a)(1)(ii), 61.150(a)(2)(ii), and 61.155(e) shall:

* * * * *

(3) For fabric filter collection devices installed after January 10, 1989, provide for easy inspection for faulty bags.

(b) * * *

(1) After January 10, 1989, if the use of fabric creates a fire or explosion hazard, or the Administrator determines that a fabric filter is not feasible, the Administrator may authorize as a substitute the use of wet collectors designed to operate with a unit contacting energy of at least 6.85 kilopascals (40 inches water gage pressure).

(2) Use a HEPA filter that is certified to be at least 99.97 percent efficient for 0.3 micron particles.

(3) The Administrator may authorize the use of filtering equipment other than described in paragraphs (a)(1) and (b)(1) and (2) of this section if the owner or operator demonstrates to the Administrator's satisfaction that it is equivalent to the described equipment in filtering particulate asbestos material.

16. Section 61.155 is redesignated as § 61.153 and amended by redesignating paragraphs (a)(3) and (a)(4) as paragraphs (a)(4) and (a)(5), respectively, revising the introductory text of paragraphs (a), (a)(4), and (a)(5) and revising paragraphs (a)(2), (a)(4)(ii) and (iii), and (b), and adding paragraph (a)(3) to read as follows:

§ 61.153 Reporting.

(a) Any new source to which this subpart applies (with the exception of sources subject to §§ 61.143, 61.146, and 61.148), which has an initial startup date preceding the effective date of this revision, shall provide the following information to the Administrator postmarked or delivered within 90 days of the effective date. In the case of a new source that does not have an initial startup date preceding the effective date, the information shall be provided, postmarked or delivered, within 90 days of the initial startup date. Any owner or operator of an existing source shall provide the following information to the Administrator within 90 days of the effective date of this subpart unless the owner or operator of the existing source has previously provided this information to the Administrator. Any changes in the information provided by any existing source shall be provided to the Administrator, postmarked or delivered, within 30 days after the change.

* * * * *

(2) If a fabric filter device is used to control emissions,

(i) The airflow permeability in $m^3/min/m^2$ ($ft^3/min/ft^2$) if the fabric filter device uses a woven fabric, and, if the fabric is synthetic, whether the fill yarn is spun or not spun; and

(ii) If the fabric filter device uses a felted fabric, the density in g/m^2 (oz/yd^2), the minimum thickness in millimeters (inches), and the airflow permeability in $m^3/min/m^2$ ($ft^3/min/ft^2$).

(3) If a HEPA filter is used to control emissions, the certified efficiency.

(4) For sources subject to §§ 61.149 and 61.150:

* * * * *

(ii) The average volume of asbestos-containing waste material disposed of, measured in m^3/day (yd^3/day); and

(iii) The emission control methods used in all stages of waste disposal; and

* * * * *

(5) For sources subject to §§ 61.151 and 61.154:

* * * * *

(b) The information required by paragraph (a) of this section must accompany the information required by § 61.10. Active waste disposal sites subject to § 61.154 shall also comply with this provision. Roadways, demolition and renovation, spraying, and insulating materials are exempted from the requirements of § 61.10(a). The information described in this section must be reported using the format of Appendix A of this part as a guide.

17. Section 61.156 is redesignated as § 61.154 and amended by revising the introductory text of § 61.154, paragraphs (c) and (d), and adding paragraphs (e) through (j) to read as follows:

§ 61.154 Standard for active waste disposal sites.

Each owner or operator of an active waste disposal site that receives asbestos-containing waste material from a source covered under §§ 61.149, 61.150, or 61.155 shall meet the requirements of this section:

* * * * *

(c) Rather than meet the no visible emission requirement of paragraph (a) of this section, at the end of each operating day, or at least once every 24-hour period while the site is in continuous operation, the asbestos-containing waste material that has been deposited at the site during the operating day or previous 24-hour period shall:

(1) Be covered with at least 15 centimeters (6 inches) of compacted nonasbestos-containing material, or

(2) Be covered with a resinous or petroleum-based dust suppression agent that effectively binds dust and controls wind erosion. Such an agent shall be used in the manner and frequency recommended for the particular dust by the dust suppression agent manufacturer to achieve and maintain dust control. Other equally effective dust suppression agents may be used upon prior approval by the Administrator. For purposes of this paragraph, any used, spent, or other waste oil is not considered a dust suppression agent.

(d) Rather than meet the no visible emission requirement of paragraph (a) of this section, use an alternative emissions control method that has received prior written approval by the Administrator according to the procedures described in § 61.149(c)(2).

(e) For all asbestos-containing waste material received, the owner or operator of the active waste disposal site shall:

(1) Maintain waste shipment records, using a form similar to that shown in Figure 4, and include the following information:

(i) The name, address, and telephone number of the waste generator.

(ii) The name, address, and telephone number of the transporter(s).

(iii) The quantity of the asbestos-containing waste material in cubic meters (cubic yards).

(iv) The presence of improperly enclosed or uncovered waste, or any asbestos-containing waste material not sealed in lead-tight containers. Report in writing to the local, State, or EPA Regional office responsible for administering the asbestos NESHAP program for the waste generator (identified in the waste shipment record), and, if different, the local, State, or EPA Regional office responsible for administering the asbestos NESHAP program for the disposal site, by the following working day, the presence of a significant amount of improperly enclosed or uncovered waste. Submit a copy of the waste shipment record along with the report.

(v) The date of the receipt.

(2) As soon as possible and no longer than 30 days after receipt of the waste, send a copy of the signed waste shipment record to the waste generator.

(3) Upon discovering a discrepancy between the quantity of waste designated on the waste shipment records and the quantity actually received, attempt to reconcile the discrepancy with the waste generator. If the discrepancy is not resolved within 15 days after receiving the waste, immediately report in writing to the local, State, or EPA Regional office responsible for administering the asbestos NESHAP program for the waste generator (identified in the waste shipment record), and, if different, the local, State, or EPA Regional office responsible for administering the asbestos NESHAP program for the disposal site. Describe the discrepancy and attempts to reconcile it, and submit a copy of the waste shipment record along with the report.

(4) Retain a copy of all records and reports required by this paragraph for at least 2 years.

(f) Maintain, until closure, records of the location, depth and area, and quantity in cubic meters (cubic yards) of asbestos-containing waste material within the disposal site on a map or diagram of the disposal area.

(g) Upon closure, comply with all the provisions of § 61.151.

(h) Submit to the Administrator, upon closure of the facility, a copy of records of asbestos waste disposal locations and quantities.

(i) Furnish upon request, and make available during normal business hours for inspection by the Administrator, all records required under this section.

(j) Notify the Administrator in writing at least 45 days prior to excavating or otherwise disturbing any asbestos-containing waste material that has been deposited at a waste disposal site and is covered. If the excavation will begin on a date other than the one contained in the original notice, notice of the new start date must be provided to the Administrator at least 10 working days before excavation begins and in no event shall excavation begin earlier than the date specified in the original notification. Include the following information in the notice:

(1) Scheduled starting and completion dates.

(2) Reason for disturbing the waste.

(3) Procedures to be used to control emissions during the excavation, storage, transport, and ultimate disposal of the excavated asbestos-containing waste material. If deemed necessary, the Administrator may require changes in the emission control procedures to be used.

(4) Location of any temporary storage site and the final disposal site.

18. Section 61.155 is added to subpart M to read as follows:

§ 61.155 Standard for operations that convert asbesto-containing waste material into nonasbestos (asbestos-free) material.

Each owner or operator of an operation that converts RACM and asbestos-containing waste material into nonasbestos (asbestos-free) material shall:

(a) Obtain the prior written approval of the Administrator to construct the facility. To obtain approval, the owner or operator shall provide the Administrator with the following information:

(1) Application to construct pursuant to § 61.07.

(2) In addition to the information requirements of § 61.07(b)(3), a

(i) Description of waste feed handling and temporary storage.

(ii) Description of process operating conditions.

(iii) Description of the handling and temporary storage of the end product.

(iv) Description of the protocol to be followed when analyzing output materials by transmission electron microscopy.

(3) Performance test protocol, including provisions for obtaining information required under paragraph (b) of this section.

(4) The Administrator may require that a demonstration of the process be performed prior to approval of the application to construct.

(b) Conduct a start-up performance test. Test results shall include:

(1) A detailed description of the types and quantities of nonasbestos material, RACM, and asbestos-containing waste material processed, *e.g.*, asbestos cement products, friable asbestos insulation, plaster, wood, plastic, wire, etc. Test feed is to include the full range of materials that will be encountered in actual operation of the process.

(2) Results of analyses, using polarized light microscopy, that document the asbestos content of the wastes processed.

(3) Results of analyses, using transmission electron microscopy, that document that the output materials are free of asbestos. Samples for analysis are to be collected as 8-hour composite samples (one 200-gram (7-ounce) sample per hour), beginning with the initial introduction of RACM or asbestos-containing waste material and continuing until the end of the performance test.

(4) A description of operating parameters, such as temperature and residence time, defining the full range over which the process is expected to operate to produce nonasbestos (asbestos-free) materials. Specify the limits for each operating parameter within which the process will produce nonasbestos (asbestos-free) materials.

(5) The length of the test.

(c) During the initial 90 days of operation,

(1) Continuously monitor and log the operating parameters identified during start-up performance tests that are intended to ensure the production of nonasbestos (asbestos-free) output material.

(2) Monitor input materials to ensure that they are consistent with the test feed materials described during start-up performance tests in paragraph (b)(1) of this section.

(3) Collect and analyze samples, taken as 10-day composite samples (one 200-gram (7-ounce) sample collected every 8 hours of operation) of all output material for the presence of asbestos. Composite samples may be for fewer than 10 days. Transmission electron microscopy (TEM) shall be used to analyze the output material for the presence of asbestos. During the initial 90-day period, all output materials must be stored on-site until analysis shows the material to be asbestos-free or disposed of as asbestos-containing waste material according to § 61.150.

(d) After the initial 90 days of operation,

(1) Continuously monitor and record the operating parameters identified during start-up performance testing and any subsequent performance testing. Any output produced during a period of deviation from the range of operating conditions established to ensure the production of nonasbestos (asbestos-free) output materials shall be:

(i) Disposed of as asbestos-containing waste material according to § 61.150, or

(ii) Recycled as waste feed during process operation within the established range of operating conditions, or

(iii) Stored temporarily on-site in a leak-tight container until analyzed for asbestos content. Any product material that is not asbestos-free shall be either disposed of as asbestos-containing waste material or recycled as waste feed to the process.

(2) Collect and analyze monthly composite samples (one 200-gram (7-ounce) sample collected every 8 hours of operation) of the output material. Transmission electron microscopy shall be used to analyze the output material for the presence of asbestos.

(e) Discharge no visible emissions to the outside air from any part of the operation, or use the methods specified by § 61.152 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air.

(f) Maintain records on-site and include the following information:

(1) Results of start-up performance testing and all subsequent performance testing, including operating parameters, feed characteristic, and analyses of output materials.

(2) Results of the composite analyses required during the initial 90 days of operation under § 61.155(c).

(3) Results of the monthly composite analyses required under § 61.155(d).

(4) Results of continuous monitoring and logs of process operating parameters required under § 61.155 (c) and (d).

(5) The information on waste shipments received as required in § 61.154(e).

(6) For output materials where no analyses were performed to determine the presence of asbestos, record the name and location of the purchaser or disposal site to which the output materials were sold or deposited, and the date of sale or disposal.

(7) Retain records required by paragraph (f) of this section for at least 2 years.

(g) Submit the following reports to the Administrator:

(1) A report for each analysis of product composite samples performed during the initial 90 days of operation.

(2) A quarterly report, including the following information concerning activities during each consecutive 3-month period:

(i) Results of analyses of monthly product composite samples.

(ii) A description of any deviation from the operating parameters established during performance testing the duration of the deviation, and steps taken to correct the deviation.

(iii) Disposition of any product produced during a period of deviation, including whether it was recycled, disposed of as asbestos-containing waste material, or stored temporarily on-site until analyzed for asbestos content.

(iv) The information on waste disposal activities as required in § 61.154(f).

(h) Nonasbestos (asbestos-free) output material is not subject to any of the provisions of this subpart. Output materials in which asbestos is detected, or output materials produced when the operating parameters deviated from those established during the start-up performance testing, unless shown by TEM analysis to be asbestos-free, shall be considered to be asbestos-containing waste and shall be handled and disposed of according to §§ 61.150 and 61.154 or reprocessed while all of the established operating parameters are being met.

19. Section 61.156 is added to subpart M to read as follows:

§ 61.156 Cross-reference to other asbestos regulations.

In addition to this subpart, the regulations referenced in Table 1 also apply to asbestos and may be applicable to those sources specified in §§ 61.142 through 61.151, 61.154, and 61.155 of this subpart. These cross-references are presented for the reader's information and to promote compliance with the cited regulations.

20. Section 61.157 is added to subpart M to read as follows:

§ 61.157 Delegation of authority.

(a) In delegating implementation and enforcement authority to a State under section 112(d) of the Act, the authorities contained in paragraph (b) of this section shall be retained by the Administrator and not transferred to a State.

(b) Authorities that will not be delegated to States:

(1) Section 61.149(c)(2)

(2) Section 61.150(a)(4)

(3) Section 61.151(c)

(4) Section 61.152(b)(3)

(5) Section 61.154(d)

(6) Section 61.155(a).

[FR Doc. 90-26835 Filed 11-19-90; 8:45 am]

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TABLE 1.—CROSS-REFERENCE TO OTHER ASBESTOS REGULATIONS

Agency	CFR citation	Comment
EPA	40 CFR 763, Subpart E, F	Requires schools to inspect for asbestos and implement response actions and submit asbestos management plans to States. Specifies use of accredited inspectors, air sampling methods, and waste disposal procedures.
	40 CFR 427	Effluent standards for asbestos manufacturing source categories.
	40 CFR 763, Subpart G	Protects public employees performing asbestos abatement work in States not covered by OSHA asbestos standard.
OSHA	29 CFR 1910.1001	Worker protection measures—engineering controls, worker training, labeling, respiratory protection, bagging of waste, 0.2 f/cc permissible exposure level.
	29 CFR 1926.58	Worker protection measures for all construction work involving asbestos, including demolition and renovation—work practices, worker training, bagging of waste, 0.2 f/cc permissible exposure level.
MSHA	30 CFR 56, Subpart D	Specifies exposures limits, engineering controls, and respiratory protection measures for workers in surface mines.
	30 CFR 57, Subpart D	Specifies exposure limits, engineering controls, and respiratory protection measures for workers in underground mines.
DOT	49 CFR 171 and 172	Regulates the transportation of asbestos-containing waste material. Requires waste containment and shipping papers.

APPENDIX B

RESPIRATORY PROTECTION SELECTION CHECKLIST

RESPIRATORY PROTECTION SELECTION CHECKLIST

NO RESPIRATORY PROTECTION REQUIRED:

Outside Containment*

- Inspection is taking place in office areas or other areas outside the barrier. All barrier seals are intact and all envelope entrances must have at least a double barrier. No potentially asbestos-containing dust or debris is present on any surface in the area. _____
- Secondary containment is in place when glove-bagging is used. The secondary containment enclosure must be complete. _____
- Materials removed from the envelope have been cleaned and the pathway for removal of bags and equipment is clear and clean. _____
- All ventilation systems in the envelope are off and sealed. _____
- Wet methods are being used. _____

*If all applicable conditions above are affirmed, inspectors need not use respiratory protection.

Inside Containment

- The restricted area has already passed an appropriate clearing test (minimum of aggressive sampling with a concentration below 0.01 f/cc by PCM); or _____
- No removal work has begun and all ACM is intact, undisturbed, undamaged and no debris is present. _____

RESPIRATORY PROTECTION REQUIRED

Air Purifying Respirators (Full-face air-purifying or PAPR) Required

Outside Containment

- Workers are wearing air-purifying respirators; or _____
- The barrier is not complete; or _____
- Asbestos-containing debris is present. _____

Inside Containment

- The work operation is in compliance with the OSHA asbestos standard; or _____
- No active removal or disturbances have occurred in the previous 24-hour and the inspection will not disturb ACM. _____

Supplied Air Respirators (SCBA operated in the pressure-demand mode)

- The work operation is *not* in compliance with the OSHA asbestos standard; or _____
- Materials being removed cannot be properly wetted or removal generates significant amounts of dust; or _____
- Monitoring data show levels in excess of 2.0 f/cc and the inspection may last more than 2-hours; or _____
- Others at the site are wearing supplied-air respirators. _____

APPENDIX C

FIELD INSPECTION CHECKLISTS

APPENDIX C-1
ASBESTOS NESHAP
DEMOLITION AND RENOVATION
INSPECTION EQUIPMENT CHECKLIST

General Inspection Equipment

Employee I.D.	—
Copy of regulation	—
Field notebook	—
Pens/pencils	—
Inspection checklist	—
Camera/flash (preferably waterproof)	—
Waterproof flashlight	—
Tape measure	—
Plastic clipboard	—
Duct tape	—
Disposable towels	—
Plastic sheets	—

Safety Equipment

Full-facepiece air-purifying negative pressure respirator	—
PAPR (tight-fitting)	—
SCBA (pressure demand type)	—
Respirator cartridges	—
Disposable full-body coveralls	—
Disposable boots	—
Hard hat	—
Safety glasses	—
Safety shoes	—
Ear protection	—
Asbestos waste bags (preferably 6 mil)	—
Bathing suit	—
Disposable towels	—

Sampling Equipment

Sample containers	___
Water spray bottle	___
Duct tape	___
Tamperproof tape	___
Tools (locking blade pen knife, slotted screwdriver, needle-nose pliers)	___
Plastic drop cloths	___
Wet wipes	___
Reclosable quart- and gallon-size plastic bags	___
Sample labels	___
Spray paint	___
Shipping supplies	___
Chain-of-custody forms	___
Waterproof markers	___
Glove bags	___
Surfactant	___
Bathroom caulking	___

APPENDIX C-2

FACILITY INSPECTION CHECKLIST

ASBESTOS DEMOLITION AND RENOVATION (D/R)
FIELD DATA COLLECTION CHECKLIST

I. GENERAL INFORMATION

Site Name:_____

Location:_____

_____

Date of inspection:_____ Time of inspection:_____

Weather conditions:_____

Inspector(s):_____

_____

Notification Received? Yes (date):_____ No:_____

Reason for Inspection:_____

Routine Compliance Inspection _____ Citizen complaint ____

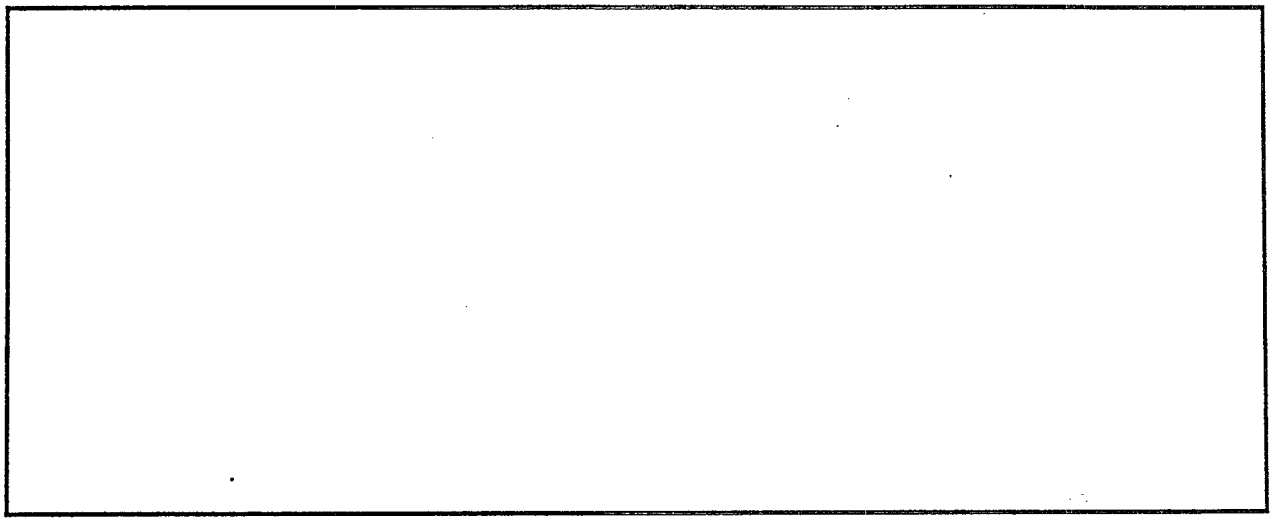
Suspected Non-notifier _____ State Oversight/Joint _____

Other (explain _____

II. REMOTE OBSERVATIONS

Using the space provided, draw a sketch of the suspected abatement area. Draw the building or other source of suspect ACM, waste storage area(s), location(s) of debris, land use surrounding site, vehicles of importance, etc. Estimate and indicate dimensions and distances as accurately as possible on the drawing.

REMOTE OBSERVATION SKETCH



		Yes	No
1.	Visible emissions to the outside air?	—	—

If yes, describe specific location (e.g., door, window, waste storage area, etc.) referring to remote observation sketch.

_____

_____

_____

		Yes	No
2.	Suspect ACM debris observed outside removal area?	—	—

If yes, describe [e.g., location, estimated quantity, condition (intact? crushed? wet? dry?)]

_____

_____

_____

		Yes	No
3.	Are vehicles being used to haul suspect ACWM properly marked? [61.150(c)]	___	___

4. Land use surrounding site (i.e., residential, schools, businesses, etc.):

_____

_____

_____

a. Distance to the closest residence/public building from the D/R site: _____

b. Number of residences or occupied buildings on adjacent properties or lots: _____

c. Distance to pedestrian walkway, street, or thoroughfare from site: _____

d. Additional information indicating potential public exposure:

_____

_____

5. Building/Structure Information

a. Use (office, retail, industry, school, etc.): _____

b. Brief physical description of building involved in D/R (number of floors, dimensions, etc.):

_____

_____

c. Year constructed: _____ Year(s) renovated: _____

III. PRE-INSPECTION INTERVIEW

	Yes	No
1. Credentials shown:		
agency identification	___	___
medical monitoring certification	___	___

2. Name and position of person being interviewed (include company name):

_____

_____

3. Establish identity of owner/operator(s):

a. Owner name:_____

b. Main contact person and title:_____

c. Mailing address:

_____
City State Zip Code

d. Telephone number:_____
(area code)

4. Describe any changes/modifications/discrepancies to the information provided in the notification:

_____

5. Prime Contractor (provide the following information for each contractor related to the D/R job):

a. Company name: _____

b. Main contact person and title: _____

c. Mailing address:_____

_____

City State Zip Code

d. Telephone number: _____
(area code)

e. Contractor's responsibilities at job: _____

_____

f. Number of employees involved in job: _____

g. Number of on-site employees trained in asbestos removal: ____

h. Name of Supervisor (if different from 5b.):_____

i. What type of asbestos training has the supervisor had?_____

_____

6. On-site Representative

a. If applicable, name of on-site representative who has had required training in the provisions of the NESHAP regulation (effective 1 year after promulgation of the revised NESHAP):

_____

b. Is evidence regarding this individual's training posted and available for inspection at the demo/reno site? Yes__ No__ N/A __

7. Subcontractors [Provide the following information for each subcontractor or any other party onsite (e.g., hygienist, consultant, etc.) who controls or supervises the D/R project.]

a. Company name: _____

b. Main contact person and title: _____

c. Mailing address: _____

_____

City State Zip Code

d. Telephone number: _____
(Area Code)

e. Responsibilities at job: _____

f. Number of employees involved in job: _____

g. Number of on-site employees trained in asbestos removal: ____

h. Name of supervisor: _____

i. What type of asbestos training has the supervisor had? _____

8. Activity Description:

	Yes	No
a. Is more than one project occurring at the facility?	__	__

(If yes, complete a separate checklist for each or differentiate accordingly.)

b. Type of activity:

Demolition __ Ordered Demolition __ Planned renovation __

Nonscheduled Operation __ Emergency Renovation __

c. Describe the project and indicate its current phase: _____

_____

_____

_____

d. Describe type of abatement occurring (e.g., removal, encapsulation, etc.):

_____

_____

e. Abatement starting date: _____

IV. SITE INSPECTION OBSERVATIONS

A. Types of Suspect ACM

Insulation

Pipe insulation (felt, air cell, premolded, asbestos cement) ____
Block insulation ____

Surfacing Materials

Plaster _____ Spackling compound _____ Stucco _____

Joint compound _____ Sprayed-on (acoustical, decorative or insulative) ____

Miscellaneous

Ceiling tiles ____ Acoustical tiles _____

Category I Nonfriable ACM

Packings _____ Gaskets _____ Asphalt roofing products _____

Resilient floor coverings (vinyl/asbestos tile, asphalt/asbestos tile, linoleum ____

Category II Nonfriable ACM

Extrusion panels ____ Clapboards/shingles _____ Millboard ____

Vinyl wallpaper ____ Pegboard _____ Putties ____

Sealants _____ Adhesives (mastics) ____ Concrete/asbestos pipe ____

Paints and coatings _____

Textiles (fire blankets, laboratory aprons, theater and welding curtains, gloves) __

Laboratory benchtops __

Other (Specify)

_____

_____

_____

_____

B. Quantity Determination [61.145(a)]

Complete Attachment A (Quantification of ACM) and the following:

1. Linear footage of ACM present on pipes: _____

2. Square footage of ACM present on other facility components: _____

3. Amount of ACM off facility components where the amount of ACM previously on pipes and other facility components is unknown: _____

4. Method of measuring or estimating amount of ACM present:

_____

	Yes	No	N/A

C. Emission Control Procedures [61.145(c)]

1. Facility ordered demolished (removal not required): __ __ __

If "yes",

a. Governmental agency ordering demolition:

_____

b. Portion of facility containing ACM adequately wet during wrecking? __ __

		Yes	No	N/A
	c. Visible dust emissions:	—	—	
2.	Category I nonfriable ACM not in poor condition and not friable? (removal not required)	—	—	—
3.	Encased in concrete (removal not required):	—	—	—
	If "yes", adequately wetted whenever exposed during demolition?	—	—	
4.	ACM not discovered until after demolition began and cannot be safely removed (removal not required)	—	—	—
	If "yes", adequately wet at time of inspection?	—	—	
5.	Category II nonfriable with low probability of becoming crumbled, pulverized or reduced to a powder during demolition? (removal not required)	—	—	—
6.	Unit/section removal:			
	If "yes",			
	a. ACM adequately wet whenever exposed?	—	—	
	b. Lowered to floor and ground level without disturbing ACM?	—	—	
7.	Stripping in place?	—	—	—
	If "yes",			
	a. ACM adequately wet while being stripped and until collected and contained or treated in preparation for disposal?	—	—	—
	b. Carefully lowered to floor or ground?	—	—	
	c. Transported to ground via leak-tight chutes or containers if removed or stripped >50 feet above ground level and not removed as units or in sections?	—	—	

		Yes	No	N/A
8.	Temperature at point of wetting below 32°F?	—	—	
	If "yes",			
	a. Regulated facility components being removed as units or sections?	—	—	
	b. Visible emissions to the outside air?	—	—	
	c. Required records kept regarding cessation of wetting?	—	—	
	d. Records available for inspection:	—	—	
9.	Has the owner/operator been granted an exemption from wetting?	—	—	
	a. Reason for exemption _____			
	b. Who granted the exemption? _____			
	_____			
	c. Is one of the following emission control techniques in use?	—	—	
	Local exhaust ventilation and collection system	—	—	
	Glove-bag system	—	—	
	Leak-tight wrapping	—	—	
	Equivalent approved method (with approval kept at the worksite)	—	—	
	d. Are there visible emissions to the outside air?	—	—	

		Yes	No	N/A
10.	Is the facility being demolished by intentional burning?	—	—	—
	If "yes", has all ACM (including Categories I and II) been removed before burning?	—	—	
11.	Is Category I nonfriable ACM being sanded, ground or abraded?	—	—	
	If "yes",			
	a. Are visible emissions produced?	—	—	
	b. Is the ACM adequately wet?	—	—	
	c. Is a local exhaust and ventilation and collection system being used?	—	—	
12.	Are large facility components being removed without the ACM being stripped?	—	—	
	If "yes",			
	a. Is the ACM being disturbed or damaged in any way?	—	—	
	b. Is the component encased in a leak-tight wrapping labeled appropriately during all loading and unloading operations and during storage?	—	—	

D. Evaluation of Wetting

1.	Is there a water or wetting agent supply?	—	—	
2.	What equipment is used to apply it? _____			
	_____			

		Yes	No	N/A
3.	Is water or a wetting agent observed being sprayed on suspect ACM during:			
	a. removal of units or sections?	___	___	
	b. stripping?	___	___	
	c. government-ordered demolitions?	___	___	
4.	Is there visible dust (airborne or settled), or dry suspect ACM or ACWM debris in the immediate vicinity of the operation?	___	___	
5.	Upon examination of some removed ACM, does the full depth of the ACM appear to have been wetted?	___	___	
6.	Describe how the ACM changes when it is wetted (e.g., color, texture, weight, etc.):			

_____

7.	Is ACM awaiting containerization adequately wet throughout?	___	___	
	If not, describe: _____			

_____

8.	Is ACM in bags or other containers adequately wet? (follow sampling procedures detailed in "Asbestos NESHAP Demolition and Renovation Inspection Procedures Field Manual")	___	___	
	If not, describe: _____			

_____

9.	Are there any open or ripped waste bags in the waste storage area?	___	___	
	How many? ___			
	Are the contents of these bags adequately wet?	___	___	

	Yes	No	N/A

E. Waste Disposal (61.150)

1. Are there visible emissions to the outside air? ___ ___

2. Is there any suspect ACM dust or debris on the ground? ___ ___

   If yes, describe the quantity and location of the material and collect samples for analysis (sketch and photograph as necessary): _____

   _____

   _____

3. Is the owner/operator choosing an alternative to the "no visible emission" standard? ___ ___

   If yes, which of the following options is in use?

   ___ Treat with water and put into leak-tight, labeled containers:

   Is the ACM adequately wet? ___ ___

   Are the containers leak-tight? ___ ___

   Are the containers properly labeled? ___ ___

   ___ Process into nonfriable forms

   ___ Alternative method approved by Administrator

   Description of alternative method: _____

   _____

	Yes	No	N/A
Approving agency: _____			
Name and title of approving official: _____			
_____			
4. Is ACWM being generated during an ordered demolition or demolition where ACM is not required to be removed?	___	___	
If "yes", is the ACWM kept:			
a. adequately wet after demolition?	___	___	
b. wet during handling and loading for transport to a disposal site?	___	___	
(sealing in leak-tight containers or wrapping not required - may be transported and disposed of in bulk)			
5. Are containers of ACWM destined for off-site transport labeled with the name of the waste generator and the location of its generation?	___	___	___
6. Is all ACWM (excluding Category I Nonfriable in good condition) disposed of properly as soon as is practical?	___	___	___
7. Are vehicles used in the transport of ACWM marked appropriately during loading and unloading?	___	___	___
8. Waste Shipment Records			
The following information may not be available onsite:			
a. Are appropriate waste shipment records maintained?	___	___	
b. Has a signed copy of the waste shipment record been received by the generator from the waste disposal facility within 35 days?	___	___	___

		Yes	No	N/A
c.	If such a signed copy has not been received, has the status of the ACWM been determined?	—	—	—
d.	Has the generator notified EPA in writing within 45 days if a signed copy of the waste shipment record has not been received from the disposal facility?	—	—	—
e.	Are copies of all waste shipment records (including the signed copy sent by the disposal facility) maintained for 2 years?	—	—	
f.	Comments: _____			

Whenever a violation of the asbestos NESHAP is suspected, document occurrence in field notes and with photographs and take samples as needed to prove ACM was involved. Use Attachment B for documenting sample information and Attachment C for documenting photograph information.

V. OSHA REQUIREMENTS

Containment Barrier?	—	—
Respiratory Protection?	—	—
Glove Bag?	—	—
Secondary containment in place where glove bags are used?	—	—
Decontamination unit?	—	—
Signs posted?	—	—

Estimated size of containment area: _____

Number and cfm rating of local exhaust ventilation units: _____

Hygienist company: _____

On-site representative: _____

VI. POST INSPECTION INTERVIEW

Summary of Recommendations/Discussion with Owner/Operator:

_____

_____

_____

_____

_____

_____

_____

VII. ADDITIONAL COMMENTS

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____ _____

Inspector Signature Date

APPENDIX C-3

LANDFILL INSPECTION CHECKLIST

ASBESTOS DISPOSAL LANDFILL
INSPECTION CHECKLIST

Site Name: _____

Site Address: _____

Inspector(s): _____

Date of Inspection: _____ Time of Inspection: _____

I. PRELIMINARY INTERVIEW

1. Site Contact: _____

2. Title: _____

3. Affiliation: _____

4. Telephone number: _____

	YES	NO
5. Is the landfill approved by the State?	___	___
If yes, Operating Permit No.: _____		
Effective date: _____ through _____		
6. Is the disposal site operated in compliance with *one* of the following site requirements? (61.154)	___	___
a. No visible emissions [61.154(a)] *and*	___	___
warning signs and fencing, or natural barrier [61.154(b)]	___	___
b. 6-inch cover within 24 hours [61.154(c)(1)]	___	___
c. Dust suppressant within 24 hours [61.154(c)(2)] *and*	___	___
warning signs and fencing, or natural barrier [61.154(b)]	___	___

		YES	NO	N/A
d.	Administrator approved alternative method [61.154(c)]	—	—	
	If yes, explain: _____			
	_____			
	_____			
7.	Are waste shipment records maintained onsite? [61.154(e)(1)]	—	—	
	Do these records contain the following information?			
a.	Waste generator's information [61.154(e)(1)(i)]:			
	1) name	—	—	
	2) address	—	—	
	3) telephone number	—	—	
b.	Transporter's information [61.154(e)(1)(ii)]:			
	1) name	—	—	
	2) address	—	—	
	3) telephone number	—	—	
c.	Quantity of ACWM (cubic yards or meters) [61.154(e)(1)(iii)]:	—	—	
d.	Presence of improperly enclosed or uncovered waste, or any ACWM not sealed in leak-tight containers [61.154(e)(1)(iv):	—	—	
	[Has the landfill operator reported to the EPA, in writing, by the following day, the presence of a significant amount of improperly enclosed or uncovered waste?]	—	—	—
e.	Date of receipt [61.154(e)(1)(v)]:	—	—	
8.	Have signed copies of waste shipment records been sent to the waste generator as soon as possible, but no longer than 30 days after receipt of the waste? [61.154(e)(2)]	—	—	

		YES	NO	N/A
9.	Has the landfill operator attempted to reconcile differences between the quantity of waste designated on the waste shipment record and the quantity actually received? [61.154(e)(3)]	—	—	—
	Explain: _____			
	_____			
	_____			
	_____			
	If the discrepancy is not resolved within 15 days after receiving the waste, has a report been filed with the government agency responsible for administering the asbestos NESHAP program for the *waste generator*	—	—	
	and			
	if different, the government agency responsible for administering the asbestos NESHAP program for the *disposal site*?	—	—	
10.	Are copies of all records and reports retained for 2 years? [61.154(e)(4)]	—	—	
11.	Is a map or diagram of the disposal area being maintained? [61.154(f)]	—	—	
	Does the map or diagram contain the following ACWM information?			
	location	—	—	
	depth	—	—	
	area	—	—	
	quantity	—	—	
	cubic yards or meters	—	—	
12.	Are records available for inspection? [61.154(i)]	—	—	
13.	Has written approval from the Administrator been obtained prior to excavating or otherwise disturbing any ACWM already deposited and covered? [61.154(j)]	—	—	

14. When was waste last received? _____

15. What was the method of containerization? _____

_____

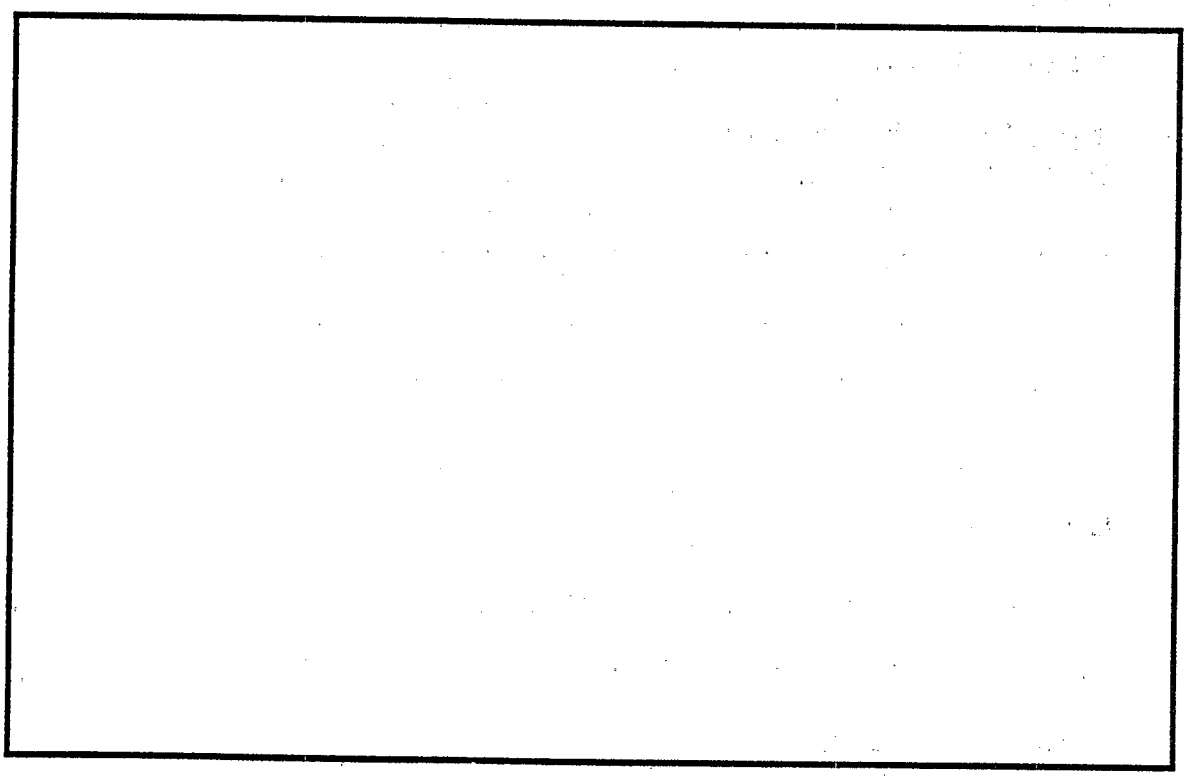
16. How was it deposited (e.g., manually off-loaded, dumped semiautomatically)?

_____

_____

17. Where was it actually deposited? (Note on sketch below.)

SKETCH OF DISPOSAL SITE (PLAN VIEW)



(Include Site Entrance and Boundaries, Roadways, Active cells, Closed cells, Borrow Areas, Direction of Prevailing Wind, and Location of Deposited Asbestos-Containing Waste.

YES NO

18. Are there any special provisions for handling ACWM at this landfill? ___ ___

If yes, describe: _____

_____

_____

III. VISUAL OBSERVATIONS

Determine the following at the disposal site. Collect samples and take photographs as necessary to document non-compliance with the provisions of the asbestos NESHAP. Use **Attachment A** for documenting sample information and **Attachment B** for documenting photograph information.

1. Are there visible emissions? [61.154(a)] ___ ___

If yes, describe location, magnitude and activity causing the emissions: _____

_____

_____

2. If barriers (fencing, natural) exist, describe them in detail. [61.154(b)(1)] _____

_____

Can the barriers keep out intruders? ___ ___

Explain. _____

3. Are warning signs posted? [61.154(b)(1)] ___ ___

4. Is the waste sufficiently covered? [61.154(c)(1)] ___ ___

Depth of cover material (inches, feet): _____

		YES	NO
5.	Is the waste covered daily? [61.154(c)(1)]	—	—
	Type of cover material: _____		
6.	Is a dust suppressant agent used? [61.154(c)(2)]	—	—
	Type of suppressant used: _____		
7.	Is any ACWM exposed?	—	—
	a. Was it deposited within the past 24 hours? [61.154(c)(2)]	—	—
	b. Is it sealed in leak-tight containers? [61.150(a)(1)(iii)]	—	—
	c. Are the containers intact?	—	—
	If no, explain: _____		
	_____		
	d. Are the containers or wrapped materials labeled with the following? [61.150(1)(v)]		
	asbestos hazard warning	—	—
	name of waste generator	—	—
	location where waste was generated	—	—
	(If not, examine records and attempt to determine who generated the ACWM.)		
	e. If ACWM seen is not contained or wrapped, was it generated during a governmentally-ordered demolition? [61.145(a)(3)]	—	—
8.	Are vehicles seen unloading ACWM marked with the following information? [61.150(c)(3)]	—	—
	easy to read legend	—	—
	20" x 14" upright format sign	—	—
	asbestos hazard warning	—	—

	YES	NO
Does the transporter possess a properly completed waste manifest?	___	___

If not, determine as many of the following as possible:

transporter company name _____
address _____
telephone no. _____

generator's name _____
address _____
telephone no. _____
location where ACWM is being collected _____

IV. POST INSPECTION INTERVIEW

Summary of Recommendations/Discussions with Site Operator.

_____

_____

_____

_____

V. ADDITIONAL COMMENTS

_____

_____

_____

_____

_____

Date

Inspector signature(s): _____ _____

_____ _____

SAMPLE COLLECTION LOG

Facility Name _____

Facility Address _____

_____

Sampler(s) _____

_____

Date Sampled _____

SAMPLE NUMBER	SAMPLE LOCATION	SAMPLE DESCRIPTION	TIME SAMPLE TAKEN	COMMENTS

Attachment B
Photo Identification Log Sheet

Name/Address of Facility: _____

_____

Date: _____ Inspector (photographer): _____

Frame No.	Time	Sample No.	Description

Remarks: _____

_____

Inspector Signature: _____

ATTACHMENT C
ASBESTOS D/R CHECKLIST

QUANTIFICATION OF ACM

Facility Component[a]	Quantity[b] Area ft^2	Quantity[b] Length ft	Measurement/ Estimation Technique[c]	Friable[d]

Total

[a]Examples of facility components: pipe, duct, boiler, I-Beam, ceiling, steel deck, etc.
[b]Quantity of suspect ACM that will be disturbed during demo/reno.
[c]Measurement Technique: Measured or estimated - if estimated, explain technique.
[d]Friable rating: yes, no, or potentially during demolition or renovation.

APPENDIX C-4

AHERA INSPECTION CHECKLIST

ABBREVIATED CHECKLIST FOR AHERA COMPLIANCE
FOR USE ON NESHAP INSPECTIONS

Local Education Agency (LEA) _____

Address _____

School _____

Address _____

Designated Person _____

Phone Number _____

Abatement Project Description (including size of project):

_____

_____

Was Project Supervisor Accredited? Yes _____ No _____

Accreditation Number _____ Date _____

Each worker, state/number of accreditation, date of accreditation

Was Air Clearance in progress? Yes _____ No _____

Name of Person Conducting Clearance _____

Affiliation _____

Laboratory contracted to analyze samples:

_____ _____

Name Address/Phone Number

Type of Analysis: TEM _____ PCM _____

Was the Management Plan available to look at?

Yes ___ No ___ Location of Plan LEA ____ School ____

Was the abatement project included in the Plan? Yes _____ No _____

_____ _____

Inspector Date

APPENDIX C-5

WORKER PROTECTION RULE CHECKLIST

WORKER PROTECTION RULE CHECKLIST

Date of Inspection: _____

Inspection Site: _____

1. Is asbestos abatement work being done? (Abatement means activity involving the removal, enclosure or encapsulation of friable asbestos material.)

   Yes ___ No ___

2. Is abatement work performed by State and local government employees not covered by the OSHA Rule (29 CFR 1926.58)?

   Yes ___ No ___

3. Does the work involve more than 3 linear feet or 3 square feet?

   Yes ___ No ___

Notes: _____

_____

_____

_____

_____

_____

_____ _____ _____

Inspector's Signature Telephone Number Date

LIST OF AVAILABLE REFERENCES

The following is a list of publications that deal with asbestos. These publications may be available from the EPA Regional Offices or from the Asbestos and Small Business Ombudsman, OSDBU A-149-C, Washington, D.C. 20460. Telephone: (800) 368-5888; for D.C. and VA: (703-557-1938). Information may also be obtained by calling the TSCA Hotline (202) 554-1404.

1. Malmberg, K.B. EPA Demolition & Renovation Inspection Procedures. Stationary Source Enforcement Division, Washington, D.C. October 1975. (S.22 Document).

2. Piper, S.G., and P. Ford. 1988 NESHAPs Asbestos Demolition and Renovation Inspection Workshop - Final Report. Alliance Technologies Corporation. EPA Contract No. 68-02-4465, Work Assignment No. 21. March 1988.

3. Piper, S.G., et al. Asbestos NESHAP Inspector Safety Workshop - Draft Final Report. Alliance Technologies Corporation. EPA Contract No. 68-02-4465, Work Assignment No. 40. June 1988.

4. U.S. Environmental Protection Agency. Asbestos Demolition and Renovation Enforcement Strategy (Revised). Stationary Source Compliance Division. Washington, D.C. March 31, 1988.

5. U.S. Environmental Protection Agency. Draft Health and Safety Guidelines for EPA Asbestos Inspectors (Revised). Environmental Health and Safety Division, Office of Administration and Resource Management, Washington, D.C. June 1990. (Attached as Appendix C).

6. Piper, S.G. and N. Lebedzinski. 1989 Demolition and Renovation Inspection and Safety Procedures Workshop - Final Report. Alliance Technologies Corporation. EPA Contract No. 68-02-4465, Work Assignment No. 89-112. July 1989.

7. U.S. Environmental Protection Agency. Asbestos-Containing Materials in School Buildings: A Guidance Document, Parts 1 and 2. Office of Toxic Substances, Washington, D.C. C00090, March 1979. (Orange Books).

8. American Industrial Hygiene Association. Respiratory Protection, a Manual and Guideline. Prepared by L.R. Binkner, Department of Environmental Health and Safety Affairs, NY, 1980.

9. U.S. Department of Health and Human Services. Workplace Exposure to Asbestos National Institute for Occupational Safety and Health Publication N. 81-103, April 1980.

10. U.S. Environmental Protection Agency. Support Document/Asbestos-Containing Materials in Schools/Health Effects and Magnitude of Exposure. Office of Pesticides and Toxic Substances, Washington, D.C. EPA-560/12-80-003, October 1980.

11. U.S. Environmental Protection Agency. Asbestos-Containing Materials in School Buildings, Guidance for Asbestos Analytical Programs. EPA-560/13-80-017A, December 1980.

12. U.S. Environmental Protection Agency. Solid Waste Landfill Design and Operation Practices. Contract No. 68-01-3915, Washington, D.C. April 1981.

13. U.S. Environmental Protection Agency. Evaluation of Encapsulants for Sprayed-On Asbestos-Containing Materials in Buildings. Office of Research and Development, Cincinnati, OH. 1981.

14. The Foundation of the Wall and Ceiling Industry, Washington, D.C. Guide Specifications for the Abatement of Asbestos Release from Spray- or Trowel-Applied Materials in Buildings and Other Structures. December 1981.

15. U.S. Environmental Protection Agency, Region VII. Asbestos Exposure Assessment in Buildings. Inspection Manual. October 1982.

16. U.S. Environmental Protection Agency. Guidance for Controlling Friable Asbestos-Containing Materials in Buildings. Office of Pesticides and Toxic Substances, Washington, D.C. EPA-560/5-83-002, March1983. (Blue Book).

17. U.S. Environmental Protection Agency. Airborne Asbestos Levels in Schools. Washington, D.C. EPA-560/5-83-003, June 1983.

18. U.S. Environmental Protection Agency. Evaluation of the Asbestos-in-Schools Identification and Notification Rule. EPA-560/5-84-005, October 1984.

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16. ABSTRACT

This document provides EPA guidance on procedures for conducting regulatory compliance inspections at asbestos demolition and renovation worksites and waste disposal facilities. Detailed information concerning the following is included: 1) identification of asbestos-containing materials, 2) safety procedures, 3) pre-inspection activities, 4) facility inspection procedures, 5) post-inspection activities, 6) landfill inspections and 7) bulk sampling and analysis.

Inspection checklists designed for facility inspection and landfill inspections are appended. The material presented is a summary of information and experience gained by EPA through the inspection and case development experiences of a nationwide representation of regulatory staff responsible for enforcing the asbestos NESHAP.

17. KEY WORDS AND DOCUMENT ANALYSIS

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