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Environmental Protection
Agency

Guidelines for Catastrophic Emergency Situations Involving Asbestos

Prepared by:

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OFFICE OF
ENFORCEMENT AND
COMPLIANCE ASSURANCE

MEMORANDUM

SUBJECT: Guidance for Catastrophic Emergency Situations Involving Asbestos

FROM: Richard F. Duffy, Acting Director
Compliance Assessment and Media Programs Division

TO: Regional Enforcement Division Directors
Regional Superfund Division Directors
Regional Media Division Directors
Regional Enforcement Coordinators
Regional Asbestos Coordinators

I am pleased to provide you with a copy of the U.S. Environmental Protection Agency's *Guidance for Catastrophic Emergency Situations Involving Asbestos*. This document is intended for use by EPA managers and staff with Asbestos National Emission Standards for Hazardous Air Pollutant (NESHAP) responsibilities that need information on the types of asbestos issues that may arise during catastrophic events and how EPA has addressed such issues. It is also intended as a reference for EPA's emergency responders. The document addresses federal asbestos regulations and asbestos concerns that arise related to catastrophic events, including:

- Exposure concerns for emergency responders and others in the immediate area;
- Cleanup and disposal of debris that may be contaminated with asbestos;
- Demolition and renovation of buildings during recovery efforts; and
- Transport and disposal of material that may contain asbestos.

This document replaces the *Guidelines for Catastrophic Emergency Situations Involving Asbestos* which was issued in 1992. This new document discusses specific events that have occurred since that time, and discusses how EPA has responded in each to asbestos related concerns and how the agency has worked with other government agencies on response and cleanup.

I want to thank Phyllis Flaherty, Chief, National Compliance Monitoring Policy Branch, and Everett Bishop and Dan Klaus on her staff for their work on this document. I also appreciate the extensive document review and input by managers and staff in the Office of Civil Enforcement's Air Enforcement Division, the Office of Solid Waste and Emergency Response, the Office of Air Quality Planning and Standards, the Office General Counsel, and the regions.

This document will be posted on the Inspector's Website (intranet) at http://intranet.epa.gov/oeca/inspector. If you have questions about the document, please contact Phyllis Flaherty at 202-564-4131 (Flaherty.Phyllis@epa.gov.) or Dan Klaus at 202-564-7757 (Klaus.Dan@epa.gov).

Attachment

cc: Lisa Lund, Director, Office of Compliance
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Executive Summary

This document is organized into three consecutive sections of increasing specificity. The following provides a summary of the Guidance.

Section I (Introduction) provides the background and purpose of this guidance.

Section II (Asbestos Overview) provides information on concerns related to asbestos during and after a catastrophic incident including describing and recognizing asbestos and health issues related to the handling of asbestos.

Section III (The Regulation of Asbestos) describes how the U.S. Environmental Protection Agency (EPA) and other federal and state agencies regulate asbestos, and provides an overview of the EPA requirements, other federal regulations, and applicability of the Asbestos National Emissions Standard for Hazardous Air Pollutants (NESHAP) to catastrophic events. Here is **What You Need to Know:**

- Any building may contain asbestos. Inhalation exposure can occur when asbestos-containing material (ACM) is disturbed and releases fibers.
- Keeping material wet and contained minimizes emissions.
- It is important to not burn or grind asbestos-containing material where doing so will result in the discharge of visible emissions to the air. In addition, units which burn asbestos may need permits under the Clean Air Act (CAA) and state solid waste requirements.
- It is important to comply with regulatory requirements related to the renovation or demolition of buildings and the transport and disposal of asbestos-containing waste material.

Asbestos Facts:

- Asbestos refers to the habit of minerals to form long thin fibers.
- Asbestos minerals used for their commercial value are regulated under the Asbestos NESHAP.
- Asbestos occurs as a contaminant of rock formations, in soils, along fault lines, and as a contaminant of minerals mined for their commercial value.
- Asbestos does not degrade under normal conditions.
- Asbestos can be found in buildings including homes (floor tiles, ceilings, shingles, etc.).
- Asbestos is not found in, but may be on, glass, metal/steel, or wood; all other building material is suspect. Testing is necessary to determine if asbestos is present.
- EPA did not ban all commercial asbestos.
- Inhalation of asbestos fibers is extremely hazardous. Health effects generally take 15 years or longer before they are identified by medical personnel. Health consequences can be severe and include asbestosis, lung cancer, and mesothelioma.

Section IV (Catastrophic Events and the Asbestos NESHAP Applicability) describes how the Asbestos NESHAP specifically applies to situations that arise following catastrophic events. This includes types of debris that may be encountered, as well as requirements that must be followed during renovation and demolition operations. Here is **What You Need to Know:**

- There are **no** statutory or regulatory provisions that stay the applicability of the Asbestos NESHAP as a result of a catastrophic event.
- The Asbestos NESHAP demolition and renovation regulation includes requirements for:
  - submission of written, advance notification of the state or EPA;
  - a thorough inspection for asbestos;
  - removal of regulated asbestos-containing material (see regulation for requirements for friable and nonfriable asbestos);
  - with some exceptions, adequately wetting of regulated asbestos-containing material being removed during and after its removal (Note: regulations provide alternative emission controls in some situations);
  - handling and transport;
  - record keeping and disposal; and
  - disposal sites (landfills) accepting asbestos-containing waste material.
- Renovation/demolition activities and handling of the debris through disposal may be subject to the Clean Air Act (CAA) Asbestos NESHAP.
- TSCA Asbestos Hazard Emergency Response Act (AHERA) may apply if a school or public building is involved.
- Accreditation requirements may apply to laboratories.
- Training requirements may apply to workers/supervisors.
- If asbestos contaminates an area, Superfund may apply.
- If asbestos-containing waste material is going to a landfill, the Asbestos NESHAP and state/federal landfill requirements may apply.
- Asbestos in drinking water may be subject to the Safe Drinking Water Act (SDWA).
- U.S. Department of Transportation (DOT), and Occupational Safety and Health Administration (OSHA) requirements may also apply.
- Different regulations may apply to different situations involving asbestos.
- Catastrophic events often involve debris from building materials that may contain asbestos.
- Asbestos NESHAP applies to: demolitions and renovations of buildings; mining, spraying, manufacturing, fabricating, mills, etc.; use in roadways and insulating materials; transport and waste disposal; active and inactive waste disposal sites; and conversion of ACM to non-ACM.
- Residences with four or fewer dwelling units are generally exempt from the demolition/renovation and the waste disposal stages unless, for example, the demolition and renovation is part of a larger project, or the residence is part of an installation as defined in the regulation. Other circumstances may also apply to make otherwise exempt residences covered.
- Prior to renovation or demolition, the owner or operator is required to:
  1. Inspect for asbestos and determine amounts, if any.
  2. Provide written notification (10 working days in advance) to state/EPA for all demolitions and for renovations that meet threshold amounts.

3. Emergency provisions may allow notice to be made 24 hours instead of 10 working days.
4. Remove asbestos material if it is friable or will become friable prior to the demolition/renovation (for renovations, there are threshold amounts).
5. Ensure there is an asbestos trained supervisor on the jobsite with documentation posted.

Emission Controls:

- The Asbestos NESHAP demolition and renovation provisions require the owner/operator to adequately wet asbestos containing material prior to, during, and in preparation for transport and disposal.
- Adequately wet means to sufficiently mix or penetrate with liquid to prevent the release of particulates/fibers. Amended water (water to which a surfactant or wetting agent has been added) is strongly recommended. Note: There are other ways to comply that do not release emissions.
- If visible emissions are observed coming from the asbestos-containing material, then that material has not been adequately wetted. The absence of visible emissions is not sufficient evidence of adequately wet.
- EPA issued a booklet entitled Asbestos/NESHAP Adequately Wet Guidance, EPA340/1-9019. It discusses friable asbestos material and nonfriable asbestos-containing material, requirements for adequately wetting, exceptions, techniques, and procedures for different types of material.

Disposal Sites:

- NESHAP landfill requirements are separate from the Resource Conservation and Recovery Act (RCRA) solid waste regulations and state or local permit requirements.

- Asbestos-containing waste material (ACWM) can only be disposed of in a landfill that meets the Asbestos NESHAP requirements.

- Asbestos-containing material is also subject to state and local solid waste regulations.

Section V (Asbestos Test Methods) provides a description of the methods and who is responsible for conducting the testing.

Section VI (Catastrophic Case Studies Involving Asbestos) provides background and applicability of the Asbestos NESHAP to a number of incidents, e.g. Greensburg Tornado, Hurricanes Katrina and Rita, and the Northridge Earthquake.

Section VII (Emergency Preparedness) provides useful sources for determining where asbestos is located, as well as other ideas for emergency preparedness.

The **Appendix** provides EPA Regional Asbestos Contacts and the Asbestos NESHAP regulation.

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Appendix A: EPA Regional Asbestos Contacts NESHAP and TSCA A-1

Appendix B: Asbestos NESHAP Regulation 40 CFR Part 61, Subpart M B-1

ACRONYMS AND ABBREVIATIONS

ACM	Asbestos-Containing Material
ACWM	Asbestos-Containing Waste Material
AHERA	Asbestos Hazard Emergency Response Act
ATSDR	Agency for Toxic Substances and Disease Registry
C&D	Construction and Demolition
CAA	Clean Air Act
CDC	Centers for Disease Control
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
DHHS	Department of Health and Human Services
DHS	Department of Homeland Security
DOT	U.S. Department of Transportation
ECHO	Enforcement and Compliance History Online
EPA	U.S. Environmental Protection Agency
EPCRA	Emergency Planning and Community Right to Know Act
FEMA	Federal Emergency Management Agency
FR	Federal Register
FRP	Federal Response Plan
GAO	Government Accounting Office
HHCU	Health Hazards Control Unit
HSPD	Homeland Security Presidential Directive
IDNR	Iowa Department of Natural Resources
KDHE	Kansas Department of Health and Environment
LDEQ	Louisiana Department of Environmental Quality
LEA	Local Education Agencies
MAP	Model Accreditation Program
MDEQ	Mississippi Departments of Environmental Quality
MSHA	Mine Safety and Health Administration
NAA	No Action Assurance
NCP	National Contingency Plan
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NIMS	National Incident Management System
NIOSH	National Institute for Occupational Safety and Health
NIST	National Institute of Standards and Technology
NRC	National Response Center
NRF	National Response Framework
NRP	National Response Plan
NRS	National Response System
NRT	National Response Team
NVLAP	National Voluntary Accreditation Laboratory Program
NYCDDC	New York City Department of Design and Construction
OECA	Office of Enforcement and Compliance Assurance
OIG	Office of the Inspector General
OSC	On-Scene Coordinator
OSHA	Occupational Safety and Health Administration
PACM	Presumed Asbestos-Containing Material
PCM	Phased Contrast Microscopy
PHMSA	Pipelines and Hazardous Materials Safety Administration
PLM	Polarized Light Microscopy
RACM	Regulated Asbestos-Containing Material
RCRA	Resource Conservation and Recovery Act
SDWA	Safe Drinking Water Act
SIC	Standard Industrial Classification
TEM	Transmission Electron Microscopy
TRI	Toxics Release Inventory
TSCA	Toxic Substances Control Act
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USCG	U.S. Coast Guard
WTC	World Trade Center

I. INTRODUCTION

A. Background

This Guidance addresses federal asbestos regulations and concerns that arise related to asbestos—a known carcinogen—following catastrophic events including: immediate exposure concerns for emergency responders including rescue personnel or others in the immediate area of the event; cleanup and disposal of debris that may be contaminated with asbestos; the demolition or renovation of buildings during recovery efforts; and the transport and disposal of material that may contain asbestos. It discusses which building materials may contain asbestos and those that do not.

The U.S. Environmental Protection Agency (EPA) first issued Guidelines for Catastrophic Emergency Situations Involving Asbestos in 1992. Since that time, EPA has worked with other federal agencies and state and local governments to respond to additional catastrophic events and their cleanup including Hurricanes Katrina and Rita, the attack on the World Trade Center towers, tornadoes and floods in the Midwest, and major fires. This publication includes discussions of those events as well as some of the earlier events and how the Agency responded concerning asbestos.

The Guidance for Catastrophic Emergency Situations Involving Asbestos (referred to as the Guidance) includes a discussion of environmental regulations that apply to materials containing asbestos with an emphasis on the Asbestos National Emissions Standard for Hazardous Air Pollutants (NESHAP) regulation promulgated under the Clean Air Act (CAA). It reviews the requirements found in the Asbestos NESHAP and explains the limited flexibility that is available. It briefly discusses No Action Assurances (NAA) in terms of when an NAA may be

appropriate and the information needed to make such an assessment. It includes options that were selected in response to specific events, and in some cases, discusses options considered by EPA and rejected. In addition to discussing the regulatory requirements, it touches on EPA's role in providing advice in response to questions from the public and government agencies concerning whether asbestos levels in the area of a disaster or a related response activity are within allowable levels and on what they should do to clean up asbestos contaminated debris, including material that is outside the purview of the regulations. During a crisis, the public looks to EPA for advice on the risks posed by pollutants and for advice on how to clean up. At times, the questions pertain to regulated activities but may also concern unregulated activities.

B. Purpose

This document is intended for use by EPA managers and staff with Asbestos NESHAP responsibilities who need information on the types of asbestos issues that may arise during catastrophic events and how EPA has addressed such issues. In addition, it is intended for EPA's emergency responders such as On Scene Coordinators (OSCs) who need a quick reference document on how asbestos is regulated, especially under the Asbestos NESHAP. This Guidance provides consolidated, summary information on asbestos requirements under federal statutes with an emphasis on the demolition or renovation of buildings under the Asbestos NESHAP. It is not a comprehensive review of the regulations but is intended to provide basic information to EPA personnel, including those who may not be familiar with the requirements pertaining to asbestos. It includes references (weblinks to additional information) and provides summaries of previous catastrophic events. It does not impose legally binding requirements on any party, including EPA, states, local governments, the regulated community, or any other person.

It is intended to provide an overview of issues that may arise after a catastrophic event and how such issues have been addressed in the past. It consolidates information on how EPA regulations pertaining to asbestos apply to various scenarios. For a more in-depth knowledge of the regulations, there are courses that have been approved by EPA and states for persons that inspect for the presence of asbestos, for workers involved in renovations or demolitions of buildings that may contain asbestos, and for their supervisors.[1] There are numerous publications by EPA on specific asbestos issues, Federal Register notices that interpret the regulations, and an index of Applicability Determinations[2] issued by EPA under the CAA. The requirements for the Asbestos NESHAP are found at 40 CFR Part 61, Subpart M. This Guidance does not modify or replace these regulations in any way. The reader is referred to the regulation for information on the specific requirements. The Guidance discusses the Asbestos NESHAP as it applies to the renovation or demolition of facilities (including the disposal of asbestos-containing waste) in the aftermath of natural or man-made catastrophic events. From the early stages of a response to a catastrophic event to the later stages of debris cleanup and disposal, compliance with the Asbestos NESHAP is important to ensure that emergency responders, cleanup crews, and the public avoid unnecessary exposures to or releases of asbestos fibers.

Readers should also refer to EPA's Planning for Natural Disaster Debris Guidance, (EPA 530-K-08-001). The Planning for Natural Disaster Debris Guidance provides a holistic view of general debris management consistent with Federal Emergency Management Agency (FEMA) and state requirements.

The Office of Enforcement and Compliance Assurance (OECA) encourages EPA regions and other emergency response personnel to consult with the Office of Compliance and the Office

[1] For more information on the approved training courses, see http://www.epa.gov/asbestos/pubs/ndaac.html.
[2] To view the Clean Air Act (CAA) Applicability Determinations, see http://cfpub.epa.gov/adi.

of Civil Enforcement if questions arise in connection with a catastrophic event concerning asbestos and the applicability of EPA's regulations on asbestos.

II. ASBESTOS – OVERVIEW

A. Asbestos Concerns During and After a Catastrophic Incident

During and after a catastrophic incident that damages or destroys buildings, there is a potential for exposure to asbestos fibers that have been disturbed and released as a result of the incident and that may pose risks to persons in the area, including rescue workers, emergency responders, and residents returning to the area.

As cleanup begins, there is an additional concern for potential releases of asbestos fibers during cleanup and disposal of debris and during the demolition or renovation of buildings, including commercial buildings, public buildings, schools, and homes. Concerns include potential release of asbestos fibers during handling and transport of waste material containing asbestos as well as during disposal activities. At the same time, there is a concern to expedite cleanup and recovery.

WHAT YOU NEED TO KNOW

Any building may contain asbestos. Inhalation exposure can occur when asbestos-containing material is disturbed and releases fibers.

Keeping material wet and contained minimizes emissions.

It is important to not burn or grind asbestos-containing material except with strict controls that prevent visible emissions to the outside air.

It is important to comply with regulatory requirements related to the renovation/demolition of buildings and the transport and disposal of asbestos-containing waste material.

It is important to ensure that response activities taken to clean up and restore areas do not result in future problems from improper work practices or improper disposal of asbestos-containing material. Compliance with regulatory requirements is important to minimize or prevent exposure to asbestos.

Widespread asbestos contamination of soils may also be an issue if manufacturing sites, milling operations, or landfills with asbestos are damaged by the catastrophic event. A separate

issue may involve schools and the need to set up schools in temporary buildings which may contain asbestos. Inspecting for asbestos and having management and operating plans in place as required under the Asbestos Hazard Emergency Response Act (AHERA), Subchapter II of the Toxic Substances Control Act (TSCA), is important to protecting school children, teachers, and other school employees. If the asbestos-containing material in a building is not damaged or friable, it is best left in place and actions should be taken to ensure that it is not disturbed or damaged.

B. What is Asbestos?

The term "asbestos" is used to refer to the habit of some minerals to form long thin fibers that are hair-like or needle-like. There are hundreds of minerals that can form this way, depending on the geological conditions of their formation. Many rock bodies in the U.S. contain some level of asbestos. When a large deposit of a nearly pure asbestos mineral is formed in the earth, it can be a source of "commercial" asbestos. Asbestos having commercial significance, i.e., the regulated asbestiform[3] varieties are categorized into two groups. The first group is known as Serpentine, which includes chrysotile asbestos. The second group is known as Amphiboles, which includes crocidolite, amosite, anthophyllite, actinolite, and tremolite asbestos.

WHAT YOU NEED TO KNOW

The term "asbestos" is used to refer to the habit of minerals to form long thin fibers that are hair-like or needle-like.

Commercial asbestos regulated under the Asbestos NESHAP can be categorized into two groups: Serpentine (chrysotile) and Amphibole (crocidolite, amosite, anthophyllite, actinolite, and tremolite).

Asbestos does not degrade under normal conditions.

[3] When handled or crushed, the asbestos bundles readily separate into individual mineral fibers. This type of mineral growth form or "habit" is called asbestiform.

Serpentine asbestos fibers are long and flexible like hair while amphibole asbestos fibers are relatively brittle and crystalline like needles. Amphibole asbestos mineral fibers frequently end in a "barb" or display flayed ends. Amphiboles are distinguished from one another by the amount of sodium, calcium, magnesium, and iron they contain.

The physical and chemical properties of these commercial asbestos fibers include high tensile strength, flexibility, resistance to chemical and thermal degradation, and high electrical resistance. Asbestos fibers were once found in over 3,600 commercial products including thermal system, fireproofing, and acoustical insulation materials. Although many commercial asbestos products have been phased out many asbestos-containing products may still be present in buildings, including homes, and in building materials. Asbestos is not found in, but may be on, glass, metal, or wood. All other building materials may contain asbestos.

A partial list of the types of building materials that may contain asbestos is provided below:

Walls, Floors and Ceilings	Thermal and Friction
Asphalt Floor Tile	Fire Blankets
Vinyl Floor Tile	Fire Curtains
Vinyl Sheet Flooring and Backing	Elevator Brake Shoes
Acoustical Plaster	Fireproofing Materials
Caulking/Putties/Adhesives	Taping Compounds (thermal)
Textured Paints and Coatings	Electric Wiring Insulation
Decorative Plaster	Electrical Cloth
Ceiling Tiles and Lay-in Panels	Duct Work Flexible Fabric Connections
Joint Compounds	Fire Doors
Vinyl Wall Coverings	Thermal Paper Products
Spackling Compounds	High Temperature Gaskets
Construction Mastics	Heating and Electrical Ducts

Insulation	Other Applications
HVAC Duct Insulation	Cement Siding
Boiler Insulation	Cement Wallboard
Breaching Insulation	Cement Pipes
Blown-in Insulation	Roofing Shingles, Felt, and Asphalt Coatings
Spray-Applied Insulation	Laboratory Hoods/Table Tops/Gloves
Pipe Insulation	

More on Non-Commercial Asbsestos

Asbestos occurs geologically in soils and rock. When it is not extracted and used for commercial purposes, it is not regulated under the Asbestos NESHAP; however, some states have regulated certain activities that would disturb and/or distribute asbestos from naturally occurring sources to the ambient air.

In addition, asbestos can also be found as a contaminant in some mineral products. For instance, vermiculite was used extensively as attic insulation, soils amendment, and as a packaging material (specifically, for chemicals in glass containers). The asbestos is a contaminant of the vermiculite, was not added deliberately, and does not increase the value of the vermiculite. It is not considered "commercial asbestos" under the Asbestos NESHAP. Similarly, sprayed-on structural steel coatings may contain asbestos that occurs as a contaminant of the coating, e.g., Monokote© which had been sprayed on steel beams in the World Trade Center. These mineral products are not regulated under the Asbestos NESHAP;

WHAT YOU NEED TO KNOW

For additional information on:

Naturally occurring asbestos, see http://www.epa.gov/asbestos/pubs/clean.html

Vermiculite attic insulation, see http://www.epa.gov/asbestos/pubs/verm.html

nevertheless, they can present a potential exposure to asbestos in disaster response scenarios. First responders are cautioned to be aware of the likely presence of asbestos in attics, in interstitial spaces of cement block walls, and on steel construction.

C. Recognizing Asbestos

It is not possible to determine whether materials contain asbestos by visual inspection; analysis of the material is necessary. A thorough inspection of a building by trained personnel is necessary along with analysis of the material to determine if asbestos is present. There are several methods to analyze for asbestos, and different regulations require different methods. These methods are: Polarized Light Microscopy (PLM), Transmission Electron Microscopy (TEM) and Phased Contrast Microscopy (PCM). The Asbestos NESHAP relies on PLM to determine asbestos' presence in bulk samples. The Asbestos Hazard Emergency Response Act (AHERA), which is Subchapter II of the Toxic Substances Control Act (TSCA), relies on both PLM, for bulk sample analysis, and on TEM for air clearance after a response action. The Occupational Safety and Health Administration (OSHA) uses PCM for total fiber counts. If fibers below a certain size (50 microns) are present, then further analysis (using TEM) is needed to determine if the material contains asbestos.

For school buildings, EPA and state regulations require inspections by trained inspectors to determine if asbestos is present and the maintenance of related records. These records may be available to determine if a school building has asbestos, which may be useful information if a school building is damaged or destroyed by a catastrophic event.

Scanning electron micrograph of asbestiform Amphibole. Source: U.S. Geological Survey and U.S. Environmental Protection Agency Denver, Colorado

WHAT YOU NEED TO KNOW

Asbestos can be found in buildings including homes (floor tiles, ceilings, shingles, etc).

Asbestos is not found in (but may be found on) glass, metal/steel, or wood. All other building material is suspect.

Testing is required to determine if asbestos is present.

EPA did not ban all asbestos.

EPA does not regulate asbestos that is a contaminant of a mineral product.

See http://www.epa.gov/asbestos/pubs/ashome.html for more information on the asbestos containing materials that are likely to be found in homes.

Since 1970, the government has banned certain applications of asbestos-containing materials from buildings, including residences. In April 1973 (38 FR 8821), EPA banned the spray application of surfacing asbestos-containing material for insulation and fire-proofing purposes. In June 1978 (43 FR 26372), EPA banned the spray application of surfacing asbestos-containing material for decorative purposes. While some publications have suggested that buildings built after a certain date do not contain asbestos (the dates given vary but are usually 1978 or 1980[4]), it is not appropriate to conclude that such buildings do not contain asbestos for purposes of complying with the Asbestos NESHAP. While it is likely that houses built during certain time periods such as prior to 1980 are more likely to contain asbestos, it is not possible to determine that houses and buildings built after this time do not contain asbestos. Similarly, some documents suggest that houses built prior to a certain date (e.g., a building built prior to 1910) do

[4] See OSHA's definition of Presumed Asbestos-Containing Material (PACM) definition at 29 CFR §1926.1101(b).

not contain asbestos as it was not commonly used. Remodeling of older homes may have introduced asbestos into these homes. For newer homes, imported building materials may contain asbestos. Federal law does not prohibit the use of asbestos in materials except for certain products. There have been instances where buildings constructed in recent years were found to contain asbestos, e.g., an airport was built recently, and although the contract specified no asbestos material, the building contained asbestos. There is no exemption in the Asbestos NESHAP regulation based on the date a building was built.

D. Health Issues

Health problems due to exposure to asbestos generally take a long time (15 years or more) to develop. It is important that first responders and other emergency personnel take precautions to protect themselves against possible exposure to asbestos fibers when they are working in a situation where buildings have been damaged or destroyed or where renovation, demolition, or disposal is occurring. It is unlikely a person will even know if asbestos is present unless there has been an inspection for asbestos and notification is provided. There are no immediate symptoms associated with exposure to asbestos, and whether dust in the air contains asbestos can only be determined by testing.

WHAT YOU NEED TO KNOW

Risk of asbestos exposure occurs through inhalation of asbestos fibers.

Keeping the asbestos from becoming airborne is the best way to protect human health.

Generally, if asbestos-containing material is not damaged or friable, it is best left in place and actions should be taken to ensure that it is not disturbed or damaged.

Many factors determine whether a person's health will be affected if exposed to asbestos. These factors include the dose (how much), the exposure duration (how long), the fiber type and size, and how the person came in contact with the asbestos fibers (e.g., inhalation of asbestos is

generally more harmful than exposure by ingestion or skin exposure). Additional factors include other chemicals to which the person has been exposed, age, sex, diet, genetic factors, whether the person smokes tobacco, and his or her general state of health.

Information on the health effects of asbestos in people comes mostly from studies of individuals who were exposed in the past to airborne asbestos in the workplace. Individuals exposed to high levels of asbestos over a long period may experience a slow buildup of scar-like tissue in the lungs and in the membrane that surrounds the lungs. This scar-like tissue does not expand and contract like normal lung tissue making breathing difficult. Blood flow to the lung may also be decreased leading to enlargement of the heart. This disease is called asbestosis. People with asbestosis have shortness of breath, often accompanied by a cough. This is a serious disease that appears 20 to 30 years after first exposure to asbestos but can eventually lead to disability or death. Other possible non-cancer effects from asbestos exposure include changes in the membrane surrounding the lung, called pleural plaques. These changes are quite common in people occupationally exposed to asbestos and are sometimes found in people living in areas with high levels of natural-occurring asbestos. Health effects on breathing from pleural plaques alone are not always serious, depending on the extent of plural plaque formation.

Asbestos workers have increased chances of developing one of two principal types of cancer: cancer of the lung tissue and mesothelioma, a cancer of the thin membrane that surrounds the lung and other internal organs. These cancers do not develop immediately following exposure to asbestos but appear only after a number of years. Lung cancer is usually fatal, while mesothelioma is almost always fatal, often within a few months of diagnosis. There

WHAT YOU NEED TO KNOW

Inhalation of asbestos fibers is extremely hazardous.

Health effects generally take 15 years or longer before they are identified by medical personnel.

is also some evidence from studies of workers that breathing asbestos can increase the chances of getting cancer in other locations (for example, the stomach, intestines, esophagus, pancreas, and kidneys), but this is less certain.

References

Agency for Toxics Substances and Disease Registry (ATSDR), Department of Health and Human Services (DHHS), Asbestos; http://www.atsdr.cdc.gov/asbestos/, February 2009.

U.S.Geological Survey (USGS), Department of the Interior, Asbestos Statistics and Information; http://minerals.usgs.gov/minerals/pubs/commodity/asbestos/, February 2009.

III. THE REGULATION OF ASBESTOS

A. General Overview of How EPA and Other Federal and State Agencies Regulate Asbestos

There are a number of environmental statutes and regulations that the U.S. EPA administers that may apply to activities involving asbestos:

- Clean Air Act (CAA), National Emission Standard for Hazardous Air Pollutants for Asbestos (Asbestos NESHAP)
- Toxic Substances Control Act (TSCA)
    - Asbestos Hazard Emergency Response Act (AHERA – asbestos in schools)
    - Section 6 – Asbestos Worker Protection Standards
    - Section 6 - Asbestos Ban and Phase-Out Rule
    - Model Accreditation Program (MAP)
- Safe Drinking Water Act (SDWA)
- Emergency Planning and Community Right to Know Act (EPCRA)
- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) - Superfund
- Resource Conservation and Recovery Act (RCRA)

In addition to EPA's statutes and regulations that apply to asbestos**,** various federal and state agencies also regulate asbestos. Federal regulations address the mining of asbestos ore, worker protection, and transportation of asbestos containing material. An overview of asbestos regulation by other federal agencies can be found in section C of this chapter. In addition, state agencies may be authorized or delegated authority under the various federal statutes to carry out similar responsibilities. State requirements may be more stringent than the federal requirements.

While disposal sites for solid and hazardous waste material are regulated primarily by the state solid and/or hazardous waste programs, the federal Asbestos NESHAP has specific requirements that apply to the disposal of asbestos-containing waste material (including debris from a government ordered demolition where an inspection for asbestos was not required prior to the demolition, and for which the debris is to be treated as though it contains asbestos) in addition to any solid or hazardous waste requirements.

WHAT YOU NEED TO KNOW WHEN ASBESTOS IS PRESENT

Renovation/demolition activities and handling of the debris through disposal may be subject to the Clean Air Act Asbestos NESHAP.

TSCA AHERA may apply if a school or public building is involved. EPA has developed guidance for schools in both English and Spanish. Go to: http://www.epa.gov/asbestos/pubs/asbestos_in_schools.html

Accreditation requirements may apply to laboratories.

Training requirements may apply to workers/supervisors. See EPA guidance for asbestos professionals at http://www.epa.gov/asbestos/pubs/ndaac.html

If asbestos contaminates an area, Superfund may apply.

If asbestos-containing material is going to landfills, the Asbestos NESHAP and state/federal landfill requirements may apply.

Asbestos in drinking water may be subject to the Safe Drinking Water Act.

B. Asbestos: Overview of EPA Requirements

Clean Air Act (CAA)

EPA's Asbestos National Emissions Standards for Hazardous Air Pollutants (NESHAP) program (40 CFR Part 61, Subpart M), promulgated under authority of the CAA, regulates asbestos as a hazardous air pollutant. The Asbestos NESHAP protects the public by establishing

requirements that minimize the release of asbestos fibers from certain sources during activities involving the processing, handling, and disposal of asbestos-containing material.

The sources covered by the Asbestos NESHAP regulation include:

- asbestos mills
- manufacturing operations using commercial asbestos
- fabricating operations using commercial asbestos
- roadway construction and maintenance
- spraying operations
- installation of insulating materials that contain commercial asbestos
- renovation and demolition operations
- waste disposal
- active and inactive asbestos-containing waste disposal sites (e.g., landfills)
- operations that convert asbestos-containing waste material into nonasbestos-containing material

This document focuses on activities involving asbestos that are likely to be encountered as a result of catastrophic events and cleanup/recovery efforts that are subject to the Asbestos NESHAP regulation, i.e., renovation and demolition activities, handling and transport, and waste disposal, including Asbestos NESHAP landfill requirements. The Asbestos NESHAP specifies work practices to be followed during demolitions and renovations of all structures, installations, and buildings (excluding certain residential buildings with four or fewer units that do not meet the definition of installation or are not part of a larger project). In

WHAT YOU NEED TO KNOW

The Asbestos NESHAP applies to demolition/renovation of buildings and the handling and disposal of resulting debris.

addition, the regulation requires the owner of the building and/or the contractor to notify applicable state and local agencies and/or EPA before all demolitions, and before renovations of buildings that contain a certain threshold amount of regulated asbestos-containing material. Section 4 of this chapter provides additional information on the Asbestos NESHAP regulation and how it applies to situations resulting from catastrophic events.

Toxic Substances Control Act (TSCA)

The Toxic Substances Control Act (TSCA) regulates asbestos in a number of ways including the AHERA of 1986, TSCA Section 6 Asbestos Worker Protection Standards, TSCA Section 6 Asbestos Ban and Phase-Out Rule, and the Model Accreditation Program (MAP) requirements.

Under AHERA, EPA developed a comprehensive framework for dealing with asbestos in public and non-profit private elementary and secondary schools. The regulation (40 CFR Part 763, Subpart E) requires Local Education Agencies (LEAs) associated with public and non-profit elementary and secondary schools to visually inspect all school buildings for both friable and nonfriable asbestos; to sample and analyze material not assumed to be asbestos-containing material; to develop plans to manage asbestos in schools; and to carry out the plans in a timely fashion. The LEA is required to notify parent, teacher and employee groups about asbestos if it is in the school and about any asbestos-related activities. Demolitions or renovations of school buildings with asbestos are also subject to the Asbestos NESHAP. To minimize exposure to asbestos, it is important to know where it is and to minimize any disturbance of the asbestos.

During catastrophic events, schools may be damaged and in need of repair. Ensuring that the school has a management plan for asbestos and that it is being followed as well as ensuring compliance with the Asbestos NESHAP if the building is renovated or demolished is important.

In addition, as a result of a catastrophic event, a school may have to be physically relocated to other buildings due to damage. In such cases, the LEA needs to ensure compliance with the AHERA requirements, including ensuring that the building to be used as a school on an emergency basis is inspected for asbestos by trained personnel within 30 days after commencement of such use and that a management plan is subsequently developed and followed.

The TSCA Section 6 Asbestos Worker Protection regulation (40 CFR Part 763, Subpart G) applies to state and local government employers located in a state that does not have an OSHA-approved program (in which case its employees are not protected by OSHA's Asbestos Standards) and that does not have a state asbestos plan that EPA has exempted from the requirements of Subpart G. It affects employees who perform certain construction activities, custodial activities, and repair, cleaning, or replacement work involving asbestos-containing brakes and related equipment. It provides protections to those employees identical to the OSHA asbestos standards that apply in states with OSHA-approved programs.

The TSCA regulations also establish training requirements for accreditation programs. In the course of cleaning up the devastated area, certain types of buildings, i.e., schools, public and commercial buildings require trained supervisors and staff on-site to undertake the cleanup. The type of training and subject matter necessary to be accredited is specified in the Model Accreditation Program (MAP found at 40 CFR Part 763, Subpart E, Appendix C).

TSCA Section 6 regulations also include a Prohibition on the Manufacture, Importation, Processing, and Distribution in Commerce of Certain Asbestos-Containing Products and Labeling Requirements (also referred to as the Asbestos Ban and Phase-Out Rule; 40 CFR Part 763, Subpart I). The rule was first published in 1989 and banned most asbestos products. However, in 1991, the Fifth Circuit Court of Appeals vacated parts of the original rule. What

continues to be banned under the Asbestos Ban and Phase-Out Rule are corrugated paper, rollboard, commercial paper, specialty paper, flooring felt, and new uses of asbestos after July 1989.

Emergency Planning and Community Right-to-Know Act (EPCRA)

Under the Emergency Planning and Community Right-to-Know Act (EPCRA), facilities that manufacture, process, or use significant amounts of toxic chemicals are required to develop emergency plans and inform local communities and citizens of the potential hazards and to report annually their releases of these chemicals to the environment. Facilities belonging to one of the identified Standard Industrial Classification (SIC) industries must make annual reports of chemical releases, including releases of asbestos. Information identifying the affected facilities and the amount of released friable asbestos can be found at EPA's Toxics Release Inventory (TRI) data base system (http://www.epa.gov/tri/). The information reported on friable asbestos releases through TRI is predominately associated with its transfer to approved land disposal facilities. Requirements to submit annual reports of chemical releases to EPA apply to facilities that have 10 or more full-time employee equivalents, and manufacture or process more than 25,000 pounds or otherwise uses more than 10,000 pounds of any listed chemical during the calendar year.

During and after a catastrophic event, it may be useful to check with Local Emergency Planning entities and the TRI database to identify facilities located within the area damaged by the event that may have asbestos.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

WHAT YOU NEED TO KNOW

Different regulations may apply to different situations involving asbestos. Catastrophic events often involve debris from building materials that may contain asbestos.

The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), also known as Superfund, gives EPA the authority to initiate a Superfund response when there is a release or threatened release of a hazardous substance into the environment. Asbestos, as a hazardous air pollutant, is regulated under the CAA and, as a hazardous substance, is regulated under CERCLA. In addition to the asbestos minerals regulated as commercial asbestos under the Asbestos NESHAP, there are other forms of asbestos minerals, primarily of the amphibole group, which may be subject to CERCLA authority. CERCLA provides the authority and funds for government responses to hazardous substance releases into the environment, including the ambient air, and allows the federal government to recover the costs of responding to and cleaning up hazardous substance releases. CERCLA also provides authority for the federal government to order a responsible party to conduct cleanup. OSWER has developed a document, Framework for Investigating Asbestos-Contaminated Superfund Sites (OSWER Directive 9200.0-68) which present a recommended framework for investigating and characterizing the potential for human exposure from asbestos contamination in outdoor soil and indoor dust at Superfund Removal and Remedial sites.

Safe Drinking Water Act (SDWA)

The Safe Drinking Water Act (SDWA) gives EPA the authority to set drinking water standards. Drinking water standards are regulations that EPA sets to control the level of contaminants in the nation's drinking water. These standards are part of the Safe Drinking Water Act's "multiple barrier" approach to drinking water protection, which includes assessing and

protecting drinking water sources; protecting wells and collection systems; making sure water is treated by qualified operators; ensuring the integrity of distribution systems; and making information available to the public on the quality of their drinking water. Asbestos is regulated under the National Primary Drinking Water regulations. These regulations are legally enforceable standards that apply to primary water systems. EPA has set a maximum contaminant level of 7 million asbestos fibers per liter. Asbestos fibers end up in water, including drinking water, due to a number of sources: erosion from natural sources such as asbestos-containing ores; the wear or breakdown of asbestos-containing materials; the dumping of asbestos mine tailings into lakes; the runoff of process and air scrubber water into lakes and streams; and through the use of asbestos cement pipes in water supply systems.

During or after a catastrophic event, it is important to manage any asbestos-containing material to ensure that it does not get into the public water supply, both immediately after the catastrophic event and in the long term (i.e., years after the event).

Resource Conservation and Recovery Act (RCRA)

The Resource Conservation and Recovery Act (RCRA) is the statute under which EPA regulates solid waste, including hazardous waste. RCRA provides authority to regulate waste from "cradle to grave" (generation through disposal). Subtitle D of RCRA regulates non-hazardous solid waste (hazardous waste is also solid waste). Solid waste can include municipal solid waste (i.e., everyday trash and garbage), waste from industrial processes, and construction and demolition (C&D) debris. Hazardous waste may not go to a Subtitle D landfill, although some non-hazardous material may be sent to a Subtitle C landfill. Municipal (Subtitle D) landfills receive wastes with high organic content (e.g., discarded food) and must take steps to keep out birds and other animals and to vent gases that are generated through the breakdown of

these materials. The requirements for Subtitle C landfills limit liquids and organic material, so there is less emphasis on such measures.

Asbestos is not regulated as a listed or characteristic waste under RCRA at the federal level, however, the Subtitle D solid waste programs are almost exclusively the responsibility of the states; no authorization by EPA is necessary. EPA has issued basic standards for solid waste landfills, but implementation of these standards is left to the States. Generally, state solid waste regulations have specific asbestos handling and disposal requirements, and the States determine which landfills can accept asbestos-containing materials. If the landfills accept regulated asbestos-containing material, they must also comply with the Asbestos NESHAP requirements for active and inactive disposal sites. Consult with the state solid waste authority for the asbestos disposal requirements and approved landfills specific to that state.

C. Other Federal Regulations

Department of Transportation (DOT)

The U.S. Department of Transportation (DOT), Pipelines and Hazardous Materials Safety Administration (PHMSA), regulates asbestos as part of its hazardous materials transportation program. The hazardous materials program is responsible for the safe, reliable, and environmentally sound operations of the U.S. transportation system. The general standards for transporting hazardous materials are found at 49 CFR Parts 171–180.

Occupational Safety and Health Administration (OSHA)

The Department of Labor, Occupational Safety, and Health Administration's (OSHA) mission is to prevent work-related injuries, illnesses, and deaths. OSHA rules specify a permissible exposure limit for asbestos, respiratory protection, engineering controls for worker

protection and work practices. Note: EPA promulgated a worker protection rule under the Toxic Substances Control Act, which applied the same asbestos standards as OSHA's to state and local government employees in those states that do not have OSHA-approved programs (see the discussion of "Worker Protection Standards" in Section 2). For a listing of the states that currently have OSHA-approved programs, see http://www.osha.gov/dcsp/osp/index.html. The OSHA asbestos regulation for general industry and construction can be found at 29 CFR 1910.1001 and 29 CFR 1926.1101, respectively. OSHA's web site for asbestos is: http://www.osha.gov/SLTC/asbestos/index.html.

Mine Safety and Health Administration (MSHA)

The mission of the Mine Safety and Health Administration (MSHA), in the Department of Labor, is to enforce compliance with mandatory safety and health standards as a means to eliminate fatal accidents; to reduce the frequency and severity of non-fatal accidents; to minimize health hazards; and to promote improved safety and health conditions in the nation's mines. The regulations governing the mining of asbestos are found at 30 CFR Parts 1–199. MSHA revised its health standards for asbestos exposure at metal and nonmetal mines, surface coal mines, and surface areas of underground coal mines, reducing the permissible exposure limit (PEL) for asbestos. See http://www.msha.gov/REGS/FEDREG/FINAL/2008finl/E8-3828.pdf for more information on MSHA's asbestos rule.

IV. CATASTROPHIC EVENTS AND THE APPLICABILITY OF THE ASBESTOS NESHAP

A. Introduction

The Asbestos NESHAP (40 CFR Part 61, Subpart M) regulation specifies work practices and emission control requirements for milling, manufacturing, and fabricating operations using commercial asbestos; for activities associated with the demolition and renovation of asbestos-containing buildings; and for the handling and disposal of asbestos containing waste material from regulated sources. The regulation requires work practices and emission controls that minimize the release of asbestos fibers during activities involving the handling and processing of asbestos and asbestos-containing material. This Guidance focuses on the applicability of the Asbestos NESHAP regulation to renovation and demolition operations, waste handling, and disposal activities, which occur as part of the cleanup and recovery efforts after massive damage to buildings from catastrophic events. Damaged or destroyed buildings which may have asbestos include commercial, public, and residential buildings. The previous discussion on TSCA AHERA touched on the asbestos in school requirements and the need for inspections and management plans if new buildings are converted to schools as well as adherence to the management plan and AHERA requirements for trained

WHAT YOU NEED TO KNOW

Asbestos NESHAP applies to:

- Demolitions and renovations of buildings.
- Mining, spraying, manufacturing, fabricating, mills, etc.
- Use in roadways and insulating materials.
- Transport and waste disposal.
- Active and inactive waste disposal sites.
- Conversion of Asbestos-Containing Material (ACM) to non-ACM.

personnel and air clearance requirements for renovations and demolitions in existing schools. The renovation and demolition of school buildings are also subject to the Asbestos NESHAP requirements. Additionally, if there is a manufacturing site, asbestos milling operation, or asbestos landfill that is damaged by the event, these may also present asbestos risks. Determining if such operations are located in the area affected by the catastrophic event should be done as soon as possible as damage to such sites may pose an immediate risk. To date, EPA's experience has mostly involved catastrophic events that damaged buildings including homes rather than other sources.

The most relevant sections of the Asbestos NESHAP related to this Guidance include Definitions (40 CFR § 61.141); Standard for Demolition and Renovation (40 CFR § 61.145); Standard for Waste Disposal for Manufacturing, Fabricating, Demolition, Renovation, and Spraying Operations (40 CFR § 61.150); and Standards for Active Waste Disposal Sites (40 CFR § 61.154). Table 1, contains a list of definitions from the regulation most relevant to the discussions below. A copy of the Asbestos NESHAP regulation can be found in Appendix B. Note: The discussion in this Guidance does not modify or take the place of the regulations in any way; please refer to the regulation to determine specific requirements. This document is not a substitute for completing required training or obtaining certifications. It provides an overview and guidance on when trained persons should be involved in cleanup activities.

B. The Asbestos NESHAP Regulation and Emergencies

1. Applicability of the Asbestos NESHAP during Emergencies

There are **no** statutory or regulatory provisions that stay the applicability of the Asbestos NESHAP as a result of a catastrophic event[5]. There are provisions for emergency renovations, government-ordered demolitions, and situations where the requirements to adequately wet material may be hampered by freezing temperatures or situations that pose risk if water is used. These provisions waive some requirements such as the advance notification requirements (notification is still required, just the timeframe differs). The provisions for addressing government ordered demolitions based on a determination that the building is structurally unsound and in danger of imminent collapse waive the requirements to inspect and remove the regulated asbestos containing material provided all material is treated as asbestos (kept adequately wet and transported and disposed of as asbestos-containing material).

WHAT YOU NEED TO KNOW

There are no statutory or regulatory provisions that stay the applicability of the Asbestos NESHAP for activities related to catastrophic events.

In extremely unusual situations, EPA may issue a No Action Assurance (NAA). Under an NAA, EPA will not take an enforcement action for an activity that otherwise is in violation of the regulation provided all other conditions of the NAA are met. In the limited circumstances that EPA has issued an NAA related to the Asbestos NESHAP, EPA has imposed additional

[5] Please note, the President of the United States may exempt any stationary source from compliance with any standard or limitation under CAA section 112(i)(4) for a period of not more than 2 years if the President determines that the technology to implement such standard is not available and that it is in the national security interests of the United States to do so. The President may also exempt under CAA section 118(b) any emission source of any department, agency, or instrumentality in the executive branch from compliance with such a requirement if he determines it to be in the paramount interest of the United States to do so. The President shall report to Congress with respect to each exemption.

requirements such as air monitoring. An NAA is usually applicable to specific entities and for a short timeframe. Before requesting an NAA, it is important to determine the following:

- What is the issue? Are there other ways to resolve this? For example, if the issue is a lack of trained personnel, are there personnel available from other states?
- What is the specific relief being requested? For whom?
- Why is it needed? What supporting data is available?
- What federal statutes or regulations are involved? State or local?
- How will the request be coordinated with the county and local governments? Other federal or state agencies?
- What is the role of other agencies?
- What is the time limit, geographic restrictions, other limits? NAA's by nature are short term and limited in scope.
- What conditions and requirements are needed to minimize the potential for environmental harm (e.g., monitoring, buffer zones, oversight).

In recent responses to catastrophic events, states have asked if they can exercise their enforcement discretion or provide an NAA or waive requirements if they have been authorized under the CAA to carry out the provisions of the Asbestos NESHAP. In most cases, the delegation by EPA precludes the state from being less stringent than the federal regulations. If a state chooses to waive state requirements, the federal Asbestos NESHAP provisions continue to apply. Even if EPA issues an NAA, this would not prevent citizens or states from filing a lawsuit under the CAA provisions or from taking other legal actions.

2. Types of Debris and Damaged Structures Which May Contain Asbestos That May Be Encountered Following a Catastrophic Event

During and after a catastrophic event, the following situations may be encountered—each may involve asbestos-containing material:

- Debris on the ground from buildings totally demolished by the catastrophic event itself.
- Partially destroyed houses and buildings, e.g., only three walls standing, the roof is gone.
- Houses and buildings removed from their foundation.
- Houses and buildings damaged to the point that they are uninhabitable and renovation is not economical or feasible.
- Houses and buildings for which the government has issued a demolition order based on a determination that the building is structurally unsound and in danger of imminent collapse (See discussion in section 4d).
- Buildings severely damaged and subject to planned demolition but for which no order has been issued based on a determination that the building is structurally unsound and in danger of imminent collapse. The building may be unsafe to enter for reasons other than structural damage, e.g., mold issues.

<u>Debris on the Ground and the Asbestos NESHAP</u>

- Building debris on the ground from structures totally destroyed by natural forces (as opposed to structures demolished in whole or in part by human activities) is not subject to the Asbestos NESHAP requirements related to demolition and renovations, transport, or disposal requirements. This debris did not originate because an owner or

operator destroyed the building. Note: If someone demolished a building that was subject to the Asbestos NESHAP, the debris on the ground would be subject to the Asbestos NESHAP requirements even if the demolition occurred prior to or after a catastrophic event.

- If the debris is not broken into pieces but requires further demolition, it may be subject to the Asbestos NESHAP.

Partially Destroyed Houses and Buildings Including Ones Moved Off Their Foundations

- If a house or building is partially destroyed, for example, only three walls standing or the roof is gone, its demolition or renovation may be subject to the Asbestos NESHAP if it meets the definition of a facility, which includes an installation, or its demolition is part of a larger project.
- If a building is moved off its foundation, but is still standing or partially standing, further demolition and renovation activities may be subject to the Asbestos NESHAP.
- Note: If a state or local government has issued a Demolition Order based on a determination that the building is structurally unsound and in danger of imminent collapse, the demolition is exempt from certain provisions of the Asbestos NESHAP (but not all). Further discussion of government ordered demolitions can be found in section 4d.

3. Asbestos NESHAP Demolition and Renovations—Residences and Other Buildings

The Asbestos NESHAP demolition and renovation provisions apply to 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. It applies to the demolition or renovation of a facility as defined in the regulation. Covered facilities include any institutional, commercial, public, industrial, or residential structure, installation, or building; any ship; and any active or inactive waste disposal site. Specifically excluded from the definition of facility, however, are residential buildings having 4 or fewer dwelling units. This exclusion, however, does not apply when the residential building containing 4 or fewer dwelling units is, for instance, part of an installation or is being demolished or renovated as part of a larger project.

EPA has published many documents that provide guidance on complying with the regulatory requirements, e.g., A Guide to the Asbestos NESHAP, as revised November 1990, EPA 340/1-90-015.

WHAT YOU NEED TO KNOW

The regulation includes requirements for:

- Submission of written, advance notification of the state or EPA.
- A thorough inspection for asbestos.
- A requirement to remove regulated asbestos-containing material (see regulation for requirements for friable and nonfriable asbestos).
- Adequately wetting asbestos-containing material prior to, during, and after its removal.
- Handling and transport.
- Record keeping and disposal.
- Disposal sites (e.g., landfills) accepting regulated asbestos-containing material.

Residential Buildings with Four or Fewer Dwelling Units

As noted above, the definition of facility excludes residential buildings having four or fewer dwelling units. The exclusion, however, does not apply if the building falls within the definition of an installation. EPA published a Clarification of Intent related to the residential

building exemption in the Federal Register on July 28, 1995.[6] A number of Applicability Determinations have also addressed this issue.

In the aftermath of a catastrophic event, many buildings including single family homes within the affected area may be badly damaged and need to be demolished. Though the definition of "facility" excludes residences that have four or fewer dwelling units, when residences are on the same site or they meet the criteria to be considered an installation, they are subject to the demolition, renovation, and disposal requirements. After a catastrophic event, the demolition activities may be carried out by government agencies or contractors (often funded with public funds) and these demolitions are part of a larger project as opposed to a demolition by an individual. Under such circumstances, the demolition or renovation of single family homes is covered. Residences that are part of an installation or larger project are subject to the Asbestos NESHAP requirements.

WHAT YOU NEED TO KNOW

Residences with four or fewer dwelling units are exempt unless, for instance, the demolition/renovation is part of a larger project or the residence is part of an installation as defined in the regulation.

In many cases, a contractor may be carrying out multiple demolitions involving buildings including single family homes through a contractual arrangement with a government organization. In such situations, single family homes or buildings with four or fewer dwelling units within the area of destruction are considered to be an installation and are subject to the asbestos NESHAP regulation.

[6] EPA provided further information on the single-family home exclusion in the July 28, 1995 Federal Register Notice (60 FR 38725).

Table 1: Important Regulatory Definitions (40 CFR § 61.141)

See Appendix B for the regulation, including all definitions.

Adequately wet: 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.
Category I nonfriable ACM: 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 E, subpart E, 40 CFR part 763, section 1, Polarized Light Microscopy.
Category II nonfriable ACM: any material, excluding Category I nonfriable ACM, containing more than 1 percent asbestos as determined using the methods specified in appendix E, subpart E, 40 CFR Part 763, section 1, Polarized Light Microscopy that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.
Emergency renovation operation: 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 non-routine failures of equipment.
Facility: 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.
Friable asbestos material: any material containing more than 1 percent asbestos as determined using the method specified in appendix E, subpart E, 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.
Installation: 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). See also FR Clarification.
Owner or operator of a demolition or renovation activity: 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.
Regulated asbestos-containing material (RACM): (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.

4. Compliance with the Asbestos NESHAP

a. Requirements that Apply Prior to a Renovation or Demolition

Inspecting for Asbestos

Prior to conducting a renovation or demolition of a facility or portion of a facility, the owner/operator must ensure that a thorough inspection for asbestos is conducted [section 61.145(a)]. Note: For the demolition of a facility, a Notification must be submitted even if no asbestos is found in the facility. For a renovation, a Notification is only required if threshold amounts of regulated asbestos containing material are to be stripped, removed, dislodged, cut, drilled, or similarly disturbed, thus making the material friable. If regulated asbestos-containing material is present and a threshold amount of regulated asbestos containing material is friable or will be made friable, then the provisions related to work practices such as adequately wetting the material and keeping it wet prior to, during, and after removal apply. A trained supervisor must be on-site.

WHAT YOU NEED TO KNOW

Prior to renovation/demolition, the owner or operator is required to:

- Inspect for asbestos and determine amounts.
- Provide written notification (10 days in advance) to state/EPA.
- Emergency provisions may allow notice to be made within 24 hours of the demolition/renovation instead of 10 days.
- Remove asbestos material if it is friable or will become friable during the demolition or renovation operation.
- Ensure there is an asbestos trained supervisor on the jobsite with documentation posted.

Threshold amounts of regulated asbestos containing material are 260 linear feet on pipe, 160 square feet on facility components, or 35 cubic feet for those components where measurements could not previously be made.

For damaged buildings where part of the structure is still standing, even if one wall remains, that wall must be inspected for asbestos and determined if it is subject to the air emissions, waste handling and disposal requirements.

Notification (40 CFR 61.145(b))

The owner or operator is required to provide written notification to the appropriate federal, state, or local air authority with jurisdiction at least 10 working days[7] before demolition or renovation operations begin. For emergency renovations and government-ordered demolitions (issued because the facility is structurally unsound and in danger of imminent collapse), the notification is required to be submitted as early as possible before, but not later than, the following working day.

b. Requirements that Apply During Renovation or Demolition Operations

Emission Controls

Asbestos fiber release is managed through work-practices. Section 61.145(c) outlines the requirements that apply when conducting a renovation or demolition operation. The regulation requires asbestos to be removed prior to the demolition or renovation if it is friable or will become friable during the demolition or renovation operation. To minimize the release of fibers during removal, the regulation generally (there are some exceptions in the rule) requires that asbestos-containing material be kept adequately wet. EPA recommends the use of amended water (water to which a surfactant or wetting agent has been added) to ensure that the material is adequately wet.

The Asbestos NESHAP defines adequately wet as:

[7] Working days means Monday through Friday and includes holidays that fall on any of the days Monday through Friday, see Definitions §61.141.

> . . . 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. (See Table 1).

For further information, review EPA's Asbestos NESHAP Adequately Wet Guidance (340/1-90-019; http://www.epa.gov/region4/air/asbestos/awet.htm).[8] Note: Immediately following a catastrophic event, running water may not be available. In such cases, demolition or renovation activities should be delayed or water should be trucked to the site until running water service is restored.

There may be times during a renovation operation when abatement workers will need to remove asbestos-containing materials in a room that contains electrical equipment. If the use of water near this equipment would result in equipment damage or a safety hazard, other asbestos emission controls may be used. However, before the owner or operator begins the removal of the asbestos-containing material, he or

WHAT YOU NEED TO KNOW

The regulation requires the owner/operator to adequately wet asbestos containing material prior to, during, and in preparation for transport and disposal.

Adequately wet means to sufficiently mix or penetrate with liquid to prevent the release of particulates/fibers.

If visible emissions are observed coming from the asbestos containing material, then that material has not been adequately wetted. The absence of visible emissions is not sufficient evidence of adequately wet.

EPA issued a booklet entitled Asbestos/NESHAP Adequately Wet Guidance, EPA340/1-9019. It discusses friable asbestos material and nonfriable asbestos containing material, requirements for adequately wetting, exceptions, techniques, and procedures for different types of material.

[8] The guidance discusses friable and nonfriable asbestos-containing material, requirements for adequately wetting, exceptions, techniques, and procedures for different types of material.

she must request in writing and receive written approval from the EPA Administrator that the wetting would unavoidably damage equipment or pose a safety hazard before he or she removes the asbestos. Once approval is given, the owner or operator can use a local exhaust ventilation system that captures the asbestos particulates during the removal process; a glove bag system; or leak-tight wrapping of all the regulated asbestos-containing material before dismantlement. Where none of these additional methods can be used another method may be used, but only after obtaining written approval from the EPA Administrator based on a determination that the method is equivalent to wetting in controlling emissions or to the other methods specifically identified above. See 40 CFR § 61.145(c)(3).

If the temperature is below 32°F, the regulation provides some flexibility with respect to the wetting requirements. For instance, instead of wetting, the owner or operator is required to remove materials with regulated asbestos-containing material in large units or sections, to the maximum extent possible. Also, the owner or operator must take temperature readings within the rooms being demolished or renovated, at the beginning, middle and end of each work day. The information must be recorded and be made available during normal business hours at the site. The records must be retained for at least two years. See 40 CFR § 61.145(c)(7).

Requirement for a Trained Supervisor on Site

The asbestos NESHAP demolition and renovation provisions require the presence of at least one onsite representative, such as a foreman or management-level person or other authorized representative who is trained in the demolition and renovation provisions of the Asbestos NESHAP and the means to comply with them, at the site during the renovation or demolition operation. Section 61.145(c)(8) describes the type of training courses required. In addition, evidence that the supervisor is trained must be posted at the site.

Handling, Transport, and Waste Disposal (40 CFR § 61.150)

Asbestos containing waste material (ACWM) must be adequately wetted or emissions controlled in other ways as specified in the regulations at all times after demolition. After removal, there are several methods to manage the ACWM prior to transport and disposal. The methods available are to: discharge no visible emissions to the outside air; adequately wet the material; process all asbestos-containing waste material into nonfriable pellets or other shapes; or use an alternative emission control and waste treatment method that has received the Administrator's prior written approval.

For state or local government ordered demolitions of buildings based on the building being structurally unsound and in danger of imminent collapse, the inspection requirement and the requirement to remove regulated asbestos-containing material (RACM) prior to the demolition or renovation do not apply. However, treating the material as though it contains asbestos and disposing of it in accordance with the Asbestos NESHAP is required. The ACWM must be kept adequately wet at all times after demolition and kept wet during handling and loading for transport to a disposal site. ACWM from government ordered demolitions of this kind do not have to be sealed in leak-tight containers or wrapping but may be transported and disposed of in bulk. The waste disposal provisions found in 40 CFR § 61.150 apply in all cases to the regulated asbestos containing material generated as a result of covered demolition or renovation operations, including the requirements to:

- Dispose of the waste as soon as practical at an approved site (40 CFR § 61.150(b)).
- Properly mark vehicles used to transport the asbestos-containing waste (40 CFR § 61.150(c)).

- To maintain waste shipment records for all asbestos containing waste materials transported off the facility site (40 CFR § 61.150(d)(1)).
- To provide a copy of the waste shipment record to the disposal site (40 CFR § 61.150(d)(2)).
- To report in writing any waste shipment for which a copy of the waste shipment record signed by the disposal site owner or operator is not received by the waste generator within 45 days of the date the waste was accepted by the initial transport company (40 CFR § 61.150(d)(4)).

WHAT YOU NEED TO KNOW

ACWM must be adequately wetted or emissions controlled in other ways as specified in the regulations at all times after demolition.

For government ordered demolitions where the RACM is not removed prior to demolition the owner or operator must adequately wet ACWM at all times after demolition and keep it wet during handling and loading for transport to a disposal site.

c. Requirements that Apply to Disposal Sites

The requirements for active waste disposal sites establish work practices to minimize the release of fibers, to restrict public access, and to ensure records are maintained on the location of the asbestos-containing waste material. Asbestos-containing waste material from emergency renovations, government ordered demolitions, or from any source covered by the Asbestos NESHAP must be

WHAT YOU NEED TO KNOW

NESHAP landfill requirements are separate from the Resource Conservation and Recovery Act (RCRA) solid waste regulations and state or local permit requirements.

Asbestos-containing waste material (ACWM) can only be disposed of in a landfill that meets the Asbestos NESHAP requirements.

Asbestos-containing material is also subject to state and local solid waste regulations.

disposed of in compliance with all the provisions of 40 CFR §61.154 or converted to non-ACM in accordance with 40 CFR §61.150(b)(2). Refer to the regulation for the specific requirements as there are a number of options for complying with specific requirements.

State solid and hazardous waste programs have the primary responsibility for managing solid and hazardous waste landfills. Entities, including contractors, responsible for hauling the asbestos-containing waste material should be aware of additional state and/or local regulations governing the disposal of asbestos-containing material. Generally under state solid waste regulations the landfill will need to be approved by the state to receive and dispose of asbestos-containing waste material.

Under the Asbestos NESHAP, The landfill should be designed to deter access of the general public. This can be done by natural barriers or by fencing and posting signs warning of asbestos. There is a no visible emissions requirement or a requirement to cover asbestos containing waste material with 6 inches of non-asbestos containing fill or a resinous or petroleum based dust suppression agent. Other alternative emission control methods may be approved by the Administrator of EPA. In addition, the landfill operator is required to maintain the waste shipping papers for two years and develop a site plan (maps and records) that identifies the location, depth and area, and quantity in cubic meters of all asbestos waste containing material.

Note: When a catastrophic event generates an unusually large amount of asbestos-containing waste, this can cause a burden to existing landfill capacity. There may be instances where the asbestos-containing waste may need to be shipped out-of-state or a state may decide to relax state requirements for landfills. Federal requirements under the CAA NESHAP for Asbestos continue to apply.

d. Flexibility in the Regulation

Emergency Renovation Operations (40 CFR § 61.145)

While the regulation has provisions for emergency renovation operations, the term is specifically defined. A declaration of a "Nationally Significant Incident" does not automatically trigger these provisions. In order for a renovation during or after a catastrophic event to be considered an emergency renovation operation and subject to the Asbestos NESHAP emergency renovation regulations, the event must:

- Meet the definition of emergency renovation operation (see Table 1); and
- Meet the applicability requirements of 40 CFR § 61.145(a)(4)(iv).

The regulatory requirement of 40 CFR § 61.145(a)(4)(iv) states that to determine if an emergency renovation is subject to the Asbestos NESHAP, the owner or operator must estimate the combined amount of regulated asbestos-containing material that will be removed or stripped as a result of the sudden, unexpected event that necessitated the renovation. To be subject to the notification and control procedures, the total amount of regulated asbestos containing material at issue must be at least 260 linear feet of asbestos on pipes, 160 square feet on other facility components, or 35 cubic feet if the regulated asbestos-containing material is already off the facility component and the length or area could not be previously determined.

The owner or operator of the emergency renovation operation must notify the appropriate state or local air authority as early as possible before the renovation begins, but no later than the next working day following the day the emergency renovation begins (40 CFR § 61.145(b)(3)(iii)). All notifications must be in writing and may be delivered by the U.S. Postal Service, commercial delivery service, or hand delivery. Currently, the Asbestos NESHAP does

not permit notification by telephone, facsimile (fax) machines, or by the Internet.[9] The information required for an emergency renovation is the same as required for routine notifications, except that the following information is also required:

- The date and the hour 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 (40 CFR § 61.145(b)(4)(xv)).

Emergency renovation operations are subject to the emission control procedures of 40 CFR § 61.145(c). These procedures include removal of all regulated asbestos containing material from the facility before any activity that would cause the asbestos to become friable, with some exceptions wetting the asbestos during the removal operation, keeping the asbestos-containing material wet after removal until collected and contained or treated for disposal, and having an individual on-site who is certified in asbestos removal operations. There are no exemptions from the emission control procedures for emergency renovation operations.

Below are examples of asbestos removal operations that may be considered an emergency renovation. It is the responsibility of the owner or operator to demonstrate that the renovation is an emergency operation.

- The repair or replacement of an apartment building's asbestos-insulated boiler that fails during the winter may be considered an emergency renovation, if the delayed repair or replacement could expose residents of the apartment building to dangerously cold temperatures.

[9] The Cross Media Electronic Reporting rule published on October 13, 2005 (70 FR 59848) allows for electronic submission of Notifications. However, the state or local system created to receive the electronic Notification must have prior EPA approval before accepting the electronic submission.

- The failure of asbestos-insulated equipment at a power plant could result in a prolonged power outage and affect many essential services if not attended to immediately.

Government-Ordered Demolitions

The Asbestos NESHAP exempts certain types of demolitions from some of the notification and emission control requirements. At 40 CFR § 61.145(a)(3), the regulation states that a facility that is being demolished under an order of a state or local government, issued because the facility is structurally unsound and in danger of imminent collapse, is exempt from the following:

- Notification requirement to provide 10-day notice before the ordered demolition occurs. The owner or operator of the government-ordered demolition must provide notification to the appropriate state or local air authority as early as possible, but no later than the following working day after demolition begins.
- Notification requirement to include the scheduled starting and completion dates of asbestos removal.

All other notification requirements apply. In addition, the owner or operator of the building subject to the government-ordered demolition must include the name, title, and authority of the state or local government representative who ordered the demolition, the date the order was issued, and the date on which the demolition is ordered to begin.

Government-ordered demolition of a facility which is found to be structurally unsound and in danger of imminent collapse (40 CFR § 61.145(a)(3)) is exempt from all but the following emission control procedures:

- The requirement to strip or place in leak-tight wrapping all asbestos covered or coated facility components that were removed in sections or units (40 CFR § 61.145(c)(4)).
- The requirements for large facility components to be removed where the asbestos will not be disturbed (40 CFR § 61.145(c)(5)).
- The requirements for regulated asbestos-containing material that has been stripped or removed (40 CFR § 61.145(c)(6)).
- The requirements during periods of freezing temperatures (40 CFR § 61.145(c)(7)).
- The requirement for an asbestos trained person to be on-site (40 CFR § 61.145(c)(8)).
- The requirement that all government-ordered demolitions adequately wet the part(s) of the facility that contains regulated asbestos-containing material during the wrecking operation (40 CFR § 61.145(c)(9)).

WHAT YOU NEED TO KNOW

For demolitions of buildings subject to a state or local government issued demolition order based on a determination that the building is structurally unsound and in danger of imminent collapse, the following apply:

- The owner/operator does not have to inspect for asbestos and does not have to remove the asbestos prior to demolition. Burning is not allowed.
- The ten day advance Notification is reduced to 24 hours.
- Emission controls (wetting), handling, transport, disposal requirements still apply.
- Information on the government issued Demolition Order must be attached to the Notification.
- A supervisor/authorized representative trained with regard to the Asbestos NESHAP regulation must be on site.

References

Pipelines and Hazardous Materials Safety Administration (PHMSA), U.S. Department of Transportation (DOT), 49 CFR Parts 100–185 http://www.phmsa.dot.gov/about/agency.

Occupational Safety and Health Administration (OSHA), Department of Labor, 29 CFR 1926.1101; Safety and Health Tips http://www.osha.gov/SLTC/asbestos/index.html.

Mine Safety and Health Administration (MSHA), Department of Labor, 30 CFR 1–199; http://www.msha.gov/.

Safe Drinking Water Act (SDWA), Environmental Protection Agency (EPA); 40 CFR 141–149, Asbestos http://www.epa.gov/safewater/contaminants/dw_contamfs/asbestos.html.

Asbestos Hazard Emergency Response Act (AHERA), Environmental Protection Agency (EPA), 40 CFR Part 763; http://www.epa.gov/asbestos/.

Emergency Planning and Community Right-to-Know Act (EPCRA) – Toxics Release Inventory (TRI), Environmental Protection Agency (EPA); 40 CFR Part 372, http://www.epa.gov/tri/.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) – Superfund, Environmental Protection Agency (EPA); http://www.epa.gov/superfund/.

Asbestos National Emissions Standards for Hazardous Air Pollutants (NESHAP), 40 CFR Subpart M, Government Printing Office; http://www.access.gpo.gov/cgi-bin/cfrassemble.cgi?title=200840.

Federal Register (FR) (60 FR 38725), Asbestos NESHAP Clarification of Intent, General Printing Office; July 28, 1995.

V. ASBESTOS TEST METHODS

A. Test Methods

The required test method varies depending on the specific regulation. This section provides an overview and references on the test methods available for asbestos-containing materials.

Both the Asbestos NESHAP and AHERA regulatory programs rely on Polarized Light Microscopy (PLM) to analyze bulk samples to determine if the material is asbestos-containing material (>1%). The procedure to prepare and analyze bulk samples is found at 40 CFR § 763, Subpart E (Asbestos-Containing Materials in Schools), Appendix E – Interim Method of the Determination of Asbestos in Bulk Insulation Samples. This link provides the regulatory details: http://edocket.access.gpo.gov/cfr_2008/julqtr/pdf/40cfr763EAppE.pdf.

WHAT YOU NEED TO KNOW

Asbestos NESHAP requires PLM for bulk sample analysis.

TSCA (AHERA) requires PLM for bulk sample analysis and TEM for air clearance for school buildings.

OSHA requires PCM to monitor worker exposure to asbestos during renovation or demolition activities.

The AHERA program also requires the use of Transmission Electron Microscopy (TEM) to analyze and report on air samples that are collected once a response action has been completed. At 40 CFR 763, Appendix A to Subpart E – Interim Transmission Electron Microscopy Analytical Methods – Mandatory and Non-Mandatory – and Mandatory Section To Determine Completion of Response Actions discusses how to collect air samples, prepare the samples, and analyze them by TEM. For more detailed information on sample preparation and analysis, see http://edocket.access.gpo.gov/cfr_2008/julqtr/pdf/40cfr763EAppA.pdf.

The Asbestos NESHAP requires a thorough inspection, but it does not specify the number of samples for collection in order to be considered a thorough inspection. The number of samples to be collected for schools can be found at 40 CFR 763.86 – Sampling. This section identifies the number of samples to be taken depending on the building material, i.e., surfacing material, thermal system insulation and miscellaneous material. EPA published information on determining the number of samples to be collected from surface material, thermal system insulation, and miscellaneous material. The publications are: Asbestos in Buildings: Simplified Sampling Scheme for Friable Surfacing Material (EPA 560/5-85-030a) and Guidance for Controlling Asbestos-Containing Materials in Buildings (EPA 560/5-85-024).

OSHA requires Phased Contrast Microscopy (PCM) which measures the total fiber concentration in air samples. A high fiber count does not necessarily mean the presence of asbestos. To determine if asbestos is present, other tests are used to determine if asbestos is present and in what quantity. For further information of PCM, see: http://www.osha.gov/dts/sltc/methods/inorganic/id160/id160.html.

B. Accredited Laboratories

Bulk and air samples should be analyzed by a laboratory that is accredited through the National Institute of Standards and Technology's (NIST) National Voluntary Accreditation Laboratory Program (NVLAP). The NVLAP provides an unbiased third-party evaluation and recognition of performance, as well as expert technical guidance to upgrade laboratory performance. The accreditation does not imply any guarantee (certification) of laboratory performance or test/calibration data; it is solely a finding of laboratory competence. To locate an NVLAP laboratory, refer to: http://ts.nist.gov/standards/scopes/programs.htm.

C. Who Is Responsible?

Under the Asbestos NESHAP (40 CFR § 61.145(a)), it is the owner or operator of the renovation or demolition operation that is responsible for conducting a thorough inspection for asbestos-containing materials of the whole facility or that portion of the facility undergoing the demolition or renovation operation.

Under the AHERA program, the Local Education Agency is responsible for identifying friable and nonfriable asbestos-containing material in public and private elementary and secondary schools by visually inspecting school buildings for such materials, sampling such materials if they are not assumed to be asbestos-containing material, and having samples collected by trained personnel and analyzed by the appropriate techniques (e.g., bulk sample analysis and air clearance), as required. The LEA is required to identify a Designated Person who has the responsibility for creating Management Plans for each school building. The Management Plan includes test results of the building material in each school building.

References

Asbestos Hazard Emergency Response Act, Environmental Protection Agency, 40 CFR § 763, Subpart E, Appendix E - Interim Method of the Determination of Asbestos in Bulk Insulation Samples; http://edocket.access.gpo.gov/cfr_2008/julqtr/pdf/40cfr763EAppE.pdf

Asbestos Hazard Emergency Response Act, Environmental Protection Agency, 40 CFR § 763.86 – Sampling; http://edocket.access.gpo.gov/cfr_2008/julqtr/pdf/40cfr763.86.pdf

National Voluntary Accreditation Laboratory Program, Department of Commerce 15 CFR § 285; http://ts.nist.gov/standards/accreditation/index.cfm

US EPA, Asbestos in Buildings: Simplified Sampling Scheme for Friable Surfacing Material (560/5-85-030a), 1985. Also referred to as the Pink Book.

US EPA, Guidance for Controlling Asbestos-Containing Materials in Buildings (560/5-85-024), 1985. Also referred to as the Purple Book.

VI. CATASTROPHIC EVENTS AND CASE STUDIES INVOLVING ASBESTOS

A. National Response Framework and EPA's Role

Based on EPA's experience with asbestos issues associated with catastrophic events, it is apparent that each incident has its own unique issues depending on the type and scope of the incident. The response by the federal government to catastrophic incidents has changed over the years with improved coordination and more clearly defined roles for the different agencies, federal and state. There are a number of laws and executive orders that govern federal agencies' disaster response activities. The federal response typically begins with issuance of a declaration of a major disaster or emergency by the President of the United States. The Robert T. Stafford Disaster Relief and Emergency Assistance Act of 2000 (the Stafford Act, 42 USC Section 5121 et seq.)[10] and the National Response Framework (NRF)[11] govern the implementation of disaster response by establishing a response organization from across all federal agencies, led by the Department of Homeland Security (DHS), primarily through the Federal Emergency Management Agency (FEMA). Homeland Security Presidential Directive (HSPD)-5 of 2003

[10] The Robert T. Stafford Disaster Relief and Emergency Assistance Act establishes programs and processes for the federal government to provide major disaster and emergency assistance to states, local governments, tribal nations, individuals, and qualified private nonprofit organizations. Under the Stafford Act, state governors may request assistance from the federal government when an incident overwhelms state and local resources. Such assistance has been—and to some extent continues to be—provided to the Gulf Coast under the Department of Homeland Security's (DHS) National Response Framework.

[11] The National Response Framework (NRF), which was mandated by the Homeland Security Act of 2002 and Homeland Security Presidential Directive-5, establishes a single, comprehensive approach to domestic incident management led by the Department of Homeland Security (DHS), primarily through the Federal Emergency Management Agency (FEMA), to prevent, prepare for, respond to, and recover from terrorist attacks, major disasters, and other emergencies. The NRF incorporates many aspects of the National Oil and Hazardous Substances Pollution Contingency Plan (The National Contingency Plan or NCP, 40 CFR 300), which through the National Response System (NRS) lays out the responsibilities for responding to oil and hazardous substance releases.

establishes an approach for responding to national emergencies such as major hurricanes. The Directive calls for development of a National Response Framework. State governors may request assistance from the federal government when an incident overwhelms state and local resources. As part of EPA's role in the NRF, it may be tasked to perform a number of functions and to serve as a support agency. These functions may focus on debris removal and hazardous materials response. Typically, these support functions are covered under an Emergency Support Function (ESF) – 10 Mission Assignment.

EPA's own agency emergency guidelines, the National Approach to Response, sets up internal organizations, roles, and responsibilities. During a catastrophic event, generally the Region designates a person in the Superfund program to have the lead for the response, and EPA's Office of Emergency Management (OEM) has the lead role within Headquarters. Note, during nationally significant incidents, such as Hurricane Katrina, the Director of OEM typically serves as the National Incident Coordinator and chair of the Agency's National Incident Coordination Team. The Director of OEM also co-chairs the multi-agency National Response Team (NRT) with the United States Coast Guard. The NRT provides interagency advice and support when needed as part of an ESF-10 activation. As questions and requests come into various offices, OEM coordinates with the Agency's designated leads.

WHAT YOU NEED TO KNOW

EPA responds to catastrophic events as part of the National Response Framework (NRF) when tasked by FEMA.

The Office of Emergency Management (OEM) has the lead role within Headquarters, with a regional person from the Superfund program typically leading the response.

OEM coordinates with OECA regarding Asbestos NESHAP applicability determinations and responses to No Action Assurance (NAA) requests.

The Office of Enforcement and Compliance Assurance assists in these efforts and has the lead for enforcement response actions such as No Action Assurance letters[12] and statements of enforcement discretion and for responsive guidance and interpretive documents. Note, under EPA policy guidance, No Action Assurances are to be used only in extremely unusual cases when clearly necessary to serve the public interest—such as to avoid extreme risks to public health or safety or to obtain important information for research purposes—when no other mechanism can adequately address the problem presented. It has been in this capacity that OECA has been involved in more recent responses to catastrophic events.

B. Compliance Issues that May Arise After a Catastrophic Event

1. Capacity Issues

Depending on the number of buildings damaged and the need for renovation and demolition of these buildings, capacity challenges may include:

- Insufficient number of trained personnel to handle the increased workload during a disaster. This may include trained personnel that conduct abatement work as well as trained government inspectors for overseeing such work.
- Insufficient number of trained, accredited supervisors/workers to be on-site for every demolition or renovation.
- Capacity of accredited laboratories to analyze samples quickly.
- Landfill capacity issues.

[12] A No Action Assurance is an enforcement tool, which can be approved only by the Assistant Administrator, Office of Enforcement Compliance and Assistance. After consultation with HQ and regional managers, the Assistant Administrator can approve, for a limited time, EPA's enforcement discretion in a particular issue or a particular set of extremely unusual circumstances where such an assurance is clearly necessary to serve the public interest and which no other enforcement mechanism can address adequately.

Often, the personnel and training issues can be resolved by waiving requirements that such personnel be certified within the state and establish reciprocity agreements with other states so that trained personnel from outside the state can be used. For government inspectors to monitor demolition/renovation activities, personnel from other states may be willing to assist during an emergency.

In terms of laboratory capacity, large numbers of air samples and bulk samples may require quick analysis to determine the presence of asbestos, to evaluate air quality, and public safety. Samples may also be required for determining compliance with the requirements. Arrangements should be made for additional laboratory support to handle a potentially large number of samples. In addition, consideration should be given to arranging for overnight analysis of bulk samples. This would allow for the results from the analysis of samples collected one day being available sooner. In some circumstances, lack of information on the location of accredited laboratories may be an issue. To locate an NVLAP laboratory, refer to: http://ts.nist.gov/standards/scopes/programs.htm. EPA has also developed an Environmental Response Laboratory Network made up of laboratories accredited under the National Environmental Laboratory Accreditation Program, and satisfying additional criteria for methods, quality, security, and reporting criteria. These laboratories are listed in an on-line, password protected compendium at www.epa.gov/compendium.

With regard to landfill capacity, in situations where many facilities containing asbestos are damaged and need to be demolished without prior removal of the asbestos, a large amount of waste will be generated that is required to be disposed of as though it all contains asbestos. The existing capacity of landfills that are available to accept asbestos waste may be inadequate. Additionally, some landfills may not be accessible as a result of the disaster. It may be possible to arrange with another local asbestos-approved landfill to accept the waste, or it may be

necessary to transport the waste to more distant sites. Acceptable landfills should be identified in advance, if possible.

2. Compliance Difficulties

Examples of compliance issues where it is difficult to comply due to conditions caused by the catastrophic event include:

- No mail delivery or courier service available to deliver notifications. In such cases, it may not be possible to comply with requirements in the initial aftermath. Alternative methods to comply during the short timeframe where such service is not available can be considered. For massive demolition activity, notification can be provided for multiple sites rather than one notification for each site.
- Lack of knowledge of the Asbestos NESHAP requirements. Bringing in instructors to provide training and overview of requirements may be helpful. Where there is specific training required by the regulations, bringing in instructors including those outside of the geographical area may be helpful.
- Dust suppression when bulldozing is the method of demolition. Use amended water (water to which a surfactant or wetting agent has been added) if possible.
- Limited availability of water for wetting the asbestos-containing material. It may be necessary to use water trucks. See discussion under the requirements for adequately wetting material.
- Staging areas needed due to the volume of waste may be needed rather than direct transport. Compliance with emission controls, such as keeping the material wet, continue to apply.

WHAT YOU NEED TO KNOW

Compliance issues that may arise after a catastrophic event may include:

- Insufficient trained personnel (i.e., accredited inspectors, supervisors, workers, government inspectors) to handle the increased workload during a disaster.
- Inadequate accredited laboratory capacity to analyze samples.
- Lack of knowledge of the Asbestos NESHAP requirements.
- No mail delivery or courier service available to deliver notifications.
- Limited availability of water for wetting the asbestos containing material.
- Emissions control and records issues when staging areas are required rather than direct transport.
- Public safety from demolition, dust, and entry into damaged houses.
- Safety to workers.
- Adequacy of monitoring, and concerns when monitoring is reduced (Note: Monitoring is not required under the Asbestos NESHAP).

C. Summary of Catastrophic Events

A brief summary of a number of catastrophic events is provided below. These summaries give a brief overview of the events and highlight the asbestos issues. For those events where much has been written such as in Office of the Inspector General (OIG) or Government Accounting Office (GAO) reports, the summaries do not attempt to provide extensive details but do provide an overview of the asbestos issues.

During a catastrophic event, EPA's Office of Emergency Management has the lead role within the Agency. As requests come into various offices, such as those with asbestos responsibilities, it is important to coordinate with the Agency's designated leads. Offices with responsibility for asbestos regulations can provide valuable support as questions on the applicability of the regulations are raised to the persons working within the infrastructure established for dealing with such emergencies. In response to more recent incidents, EPA has

established websites that provide a great deal of information on the specific event. For many of the recent events, there have been publications by the OIG and the GAO as well as information on EPA's website that address details of EPA's response, including asbestos issues. This Guidance gives a brief overview of the event and highlights some of the issues that it addressed.

D. Case Studies

The following case studies are offered as examples of how local, state and federal officials dealt with asbestos-containing materials.

1. Iowa Tornadoes and Flooding

Background

For about two weeks, from late May through mid-June, 2008 the State of Iowa was battered by a series of tornados and storms causing floods affecting 83 of 99 counties or roughly 45,000 square miles, including 700 cities and towns. On May 25, a tornado classified as an EF-5[13] ripped through the towns of Parkersburg and New Hartford located northwest of Waterloo. Nine people died and hundreds more were homeless. For many others, continuing rain caused streams and rivers to overflow resulting in large scale flooding. For example, Cedar Rapids had 7,000 properties significantly affected including 5,390 residential, 1,049 commercial, 84 industrial, 51 agricultural, 486 non-profit organizations, and 138 other parcels of land.

During the response efforts, EPA Region 7 established a protocol which described the steps to be taken if asbestos was detected by any air monitors. The contingency plan, detailed

[13] The Fujita tornado scale (or the "F-scale") is the definitive scale used by the National Weather Service for estimating wind speeds within tornadoes based upon the damage caused by the tornado. The scale has been "enhanced" by accounting for quality of construction and standardizes different kinds of structures An EF-5 tornado is capable of lifting strong frame houses off foundations and carry them considerable distances to disintegrate; automobile sized missiles fly through the air in excess of 100 meters; trees debarked; steel re-enforced concrete structures badly damaged.

below, included steps to notify city officials, minimize fiber releases, add additional monitors, and restrict access as appropriate.

CONTINGENCY PLAN FOR RESPONDING TO A DETECTION OF ASBESTOS IN AN AMBIENT AIR SAMPLE

A detection of greater than 0 asbestos structures detected using the EPA AHERA Method will activate this plan.

When a detection of greater than 0 asbestos structures are detected using the EPA AHERA method, the sample will be analyzed using NIOSH Method 7402. If the laboratory analysis is in excess of 0.0 1 fibers per cubic centimeter, the following actions will be taken:

1) The EPA OSC onsite will notify city officials and lDNR personnel as soon as practicable.
2) The following steps will be addressed in the vicinity of the air monitoring device:
    a) Determine what potential source of the detection could be and determine whether any corrective action can be taken in vicinity of the monitoring devices.
    b) Once the cause of detection is determined, implement engineering controls if possible, to minimize the possibility of a reoccurrence.
    c) Discuss with city officials actions that can be taken to minimize release of asbestos fibers.
    d) Begin collecting additional samples at the site, including a co-located sampler. Check chain of custody integrity. Check QA/QC of sampling and analytical methods.
    e) Discuss with city officials restriction of the access to the area (as appropriate) until corrective measures have been implemented.

Applicability of the Asbestos NESHAP Regulation

Request for a No Action Assurance (NAA)

On July 1, 2008, the Iowa Department of Natural Resources (IDNR) requested a No Action Assurance (NAA) for limited provisions of the Asbestos NESHAP regulation. Due to the record flooding, 83 counties were declared a state disaster area, and 78 counties were under a Presidential Emergency Declaration. The request for the NAA was needed to expedite renovation and demolition activities while ensuring protection to public health and the environment. Iowa requested relief from two requirements of the Asbestos NESHAP regulation. They were: (1) the 10-day advance notification requirement for demolitions and renovations [40

CFR §61.145 (b)(3)(i) and (ii)]; and (2) the thorough inspection requirement, prior to renovations [40 CFR §61.145 (a)].

On July 3, the Assistant Administrator for the OECA issued the NAA to the IDNR. It was valid for 90 days.

With regard to the 10-day notification requirement, the regulation affords flexibility for emergency renovation operations (40 CFR §61.141 – Definitions) and for demolitions of facilities occurring under an Order by the State or local government authority issued because the facility is structurally unsound and in danger of imminent collapse [40 CFR §61.145 (a)(3)]. For both of these situations, the 10-day notice need only be provided as early as possible, before, but no later than the following working day. However, this provision does not apply to other types of renovation or demolition activities. The NAA provided the above, flexibility to these other renovation and demolition activities in those counties that were covered under the Presidential Emergency Declaration. All other applicable Asbestos NESHAP requirements remained in effect.

With regard to the thorough inspection that is required for renovations, the regulation requires the owner or operator to thoroughly inspect the affected facility or that part of the affected facility where the renovation activity will occur prior to commencement of the renovation activity for the presence of asbestos. IDNR asked EPA to allow owners or operators to forgo the required inspection in the context of renovations, provided that all material was treated as if it were, in fact, asbestos-containing material and removed prior to any activity that would break up, dislodge, or similarly disturb the material or preclude access to the material for subsequent removal. All material was handled, transported, and disposed of in accordance with the Asbestos NESHAP regulation applicable to regulated asbestos-containing material. EPA granted an NAA to allow the requested inspection flexibility to apply to all renovations of

structures damaged by the storms and flooding in Iowa counties covered under a disaster declaration made by the President of the U.S. All other applicable Asbestos NESHAP requirements remained in effect.

Request for an Applicability Determination Related to Grinding of Certain Flood Debris

Senator Grassley's staff requested a statement regarding the applicability of the Asbestos NESHAP to certain flood debris in Palo, Iowa. Specifically, EPA was asked to determine whether the Asbestos NESHAP regulation applied to a waste pile staged in Palo containing approximately 10,000 cubic yards of residential, non-contractor debris. The debris was removed from homes by individual homeowners. The City of Palo proposed to hire a contractor to grind this debris prior to disposal. The debris may have included asbestos removed (again, by the individual homeowners) as part of a renovation or a demolition of the houses damaged by the floods.

EPA responded that in this limited instance where an individual homeowner removed material from a residence (a building with four or fewer dwelling units), the Asbestos NESHAP renovation and related disposal requirements generally do not apply, with respect to both the removal activity and to the resulting waste pile. The Asbestos NESHAP regulation does apply: (1) where an owner or operator renovates or demolishes more than one residential property on the same site; (2) demolishes or renovates homes as part of a larger project; or (3) if any of the waste material originates from the demolition or renovation of commercial or public buildings, results from a larger demolition or renovation project, or comes from the demolition or renovation of an installation. These provisions are more fully defined within the Asbestos NESHAP regulations. In addition, other provisions of the CAA may apply to the management and disposal of this waste pile. With regard to the situation in Palo, the IDNR communicated to

EPA that it would not authorize the grinding of the material in the waste pile due to the potential release of hazardous materials commonly found in homes or home building materials (e.g., asbestos and lead). Note: The IDNR is authorized by the EPA to implement the Clean Air program within the State.

2. Greensburg, Kansas Tornado

Background

On May 4, 2007, Greensburg, Kansas, a city located in south-central Kansas with a population of approximately 1,600 people, was struck by an EF-5 tornado, one of the most powerful ever recorded. In all, 11 people died and 961 homes and businesses were destroyed. The total loss from the tornado was approximately $250 million dollars.

Applicability of the Asbestos NESHAP Regulation

The Kansas Department of Health and Environment (KDHE) issued a hazard declaration for the tornado debris. Many homes and businesses in Greensburg were built at a time when construction materials frequently contained asbestos. KDHE encourage residents to take appropriate steps to remove tornado debris which had the potential to be a health and safety risk to the public. Since most single-family homes were destroyed, much of the debris was considered solid waste and not subject to the Asbestos NESHAP regulation. Two weeks after the tornado, EPA collected eight air samples in and around Greensburg to determine if asbestos fibers were in the air. The results came back negative.

3. Hurricanes Katrina and Rita

Background

On August 29, 2005, Hurricane Katrina struck the southeast Louisiana and Mississippi coastlines as a strong Category 4 Hurricane with maximum sustained winds of approximately 143 mph and gusts up to 165 mph. The Category 4 hurricane's winds and near-record storm surge caused widespread destruction and loss of life. In southeast Louisiana, the Parishes of Orleans, St. Bernard, and Plaquemines were flooded by the excessive rain and a storm surge of 20–30 feet, overtopping levees, and ultimately causing the breach of some levees that separate New Orleans from surrounding lakes. At least 80% of New Orleans was under flood water on August 31st, largely as a result of levee failures from Lake Pontchartrain. The combination of strong winds, heavy rainfall, and storm surge led to breaks in the earthen levees after the storm passed, leaving some parts of New Orleans under 20 feet of water.

The scope and severity of the destruction that Hurricane Katrina caused on the Gulf Coast in 2005 were staggering. This natural disaster affected an area of over 90,000 square miles, destroying or severely damaging not only countless buildings but also bridges, roads, and the area's power and communications infrastructures. Tens of thousands of homes in New Orleans were flooded, many requiring either demolition or gutting before reconstruction. More than 1,600 people lost their lives, and more than a million were driven from their homes. Hurricane Katrina resulted in millions of gallons of oil and unknown quantities of potentially hazardous chemicals being released into the environment. Hazardous materials—such as industrial drums containing toxic and flammable chemicals, asbestos-containing materials, household chemicals, paints, pesticides, and propane tanks—were commingled with the storm's unprecedented levels of other debris, slowing its collection and disposal.

The size and power of Katrina covered the Mississippi coast, from Bay St. Louis in the west to Pascagoula in the east and beyond to Mobile, Alabama. The three coastal Mississippi counties bordering the Gulf of Mexico, Hancock, Harrison, and Jackson counties were inundated by the storm surge which displaced approximately 400,000 residents. Many coastal towns were leveled entirely, with flooding 6–12 miles inland, crossing Interstate 10 in some places.

Almost one month later, Hurricane Rita struck southwest Louisiana and northeast Texas with a storm surge of 15–20 feet causing extensive damage in Cameron Parish, Calcasieu Parish, and Beauregard Parish, Louisiana. While storm surge damage in Texas was not as extensive as in Louisiana, wind damage was the more destructive force in Jasper County, Texas, which had an extensive pine forest, and in the cities of Orange, Beaumont, and Port Arthur.

EPA conducted an unprecedented response effort under challenging circumstances following Hurricane Katrina and Hurricane Rita and in the subsequent recovery efforts. When EPA arrived on the scene to conduct emergency response cleanup and recovery, they participated in search and rescue efforts, EPA personnel rescued over 800 persons. EPA worked with federal and state partners to respond to chemical and oil spills, collect abandoned chemical containers, coordinate recycling of damaged white goods (appliances), and collect and recycle electronic waste. EPA also conducted air, water, sediment, and soil sampling; helped assess drinking water systems and wastewater infrastructures; and issued timely information to the public on a variety of environmental health risks. An important part of their efforts included communication with other government agencies and the public to provide environmental health risk information to the public via flyers, public service announcements, and the EPA Webpage.

This Guidance can only provide a brief overview of the many response actions that occurred. EPA has a website, www.epa.gov/katrina, which can provide additional information. In addition, there have been numerous reports issued by the OIG and GAO on the response to the

Hurricanes. Much of the discussion below is based on EPA's website and the GAO report, GAO-07-651, on Hurricane Katrina, particularly from EPA's response. The purpose of the discussion in this Guidance is to highlight issues which relate to asbestos as well as provide the overall context in which those activities occurred. Regarding asbestos, EPA responded to questions concerning what could and could not be done in regard to the demolition of buildings and the resultant debris, especially residences that might contain asbestos. Concern for public health was a major issue. Communication was an extremely important part of EPA's response as was close coordination and collaboration with other federal agencies as well as state and local agencies.

EPA Communication Efforts

EPA posted a Hurricane page on its website and provided almost daily web postings, informational handouts and numerous press releases immediately following the storm's landfall in August and later to help displaced residents understand the potential health risks of returning home and how to mitigate them. These efforts included information on asbestos hazards and precautions to take when removing or disturbing material that may contain asbestos.

Note: It was not EPA's role to determine when it was safe to allow residents to return to their homes. That is the proper role of state and local officials in close coordination with the DHS. Communication about the environmental conditions represented a coordinated effort among appropriate federal and state agencies.

EPA Assistance to States to Ensure Proper Sorting and Disposal of Debris

EPA's assistance to the states resulted in the establishment of several mechanisms to help ensure the proper sorting of debris prior to disposal, including asbestos-containing material. The mechanisms established included:

- Education through the distribution of flyers that identified the proper categories of segregation.
- Additional curbside segregation and oversight during collection activities, which were closely coordinated with the appropriate party responsible for general debris (i.e., the U.S. Army Corps of Engineers [USACE] or local government).
- Landfills posted signs identifying the type of waste that the landfill could accept.
- Inspection towers were in place to inspect loads of debris prior to its entrance into the landfill.
- Landfill operators also had landfill spotters that worked the landfill and with the loads as they were being placed in the landfill.
- The landfill machine operators also reviewed the material as it was being pushed into the landfill.
- The landfill operators maintained logs of rejected loads and kept a roll-off container to place unauthorized waste that was found through these precautions at the landfill. This waste was then disposed of at a proper facility off-site.
- Louisiana Department of Environmental Quality (LDEQ) conducted inspections of these operations and kept a full time representative at five of the landfills.
- EPA performed landfill operations twice a week at several sites to ensure that precautions described above were in place and working.

These efforts resulted in more than 5 million potentially hazardous containers being separated from the general debris stream. Although EPA has limited authority over solid waste landfills, it worked closely with federal, state, and local partners to institute extensive procedures to address waste.

Sample Collection and Analysis

Extensive asbestos monitoring was conducted by a number of entities including EPA and state agencies. There was a robust federal and state network created to provide necessary information regarding exposure to workers and the public. The USACE and EPA collected over 20,000 samples to test for asbestos in locations where major demolitions occurred. EPA's efforts included conducting perimeter air monitoring of grinding sites where volume reduction was occurring. This effort was specifically to address the issue of potential asbestos releases from unregulated sources. Volume reduction activities such as grinding or burning have the potential to release asbestos fibers. Burning asbestos in portable burners such as Air Curtain Destructors result in visible emissions, and is not allowed.

Although EPA issued an NAA that would allow a pilot study of the use of an Air Curtain Destructor under very strict conditions including extensive monitoring, no burning or grinding of regulated asbestos-containing material was performed under EPA's NAA.

As part of its efforts to monitor for asbestos fibers, EPA more than doubled the number of ambient outdoor air monitors in the area. These monitors were used to characterize ambient air quality concerning numerous potential pollutants from broad sources both local and regional.

In response to Hurricane Katrina, FEMA gave EPA a mission assignment to collect and maintain environmental data in order to characterize the nature of environmental impacts of the hurricane. The Department of Health and Human Services (DHHS), specifically the Agency for

Toxic Substances and Disease Registry (ATSDR), had the mission assignment to provide data and technical assistance related to the health and medical aspects of situations involving hazardous materials. DHS had the public communication assignment of the NRP, which gives DHS the responsibility to coordinate timely information to audiences affected by the hurricane, including governments, media, the private sector, and individual citizens. In support of these responsibilities, EPA provided information on environmental issues.

EPA's Support Role

Within EPA, almost every office was involved in providing support. EPA's Office of Emergency Management operated the Emergency Operations Center, which provided 24-hour support. In addition, state and local officials were very involved. As government officials responded to this emergency, there was a need to pull in experts and support from across all offices within EPA to respond within very short timeframes. At the time of Hurricane Katrina, many personnel who were not emergency responders found themselves actively engaged in the response. Communication was a challenge due to the lack of availability of land lines and the need for personnel to move between locations.

Applicability of the Asbestos NESHAP Regulation

The Asbestos NESHAP regulation was applicable to the demolition and renovation activities carried out by government agencies (FEMA, USACE, State governments, and their contractors). It was also applicable to demolitions and renovations of all buildings (including all commercial and public buildings), to residences with more than four units, and to residences with four dwelling units or fewer if the demolition/renovation was being done as part of a larger project, or if the owner or operator was demolishing more than one building on the same site.

Initial Concerns on Returning to the Area

Initial concerns after rescue efforts were completed focused on when citizens could return to their homes and to identification of ways to expedite recovery efforts and re-populate the communities that had been severely damaged. Due to the time it took for the waters to recede and the damage to roads and bridges, many could not return for days. Many homes were without electricity or potable water. This lack of electricity and the time that elapse presented its own set of cleanup problems as food rotted and mold developed in the houses damaged by water. The extent of damage caused many to worry as to whether recovery could occur in any foreseeable timeframe. This heightened the sense of urgency to expedite recovery efforts. Government officials were asked to look at all options and evaluate whether they would expedite recovery and whether they could be used.

The public wanted to know about their risks to possible contaminants in the air, water, and soil. They wanted information on what they should do when re-entering their homes and undertaking cleanup activities including demolition or renovation operations. Communication between and within government agencies and with the pubic were extremely important. How to communicate with the public was an initial concern, electricity was out which meant that television, radio, and internet might not be available to the public in certain areas. Mail delivery was stopped, bridges and roads were out, and street signs had washed away in many neighborhoods, making notification of the address of the demolition being delivered by mail to the state office unlikely.

For cleanup and renovation of homes that do not meet criteria for being regulated under the Asbestos NESHAP requirements, citizens wanted to know what they should do to protect

themselves.

Recommendations for Citizens on How to Protect Themselves

If there were asbestos-containing products—specifically, asbestos-cement corrugated sheet, asbestos-cement flat sheet, asbestos pipeline wrap, roofing felt, vinyl-asbestos floor tile, asbestos-cement shingle, millboard, asbestos-cement pipe, and vermiculate-attic insulation—present in the damaged homes or the homeowner did not know and was pulling out damaged buildings materials, EPA's website on the Hurricane included the following recommendations: "Wear gloves, goggles, pants, shirts, socks, and most importantly, a tightly-fitted N-95 OSHA-approved respiratory mask. A regular dust mask is not enough to protect against lead or asbestos. N-95 masks are available at minimal cost at the hardware store. Carefully follow instructions when using a respiratory mask to make sure it fits correctly. A tight fit is important, and despite the heat, it is the best way to protect yourself."

In addition, many of the homes also had mold. CDC issued a report on Mold Prevention Strategies and Possible Health Effects in the Aftermath of Hurricanes and Major Floods.

Concerns on How to Expedite Recovery

As officials examined how to address the massive amount of debris, concerns arose over the need to reduce the waste through activities such as burning and grinding. Neither burning nor grinding of regulated asbestos-containing waste material was allowed. Proposals for burning or grinding asbestos-containing material from regulated sources that were exempt from some provisions of the Asbestos NESHAP due to the material being nonfriable was not allowed either. Concerns arose related to the availability of trained supervisors to supervise renovation/demolition sites, whether there was sufficient landfill capacity, costs involved if waste material had to be shipped a long distance, traffic congestion as trucks hauled waste to the landfill, laboratory capacity for the many samples being collected, expertise to analyze and evaluate the data and potential health risks, how to effectively word communications, and how to monitor compliance with the requirements for waste separation and disposal given the volume of waste being transported. Complying with requirements to adequately wet material during renovation operations became an issue in areas where there was no readily available supply of

water. Safety to workers was also important. While workers were subject to OSHA requirements, there were also concerns for homeowners and volunteer groups who arrived to help with demolitions/renovations.

State Efforts and Requests Related to the Asbestos NESHAP

Louisiana and Mississippi developed protocols for complying with Asbestos NESHAP requirements. They issued a number of documents advising their citizens; in most cases, they provided EPA an opportunity to review and comment on the documents they developed. As they explored options on how they might expedite recovery, they worked with EPA to evaluate such options in view of environmental concerns, including compliance concerns. However, it became apparent rather quickly that given the extensive damage caused by the two hurricanes, complying with the demolition requirements of the Asbestos NESHAP might be a slow process. They were interested in identifying ways to speed up the recovery process where feasible and explored many options. Louisiana and Mississippi contacted their EPA regional offices for assistance. Thousands of homes were either totally or partially demolished, moved off of their foundation intact, or were in such a condition due to mold and mildew that it was unlikely the homes could be rehabilitated. Given the widespread destruction from storm surge, flooding and wind damage the States determined that relief was needed from specific Asbestos NESHAP requirements in specific areas to expedite recovery efforts.

EPA No Action Assurances (NAAs): Expanding the Flexibility in the Regulation for the Demolition of Buildings Subject to Government Issued Demolition Orders Based on a Determination that They Are Structurally Unsound and In Danger of Imminent Collapse

Reasons for the Request

In response to requests from LDEQ and MDEQ, EPA's Assistant Administrator for the OECA prepared a No Action Assurance (NAA) letter for each State. There were several issues associated with thousands of homes partially destroyed, moved off their foundation but still intact, severe water damaged, or contaminated with mold. Some were unlikely to meet the conditions of having a demolition order issued based on the facility being structurally unsound and in danger of imminent collapse although it was apparent that they needed to be demolished. In other cases, entire blocks of homes needed to be demolished and having a house-by-house determination made by an engineer would slow demolition efforts. State officials wanted to demolish the damaged homes so rebuilding and repopulating the area could occur as quickly as possible. In addition, the presence of buildings that had structural damage or mold posed a risk to people who might enter them.

In addition, the States were concerned about landfill capacity and the risks associated with moving such large volumes of waste in trucks through residential areas. The heavy volume of trucks constantly moving through such neighborhoods was a concern to local officials. Initially, roads and bridges were washed away in many areas resulting in heavy traffic to the roads that could be used. With regard to landfill capacity, there were concerns about availability of adequate landfill space in sites in close proximity to the damaged areas. In Louisiana, there was an additional concern of moving any material that could be populated by the Formosa Termite. The Louisiana Department of Agriculture issued quarantine on material so that it could not be transported out of certain areas unless it went additional pesticide treatment and its

movement was approved by the Louisiana Department of Agriculture. To address volume of waste, there was a tremendous interest in what could be done to minimize the amount of waste/debris that needed to be disposed of in landfills.

Conditions of the No Action Assurance (NAA)

The No Action Assurance (NAA) letters issued by EPA provided flexibility to Louisiana and Mississippi officials and the Corps of Engineers for houses that were determined to be unsound or otherwise uninhabitable. The Asbestos regulation applies this same flexibility to buildings that are subject to a government-issued demolition order based a determination that the building is structurally unsound and in danger of imminent collapse.

The following structures were subject to EPA's NAA letters:

- Residences subject to a government issued demolition order based on the residence being structurally unsound but not necessarily in danger of imminent collapse;
- Residences subject to a government issued demolition order because the structure has been moved off of its foundation; and
- Residences subject to government issued demolition order because they are uninhabitable for other environmental reasons (e.g., from excessive flood damage rendering the home uninhabitable).

The NAA only exempted these buildings from the requirements to inspect and remove asbestos prior to the demolition of the buildings. A condition of the NAA was that all other work practices in the Asbestos NESHAP were to be followed, i.e., the building materials were to be adequately wet before, during, and after demolition and the debris had to be treated as though it contained regulated asbestos. Thus, it was demolished, transported, and disposed of as though it contained asbestos.

The NAA applied to the Louisiana DEQ and Mississippi DEQ, to local governments, and to the USACE, as well as to any persons operating at the direction of these government entities. The USACE was the prime contractor for many of the demolitions covered by the NAA, including all of them in Orleans Parish. Some parishes—most notably St. Bernard Parish—used other contractors. According to data from FEMA, of the vast majority of the remaining 25,000 demolitions estimated as of January 2007, approximately half were in Orleans Parish and half in St. Bernard. Regarding demolitions conducted by the Corps and its contractors, the Corps said that approximately 85% of the 2,600 demolitions conducted in Orleans Parish, which includes the Ninth Ward, were classified as containing regulated asbestos-containing materials.

EPA issued extensions to the NAA as the demolition operations were slow to commence. Issues such as home ownership and right-of-entry slowed the demolition operations as it was difficult to find many of the displaced homeowners. The displacement of the local population made it difficult to obtain the necessary permission and written approvals to begin the demolition of the damaged homes. In the NAA letters, EPA stated that it reserved the right to revoke or modify the assurances if it determined that doing so was necessary to protect public health or the environment.

No Action Assurance (NAA) for a Burn and Grind Pilot

EPA issued a No Action Assurance (NAA) that set up a pilot program to explore the use of burning regulated asbestos materials, but the pilot never went forward. The NAA for this pilot which involved the use of an Air Curtain Destructor was extremely limited in scope and involved extensive monitoring of asbestos as well as other chemicals. In developing the NAA, EPA consulted with its Science Advisory Board and incorporated their recommendations into the conditions set forth in the NAA. The April 28, 2006, the NAA letter to the LDEQ allowed a

staging process for debris from approximately 70 residential structures to be used in debris grinding and burning pilot studies in Louisiana until July 31, 2006. Note: FEMA did not approve funding for these pilot studies. The pilot evolved to only include burning construction and demolition material. Therefore, the NAA was not utilized.

Landfill Activities

Regulated asbestos-containing material is required to be disposed of at landfills that comply with the Asbestos NESHAP requirements. Nonfriable asbestos which will not be made friable through such demolition or renovation activities as sanding or grinding do not have to comply with these disposal requirements. States are responsible for regulating landfills under their solid waste regulations. States have specific requirements as to what type of wastes can be disposed in specific types of landfills. During an emergency, they may issue emergency orders relaxing their requirements on the landfills. Neither state regulations nor a state's emergency order regarding its landfills change the applicability of the Asbestos NESHAP to the landfill if it receives regulated asbestos containing waste material. After the Hurricane, the debris on the ground which required no demolition was not regulated under the Asbestos NESHAP demolition and its related waste disposal provisions even though it may have contained asbestos.

Solid waste landfills may generally receive household waste (garbage), industrial waste (solid waste generated by manufacturing, industrial, or mining processes), commercial non-hazardous waste (solid waste generated by stores, offices, restaurants, and other non-manufacturing entities), and C&D waste (non-hazardous waste that is not water soluble, such as metal, concrete, and asphalt). Under Louisiana solid waste regulations, landfills that receive household waste, industrial waste, or commercial non-hazardous waste must have safeguards that include a liner designed to control groundwater contamination. The regulations do not

require C&D landfills to have liners in place. Louisiana regulations exclude asbestos-contaminated waste, white goods, furniture, trash, and treated lumber from the categories of debris that may be disposed of at C&D landfills. Debris components allowed at C&D landfills under the emergency order included asbestos-containing material not subject to the Asbestos NESHAP. As GAO noted, the extensive renovation and demolition activities in New Orleans create the potential for large quantities of asbestos-contaminated waste to enter C&D landfills.

Monitoring at Landfills

While EPA provided consultations to the LDEQ on some landfill decisions, under the NRF and RCRA, the Agency does not have a formal role in this decision making. However, EPA provided technical support and conducted some oversight activities at New Orleans area landfills to supplement existing controls at landfills. Specifically, EPA took steps to promote the segregation of debris before it entered landfills, such as organizing hazardous waste collection events. EPA also began sending landfill observers to about 12 landfills in the New Orleans area in February 2006. EPA's landfill observers usually visited landfills unannounced and documented that they were generally operating appropriately—with entrance tower monitors and dump-site spotters in place, record keeping on violations, and financial and other documentation in order—and prepared and transmitted a report to the LDEQ citing any problems. The landfill observer activities were transitioned to Louisiana Department of Environmental Quality in October 2008.

Air Monitoring for Asbestos

EPA does not require monitoring under the Asbestos NESHAP regulation but instead relies on standards for work practices to minimize the release of asbestos fibers. However,

EPA's asbestos work practice standards generally do not apply to the demolition or renovation of a residential building by or for an individual homeowner unless the demolition or renovation is of a building that meets the definition of an installation or, generally speaking, if it is part of a larger project.

To help ensure protection of public health and environment, EPA took steps to monitor asbestos after Hurricane Katrina, initially more than doubling the ambient (outdoor) air monitors that were in the area before the storm and then conducting emissions monitoring at specific sites, such as landfills, that involve waste handling or debris reduction activities (e.g., grinding).

EPA began screening air quality for a number of constituents including asbestos in Louisiana and Mississippi in coordination with state Departments of Environmental Quality on August 30, 2005, to provide initial air quality assessments. EPA worked with state partners to restore damaged or lost air quality monitoring stations. EPA has performed air sampling to test for asbestos fibers and other contaminants (lead, arsenic, asbestos fibers, volatile organic compounds, particulate matter) using temporary ambient air monitoring stations in Louisiana and Mississippi.

Applicability to Volunteer Efforts

Whether demolitions by volunteer groups are subject to the Asbestos NESHAP work practice standards depends upon the number and location of sites and who is supervising the demolition. That thousands of demolitions and substantial renovations may occur in the same geographic area and in the same general timeframe without being subject to the Asbestos NESHAP work practice standards represents a potential health problem—especially since the protective requirement to wet any asbestos-containing materials does not apply to unregulated demolitions and disposal. In order to be responsive to potential public questions and concerns,

EPA took steps to measure asbestos emissions after Hurricane Katrina—initially more than doubling from 5 to 12 the number of the ambient (outdoor) air monitors in the New Orleans area prior to the storm. EPA officials said the Agency's monitoring network was designed to include measuring the effects from both the regulated asbestos-containing material to which NAA letters might apply and activities not regulated, which would include demolition or renovation activities by or for individual homeowners. In July 2006, the Agency scaled back ambient air monitoring to its pre-storm level of five ambient air quality monitors and also reduced the frequency of sampling to several times a month. EPA said the decision to reduce the monitoring sites was based in part on the fact that no measurable amounts of asbestos fibers were found for the period of time that a 12-monitor network had been in place. In 2007, EPA transitioned their air monitoring strategy to focus all efforts on perimeter air monitoring specifically for asbestos around demolitions of regulated asbestos containing material residences as required by the NAA. This effort continued under the direction of the NAA until October 1, 2009, when the final NAA extension expired.

4. World Trade Center (WTC) Collapse

Background

On September 11, 2001, the New York World Trade Center (WTC) towers collapsed from the impact of two hijacked passenger airplanes. The terrorist attack resulted in over 2,800 deaths. The resulting collapse of the two towers created thousands of tons of rubble, dust, and debris blanketing the surrounding buildings in Lower Manhattan. Airborne dust from the collapse of the towers was blown or dispersed into many of the surrounding office buildings, schools, and residences. The complex mixture of building debris and combustion by-products contained constituents such as asbestos, lead, glass fibers, and concrete dust. Other buildings

within the WTC complex were damaged by the collapse of the twin towers and would have to be demolished at a later time. Responding to this crisis required federal, state, and local government organizations to coordinate their response efforts and to make critical public health and safety decisions quickly, and without all the data normally desired for such decisions. Following the collapse of the towers, emergency efforts were directed at: (1) rescue efforts; (2) putting out the fires burning in the building debris; (3) the removal and disposal of building debris; (4) the demolition of the remaining buildings in the WTC complex damaged by the collapse of the towers; and (5) the cleanup of the Lower Manhattan area blanketed by the airborne dust created by the collapse of the towers including asbestos cleanup. Regarding the WTC collapse and EPA's response, a report by the OIG, Report No. 2003-P-00012 was issued August 21, 2003.

Most issues related to asbestos focused less on the regulatory requirements and more on risk assessment and the communication of risks to the community and the cleanup of dust containing asbestos within residences/office buildings that were not regulated by the Asbestos NESHAP, in that there was no "operator" available to hold responsible for the cleanup. Under the Asbestos NESHAP, the provisions apply to the owner or operator conducting the demolition. Immediately following the incident and afterwards, one of the main questions focused on whether the air was safe to breath. The OIG states that:

> "… because of uncertainties – including the extent of the public's exposure and a lack of health-based benchmarks – a definitive answer to whether the air was safe to breathe may not be settled for years to come."

When such questions arise, government agencies can only provide advice based on what information is available. How such information is communicated needs to be carefully thought out although it also needs to be communicated quickly. As EPA provided information to the public, it made efforts to link to local government websites to provide as much information as

possible. One of the challenges though in doing this is to be clear as to whether or not information on a non-EPA website which is referenced on EPA's website means that EPA agrees with the advice provided or not.

Indoor air quality and the cleanup of dust originating from the explosion that settled into homes and offices in nearby buildings was a major issue. The Asbestos NESHAP did not apply to the cleanup of dust from the collapse of the WTC even though the dust contained asbestos. Yet, the ideal safest way to clean up the material is to use work practices that apply to a demolition/renovation operation involving asbestos.

As part of recovery efforts, buildings that were left standing or partially standing needed to be demolished or renovated. The Asbestos NESHAP applied to these operations regardless of whether they had asbestos-containing material or not. At a minimum, the owner or operator is required to notify the state (or region if the state is not authorized) prior to the demolition, to conduct a thorough inspection, and to remove asbestos if threshold amounts are met. If the building is subject to a Demolition Order issued by the state/local government based on a determination that the building is structurally unsound and in imminent danger of collapse, the owner or operator does not need to conduct a thorough inspection for asbestos or remove the asbestos, but must notify and comply with work practices and disposal requirements as though there is asbestos containing material. In its report, the OIG recommended that EPA develop specific procedures for ensuring that federal, state, and local responders follow the appropriate Asbestos NESHAP work practices for catastrophic emergency situations involving asbestos. Note that in responding to catastrophic events that occurred after the collapse of the WTC such as the response to Hurricane Katrina, EPA communicated with emergency responders about the Asbestos NESHAP requirements and also had EPA and state personnel monitoring demolition sites and landfills.

Air monitoring to evaluate risk was conducted as part of the response. The Asbestos NESHAP does not require air monitoring but focuses on work practices. During a response to a catastrophic event, monitoring ambient air for asbestos as well as for chemicals that may be of concern can be an important part of the response even if not specifically required. Similarly, air monitoring of indoor air may play an important role in ensuring public safety. In response to catastrophic events, the public expects EPA to play a major role with regard to assessing environmental conditions and evaluating, mitigating, and controlling risks to human health from exposure to indoor air pollutants as well as to pollutants in ambient air or drinking water.

In addition to responding to the air quality issues, EPA conducted other response activities including overseeing the removal of hazardous waste, monitoring and assessing water quality, monitoring environmental conditions at the landfills, and establishing and operating personal and truck washing stations at the disaster site and landfills. Hazardous material removed from the site included an estimated 236 batteries, 802 containers, and 3,049 cylinders that had potential to cause environmental and human health damage. Approximately 639,465 gallons of fuel oil and/or oily water mixture were pumped from basements, manholes, trenches, and underground storage tanks. A New York City Department of Design and Construction (NYCDDC) official told the OIG that EPA's response was "phenomenal" and that EPA's response crews were on top of every issue. It is worth noting that responses to catastrophic incidents involve many environmental issues and the asbestos issues are only one component.

Also, other federal agencies in addition to EPA were involved in providing support to local authorities regarding environmental quality and safety. For example:

- FEMA was in charge of coordinating the Federal Response Plan (FRP).
- OSHA with the Department of Labor conducted ambient and bulk dust sampling within the immediate Ground Zero work zone and provided guidance to Ground Zero workers regarding the use of personal protective equipment.
- With the DHHS:
    - The National Institute for Occupational Safety and Health (NIOSH) assisted in ensuring worker health and safety.
    - The Agency for Toxic Substances and Disease Registry (ATSDR) provided technical assistance to the New York City Department of Health by conducting an indoor residential sampling and assessment project.
    - The Public Health Service provided assistance to the New York City Department of Health.

One of the lessons learned from the WTC response is that communicating information to the public is critical. EPA had issued numerous guidelines on how to effectively communicate risks to the public including EPA's "Seven Cardinal Rules of Risk Communication".

Seven Cardinal Rules of Risk Communication

- Accept and involve the public as a legitimate partner.
- Plan carefully and evaluate your efforts.
- Listen to the public's specific concerns.
- Be honest, frank, and open.
- Coordinate and collaborate with other credible sources.
- Meet the needs of the media.
- Speak clearly and with compassion.

Applicability of the Asbestos NESHAP Regulation

The Asbestos NESHAP applies to owners and operators who conduct demolitions or renovations of covered facilities. The destruction of the WTC was not either of these. The

issues first focused on the health and safety of rescue workers with regard to asbestos exposure and cleanup of material that was not subject to the Asbestos NESHAP. As renovations and additional demolitions occurred after the catastrophic event, these activities were subject to the Asbestos NESHAP.

Demolition

Although the Asbestos NESHAP renovation and demolition requirements were not applicable to the removal and disposal of debris on the ground from the WTC site, local agencies implemented measures to reduce asbestos emissions to the extent possible. Demolition and debris removal at the site was the responsibility of the NYCDDC. Contractors retained to conduct the demolition and debris removal were responsible for the wetting and misting operations at the site. Due to the unprecedented nature of the situation, the normal written contracts with detailed statements of work were not prepared; instead daily meetings were used to plan the day's activities and address any special work practices necessary to reduce asbestos emissions.

Notifications, which are required to be submitted prior to all demolitions and prior to any renovations involving threshold quantities of regulated asbestos-containing material under the Asbestos NESHAP, were not filed for the WTC or for all of the WTC buildings to be demolished. Although a formal notification was not filed, local officials reported functional notice was given and that proper planning was insured through the use of daily health and safety meetings. These meetings were attended by representatives of city, state, and federal agencies, including EPA. Three remaining buildings in the WTC complex were badly damaged and were considered to be in danger of collapse. For these three buildings, the use of abatement contractors to remove the asbestos prior to demolition was considered dangerous. Two buildings

were brought down using a method of a weight suspended by a cable, which required approval by the New York City Department of Buildings. The third building was brought down using mechanical grapplers and cutting shears. Continuous dust suppression was used during all three of the demolitions. When intact suspected asbestos-containing material, such as pipe wrapping or steel insulation, was encountered, it was tested and treated in accordance with asbestos abatement procedures.

Another potential source of asbestos emissions involved the hauling of building debris from the WTC site for disposal. City, state and federal officials established procedures to reduce emissions. Before leaving the area, trucks stopped at a wash station, operated by EPA contractors to have their load wetted and the trucks washed down. The debris was covered with a tarpaulin (tarp) before leaving the WTC site. Among the problems reported with these procedures was that not all trucks stopped at the wash stations, some trucks did not stop long enough to have their load completely wetted down, and some loads were not completely covered. Summonses issued by New York City officials to truck operators and their employers for failure to secure loads and to stop for wetting largely eliminated this problem.

Clean Up of Lower Manhattan

Although not subject to the Asbestos NESHAP, cleanup operations conducted to remove WTC dust from the exterior and interior of buildings in Lower Manhattan were a significant undertaking. Due to the extent of the devastation to Lower Manhattan and the number of people impacted, EPA and its federal, state, and city partners developed a comprehensive cleanup plan to make sure the cleanup was conducted properly. The multi-agency Task Force on Indoor Air in Lower Manhattan developed a voluntary cleanup plan for residential units south and west of

Canal, Allen, and Pike Streets, from the Hudson River to the East River. The cleanup plan included:

- Upon request, the cleanup of residential units, using certified contractors, with follow-up testing for asbestos of the indoor air, or;
- Testing-only of asbestos in the indoor air;
- Distribution of health and cleanup information;
- Professional cleanups of remaining occupied, uncleaned residential buildings;
- Evaluation of effectiveness of dust cleanup techniques already used; and
- Testing to determine and/or estimate indoor baseline levels or background concentrations for the presence of specific contaminants related to building materials and combustion byproducts that may be released when building materials are burned during a fire.

This program gave Lower Manhattan residents the option of either having their units tested for asbestos or cleaned and then tested by professional asbestos cleaners working under contract with the government.

Note: Health-based benchmarks for short-term and acute exposure did not exist for pollutants of concern resulting from the collapse of the WTC. For asbestos, EPA used benchmarks originally designed for other purposes to assess potential health risks from breathing the air following the WTC collapse. To evaluate the ambient (outdoor) air quality for asbestos, EPA used AHERA criteria developed for air monitoring inside schools following an asbestos abatement program and which is used to clear schools for re-entry. The AHERA standard is not a health-based standard but was based on a study in 1987 that showed this level as background contamination. To determine if the material present was asbestos, responders used the 1%

threshold in the Asbestos NESHAP regulation. The 1% threshold is based on the smallest amount that can be measured using PLM and is not a health-based standard. New York City also recommended that building owners use this 1% benchmark in determining whether the interior of buildings should be cleaned for asbestos. For the outdoor work TEM analysis was also used, and testing was not limited to the one percent threshold. Guidelines were not available to assess the impact of acute (up to 8 hours) exposures, i.e., those experienced by people caught up in the initial debris and dust cloud of September 11, who were potentially exposed to high levels of various pollutants for a short duration. Over 25% of the bulk dust samples that EPA collected and analyzed by September 18 showed the present of asbestos above the 1% threshold used by EPA to determine significant risk.

Because health-based benchmarks for short-term exposure did not exist for most of the other pollutants, EPA revised benchmarks for lifetime (30 year) exposures to develop screening levels for short-term (one year) exposures. Health-based benchmarks did not exist for assessing the risk to human health from exposure to the combination of air pollutants that were emitted.

5. Hurricane Floyd

Background

Hurricane Floyd, a Category 3 hurricane, came ashore at North Carolina on September 16, 1999. Unfortunately, Floyd made landfall 10 days after Tropical Storm Dennis, which left six inches of rain. Hurricane Floyd prompted millions along the southeastern coast to evacuate, resulting in 51 deaths and leaving thousands homeless. Some parts of the state received 15 to 20 inches of rain in a 12-hour period, flooding 5,000 residential and commercial structures that had to be demolished due to the extensive flood damage. The cost of the damage was estimated at $6 billion.

Applicability of the Asbestos NESHAP Regulation

The North Carolina Department of Health and Human Services, the Health Hazards Control Unit (HHCU) required asbestos surveys and sample testing to be conducted by a North Carolina accredited asbestos inspector and that an Asbestos Permit Application and Notification for Demolition and Renovation form be filed 10-working days before demolition began.

The HHCU had previously issued guidelines for "naturally razed" structures due to past weather-related incidents. The purpose of the guidelines was to protect the public and the environment from potential asbestos exposure during an "emergency" cleanup. Procedures for cleanup of "naturally razed" structures were as follows:

- Structures that were razed to the ground, by natural forces, were to be properly wetted, properly contained, covered for transportation, and disposed of in a permitted landfill; and
- Structures that had accumulated into piles of C&D debris were to be properly wetted, properly contained, covered for transportation, and disposed of in a permitted landfill.

For structures that were unsound and in danger of imminent collapse, the owner/contractor had to notify the HHCU of the demolition by submitting a notification form and a copy of the condemnation order. The notification form and the condemnation order had to be faxed to the HHCU 24 hours before the demolition activity began. These structures had to be properly wetted and demolished using normal demolition techniques, i.e., bull-dozers, front-end loaders, or wrecking balls; properly contained; covered for transportation; and disposed of in a permitted landfill.

Burning, salvaging, or grinding of building materials or structures damaged or destroyed by Hurricane Floyd was not allowed unless an asbestos inspection conducted by a North

Carolina accredited asbestos inspector showed that no asbestos was present in the structure. Notification of the HHCU prior to beginning any of these activities was also required.

A separate but major issue following Hurricane Floyd was the issue of how to dispose of the large number of severely damaged mobile homes that were single-family dwellings. The Asbestos NESHAP applies to the demolition of mobile homes and structures that are used for non-residential purposes. The HHCU issued guidelines that applied only to mobile homes used as single-family dwellings and not to mobile structures used for non-residential purposes, e.g., modular trailer used at schools, churches, or places of business. The guidelines required that the owner/contractor notify the HHCU by submitting a notification and condemnation order 24 hours prior to the demolition. The same notification requirement applied in cases where mobile homes were transported to staging areas for demolition. The guidelines stressed removing white goods and hazardous materials prior to demolition but only if the task could be completed safely. These materials were to be removed following the demolition if not removed prior to demolition. In all cases, the owner/contractor was responsible for wetting all debris to prevent visible emissions during demolition, salvaging, and debris removal. Piled debris waiting for pickup and transportation to a landfill had to be wetted every few hours to prevent the pile from drying out and potentially releasing fibers. Stockpiled debris had to be removed from the demolition site to the disposal site within five days.

6. Los Alamos, New Mexico Fire

Background

On May 4, 2000, the National Park Service initiated a prescribed burn on the Cerro Grande in Bandelier National Monument. It was intended to clear away dry underbrush that might ignite a more dangerous blaze later in the dry season. Initially, the prescribed burn reacted

as planned, but over several days' weather conditions changed. By May 7, windy conditions and low humidity fueled the flames, and within hours, the fire was out of control. The fire reached the City of Los Alamos, New Mexico, destroying more than 220 homes and leaving more than 400 families homeless. In addition, the fire destroyed or damaged 115 buildings at the Los Alamos National Laboratory, a large multi-disciplinary federal facility in northern New Mexico.

Applicability of the Asbestos NESHAP Regulation

The asbestos issues were the cleanup of debris created by the fire and the demolition of the remaining buildings including residences. Debris on the ground from the buildings was not subject to the Asbestos NESHAP.

The Asbestos NESHAP requirement was applicable to the demolition of the damaged homes. While the Asbestos NESHAP definition for "facility" excludes residences and buildings with four or fewer dwelling units, in this situation, the homes were part of an installation. An installation is any building or structure or 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). The City supervised and controlled the demolition operation, and thus met the definition of an operator. The homes were in a contiguous area. The demolition operation was subject to the requirements of the Asbestos NESHAP regulation including thorough inspection, notification, emissions control, waste management and transport, training, and disposal requirements.

7. Stockton-Pierce City, Missouri Tornado

Background

On May 4, 2003, a series of tornadoes touched down in southwest and central Missouri causing widespread destruction of property. When the storm system moved on, 18 people were

dead and approximately 70,000 structures over 76 counties were damaged or destroyed. The cities of Stockton and Pierce City were hit by a tornado that was rated an F-3 on the Fujita scale.[14]

In the City of Stockton, trees and power lines were down; 350 houses and businesses were leveled including one whole city block in the downtown area, which included the library and the post office. The high school and middle school also sustained damage. In Pierce City, 43 of the town's 45 businesses were demolished.

Applicability of the Asbestos NESHAP Regulation

When the tornadoes subsided, one of the first efforts by Missouri officials was to inform the public about the potential dangers associated with cleaning up the debris from the disaster. As part of their outreach, state officials quickly created a fact sheet entitled Natural Disaster Assistance for Missouri Citizens – How to Handle Asbestos Containing Debris. The fact sheet outlined building materials that could contain asbestos, health issues surrounding exposure to asbestos, how to identify, handle, and dispose of asbestos debris, and precautions to minimize asbestos exposure. See http://www.dnr.mo.gov/pubs/pub2121.pdf for the complete fact sheet. For those buildings normally subject to the Asbestos NESHAP, Missouri requires a Missouri-certified asbestos inspector to inspect the building before the start of the renovation or demolition project and requires that a Missouri-registered asbestos abatement contractor remove the asbestos, if more than a threshold amount is present. These requirements did not change during the cleanup process. In the case where a building had become structurally unsound, the building was allowed to be demolished in place provided the structure was kept adequately wet at all

[14] An F3 tornado is considered a severe tornado with winds between 158-206 mph, which causes roofs and some walls to be torn off well-constructed houses; trains are overturned and heavy cars lifted off the ground and thrown; and most trees uprooted.

times. All asbestos-containing waste and asbestos-contaminated debris was required to be disposed of at a solid waste landfill permitted to accept asbestos-containing material. The 10-day notification requirement was waived for buildings damaged as a result of the catastrophic disaster. However, the owner/operator was required to submit their notification within 24 hours of starting a regulated abatement or demolition project. For family residences exempt from the Asbestos NESHAP and other unregulated demolitions or renovation projects, the fact sheet provided guidance on how the owners should inspect, remove, and dispose asbestos-containing material from dwellings and structures so as to minimize potential exposure to asbestos fibers.

8. Northridge (Los Angeles) Earthquake

Background

The Northridge earthquake struck on January 17, 1994, and affected approximately 2,000 square miles of the San Fernando Valley, a densely populated residential area of northern Los Angeles, California. The earthquake's duration was approximately 15 seconds and measured 6.7 on the Richter scale. The earthquake killed 57 people and injured nearly 12,000 people. The damage was widespread. Sections of major freeways, parking structures, and office buildings collapsed, and numerous apartment buildings suffered irreparable damage. The earthquake caused $20 billion in damage.

Applicability of the Asbestos NESHAP Regulation

A thorough inspection of a building or structure is required before any demolition operation can commence. In order to expedite the recovery but meet the thorough inspection requirement, local officials examined the damaged buildings and structures and categorized them into three groups by color-coded tags. Structurally unsound and in danger of imminent collapse buildings and structures received a red tag. The red tagged buildings and structures were so

badly damaged that a thorough inspection could not be conducted without putting staff or contractors in a life-threatening situation. The local government issued a government order to demolish the red tag buildings. Since these buildings were never thoroughly inspected and asbestos-containing materials removed, the buildings were required to be kept continuously wet and all the debris sent to an approved Asbestos NESHAP landfill. Orange tagged structures were partially structurally unsound and were either demolished with asbestos material in place and treated like the red tag buildings (i.e., kept continuously wet and the debris sent to an approved Asbestos NESHAP landfill), or the buildings were made structurally sound, which allowed a thorough inspection of the building for asbestos-containing materials to be conducted. Green tagged structures were structurally sound, and all regulated asbestos-containing material was removed according to the Asbestos NESHAP regulation.

Many of the older buildings and structures sustained the most structural damage including damage to asbestos-containing building materials, such as fireproofing and insulation. In many cases, the damage to the building's structural system was severe enough to crush friable asbestos-containing materials and fill the air within the buildings to dangerous particle levels. Even if damage was not severe enough to cause air-quality concerns inside the building, the asbestos-containing materials had to be removed to allow for repairs to the damaged buildings. The inspection of the buildings and structures for asbestos-containing materials required specially trained contractors in protective clothing and respirators because of health concerns with the airborne particles.

9. Gramercy Park Explosion

Background

In August 1989, an underground steam pipe exploded in Gramercy Park, New York releasing 400°F steam, asbestos, and mud. The explosion killed three people, injured 24, and forced the evacuation of 200 residents. The steam pipe was part of Consolidated Edison's extensive network of pipeline used to heat buildings throughout New York City.

Applicability of the Asbestos NESHAP Regulation

Many underground pipes either contain asbestos (greater than 1%) or are wrapped with asbestos-containing material, i.e., asbestos paper, asbestos cloth or bituminous material containing asbestos, which is considered Category II asbestos-containing material. A pipeline is considered a facility component as it is part of a commercial, industrial, or public facility. The removal of the asbestos-containing material from the pipeline is considered a renovation since it is removing or stripping asbestos-containing material from a facility component and not wrecking or removing a load-bearing structure as required under a demolition operation. If the owner or operator removes, strips, dislodges, cuts, drills, or similarly disturbs and causes at least 260 linear feet of regulated asbestos-containing material, the operation is subject to the Asbestos NESHAP regulation. Regulated asbestos-containing material is defined, in part, as friable asbestos, which, when dry can be crumbled, pulverized, or reduced to powder by hand pressure, or as Category II nonfriable asbestos-containing material that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act upon the material in the course of the demolition or renovation operation.

The debris with asbestos-containing material resulting from the Gramercy Park explosion was not subject to the Asbestos NESHAP regulation because neither Consolidated Edison or any

other owner or operator was conducting a renovation operation on the steam pipe at the time of the explosion. If the owner or operator will disturb an additional 260 linear feet of pipe, making the pipe wrap regulated asbestos-containing material, then the cleanup operation will be subject to the Asbestos NESHAP regulation as a renovation operation.

The cleanup and decontamination of the contaminated structures took several months to complete. The asbestos-contaminated waste was collected and transported to Clarksburg, West Virginia for disposal. The cleanup was supervised by the New York City Department of Environmental Protection, with oversight by EPA.

10. North Ridge Estates, Klamath Falls, Oregon – A Superfund Site

Background

During World War II, the U.S. Navy built a Marine Recuperational Barracks just north of Klamath Falls, Oregon. Its purpose was to allow service members to recover after fighting in the Pacific theater. At the time, the complex was built to house 5,000 service members. Six dozen buildings occupied the 80-acre site which included a hospital, an amphitheater, a gymnasium, and a steam plant. After the war, the buildings became the site of the original Oregon Institute of Technology campus. Over time, several buildings were torn down and others collapsed leaving debris on the site. In 1977, a group of developers purchased the site, and over time, demolished the remaining buildings. In September 1979, EPA ordered the developers to double bag the asbestos debris and to file deed notices with the county providing notice to future buyers of the debris burial on the site. While the developers cleaned up some of the asbestos debris, they failed to file deed notices with the county. Over time, additional buildings were demolished and left on-site.

By the early 1990's the site was developed and marketed for single-family homes. In 2001, a contractor working on a home site dug up an old asbestos wrapped steam pipe. Over time, more asbestos-containing debris found its way to the surface. EPA conducted a series of emergency removals between 2003 and 2005, but was unable to mitigate unacceptable risks to residents of the site. Residents were temporarily relocated from the site for three months in 2005. In January 2006, the developer entered a consent decree to permanently relocate the majority of the residents.

Applicability of the Asbestos NESHAP Regulation

The Asbestos NESHAP regulation as implemented today was promulgated in 1983. The current regulatory controls for demolition and renovation, managing asbestos waste material and disposal of asbestos-containing waste material were not in effect when most of the demolitions were undertaken at the Klamath Falls site. Years later, pieces of asbestos made its way to the surface. If asbestos-containing waste material is not handled properly, by placing it in an approved Asbestos NESHAP landfill, the demolition or renovation site can become a Superfund site at some point in the future. The asbestos-containing waste material buried can find its way to the surface, either by natural forces or if the site is disturbed years later by someone not knowing that asbestos-containing material was left on the site.

What makes this issue relevant is that during recent catastrophic events, proposals were made to bury debris in place rather than transporting the asbestos-containing waste debris to an appropriate Asbestos NESHAP landfill, where it can be managed under appropriate conditions. These proposals were rejected, in part, to the experience that occurred at the North Ridge Estates. There is the potential for buried asbestos-containing debris to make its way to the surface or to

be brought to the surface by a disturbance later if it is not properly buried in an approved Asbestos NESHAP landfill.

VII. Preparing in Advance for Emergencies

In keeping with the National Response Framework, regional and state Asbestos NESHAP coordinators should have readily available information that can be quickly disseminated should the OSC request assistance regarding asbestos. During an emergency, knowing which facilities in the community contain asbestos and which do not could reduce the risk associated with entering unsafe structures, and avoid the unnecessary cost of treating the building as though it contained asbestos when in fact it did not. There are several sources of information available to the Asbestos NESHAP coordinator to assist them in identifying possible buildings and structures which may contain asbestos. Such information may be gathered in advance of an emergency as part of preparedness efforts.

Below are public sources of information that can help identify facilities that may have asbestos-containing material:

- EPA's Envirofacts Data Warehouse
- Other Federal Agencies
- Surveys of public and commercial buildings
- Local Education Agencies
- Local building permits
- Notifications under the Asbestos NESHAP

EPA's Envirofacts Data Warehouse

A good source of information for the location of asbestos mills and facilities that manufacture or fabricate asbestos-containing products is EPA's Envirofacts Data Warehouse. It provides several tools that can assist in locating facilities in the local jurisdiction. The web

address for the Warehouse is: http://www.epa.gov/enviro/html/qmr.html. Tools available at the warehouse include Enforcement and Compliance History Online (ECHO), TRI database, and Envirofacts Multisystem. Facilities that have been inspected or enforced against can be identified through the ECHO database. The TRI database shows facilities which released asbestos into the air, water, or ground. The Envirofacts Multisystem can locate a facility or facilities by entering the pollutant (asbestos) and state or county information.

Other Federal Agencies

Other federal agencies that inspect and enforce asbestos regulations may have their databases publicly available. When a public or commercial building is to undergo abatement or demolition, the owner is required by OSHA to notify the workers and tenants that work is to commence and that it involves the removal of asbestos. Commercial and public building owners may have completed a survey of their building showing where asbestos-containing material is located. These records would be helpful during a catastrophic event in determining were asbestos-containing material may be inside the building. To determine if a state has an OSHA-approved program, check this OSHA web page: http://www.osha.gov/dcsp/osp/index.html. If your state is not OSHA-approved, then you need to contact the regional OSHA office. For OSHA contact information, refer to: http://www.osha.gov/html/RAmap.html.

Surveys of Public and Commercial Buildings

States, universities, fire departments, non-profit organizations, or other organizations may have conducted studies of asbestos in buildings in a particular city or state. For example, it may have identified all buildings in an urban area that contained asbestos materials or it may provide generalities, i.e., all buildings eight stories or more are likely to have asbestos because building

codes at the time required it for fire management. New York City's Department of Environmental Protection conducted such a survey of buildings for the presence of asbestos in New York City in the late 1980s. Relative to the age of buildings, the study found that for buildings built prior to 1960, most of the asbestos was found as boiler and pipe insulation; for buildings built after 1960, most of the friable asbestos was sprayed or toweled onto ceilings and steel beams, a practice which continued until 1973 when most sprayed-on uses of asbestos were banned by EPA.[15]

Local Education Agencies (LEAs)

Under the AHERA program, Local Education Agencies (LEAs) are required to inspect their schools for the presence of asbestos, document the location of the asbestos, and keep this information on site at the school, as well as forward a copy to the responsible state agency.

Local Building Permit Agencies

In most communities, a building permit is required prior to any new construction. As part of the application for a building permit, the building plans are reviewed by the permitting agency to determine that the structure is designed and will be constructed in accordance with applicable building codes. Building plans usually specify that a particular code or standard will be met, for example, a fire rating. The specifications that accompany the building plans state what materials are to be used to meet the code specified in the plans. If asbestos was recommended for a certain application in order to meet the relevant codes, the specifications would contain that information. A copy of approved building plans is usually kept by building

[15] New York City Department of Environmental Protection. Assessment of the Public's Risk of Exposure to In-Place Asbestos. New York, NY. December 1, 1988.

permit agencies. Where a copy of the specifications is also kept by the permitting agency, it could be used to help identify buildings that contain asbestos.

Notifications under the Asbestos NESHAP

A number of large industrial facilities, such as petroleum refineries and chemical plants, contain large amounts of asbestos in the form of thermal insulation. Many of these facilities remove asbestos as part of non-scheduled renovation operations in addition to scheduled renovations and demolitions. Non-scheduled renovations are typically maintenance-related or repair-related renovations for which the exact date of occurrence cannot be predicted, but based on previous experience, are likely to occur. Because the dates of these renovations cannot be predicted, facilities where these operations occur often submit annual, semiannual, or quarterly notices to EPA or the delegated state or local air authority describing how these non-scheduled renovations will be handled to control asbestos emissions. Notices of non-scheduled renovations and scheduled renovations and demolitions received from large industrial facilities identify where asbestos is to be found and in what amounts.

Appendix A

EPA Regional Asbestos Contacts

NESHAP and TSCA

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EPA Regional Asbestos Contacts - TSCA and NESHAP

EPA Region	TSCA Coordinator	NESHAP Coordinator
EPA Region 1 One Congress Street Suite 1100 Boston, MA 02114-2023	Jim Bryson Mail Code: CPT Phone: 617-918-1524 FAX: 617-918-1505	Peter Kudarauskas Mail Code: SEA Phone: 617-918-1404 FAX: 617-918-0843
EPA Region 2 Air Branch 290 Broadway, 21st Floor New York, NY 10007-1866	Gaetano Lavigna Phone: 212-637-4069 FAX: 212-637-3998	Gaetano Lavigna Phone: 212-637-4069 FAX: 212-637-3998
EPA Region 3 1650 Arch Street Philadelphia, PA 19103	Stephen Forostiak Mail Code: 3WC32 Phone: 215-814-2136 FAX: 215-814-3113	Stephen Forostiak Mail Code: 3WC32 Phone: 215-814-2136 FAX: 215-814-3113
EPA Region 4 61 Forsyth Street, S.W. Atlanta, GA 30303-8960	John Hund Phone: 404-562-8978 FAX: 404-562-8972 or 8973	Pam McIlvaine Phone: 404-562-9197 FAX: 404-562-9164
EPA Region 5 77 West Jackson Blvd. Chicago, IL 60604	Phil King Mail Code: DT-8J Phone: 312-353-9062 FAX: 312-353-4788	Lucille Penson Phone: 312-353-5139 Rochelle Marceillars Phone: 312-353-4370 Renee Honore Phone: 312-886-0749 Lisa Holscher Phone: 312-886-6818 Stephanie Valentine Phone: 312-886-6787 Mail Code: AE-17J
EPA Region 6 1445 Ross Avenue Dallas, TX 75202-2733	Dave Eppler Mail Code: 6PD-T Phone: 214-665-3127 FAX: 214-665-6762	Elvia Evering Mail Code: 6EN-AT Phone: 214-665-7595 FAX: 214-665-7446
EPA Region 7 901 N. 5th Street Kansas City, KS 66101	Larry Hacker Mail Code: WWPD/TOPE Phone: 913-551-7602 FAX: 913-551-7065	Larry Hacker Mail Code: WWPD/TOPE Phone: 913-551-7602 FAX: 913-551-7065
EPA Region 8 1595 Wynkoop Street Denver, CO 80202-1129	Daniel Webster Mail Code: 8ENF-T Phone: 303-312-7076 FAX: 303-312-6409	Daniel Webster Mail Code: 8ENF-T Phone: 303-312-7076 FAX: 303-312-6409
EPA Region 9 75 Hawthorne Street San Francisco, CA 94105	Ron Tsuchiya Mail Code: CMD-4-2 Phone: 415-947-4168 FAX: 415-947-3583	Bob Trotter Mail Code: A-3-3 Phone: 415-972-3989 FAX: 415-744-3579
EPA Region 10 1200 Sixth Street Seattle, WA 98101	Rebecca "Becki" Derr Mail Code: AWT-128 Phone: 206-553-6389 FAX: 206-553-8509 or 2909	Michelle Wright Mail Code: OCE-127 Phone: 206-553-1747 FAX: 206-553-8509

For updated information: http://www.epa.gov/asbestos/pubs/regioncontact.html

Appendix B

Asbestos NESHAP Regulation

40 CFR Part 61, Subpart M

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PART 61 NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS Subpart M
National Emission Standard for Asbestos

Sec. 61.140 Applicability.

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

Source: 49 FR 13661, Apr. 5, 1984, unless otherwise noted.

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

[55 FR 48414, Nov. 20, 1990]

Sec. 61.141 Definitions.

All terms that are used in this subpart and are not defined below are given the same meaning as in the Act and in subpart A of this part.

Active waste disposal site means any disposal site other than an inactive site.

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 means the asbestiform varieties of serpentinite (chrysotile), crocidolite (riebeckite), cummingtonite-grunerite, anthophyllite, actinolite, and tremolite.

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 renovation operations, this term also includes regulated asbestos-containing material waste and materials contaminated with asbestos including disposable equipment and clothing.

Asbestos mill means any facility engaged in converting, or in any intermediate step in converting, asbestos ore into commercial asbestos. Outside storage of asbestos material is not considered a part of the asbestos mill.

Asbestos tailings means any solid waste that contains asbestos and is a product of asbestos mining or milling operations.

Asbestos waste from control devices means any waste material that contains asbestos and is collected by a pollution control device.

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 E, subpart E, 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 E, subpart E, 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 E, subpart E, 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 E, subpart E, 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 E, subpart E, 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.

Structural member means any load-supporting member of a facility, such as beams and load supporting walls; or any nonload-supporting member, such as ceilings and nonload-supporting walls.

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.

[49 FR 13661, Apr. 5, 1984; 49 FR 25453, June 21, 1984, as amended by 55 FR 48414, Nov. 20, 1990; 56 FR 1669, Jan. 16, 1991; 60 FR 31920, June 19, 1995]

Sec. 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 Sec. 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 semiannually a copy of visible emission monitoring records to the Administrator if visible emissions occurred during the report period. Semiannual reports shall be postmarked by the 30th day following the end of the six-month period.

[55 FR 48416, Nov. 20, 1990, as amended at 64 FR 7467, Feb. 12, 1999]

Sec. 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 once 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.

[55 FR 48419, Nov. 20, 1990; 56 FR 1669, Jan. 16, 1991]

Sec. 61.144 Standard for manufacturing.

(a) Applicability. This section applies to the following manufacturing operations using commercial asbestos.

The manufacture of cloth, cord, wicks, tubing, tape, twine, rope, thread, yarn, roving, lap, or other textile materials.

(2) The manufacture of cement products.

(3) The manufacture of fireproofing and insulating materials.

(4) The manufacture of friction products.

(5) The manufacture of paper, millboard, and felt.

(6) The manufacture of floor tile.

(7) The manufacture of paints, coatings, caulks, adhesives, and sealants.

(8) The manufacture of plastics and rubber materials.

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

(10) The manufacture of shotgun shell wads.

(11) The manufacture of asphalt concrete.

(b) Standard. Each owner or operator of any of the manufacturing operations to which this section applies shall either:

(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 Sec. 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 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 semiannually a copy of the visible emission monitoring records to the Administrator if visible emission occurred during the report period. Semiannual reports shall be postmarked by the 30th day following the end of the six-month period.

[49 FR 13661, Apr. 5, 1984, as amended at 55 FR 48419, Nov. 20, 1990; 56
FR 1669, Jan. 16, 1991; 64 FR 7467, Feb. 12, 1999]

Sec. 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 and 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 Sec. Sec. 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 similar 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 Sec. 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 Sec. 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 Sec. 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 Sec. 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.

[55 FR 48419, Nov. 20, 1990; 56 FR 1669, Jan. 16, 1991]

Sec. 61.146 Standard for spraying.

The owner or operator of an operation in which asbestos-containing materials are spray applied shall comply with the following requirements:

(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 E, subpart E, 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 E, subpart E, 40 CFR part 763, section 1, Polarized Light Microscopy, on equipment and machinery, except as provided in paragraph (c) of this section:

(1) Notify the Administrator at least 20 days before beginning the spraying operation. Include the following information in the notice:

(i) Name and address of owner or operator.

(ii) Location of spraying operation.

(iii) Procedures to be followed to meet the requirements of this paragraph.

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

(c) The requirements of paragraphs (a) and (b) of this section do not apply to the spray-on application of materials where the asbestos fibers in the materials are encapsulated with a bituminous or resinous binder during spraying and the materials are not friable after drying.

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

[49 FR 13661, Apr. 5, 1984. Redesignated and amended at 55 FR 48424, Nov. 20, 1990; 60 FR 31920, June 19, 1995]

Sec. 61.147 Standard for fabricating.

(a) Applicability. This section applies to the following fabricating operations using commercial asbestos:

(1) The fabrication of cement building products.

(2) The fabrication of friction products, except those operations that primarily install asbestos friction materials on motor vehicles.

(3) The fabrication of cement or silicate board for ventilation hoods; ovens; electrical panels; laboratory furniture, bulkheads, partitions, and ceilings for marine construction; and flow control devices for the molten metal industry.

(b) Standard. Each owner or operator of any of the fabricating operations to which this section applies shall either:

(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 Sec. 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 semiannually a copy of the visible emission monitoring records to the Administrator if visible emission occurred during the report period. Semiannual reports shall be postmarked by the 30th day following the end of the six-month period.

[49 FR 13661, Apr. 5, 1984. Redesignated and amended at 55 FR 48424, Nov. 20, 1991; 64 FR 7467, Feb. 12, 1999]

Sec. 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 Sec. 61.146.

[55 FR 48424, Nov. 20, 1990]

Sec. 61.149 Standard for waste disposal for asbestos mills.

Each owner or operator of any source covered under the provisions of Sec. 61.142 shall:

(a) Deposit all asbestos-containing waste material at a waste disposal site operated in accordance with the provisions of Sec. 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 Sec. 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 Sec. 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) Use a wetting agent as follows:

(i) Adequately mix all asbestos-containing waste material with a wetting agent recommended by the manufacturer of the agent to effectively wet dust and tailings, before depositing the material at a waste disposal site. Use the agent as recommended for the particular dust by the manufacturer of the agent.

(ii) Discharge no visible emissions to the outside air from the wetting operation or use the methods specified by Sec. 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 x 36 cm (20 in x 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 (\3/4\ 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.

Sec. 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 Sec. Sec. 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 Sec. 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)(4) or 1926.1101(k)(8). 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 Sec. 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 Sec. Sec. 61.145(c)(1) (i), (ii), (iii), and (iv) or for facilities demolished according to Sec. 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 Sec. 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 deposited as soon as is practical by the waste generator at:

(1) A waste disposal site operated in accordance with the provisions of Sec. 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 Sec. 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 Sec. Sec. 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.

[55 FR 48429, Nov. 20, 1990; 56 FR 1669, Jan. 16, 1991, as amended at 68 FR 54793, Sept. 18, 2003]

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

(a) Comply with one of the following:

(1) Either discharge no visible emissions to the outside air from an inactive waste disposal site subject to this paragraph; or

(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 8 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

(3) Cover the asbestos-containing waste material with at least 60 centimeters (2 feet) of compacted nonasbestos-containing material, and maintain it to prevent exposure of the asbestos-containing waste; 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) Unless a natural barrier adequately deters access by the general public, install and maintain warning signs and fencing as follows, or comply with paragraph (a)(2) or (a)(3) of this section.

(1) Display warning signs at all entrances and at intervals of 100 m (328 ft) or less along the property line of the site or along the perimeter of the sections of the site where asbestos-containing waste material was deposited. The warning signs must:

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

(ii) Conform to the requirements for 51cm x 36cm (20x14) 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	Notation
Asbestos Waste Disposal Site.	2.5 cm (1 inch) Sans Serif, Gothic or Block.
Do Not Create Dust…….	1.9 cm (\3/4\ inch) Sans Serif, Gothic or Block.
Breathing Asbestos is Hazardous to Your Health.	14 Point Gothic.

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

(2) Fence the perimeter of the site in a manner adequate to deter access by the general public.

(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.

(c) The owner or operator may use an alternative control method that has received prior approval of the Administrator rather than comply with the requirements of paragraph (a) or (b) of this section.

(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 Sec. 61.154(f) have been filed with the Administrator; and

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

[49 FR 13661, Apr. 5, 1984, as amended at 53 FR 36972, Sept. 23, 1988.
Redesignated and amended at 55 FR 48429, Nov. 20, 1990]

Sec. 61.152 Air-cleaning.

(a) The owner or operator who uses air cleaning, as specified in Sec. Sec. 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:

(1) Use fabric filter collection devices, except as noted in paragraph (b) of this section, doing all of the following:

(i) Ensuring that the airflow permeability, as determined by ASTM Method D737-75, does not exceed 9 m\3\/min/m\2\ (30 ft\3\/min/ft\2\) for woven fabrics or 11\3\/min/m\2\(35 ft\3\/min/ft\2\) for felted

fabrics, except that 12 m\3\/min/m\2\ (40 ft\3\min/ft\2\) for woven and 14 m\3\/min/m\2\ (45 ft \3\min/ft\2\) for felted fabrics is allowed for filtering air from asbestos ore dryers; and

(ii) Ensuring that felted fabric weighs at least 475 grams per square meter (14 ounces per square yard) and is at least 1.6 millimeters (one-sixteenth inch) thick throughout; and

(iii) Avoiding the use of synthetic fabrics that contain fill yarn other than that which is spun.

(2) Properly install, use, operate, and maintain all air-cleaning equipment authorized by this section. Bypass devices may be used only during upset or emergency conditions and then only for so long as it takes to shut down the operation generating the particulate asbestos material.

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

(b) There are the following exceptions to paragraph (a)(1):

(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 9.95 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.

[49 FR 13661, Apr. 5, 1984; 49 FR 25453, June 21, 1984, as amended at 51 FR 8199, Mar. 10, 1986. Redesignated and amended at 55 FR 48430, Nov. 20, 1990]

Sec. 61.153 Reporting.

(a) Any new source to which this subpart applies (with the exception of sources subject to Sec. Sec. 61.143, 61.145, 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.

(1) A description of the emission control equipment used for each process; and

(i) If the fabric device uses a woven fabric, the airflow permeability in m\3\/min/m\2\ 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\, the minimum thickness in inches, and the airflow permeability in m\3\/min/m\2\.

(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 Sec. Sec. 61.149 and 61.150:

(i) A brief description of each process that generates asbestos-containing waste material; and

(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

(iv) The type of disposal site or incineration site used for ultimate disposal, the name of the site operator, and the name and location of the disposal site.

(5) For sources subject to Sec. Sec. 61.151 and 61.154:

(i) A brief description of the site; and

(ii) The method or methods used to comply with the standard, or alternative procedures to be used.

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

(Sec. 114. Clean Air Act as amended (42 U.S.C. 7414))

[49 FR 13661, Apr. 5, 1984. Redesignated and amended at 55 FR 48430, Nov. 20, 1990; 56 FR 1669, Jan. 16, 1991]

Sec. 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 Sec. 61.149, 61.150, or 61.155 shall meet the requirements of this section:

(a) Either there must be no visible emissions to the outside air from any active waste disposal site where asbestos-containing waste material has been deposited, or the requirements of paragraph (c) or (d) of this section must be met.

(b) Unless a natural barrier adequately deters access by the general public, either warning signs and fencing must be installed and maintained as follows, or the requirements of paragraph (c)(1) of this section must be met.

(1) Warning signs must be displayed at all entrances and at intervals of 100 m (330 ft) or less along the property line of the site or along the perimeter of the sections of the site where asbestos-containing waste material is deposited. The warning signs must:

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

(ii) Conform to the requirements of 51cm x 36cm 20x14) 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	Notation
Asbestos Waste Disposal Site.	2.5 cm (1 inch) Sans Serif, Gothic or Block.
Do Not Create Dust……	1.9 cm (3/4 inch) Sans Serif Gothic or Block.
Breathing Asbestos is Hazardous to Your Health.	14 Point Gothic.

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

(2) The perimeter of the disposal site must be fenced in a manner adequate to deter access by the general public.

(3) Upon request and supply of appropriate information, the Administrator will determine whether a fence or a natural barrier adequately deters access by the general public.

(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 Sec. 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 leak-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 Sec. 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.

(Secs. 112 and 301(a) of the Clean Air Act as amended (42 U.S.C. 7412, 7601(a))

[49 FR 13661, Apr. 5, 1990. Redesignated and amended at 55 FR 48431, Nov. 20, 1990; 56 FR 1669, Jan. 16, 1991]

Sec. 61.155 Standard for operations that convert asbestos-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 Sec. 61.07.

(2) In addition to the information requirements of Sec. 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 Sec. 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 Sec. 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 Sec. 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 Sec. 61.155(c).

(3) Results of the monthly composite analyses required under Sec. 61.155(d).

(4) Results of continuous monitoring and logs of process operating parameters required under Sec. 61.155 (c) and (d).

(5) The information on waste shipments received as required in Sec. 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 Sec. 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 Sec. Sec. 61.150 and 61.154 or reprocessed while all of the established operating parameters are being met.

[55 FR 48431, Nov. 20, 1990]

Sec. 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 Sec. Sec. 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.

TABLE 1--CROSS-REFERENCE TO OTHER ASBESTOS REGULATIONS

Agency	CFR Citation	Comment
EPA	40 CFR part 763, subpart E…….	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 part 427……..	Effluent standards for asbestos manufacturing source categories.
	40 CFR part 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, permissible exposure level.
	29 CFR 1926.1101……..	Worker protection measures for all construction work involving asbestos, including demolition and renovation-work practices, worker training, bagging of waste, permissible exposure level.
MSHA	30 CFR part 56, subpart D……	Specifies exposure limits, engineering controls, and respiratory protection measures for workers in surface mines.
	30 CFR part 57, subpart D……	Specifies exposure limits, . engineering controls, and respiratory protection measures for workers in underground mines.
DOT	49 CFR parts 171 and 172……...	Regulates the transportation of asbestos-containing waste material. Requires waste containment and shipping papers

[55 FR 48432, Nov. 20, 1990, as amended at 60 FR 31920, June 19, 1995;

68 FR 54793, Sept. 18, 2003; 69 FR 43324, July 20, 2004]

Sec. 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).

[55 FR 48433, Nov. 20, 1990]

Appendix A to Subpart M of Part 61--Interpretive Rule Governing Roof Removal Operations

I. Applicability of the Asbestos NESHAP

1.1. Asbestos-containing material (ACM) is material containing more than one percent asbestos as determined using the methods specified in appendix E, subpart E, 40 CFR part 763, section 1, Polarized Light Microscopy. The NESHAP classifies ACM as either “friable” or“nonfriable”. Friable ACM is ACM that, when dry, can be crumbled, pulverized or reduced to powder by hand pressure. Nonfriable ACM is ACM that, when dry, cannot be crumbled, pulverized or reduced to powder by hand pressure.

1.2. Nonfriable ACM is further classified as either Category I ACM or Category II ACM. Category I ACM and Category II ACM are distinguished from each other by their potential to release fibers when damaged. Category I ACM includes asbestos-containing gaskets, packings, resilient floor coverings, resilient floor covering mastic, and asphalt roofing products containing more than one percent asbestos. Asphalt roofing products which may contain asbestos include built-up roofing; asphalt-containing single ply membrane systems; asphalt shingles; asphalt-containing underlayment felts; asphalt-containing roof

coatings and mastics; and asphalt-containing base flashings. ACM roofing products that use other bituminous or resinous binders (such as coal tars or pitches) are also considered to be Category I ACM. Category II ACM includes all other nonfriable ACM, for example, asbestos-cement (A/C) shingles, A/C tiles, and transite boards or panels containing more than one percent asbestos. Generally speaking, Category II ACM is more likely to become friable when damaged than is Category I ACM. The applicability of the NESHAP to Category I and II ACM depends on: (1) the condition of the material at the time of demolition or renovation, (2) the nature of the operation to which the material will be subjected, (3) the amount of ACM involved.

1.3. Asbestos-containing material regulated under the NESHAP is referred to as ``regulated asbestos-containing material" (RACM). RACM is defined in Sec. 61.141 of the NESHAP and includes: (1) friable asbestos-containing material; (2) Category I nonfriable ACM that has become friable; (3) Category I nonfriable ACM that has been or will be sanded, ground, cut, or abraded; or (4) Category II nonfriable ACM that has already been or is likely to become crumbled, pulverized, or reduced to powder. If the coverage threshold for RACM is met or exceeded in a renovation or demolition operation, then all friable ACM in the operation, and in certain situations, nonfriable ACM in the operation, are subject to the NESHAP.

A. Threshold Amounts of Asbestos-Containing Roofing Material

1.A.1. The NESHAP does not cover roofing projects on single family homes or on residential buildings containing four or fewer dwelling units. 40 CFR 61.141. For other roofing renovation projects, if the total asbestos-containing roof area undergoing renovation is less than

160 ft\2\, the NESHAP does not apply, regardless of the removal method to be used, the type of material (Category I or II), or its condition (friable versus nonfriable). 40 CFR 61.145(a)(4). However, EPA would recommend the use of methods that damage asbestos-containing roofing material as little as possible. EPA has determined that where a rotating blade (RB) roof cutter or equipment that similarly damages the roofing material is used to remove Category I nonfriable asbestos-containing roofing material, the removal of 5580 ft\2\ of that material will create 160 ft\2\ of RACM. For the purposes of this interpretive rule, ``RB roof cutter" means an engine-powered roof cutting machine with one or more rotating cutting blades the edges of which are blunt. (Equipment with blades having sharp or tapered edges, and/or which does not use a rotating blade, is used for “slicing” rather than “cutting” the roofing material; such equipment is not included in the term ``RB roof cutter".) Therefore, it is EPA's interpretation that when an RB roof cutter or equipment that similarly damages the roofing material is used to remove Category I nonfriable asbestos-containing roofing material, any project that is 5580 ft\2\ or greater is subject to the

NESHAP; conversely, it is EPA's interpretation that when an RB roof cutter or equipment that similarly damages the roofing material is used to remove Category I nonfriable asbestos-containing roofing material in a roof removal project that is less than 5580 ft\2\, the project is not subject to the NESHAP, except that notification is always required for demolitions. EPA further construes the NESHAP to mean that if slicing or other methods that do not sand, grind, cut or abrade will be used on Category I nonfriable ACM, the NESHAP does not apply, regardless of the area of roof to be removed.

1.A.2. For asbestos cement (A/C) shingles (or other Category II roofing material), if the area of the roofing material to be removed is at least 160 ft\2\ and the removal methods will crumble, pulverize, reduce to powder, or contaminate with RACM (from other ACM that has been crumbled, pulverized or reduced to powder) 160 ft\2\ or more of such roofing material, the removal is subject to the NESHAP. Conversely, if the area of the A/C shingles (or other Category II roofing materials) to be removed is less than 160 ft\2\, the removal is not subject to the NESHAP regardless of the removal method used, except that notification is always required for demolitions. 40 CFR 61.145(a). However, EPA would recommend the use of methods that damage asbestos-containing roofing material as little as possible. If A/C shingles (or other Category II roofing materials) are removed without 160 ft\2\ or more of such roofing material being crumbled, pulverized, reduced to powder, or contaminated with RACM (from other ACM that has been crumbled, pulverized or reduced to powder), the operation is not subject to the NESHAP, even where the total area of the roofing material to be removed exceeds 160 ft\2\; provided, however, that if the renovation includes other operations involving RACM, the roof removal operation is covered if the total area of RACM from all renovation activities exceeds 160 ft\2\. See the definition of regulated asbestos-containing material (RACM), 40 CFR 61.141.

1.A.3. Only roofing material that meets the definition of ACM can qualify as RACM subject to the NESHAP. Therefore, to determine if a removal operation that meets or exceeds the coverage threshold is subject to the NESHAP, any suspect roofing material (i.e. roofing material that may be ACM) should be tested for asbestos. If any such roofing material contains more than one percent asbestos and if the removal operation is covered by the NESHAP, then EPA must be notified and the work practices in Sec. 61.145(c) must be followed. In EPA's

view, if a removal operation involves at least the threshold level of suspect material, a roofing contractor may choose not to test for asbestos if the contractor follows the notification and work practice requirements of the NESHAP.

B. A/C Shingle Removal (Category II ACM Removal)

1.B.1. A/C shingles, which are Category II nonfriable ACM, become regulated ACM if the material 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. 40 CFR 61.141. However, merely breaking an A/C shingle (or any other category II ACM) that is not friable may not necessarily cause the material to become RACM. A/C shingles are typically nailed to buildings on which they are attached. EPA believes that the extent of breakage that will normally result from carefully removing A/C shingles and lowering the shingles to the ground will not result in crumbling, pulverizing or reducing the shingles to powder. Conversely, the extent of breakage that will normally occur if the A/C shingles are dropped from a building or scraped off of a building with heavy machinery would cause the shingles to become RACM. EPA therefore construes the NESHAP to mean that the removal of A/C shingles that are not friable, using methods that do not crumble, pulverize, or reduce the A/C shingles to powder (such as pry bars, spud bars and shovels to carefully pry the material), is not subject to the NESHAP provided that the A/C shingles are properly handled during and after removal, as discussed in this paragraph and the asbestos NESHAP. This interpretation also applies to other Category II nonfriable asbestos-containing roofing materials.

C. Cutting vs. Slicing and Manual Methods for Removal of Category I ACM

1.C.1. Because of damage to the roofing material, and the potential for fiber release, roof removal operations using rotating blade (RB) roof cutters or other equipment that sand, grind, cut or abrade the roof material are subject to the NESHAP. As EPA interprets the NESHAP, the use of certain manual methods (using equipment such as axes, hatchets, or knives, spud bars, pry bars, and shovels, but not saws) or methods that slice, shear, or punch (using equipment such as a power slicer or power plow) does not constitute “cutting, sanding, grinding or abrading.” This is because these methods do not destroy the structural matrix or integrity of the material such that the material is crumbled, pulverized or reduced to powder. Hence, it is EPA's interpretation that when such methods are used, assuming the roof material is not friable, the removal operation is not subject to the regulation.

1.C.2. Power removers or power tear-off machines are typically used to pry the roofing material up from the deck after the roof membrane has been cut. It is EPA's interpretation that when these machines are used to pry roofing material up, their use is not regulated by the NESHAP.

1.C.3. As noted previously, the NESHAP only applies to the removal

of asbestos-containing roofing materials. Thus, the NESHAP does not apply to the use of RB cutters to remove non-asbestos built up roofing (BUR). On roofs containing some asbestos-containing and some

non-asbestos-containing materials, coverage under the NESHAP depends on the methods used to remove each type of material in addition to other coverage thresholds specified above. For example, it is not uncommon for existing roofs to be made of non-asbestos BUR and base flashings that do contain asbestos. In that situation, EPA construes the NESHAP to be inapplicable to the removal of the non-asbestos BUR using an RB cutter so long as the RB cutter is not used to cut 5580 ft\2\ or more of the asbestos-containing base flashing or other asbestos-containing material into sections. In addition, the use of methods that slice, shear, punch or pry could then be used to remove the asbestos flashings and not trigger coverage under the NESHAP.

II. Notification

2.1. Notification for a demolition is always required under the NESHAP. However, EPA believes that few roof removal jobs constitute “demolitions” as defined in the NESHAP (Sec. 61.141). In particular, it is EPA's view that the removal of roofing systems (i.e., the roof membrane, insulation, surfacing, coatings, flashings, mastic, shingles, and felt underlayment), when such removal is not a part of a demolition project, constitutes a “renovation” under the NESHAP. If the operation is a renovation, and Category I roofing material is being removed using either manual methods or slicing, notification is not required by the NESHAP. If Category II material is not friable and will be removed without crumbling, pulverizing, or reducing it to powder, no notification is required. Also, if the renovation involves less than the threshold area for applicability as discussed above, then no notification is required. However, if a roof removal meets the applicability and threshold requirements under the NESHAP, then EPA (or the delegated agency) must be notified in advance of the removal in accordance with the requirements of Sec. 61.145(b), as follows:

Notification must be given in writing at least 10 working days in advance and must include the information in Sec.61.145(b)(4), except for emergency renovations as discussed below.

The notice must be updated as necessary, including, for example, when the amount of asbestos-containing roofing material reported changes by 20 percent or more.

EPA must be notified if the start date of the roof removal changes. If the start date of a roof removal project is changed to an earlier date, EPA must be provided with a written notice of the new start date at least 10 working days in advance. If the start date changes to a later date, EPA must be notified by telephone as soon as possible before the original start date and a written notice must be sent as soon as possible.

For emergency renovations (as defined in Sec.61.141), where work must begin immediately to avoid safety or public health hazards, equipment damage, or unreasonable financial burden, the notification must be postmarked or delivered to EPA as soon as possible, but no later than the following work day.

III. Emission Control Practices

A. Requirements To Adequately Wet and Discharge No Visible Emission

3.A.1. The principal controls contained in the NESHAP for removal operations include requirements that the affected material be adequately wetted, and that asbestos waste be handled, collected, and disposed of properly. The requirements for disposal of waste materials are discussed separately in section IV below. The emission control requirements discussed in this section III apply only to roof removal operations that are covered by the NESHAP as set forth in Section I above.

3.A.2. For any operation subject to the NESHAP, the regulation (Sec. Sec. 61.145(c)(2)(i), (3), (6)(i)) requires that RACM be adequately wet (as defined in Sec. 61.141) during the operation that damages or disturbs the asbestos material until collected for disposal.

3.A.3. When using an RB roof cutter (or any other method that sands, grinds, cuts or abrades the roofing material) to remove Category I asbestos-containing roofing material, the emission control requirements of Sec. 61.145(c) apply as discussed in Section I above. EPA will consider a roof removal project to be in compliance with the “adequately wet” and “discharge no visible emission” requirements of the NESHAP if the RB roof cutter is equipped and operated with the following: (1) a blade guard that completely encloses the blade and extends down close to the roof surface; and (2) a device for spraying a fine mist of water inside the blade guard, and which device is in operation during the cutting of the roof.

B. Exemptions From Wetting Requirements

3.B.1. The NESHAP provides that, in certain instances, wetting may not be required during the cutting of Category I asbestos roofing material with an RB roof cutter. If EPA determines in accordance with Sec. 61.145(c)(3)(i), that wetting will unavoidably damage the building, equipment inside the building, or will present a safety hazard while stripping the ACM from a facility component that remains in place, the roof removal operation will be exempted from the requirement to wet during cutting. EPA must have sufficient written information on which to base such a decision. Before proceeding with a dry removal, the contractor must have received EPA's written approval. Such exemptions will be made on a case-by-case basis.

3.B.2. It is EPA's view that, in most instances, exemptions from the wetting requirements are not necessary. Where EPA grants an exemption from wetting because of the potential for damage to the building, damage to equipment within the building or a safety hazard, the NESHAP specifies alternative control methods (Sec. 61.145(c)(3)(i)(B)). Alternative control methods include (a) the use of local exhaust ventilation systems that capture the dust, and do not produce visible emissions, or (b) methods that are designed and operated in accordance with the requirements of Sec. 61.152, or (c) other methods that have received the written approval of EPA. EPA will consider an alternative emission control method in compliance with the NESHAP if the method has received written approval from EPA and the method is being implemented consistent with the approved procedures (Sec. 61.145(c)(3)(ii) or Sec.61.152(b)(3)).

3.B.3. An exemption from wetting is also allowed when the air or roof surface temperature at the point of wetting is below freezing, as specified in Sec. 61.145(c)(7). If freezing temperatures are indicated as the reason for not wetting, records must be kept of the temperature at the beginning, middle and end of the day on which wetting is not performed and the records of temperature must be retained for at least 2 years. 42 CFR Sec. 61.145(c)(7)(iii). It is EPA's interpretation that in such cases, no written application to, or written approval by the Administrator is needed for using emission control methods listed in Sec. 61.145(c)(3)(i)(B), or alternative emission control methods that have been previously approved by the Administrator. However, such written application or approval is required for alternative emission control methods that have not been previously approved. Any dust and debris collected from cutting must still be kept wet and placed in containers. All of the other requirements for notification and waste disposal would continue to apply as described elsewhere in this notice and the Asbestos NESHAP.

C. Waste Collection and Handling

3.C.1. It is EPA's interpretation that waste resulting from slicing and other methods that do not cut, grind, sand or abrade Category I nonfriable asbestos-containing roofing material is not subject to the NESHAP and can be disposed of as nonasbestos waste. EPA further construes the NESHAP to provide that if Category II roofing material (such as A/C shingles) is removed and disposed of without crumbling, pulverizing, or reducing it to powder, the waste from the removal is not subject to the NESHAP waste disposal requirements. EPA also interprets the NESHAP to be inapplicable to waste resulting from roof removal operations that do not meet or exceed the coverage thresholds described in section I above. Of course, other State, local, or Federal regulations may apply.

3.C.2. It is EPA's interpretation that when an RB roof cutter, or other method that similarly damages the roofing material, is used to cut Category I asbestos containing roofing material, the damaged material from the cut (the sawdust or debris) is considered asbestos containing waste subject to Sec. 61.150 of the

NESHAP, provided the coverage thresholds discussed above in section 1 are met or exceeded. This sawdust or debris must be disposed of at a disposal site operated in accordance with the NESHAP. It is also EPA's interpretation of the NESHAP that if the remainder of the roof is free of the sawdust and debris generated by the cutting, or if such sawdust or debris is collected as discussed below in paragraphs 3.C.3, 3.C.4, 3.C.5 and 3.C.6, the remainder of the roof can be disposed of as nonasbestos waste because it is considered to be Category I nonfriable material (as long as the remainder of the roof is in fact nonasbestos material or if it is Category I asbestos material and the removal methods do not further sand, grind, cut or abrade the roof material). EPA further believes that if the roof is not cleaned of such sawdust or debris, i.e., it is contaminated, then it must be treated as asbestos-containing waste material and be handled in accordance with Sec. 61.150.

3.C.3. In order to be in compliance with the NESHAP while using an RB roof cutter (or device that similarly damages the roofing material) to cut Category I asbestos containing roofing material, the dust and debris resulting from the cutting of the roof should be collected as

soon as possible after the cutting operation, and kept wet until collected and placed in leak-tight containers. EPA believes that where the blade guard completely encloses the blade and extends down close to the roof surface and is equipped with a device for spraying a fine mist of water inside the blade guard, and the spraying device is in operation during the cutting, most of the dust and debris from cutting will be confined along the cut. The most efficient methods to collect the dust and debris from cutting are to immediately collect or vacuum up the damaged material where it lies along the cut using a filtered vacuum cleaner or debris collector that meets the requirements of 40 CFR 61.152 to clean up as much of the debris as possible, or to gently sweep up the bulk of the debris, and then use a filtered vacuum cleaner that meets the requirements of 40 CFR 61.152 to clean up as much of the remainder of the debris as possible. On smooth surfaced roofs (nonaggregate roofs), sweeping up the debris and then wet wiping the surface may be done in place of using a filtered vacuum cleaner. It is EPA's view that if these decontamination procedures are followed, the remaining roofing material does not have to be collected and disposed of as asbestos waste. Additionally, it is EPA's view that where such decontamination procedures are followed, if the remaining portions of the roof are non-asbestos or Category I nonfriable asbestos material, and if the remaining portions are removed using removal methods that slice, shear, punch or pry, as discussed in section 1.C above, then the remaining portions do not have to be collected and disposed of as asbestos waste and the NESHAP's no visible emissions and adequately wet requirements are not applicable to the removal of the remaining portions. In EPA's interpretation, the failure of a filtered vacuum cleaner or debris collector to collect larger chunks or pieces of damaged

roofing material created by the RB roof cutter does not require the remaining roofing material to be handled and disposed of as asbestos waste, provided that such visible chunks or pieces of roofing material are collected (e.g. by gentle sweeping) and disposed of as asbestos waste. Other methods of decontamination may not be adequate, and should be approved by the local delegated agency.

3.C.4. In EPA's interpretation, if the debris from the cutting is not collected immediately, it will be necessary to lightly mist the dust or debris, until it is collected, as discussed above, and placed in containers. The dust or debris should be lightly misted frequently enough to prevent the material from drying, and to prevent airborne emissions, prior to collection as described above. It is EPA's interpretation of the NESHAP that if these procedures are followed, the remaining roofing material does not have to be collected and disposed of as asbestos waste, as long as the remaining roof material is in fact nonasbestos material or if it is Category I asbestos material and the removal methods do not further sand, grind, cut or abrade the roof material.

3.C.5. It is EPA's interpretation that, provided the roofing material is not friable prior to the cutting operation, and provided the roofing material has not been made friable by the cutting operation, the appearance of rough, jagged or damaged edges on the remaining roofing material, due to the use of an RB roof cutter, does not require that such remaining roofing material be handled and disposed of as asbestos waste. In addition, it is also EPA's interpretation that if the sawdust or debris generated by the use of an RB roof cutter has been collected as discussed in paragraphs 3.C.3, 3.C.4 and 3.C.6, the presence of dust along the edge of the remaining roof material does not render such material ``friable" for purposes of this interpretive rule or the NESHAP, provided the roofing material is not friable prior to the cutting operation, and provided that the remaining roofing material near the cutline has not been made friable by the cutting operation. Where roofing material near the cutline has been made friable by the use of the RB cutter (i.e. where such remaining roofing material near the cutline can be crumbled, pulverized or reduced to powder using hand pressure), it is EPA's interpretation that the use of an encapsulant will ensure that such friable material need not be treated or disposed of as asbestos containing waste material. The encapsulant may be applied to the friable material after the roofing material has been collected into stacks for subsequent disposal as nonasbestos waste. It is EPA's view that if the encapsulation procedure set forth in this paragraph is followed in operations where roofing material near the cutline has been rendered friable by the use of an RB roof cutter, and if the decontamination procedures set forth in paragraph 3.C.3 have been followed, the NESHAP's no visible emissions and adequately wet requirements would be met for the removal, handling and disposal of the remaining roofing material.

3.C.6. As one way to comply with the NESHAP, the dust and debris from cutting can be placed in leak-tight containers, such as plastic bags, and the containers labeled using warning labels required by OSHA (29 CFR 1926.58). In addition, the containers must have labels that identify the waste generator (such as the name of the roofing contractor, abatement contractor, and/or building owner or operator) and the location of the site at which the waste was generated.

IV. Waste Disposal

A. Disposal Requirements

4.A.1. Section 61.150(b) requires that, as soon as is practical, all collected dust and debris from cutting as well as any contaminated roofing squares, must be taken to a landfill that is operated in accordance with Sec. 61.154 or to an EPA-approved site that converts asbestos waste to nonasbestos material in accordance with Sec. 61.155. During the loading and unloading of affected waste, asbestos warning signs must be affixed to the vehicles.

B. Waste Shipment Record

4.B.1. For each load of asbestos waste that is regulated under the NESHAP, a waste shipment record (WSR) must be maintained in accordance with Sec. 61.150(d). Information that must be maintained for each waste load includes the following:

Name, address, and telephone number of the waste generator

Name and address of the local, State, or EPA regional office responsible for administering the asbestos NESHAP program

Quantity of waste in cubic meters (or cubic yards)

Name and telephone number of the disposal site operator

Name and physical site location of the disposal site

Date transported

Name, address, and telephone number of the transporter(s)

Certification that the contents meet all government regulations for transport by highways.

4.B.2. The waste generator is responsible for ensuring that a copy of the WSR is delivered to the disposal site along with the waste shipment. If a copy of the WSR signed by the disposal site operator is not returned to the waste generator within 35 days, the waste generator must contact the transporter and/or

the disposal site to determine the status of the waste shipment. 40 CFR 61.150(d)(3). If the signed WSR is not received within 45 days, the waste generator must report, in writing, to the responsible NESHAP program agency and send along a copy of the WSR. 40 CFR 61.150(d)(4). Copies of WSRs, including those signed by the disposal site operator, must be retained for at least 2 years. 40 CFR 61.150(d)(5).

V. Training

5.1. For those roof removals that are subject to the NESHAP, at least one on-site supervisor trained in the provisions of the NESHAP must be present during the removal of the asbestos roofing material. 40 CFR 61.145(c)(8). In EPA's view, this person can be a job foreman, a hired consultant, or someone who can represent the building owner or contractor responsible for the removal. In addition to the initial training requirement, a refresher training course is required every 2 years. The NESHAP training requirements became effective on November 20, 1991.

5.2. Asbestos training courses developed specifically to address compliance with the NESHAP in roofing work, as well as courses developed for other purposes can satisfy this requirement of the NESHAP, as long as the course covers the areas specified in the regulation. EPA believes that Asbestos Hazard Emergency Response Act (AHERA) training courses will, for example, satisfy the NESHAP training requirements. However, nothing in this interpretive rule or in the NESHAP shall be deemed to require that roofing contractors or roofing workers performing operations covered by the NESHAP must be trained or accredited under AHERA, as amended by the Asbestos School Hazard Abatement Reauthorization Act (ASHARA). Likewise, state or local authorities may independently impose additional training, licensing, or accreditation requirements on roofing contractors performing operations covered by the NESHAP, but such additional training, licensing or accreditation is not called for by this interpretive rule or the federal NESHAP.

5.3. For removal of Category I asbestos containing roofing material where RB roof cutters or equipment that similarly damages the asbestos-containing roofing material are used, the NESHAP training requirements (Sec. 61.145(c)(8)) apply as discussed in Section I above. It is EPA's intention that removal of Category I asbestos-containing roofing material using hatchets, axes, knives, and/or the use of spud bars, pry bars and shovels to lift the roofing material, or similar removal methods that slice, punch, or shear the roof membrane are not subject to the training requirements, since these methods do not cause the roof removal to be subject to the NESHAP. Likewise, it is EPA's intention that roof removal operations involving Category II nonfriable ACM are not subject to the training requirements where such operations are not subject to the NESHAP as discussed in section I above.

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