



U.S. ENVIRONMENTAL PROTECTION

OFFICE OF INSPECTOR GENERAL

Pollution Prevention

EPA Should Update Guidance to Address the Release of Potentially Harmful Quantities of Asbestos That Can Occur Under EPA's Asbestos Demolition Standard

Report No. 15-P-0168

June 16, 2015



Scan this mobile code to learn more about the EPA OIG.

Trademark Disclaimer Notice: Mention of trade names, products or services does not convey, and should not be interpreted as conveying, official EPA approval, endorsement or recommendation.

Report Contributors:

Michael Wilson
Eric Lewis
Christine El-Zoghbi
Ben Beeson
Wendy Wierzbicki
Hilda Canes Garduño

Abbreviations

AACM	Alternative Asbestos Control Method
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
EPA	U.S. Environmental Protection Agency
NESHAP	National Emission Standards for Hazardous Air Pollutants
OAR	Office of Air and Radiation
OECA	Office of Enforcement and Compliance Assurance
OIG	Office of Inspector General
ORD	Office of Research and Development
OSWER	Office of Solid Waste and Emergency Response
PCM	Phase Contrast Microscopy
RACM	Regulated asbestos-containing materials
TEM	Transmission Electron Microscopy

Cover photo: Demolition and wetting of the AACM2 building. (EPA photo)

Are you aware of fraud, waste or abuse in an EPA program?

EPA Inspector General Hotline

1200 Pennsylvania Avenue, NW (2431T)
Washington, DC 20460
(888) 546-8740
(202) 566-2599 (fax)
OIG_Hotline@epa.gov

More information at www.epa.gov/oig/hotline.html.

EPA Office of Inspector General

1200 Pennsylvania Avenue, NW (2410T)
Washington, DC 20460
(202) 566-2391
www.epa.gov/oig

Subscribe to our [Email Updates](#)
Follow us on Twitter [@EPAoig](#)
Send us your [Project Suggestions](#)



At a Glance

Why We Did This Review

The U.S. Environmental Protection Agency (EPA), Office of Inspector General (OIG), evaluated the EPA's Alternative Asbestos Control Method (AACM) experiments to assess the amount of asbestos released into the environment. During a separate OIG review, we found conditions that caused us to review the impact of a portion of the Asbestos National Emission Standards for Hazardous Air Pollutants (Asbestos NESHAP).

Since 1973, the EPA's Asbestos NESHAP regulation has allowed buildings that are structurally unsound and in imminent danger of collapse to be demolished without first removing regulated asbestos-containing materials. The demolition of these buildings resulted in the generation of highly contaminated asbestos runoff wastewater.

This report addresses the following EPA goal or cross-agency strategy:

- *Addressing climate change and improving air quality.*

Send all inquiries to our public affairs office at (202) 566-2391 or visit www.epa.gov/oig.

The full report is at: www.epa.gov/oig/reports/2015/20150616-15-P-0168.pdf

EPA Should Update Guidance to Address the Release of Potentially Harmful Quantities of Asbestos That Can Occur Under EPA's Asbestos Demolition Standard

What We Found

The AACM experiments show that under the EPA's Asbestos NESHAP standard, the demolition of buildings that are structurally unsound and in imminent danger of collapse, and constructed with an asbestos-containing joint compound or Transite, can release significant amounts of asbestos into runoff wastewater.

The untreated discharge of runoff wastewater can contaminate the soil at the site or the water into which it is discharged. The AACM experiments demonstrate that the amount of asbestos released into runoff wastewater can often exceed the legally reportable quantity for asbestos, which is 1 pound in a 24-hour period. As a result, the Asbestos NESHAP demolitions under the Code of Federal Regulations (CFR) at 40 CFR § 61.145(a)(3) could require notification to the National Response Center in compliance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) § 103 if a reportable quantity is released into the environment.

Upon a CERCLA § 103 notification, the EPA is tasked with determining the seriousness of the release and the need for an immediate response or cleanup. To be consistent with the CERCLA process where reportable quantity releases are occurring during Asbestos NESHAP demolitions, the EPA needs to assess the potential public health risk posed by these releases.

Under the EPA's asbestos demolition standard, demolishing buildings that are structurally unsound and in imminent danger of collapse can release enough asbestos into the environment to pose a potential risk to human health.

Planned Corrective Actions

The acting Assistant Administrator for Air and Radiation did not agree with our recommendations. However, the agency agreed that its guidance in the area reviewed was "dated and disparate" and proposed alternative corrective actions, which we accept. The actions include assembling a team of experienced asbestos experts to advise and assist the Office of Air and Radiation in producing an updated consolidated guidance document which has practical application to the regulated community. All recommendations are resolved.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

THE INSPECTOR GENERAL

June 16, 2015

MEMORANDUM

SUBJECT: EPA Should Update Guidance to Address the Release of Potentially Harmful Quantities of Asbestos That Can Occur Under EPA's Asbestos Demolition Standard
Report No. 15-P-0168

FROM: Arthur A. Elkins Jr.

A handwritten signature in black ink, appearing to read "Arthur A. Elkins Jr.", is placed to the right of the "FROM:" field.

TO: Janet McCabe, Acting Assistant Administrator
Office of Air and Radiation

This is our report on the subject review conducted by the Office of Inspector General (OIG) of the U.S. Environmental Protection Agency (EPA). This report contains findings that describe the problems the OIG has identified and planned corrective actions. This report represents the opinion of the OIG and does not necessarily represent the final EPA position. EPA managers, in accordance with established audit resolution procedures, will make final determinations on matters in this report.

The EPA office with primary responsibility for the issues evaluated in this report is the Office of Air Quality Planning and Standards within the Office of Air and Radiation.

Action Required

You are not required to provide a written response to this final report because you provided agreed-to corrective actions and planned completion dates to address the issues noted. The OIG may make periodic inquiries on your progress in implementing these corrective actions. Should you choose to provide a final response, we will post your response on the OIG's public website, along with our memorandum commenting on your response. You should provide your response as an Adobe PDF file that complies with the accessibility requirements of Section 508 of the Rehabilitation Act of 1973, as amended.

We will post this report to our website at <http://www.epa.gov/oig>.

Table of Contents

Purpose	1
Background	1
Asbestos NESHAP	2
Asbestos NESHAP Demolitions.....	2
Reportable Quantity of Asbestos Under CERCLA	4
Use of CERCLA § 103 Notifications.....	4
CERCLA § 103 Enforcement.....	4
EPA’s Alternative Asbestos Control Method Project	4
Responsible Office	7
Scope and Methodology	7
Results of Review	8
Imminent Collapse Provision Can Result in the Release of Reportable Quantities of Asbestos.....	9
Number of Asbestos Fibers in AACM1 and AACM2 Runoff Wastewater.....	9
Weight of Asbestos in AACM1 and AACM2 Runoff Wastewater.....	10
Minimum Building Size That Can Release a Reportable Quantity of Asbestos	11
Conclusion	13
Recommendations	13
Agency Response and OIG Evaluation	14
Status of Agreed-To Corrective Actions and Potential Monetary Benefits	16

Appendices

A Agency Response to Draft Report and OIG Comments	17
B Distribution	24

Purpose

Section 103(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) requires a person in charge of a facility to immediately notify the federal government, through the National Response Center,¹ of any release of a hazardous substance equal to or in excess of its reportable quantity. The Code of Federal Regulations (CFR) at 40 CFR § 302.4 sets the reportable quantity for asbestos² at 1 pound of asbestos fibers released into the environment in a 24-hour period. The Asbestos National Emission Standards for Hazardous Air Pollutants (Asbestos NESHAP) provision for the demolition of buildings that are structurally unsound and in imminent danger of collapse, which is under 40 CFR § 61.145(a)(3) (subsequently referred to as the “imminent collapse provision”), does not require facility managers to consider whether a demolition could require the notice of a CERCLA reportable quantity release.³

The U.S. Environmental Protection Agency (EPA) conducted Alternative Asbestos Control Method (AACM) experiments, which included the demolition procedures in the imminent collapse provision and collected data on the amount of asbestos released. The Office of Inspector General (OIG) evaluated data from the AACM experiments to determine whether contractor actions during demolitions under the imminent collapse provision could trigger the notice of a release as required by CERCLA § 103. The only similarity drawn between the AACM experiments and NESHAP demolitions, under the NESHAP imminent danger of collapse provision, is the potential asbestos contamination of runoff wastewater.

Background

According to the U.S. Department of Health and Human Services, asbestos is a human carcinogen with no safe level of exposure, and can lead to serious diseases such as asbestosis, lung cancer and mesothelioma. Asbestos is a mineral that readily forms thin fibers. Since the unaided human eye cannot see individual asbestos fibers, microscopes are used to test for asbestos. The EPA uses optical Phase Contrast Microscopy (PCM) or Transmission Electron Microscopy (TEM)

¹ The U.S. Coast Guard runs the National Response Center, which is the sole federal point of contact for reporting all hazardous substance releases and oil spills.

² The 1-pound reportable quantity for asbestos is a statutory limit set under CERCLA § 102(b).

³ In addition to the asbestos-related requirement set out in CERCLA, the Clean Water Act makes it unlawful to discharge any pollutant from a point source into waters that have a significant nexus to navigable waters, unless a permit is obtained under the EPA’s National Pollutant Discharge Elimination System. Point sources include industrial facilities, municipal governments and other government facilities, and discrete conveyances such as pipes and man-made ditches. Under the Clean Water Act (40 CFR Part 122(g)(7)(vii)), asbestos is a pollutant that requires a National Pollutant Discharge Elimination System permit. In this situation, it is highly plausible that runoff water from an Asbestos NESHAP demolition—which potentially contains a large amount of asbestos—may drain into a storm sewer and move into navigable waters.

to identify and count the number of asbestos fibers present in environmental samples. PCM can measure large asbestos fibers.⁴ TEM can measure both large and small asbestos fibers.⁵ Chrysotile is a specific type of asbestos that had been used in numerous building materials produced by manufacturers of floor tile, roof shingles, wall and attic insulation, drywall joint compound, “popcorn” ceiling coatings, and Transite cement boards.

Asbestos NESHAP

The intent of the Asbestos NESHAP regulation is to protect the public by minimizing the release of asbestos fibers during activities that involve the processing, handling and disposal of asbestos-containing material. In 1973, the EPA issued the Asbestos NESHAP regulation (40 CFR Part 61–Subpart M) to protect human health by reducing asbestos exposure during building demolitions and other activities. The Asbestos NESHAP is a work practice standard which has no specific numerical limits on asbestos emissions; however, it requires zero visible emissions⁶ to the outside air from activities relating to the processing, handling and disposal of asbestos-containing material.

Asbestos NESHAP Demolitions

Building demolitions take place all over the country. There is recognition of the significance of demolitions involving asbestos in buildings.

- The Maine Department of Environmental Protection states improper demolition activities may be the biggest source of asbestos exposure to the general public and trades people working on the project.⁷
- The Mississippi Department of Environmental Quality states that asbestos is a naturally occurring mineral that has been used extensively in building materials and products.⁸
- The South Dakota Department of Environment and Natural Resources state that building demolitions and renovations are a common occurrence in every town and city throughout the state and that many of these buildings contain asbestos.⁹
- A 2012 Department of Energy report stated: Many industrial structures built post-World War II up to the 1970s utilized siding and roofing materials containing asbestos fibers. Abatement has typically focused on manual removal techniques with necessary controls. However, due to their

⁴ Larger asbestos fibers are those 5 µm or longer in length, with a diameter greater than or equal to 0.3 µm.

⁵ Smaller asbestos fibers are those 5 µm or shorter in length, with a diameter less than 0.3 µm.

⁶ See definition of “adequately wet” under Section 61.141 – Definitions; Section 61.145(c)(6)(i), and Section 61.150(a).

⁷ <http://www.maine.gov/dep/waste/asbestos/inspecreqdemo.html>.

⁸ http://www.deq.state.ms.us/mdeq.nsf/page/Air_AsbestosDemolitionandRenovationOperations.

⁹ <http://denr.sd.gov/des/wm/asb/asbdemolition.aspx>.

age, many structures clad with concrete asbestos board are no longer structurally sound, making manual removal difficult if not dangerous to perform.¹⁰

Demolition personnel must follow the Asbestos NESHAP regulation for the demolition of facilities with at least:

- 260 linear feet of regulated asbestos-containing materials (RACM) on pipes.
- 160 square feet of RACM on other facility components.
- 35 cubic feet of facility components where the amount of RACM could not be measured previously.

The Asbestos NESHAP and the Occupational Safety and Health Administration regulations require trained technicians to remove RACM intact in structurally sound buildings prior to their demolition. RACM contains more than 1 percent asbestos and is capable of becoming friable (when dry, crumbled, pulverized or reduced to powder by hand pressure). Removing RACM intact prior to the demolition reduces the release of asbestos fibers into the environment.

When RACM cannot be removed safely, the imminent collapse provision allows the RACM to remain in place during the demolition of “structurally unsound and in imminent danger of collapse” buildings. However, when the RACM is left in place, it must be “adequately wet” throughout the demolition to control asbestos air emissions. The Asbestos NESHAP defines “adequately wet” as to:

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

The imminent collapse provision generates asbestos-contaminated runoff wastewater. The imminent collapse provision has no requirements to collect and treat the asbestos-contaminated runoff wastewater before its release into the environment.¹¹ The EPA explains that a release into the environment occurs when a hazardous substance is no longer contained or when waste drums are discarded

¹⁰ http://tools.niehs.nih.gov/wetp/Public/DOE_Trainers/16_ABSTRACT_AACM_at_Hanford.pdf.

¹¹ The EPA’s Asbestos NESHAP Demolition Decision Tree guidance recommends conducting a site assessment for all imminent collapse demolitions. This site assessment consists of visual inspection and comprehensive soil sampling. However, asbestos testing of soils can detect asbestos fiber content down to only 1 percent. In 2004, Office of Solid Waste and Emergency Response Directive 9345.4-05 explains that data from the Libby, Montana, Superfund site and other sites provide evidence that soil/debris containing significantly less than 1 percent asbestos can release unacceptable concentrations of asbestos fibers into the air.

or abandoned. In the case of Asbestos NESHAP demolitions, disposing of the runoff wastewater onto the ground or into a storm drain or sewer is a release into the environment.

Reportable Quantity of Asbestos Under CERCLA

CERCLA § 103(a) requires a person in charge of a facility to immediately notify the federal government (through the National Response Center) of any release of a hazardous substance equal to or in excess of its reportable quantity. CERCLA § 102(b) sets the reportable quantity for asbestos at 1 pound of asbestos fibers released into the environment in a 24-hour period. Since CERCLA § 103 has no requirements for monitoring or measuring releases, the amount of chemical released is to be estimated based on such information as past release data, engineering estimates, knowledge of the facility's operations and release history, or best professional judgment. Specifically, the EPA requires the estimation of a reportable quantity to have a sound technical basis.

Use of CERCLA § 103 Notifications

The notification of a reportable quantity allows the EPA to focus resources on releases that are more likely to pose potential threats to public health and the environment. The EPA determines the seriousness of the release and the need for an immediate response or cleanup. The National Oil and Hazardous Substances Pollution Contingency Plan § 300.405 states that a CERCLA § 103 notification is one of eight ways the EPA discovers potential hazardous waste sites for further evaluation by the Superfund program.

CERCLA § 103 Enforcement

Failure to properly notify the National Response Center of a release of a reportable quantity can result in both civil and criminal penalties. The civil penalty under CERCLA is up to \$25,000 per day for the first violation and up to \$75,000 per day for a second violation. The criminal penalty upon conviction for failing to report, or for knowingly filing a false report, is a fine and/or up to 3 years imprisonment for the first offense and up to 5 years imprisonment for a repeat offense.

EPA's Alternative Asbestos Control Method Project

Between 2005 and 2011, the EPA conducted research testing the effectiveness of an alternative demolition method to test the viability of amending the Asbestos NESHAP standard to include the AACM. During the AACM experiments, the EPA personnel and contractors wetted and demolished three buildings without removing all of the RACM prior to the demolition. The EPA personnel and

contractors collected the runoff wastewater from the first two experiments and tested it for asbestos, before filtering and releasing it into the environment.¹²

The EPA's AACM research project demolished four separate buildings—each constructed with a commonly occurring source of RACM (e.g., drywall, Transite, and popcorn ceilings). The AACM research project consisted of the AACM1, AACM2 and AACM3 demolition experiments described below.

AACM1 Experiment

The AACM1 experiment demolished two nearly identical 1940s-era Fort Chaffee Redevelopment Authority buildings located in Fort Smith, Arkansas, and measuring about 30 feet by 150 feet. The AACM1 experiment conducted a side-by-side comparison of an Asbestos NESHAP-compliant demolition to the AACM demolition process. The building demolitions occurred in April and May 2006.



AACM1 building prior to demolition. (EPA photo)



Interior of the AACM1 building shows the asbestos hazard (i.e., the asbestos-containing joint compound connecting the gypsum wallboard).¹³ (EPA photo)

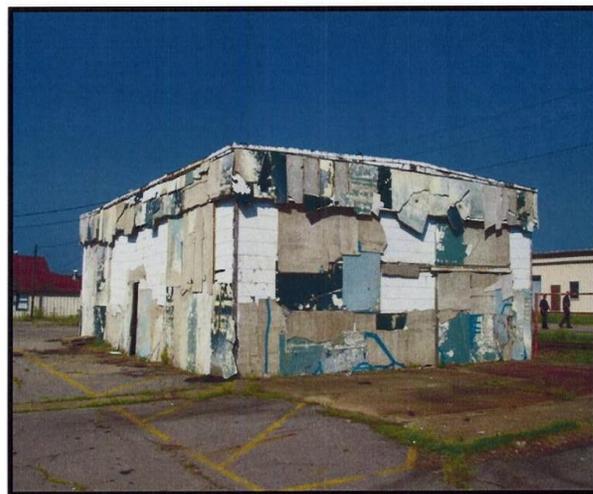
The AACM demolition building contained 20,700 square feet of gypsum wallboard having a joint compound containing 4 to 10 percent asbestos. These buildings also contained some linoleum and floor tile. The AACM1 demolition compared the AACM and NESHAP processes on two architecturally identical buildings with asbestos-containing materials such as drywall, joint compound, tape and vinyl asbestos floor tile. Additionally, the experiment provided data regarding the amount of asbestos released to the air and runoff wastewater.

¹² The Asbestos NESHAP would not allow these demolitions unless the buildings were structurally unsound and in imminent danger of collapse.

¹³ The room looks typical and requires a certified asbestos inspector to identify the hazard.

AACM2 Experiment

The AACM2 experiment demolished a World War II-era, two-story Fort Chaffee Redevelopment Authority maintenance building located in Fort Smith, Arkansas, and measuring 32 feet by 48 feet by 14 feet. The building contained 2,778 square feet of Transite siding (i.e., asbestos-cement board). AACM2 evaluated the use of the AACM process on a Transite-covered building that was in danger of imminent collapse. The demolition occurred on July 28, 2007.



AACM2 building with added asbestos-containing Transite prior to demolition. (EPA photo)

Table 1 summarizes the AACM building descriptions, type of RACM, amount of RACM present, and the asbestos content of the RACM found in the AACM1 and AACM2 experiments.¹⁴

Table 1: Characteristics of the AACM1 and AACM2 buildings

Demolition	AACM building description and footprint size	Type of RACM	Amount of RACM	Asbestos content of RACM
AACM1	Single story, wood-frame construction 30' x 150' (4,500 sq. ft.)	Joint compound	Estimated 7,762 linear feet of drywall joints connecting 20,700 sq. ft. of wallboard	4–10 percent
AACM2	Maintenance building 32' x 48' x 14' (1,536 sq. ft.)	Transite	2,778 sq. ft. of 3/8"-thick Transite cement board	30 percent

Source: The EPA's *Comparison of the Alternative Asbestos Control Method and the NESHAP Method for Demolition of Asbestos-Containing Buildings* (EPA/600/R-08/094: October 2008; revised December 2009). Also, the *Draft - Evaluation of the Alternative Asbestos Control Method at Site Two (AACM2) for Demolition of Asbestos-Containing Buildings* (EPA/600/R-09/006: October 22, 2009).

AACM3 Experiment

The AACM3 experiment demolished a 2,150-square-foot apartment building office at the former Oak Hollow Apartments in Fort Worth, Texas. The building contained 7,900 square feet of RACM in the form of popcorn ceilings and drywalls. The purpose of this experiment was to evaluate the environmental impacts of using the AACM to demolish a building that

¹⁴ The patchwork material on the outside of the building is Transite, which the EPA added to increase the amount of asbestos released for testing purposes.

contained asbestos in the form of popcorn ceilings and wall coatings. The demolition occurred on December 17, 2007.



The AACM3 building with the asbestos-containing popcorn ceilings prior to demolition. (EPA photo)

Responsible Office

The Office of Air and Radiation (OAR), Office of Air Quality Planning and Standards, administers the Asbestos NESHAP regulation and is the responsible office.

Scope and Methodology

We conducted our work from March 2012 through December 2014. We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Our evaluation scope spanned the AACM experiments conducted from 2004 through 2011. We analyzed internal and external comments about alternative demolition methods, staff correspondence gathered through the 2004 Fort Worth Method, and 2010 AACM Freedom of Information Act requests. We also interviewed current and former personnel from the EPA's Office of Policy (coordinator of the Fort Worth Method tests); OAR; Office of Enforcement and Compliance Assurance (OECA); Office of Research and Development (ORD); Office of General Counsel; Office of Solid Waste and Emergency Response (OSWER); and EPA Region 6.

We identified the following federal regulations, policies and guidance that document the requirements for reporting CERCLA § 103 releases:

Regulations. The EPA regulations addressing reportable quantities include 40 CFR Part 302 and the National Oil and Hazardous Substances Pollution Contingency Plan at § 300.170(c) and § 300.405(a).

Policies. OECA issued the EPA’s CERCLA § 103 enforcement policy on September 30, 1999. The policy is titled *Enforcement Response Policy for Sections 304, 311, and 312 of the Emergency Planning and Community Right-to-Know Act and Section 103 of the Comprehensive Environmental Response, Compensation and Liability Act*. OECA’s enforcement policy supersedes OSWER’s June 1990 penalty policy (OSWER Directive 9841.2).

Guidance. Federal guidance addressing reportable quantities includes:

- The EPA’s *Guidance for Federal Facilities on Release Notification Requirements Under CERCLA and SARA Title III* (EPA 9360.7-06: Nov. 1990).
- The Department of Energy’s *CERCLA § 103 and EPCRA § 304 Release Notification Requirements Update* (DOE/EH-0447: Jan. 1995).
- OECA’s 1990 memorandum titled *Inclusion of CERCLA Section 103(a) Counts in Asbestos NESHAP Cases*, which identifies the elements necessary to establish a CERCLA § 103(a) claim and provides a legal analysis of relevant statutes and regulations.

We applied the requirements for reporting CERCLA releases to our evaluation of whether Asbestos NESHAP demolitions using the imminent collapse provision can result in a release of a “reportable quantity” of asbestos. We used the EPA’s AACM experimental data to calculate whether the unfiltered runoff wastewater in the AACM experiments would have exceeded the reportable quantity for asbestos, if released untreated. We did not evaluate the potential amount of asbestos released into the air.

Results of Review

The OIG evaluated data from the AACM experiments to determine whether contractor compliance during NESHAP demolitions under the imminent collapse provision could trigger the notice of a release as required by CERCLA § 103. The OIG’s only source of performance data on the imminent collapse provision is from the AACM experiments, and the OIG’s evaluation of these demolitions is limited to buildings constructed with either an asbestos-containing joint compound or Transite.

Imminent Collapse Provision Can Result in the Release of Reportable Quantities of Asbestos

The AACM and the Asbestos NESHAP imminent collapse provision establish similar demolition techniques. Both techniques do not require all of the RACM to be removed prior to demolition, but require the RACM to be wetted throughout the demolition to control asbestos air emissions. Both also generate asbestos-contaminated runoff wastewater. During the first two AACM experiments, the researchers determined the concentration of asbestos in the runoff wastewater. The AACM demolitions filtered the contaminated runoff wastewater and removed the contaminated soil to limit the release of asbestos into the environment.

Demolitions under the imminent collapse provision have no requirement to collect, test or treat contaminated runoff wastewater or to remove any contaminated soil. However, for the same type of building construction and RACM content, the amount of asbestos in the unfiltered runoff wastewater observed during the AACM demolitions provides an estimate of the amount of asbestos released in contaminated runoff wastewater generated during a demolition using the imminent collapse provision. The exact amount of asbestos released into the environment during an Asbestos NESHAP demolition is not directly known, because the Asbestos NESHAP regulation is a work practice standard and does not require any monitoring or testing for asbestos emissions.

Number of Asbestos Fibers in AACM1 and AACM2 Runoff Wastewater

In both of the AACM1 and AACM2 experiments, ORD directly measured the asbestos concentrations in the unfiltered runoff wastewater and found the water to be highly contaminated with asbestos. ORD determined the amount of asbestos fibers¹⁵ released into the runoff wastewater through direct sampling and analytical testing of the runoff wastewater. AACM1 runoff wastewater contained 2.485 billion TEM structures per liter (TEM s/L). Since the AACM1 demolition generated 18,059 gallons of runoff wastewater, the unfiltered AACM1 runoff wastewater contained 170 trillion TEM structures. AACM2 runoff wastewater contained 42 billion TEM s/L. Since the AACM2 demolition generated

¹⁵ In the AACM experiments, ORD measured the amount of asbestos in the unfiltered runoff wastewater as the concentration of asbestos structures per liter (the “s/L”). The EPA’s *Asbestos-Containing Materials in Schools* regulation, implementing the Asbestos Hazard Emergency Response Act of 1986 (40 CFR Part 763, Subpart E, Appendix A(II)(A)), defines asbestos structures as asbestos in the form of bundles, clusters, fibers or matrix. Therefore, the term asbestos structures is inclusive of asbestos fibers, but also counts bundles of asbestos fibers, clusters of asbestos fibers, and asbestos sticking fibers out of matrix particles. A bundle of multiple asbestos fibers and clusters of asbestos fibers are expected to weigh more than the typical individual fiber. Since the OIG estimated the weight of asbestos fibers, the OIG’s estimation generated a lower weight than what may be actually present if the increased weight of bundles and clusters could be incorporated into the estimation. Therefore, for the OIG’s purpose of estimating a reportable quantity, the number of asbestos structures is synonymous with the number of asbestos fibers.

12,186 gallons of runoff wastewater, the unfiltered AACM2 runoff wastewater contained 1,900 trillion TEM structures. Table 2 summarizes this information.

Table 2: Calculation of TEM structures released into unfiltered runoff wastewater

Demolition	Average asbestos concentration in unfiltered runoff wastewater (TEM structures/L)	Volume of unfiltered runoff wastewater generated in a 24-hour period (gallons)	TEM structures released into unfiltered runoff wastewater (TEM structures)¹⁶
AACM1	2,485,000,000	18,059 ^a	1.7 x 10 ¹⁴
AACM2	42,000,000,000	12,186	1.9 x 10 ¹⁵

Source: OIG analysis of the EPA's *Comparison of the Alternative Asbestos Control Method and the NESHAP Method for Demolition of Asbestos-Containing Buildings* (EPA/600/R-08/094: October 2008; revised December 2009). Also, the *Draft - Evaluation of the Alternative Asbestos Control Method at Site Two (AACM2) for Demolition of Asbestos-Containing Buildings* (EPA/600/R-09/006: October 22, 2009).

Note: ^a On day one of demolition (May 1, 2006).

Weight of Asbestos in AACM1 and AACM2 Runoff Wastewater

To assess the potential for a reportable release of asbestos, the amount of asbestos fibers released during AACM1 and AACM2 experiments needs to be converted to weight in pounds. CERCLA § 103 does not require direct sampling and testing to determine whether a reportable quantity of asbestos has been released. Rather, CERCLA § 103 allows for a reasoned estimate of the size of the release. The EPA requires the estimation of a reportable quantity to have a sound technical basis.

Our estimate for the weight of asbestos exceeds the EPA requirement. We used ORD's direct measurement of the amount of asbestos fibers in AACM1 and AACM2 runoff wastewater. We converted the amount of asbestos fibers into weight by using the EPA's standard conversion factor for PCM fibers, the National Research Council's published conversion factor for TEM fibers, and the Agency for Toxic Substances and Disease Registry's published PCM fiber content of end-use commercial products.

We determined that the weight of asbestos in both of the AACM1 and AACM2 unfiltered runoff wastewater exceeded the reportable quantity for asbestos. We estimated the weight of asbestos in AACM1 and AACM2 unfiltered runoff wastewater to be 1.4 and 16 pounds, respectively. Table 3 summarizes the amount of asbestos in AACM1 and AACM2 unfiltered runoff wastewaters.

¹⁶ Calculated as follows: TEM Asbestos Structures Released into the Unfiltered Runoff Wastewater (TEM s) = Avg. Asbestos concentration (TEM s/L) x Volume of Runoff Wastewater (gallons) x 3.785 liters/gallons.

Table 3: Weight of asbestos in unfiltered runoff wastewater above the reportable quantity

Demolition	Estimated asbestos weight released into unfiltered runoff wastewater (lbs.)	Reportable quantity for asbestos (lbs. released over 24 hours)	Amount of asbestos in unfiltered runoff wastewater above the reportable quantity (lbs.)
AACM1	1.4	1.0	0.4
AACM2	16	1.0	15

Source: OIG analysis of the EPA's *Comparison of the Alternative Asbestos Control Method and the NESHAP Method for Demolition of Asbestos-Containing Buildings* (EPA/600/R-08/094: October 2008; revised December 2009). Also, the *Draft - Evaluation of the Alternative Asbestos Control Method at Site Two (AACM2) for Demolition of Asbestos-Containing Buildings* (EPA/600/R-09/006: October 22, 2009).

Our results show that if either the AACM1 or AACM2 buildings had been demolished following the Asbestos NESHAP imminent collapse provision where the same amount of RACM was left in place (i.e., where no collection or filtration of the runoff wastewater is required), the amount of asbestos released into the runoff wastewater would have exceeded the reportable quantity for asbestos and would have required the National Response Center to be notified.

Minimum Building Size That Can Release a Reportable Quantity of Asbestos

The AACM demolitions provide data to estimate when a reportable quantity of asbestos is released during Asbestos NESHAP demolitions using the imminent collapse provision. Although the amount of asbestos released into runoff wastewater depends on many variables,¹⁷ determining when a reportable quantity of asbestos could be released is helpful for understanding the scale of this issue. The AACM1 and AACM2 demolitions generated a reportable quantity of asbestos in the unfiltered runoff wastewater from: (1) buildings constructed with asbestos-containing drywall joint compound; and (2) buildings constructed with Transite.

Buildings Constructed With Asbestos-Containing Drywall Joint Compound

In a building constructed similar to the AACM1 building (i.e., 4 to 10 percent asbestos-containing joint compound being the principal asbestos fiber source), the AACM1 demolition shows that 1 pound of asbestos can be released into runoff wastewater after 3.6 hours of active demolition time.¹⁸ This is enough time to demolish 5,545 linear feet of drywall joints connecting 14,786 square feet of wallboard. In terms of building size, the AACM1 demolition shows

¹⁷ Variables include the type of RACM(s) present, the amount of each type of RACM present in the building, the asbestos content of each type of RACM, the level of wear or damage to the RACM, the friability of the RACM, the volume of water and force of the water spray used during the demolition, the type and frequency of mechanical forces used to demolish the building, and the length of the demolition.

¹⁸ "Active demolition time" is used to characterize the actual time spent performing the mechanical crushing of the building, and transferring and loading building debris into waste trucks where the spraying of amended water is used to control asbestos air emissions during the demolition.

that 1 pound of asbestos can be released into runoff wastewater after only 3,214 square feet of a building is demolished. To put this building size into perspective, the U.S. Census Bureau identified the average single-family home in 2010 as being 2,392 square feet. Therefore, the demolition of a similarly constructed building, just 1.34 times larger than the average single-family home, could be sufficient to release a reportable quantity of asbestos into runoff wastewater.

Although the demolition of single-family homes is not required to follow the Asbestos NESHAP,¹⁹ the AACM 1 experiment shows that the demolition of a large single-family home constructed with 4 to 10 percent asbestos-containing joint compound can release a reportable quantity of asbestos. Furthermore, if additional sources of RACM (e.g., popcorn ceilings or insulation) were present in the building, the minimum building size that can release a reportable quantity of asbestos upon demolition would be smaller.

Buildings Constructed With Transite

In a building constructed similar to the AACM2 building (i.e., Transite is the principal asbestos fiber source), the AACM2 demolition shows that 1 pound of asbestos can be released into runoff wastewater after just 25.4 minutes of demolition time. This is enough time to only demolish about 174 square feet of 3/8-inch thick Transite (the equivalent of 5.4 Transite wallboards measuring 4 feet by 8 feet). Since only 160 square feet of RACM present in a building invokes the requirement to follow the Asbestos NESHAP regulation, the AACM2 demolition indicates that virtually all buildings that are constructed with Transite—and are required to follow the Asbestos NESHAP—would release a reportable quantity of asbestos into the runoff wastewater upon demolition using the imminent collapse provision.

Table 4 summarizes when AACM1 and AACM2 demolitions generated a reportable quantity of asbestos into unfiltered runoff wastewater.

¹⁹ The Asbestos NESHAP regulation specifically excludes residential buildings having four or fewer dwelling units (see 40 CFR § 61.141—Definition of facility).

Table 4: AACM1 and AACM2 buildings generating a reportable quantity of asbestos upon demolition

Demolition	Type of RACM	Length of active demolition time before runoff wastewater exceeded the reportable quantity	Amount of RACM demolished before the reportable quantity for asbestos was exceeded	Minimum size of the building demolished resulting in release of a reportable quantity of asbestos
AACM1	Joint compound	3.6 hours ^a	Estimated 5,545 linear feet of joints connecting 14,786 sq. ft. of wallboard	3214 sq. ft.
AACM2	Transite	25.4 minutes ^b	174 sq. ft. of 3/8"-thick Transite; or the equivalent of 5.4 Transite wallboards measuring 4' x 8' x 3/8"	96 sq. ft.

Source: OIG analysis of the EPA's *Comparison of the Alternative Asbestos Control Method and the NESHAP Method for Demolition of Asbestos-Containing Buildings* (EPA/600/R-08/094: October 2008; revised December 2009). Also, the *Draft - Evaluation of the Alternative Asbestos Control Method at Site Two (AACM2) for Demolition of Asbestos-Containing Buildings* (EPA/600/R-09/006: October 22, 2009).

Notes: ^a At a water spray rate of 60 gallons per minute.

^b At a water spray rate of 30 gallons per minute.

Conclusion

Analysis of data collected by the EPA during the AACM experiments shows that under specific conditions Asbestos NESHAP demolitions (conducted under the “imminent danger of collapse” provision) can release significant amounts of wetted asbestos into the environment. Further, the AACM experiments demonstrate that the amount of wetted asbestos can exceed the legal standard for a reportable quantity of asbestos. As a result, Asbestos NESHAP demolitions using the imminent collapse provision could be noncompliant with CERCLA § 103 if a reportable quantity is released into the environment and not reported, or improperly reported. Because Asbestos NESHAP “imminent collapse” demolitions are allowed to occur and may be releasing harmful amounts of asbestos into the environment, the EPA needs to assess the potential public health risk posed by the release of reportable quantities of asbestos and inform the regulated community of the potential CERCLA § 103 reporting requirements.

Recommendations

We recommended that the Assistant Administrator for Air and Radiation:

1. Conduct an evaluation of the potential public health risk posed by the release of asbestos fibers through the untreated discharge of runoff wastewater during Asbestos NESHAP 40 CFR § 61.145(a)(3) demolitions of structurally unsound buildings in imminent danger of collapse.

2. Issue a technical report that is available to the public and details the findings of the evaluation done in response to Recommendation 1.
3. Implement actions needed as a result of the technical report in a timely manner, and include regulatory reviews or reviews that respond to the report's findings.
4. Consult and communicate with other EPA offices to share and discuss information about the outcomes of the OAR evaluation; and share any process, enforcement or regulatory changes.

Agency Response and OIG Evaluation

Comments received from the acting Assistant Administrator for Air and Radiation disagreed with the recommendations. In its comments, the agency asserts that the AACM experiments were not equivalent to imminent collapse Asbestos NESHAP demolitions and, as such, do not provide an appropriate basis for comparison. After review and consideration of the agency's comments, we maintain that the AACM experiments provide an appropriate basis for comparison in order to estimate the amount of asbestos released in the runoff wastewater during imminent collapse Asbestos NESHAP demolitions.

We met with the agency to discuss our findings and recommendations. The agency proposed to review, revise and consolidate what it agreed was "dated and disparate" Asbestos NESHAP guidance to include, but not limited to, addressing the issue of mitigating future releases of asbestos-contaminated runoff wastewater into the environment during subsequent Asbestos NESHAP demolitions, under the imminent danger of collapse provision. We accept the proposed alternative corrective actions, which are listed below. We believe the new guidance should address how it applies to former imminent collapse Asbestos NESHAP demolition sites.

Agency Corrective Actions: To mitigate the potential risk associated with asbestos demolitions under the NESHAP imminent danger of collapse provision, the EPA agreed to:

1. Assemble a team of experienced asbestos experts from the Technical Review Workgroup, OECA, OSWER, Office of General Counsel, on-scene coordinators, and asbestos inspectors to advise and assist OAR in producing an updated consolidated guidance document which has practical application to the regulated community.
2. Review rule applicability regarding containment of asbestos-contaminated waste materials at demolition sites (including, but not limited to, asbestos in demolition water).
3. Identify, review and revise, as appropriate, the pertinent existing guidance documents.

4. Collect, review and compile existing work practices into a set of implementation guidelines for containment of asbestos-contaminated waste materials, and materials contaminated by asbestos during the demolition process.
5. Collect and review existing applicability determinations issued by regional offices and headquarters that have a bearing on this issue.
6. Identify and review existing sampling and analysis methods that are applicable to asbestos in various media, and incorporate into the guidance as appropriate.
7. Consolidate relevant materials into a single set of guidance materials.
8. Implement guidance via outreach to local and state agencies and regional offices through team meetings, monthly Regional Asbestos Coordinator/ National Asbestos Council group meetings, technical conferences and symposia, and/or Web-based platforms.

The agency's complete response and our comments are in Appendix A.

Status of Agreed-To Corrective Actions and Potential Monetary Benefits

ACTIONS						POTENTIAL MONETARY BENEFITS (in \$000s)	
Action No.	Page No.	Action	Status ¹	Action Official	Planned Completion Date	Claimed Amount	Agreed-To Amount
1	14	Assemble a team of experienced asbestos experts from the Technical Review Workgroup, OECA, OSWER, Office of General Counsel, on-scene coordinators, and asbestos inspectors to advise and assist OAR in producing an updated consolidated guidance document which has practical application to the regulated community.	O	Assistant Administrator for Air and Radiation	4/30/16		
2	14	Review rule applicability regarding containment of asbestos-contaminated waste materials at demolition sites (including, but not limited to, asbestos in demolition water).	O	Assistant Administrator for Air and Radiation	4/30/16		
3	14	Identify, review and revise, as appropriate, the pertinent existing guidance documents.	O	Assistant Administrator for Air and Radiation	4/30/16		
4	15	Collect, review and compile existing work practices into a set of implementation guidelines for containment of asbestos-contaminated waste materials, and materials contaminated by asbestos during the demolition process.	O	Assistant Administrator for Air and Radiation	4/30/16		
5	15	Collect and review existing applicability determinations issued by regional offices and headquarters that have a bearing on this issue.	O	Assistant Administrator for Air and Radiation	4/30/16		
6	15	Identify and review existing sampling and analysis methods that are applicable to asbestos in various media, and incorporate into the guidance as appropriate.	O	Assistant Administrator for Air and Radiation	4/30/16		
7	15	Consolidate relevant materials into a single set of guidance materials.	O	Assistant Administrator for Air and Radiation	4/30/16		
8	15	Implement guidance via outreach to local and state agencies and regional offices through team meetings, monthly Regional Asbestos Coordinator/ National Asbestos Council group meetings, technical conferences and symposia, and/or Web-based platforms.	O	Assistant Administrator for Air and Radiation	4/30/16		

¹ O = Action is open with agreed-to corrective actions pending.
 C = Action is closed with all agreed-to actions completed.
 U = Action is unresolved with resolution efforts in progress.

Agency Response to Draft Report and OIG Comments

(Received February 27, 2015)

MEMORANDUM

SUBJECT: Response to Office of Inspector General (OIG) Draft Report No. OPE-FY13-0025 “Release of Potentially Harmful Quantities of Asbestos Can Occur Under EPA’s Asbestos Demolition Standard”, dated December 29, 2014

From: Janet G. McCabe
Acting Assistant Administrator

To: Carolyn Copper
Assistant Inspector General
Office of Inspector General

Thank you for the opportunity to review and comment on the Office of Inspector General’s (OIG’s) draft report titled, “Release of Potentially Harmful Quantities of Asbestos Can Occur Under EPA’s Asbestos Demolition Standard”, (Project No. OPE-FY13-0025), December 29, 2014. Using the data from earlier Alternative Asbestos Control Method (AACM) experiments, the OIG raises a concern that there is a potential for release of asbestos to water resulting when buildings, in danger of imminent collapse,¹ are demolished under the Asbestos National Emission Standards for Hazardous Air Pollutant (NESHAP) provisions and we respond to this concern in this memo.

The draft report recommends that the Assistant Administrator for OAR take the following actions:

- 1) Conduct an evaluation of the potential public health risk posed by the release of asbestos fibers through the untreated discharge of runoff wastewater during Asbestos NESHAP 40 CFR § 61.145(a)(3) demolitions of structurally unsound buildings in imminent danger of collapse.
- 2) Issue a technical report that is made available to the public and details the findings of the evaluation done in response to Recommendation 1.

¹ Under the asbestos NESHAP, 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, the requirements of 61.145(b)(1), (b)(2), (b)(3)(iii), (b)(4) (except (b)(4)(viii)), (b)(5), and (c)(4) through (c)(9) of section 61.145 apply.

3) Implement actions needed as a result of the technical report in a timely manner, and include regulatory reviews or reviews that respond to the report's findings.

4) Consult and communicate with other EPA offices to share and discuss information about the outcomes of the OAR evaluation; and share any process, enforcement or regulatory changes.

After our meeting with the OIG on January 21 and February 19, 2015, to discuss the findings of this draft report, and after conducting discussions with other EPA offices, we disagree with the recommendations in this draft report for the following reasons:

- The AACM experiments were not the equivalent of Asbestos NESHAP demolitions performed under the imminent collapse provisions and, as such, do not provide an appropriate basis for the concern raised by the OIG or the recommendations in the draft report.

OIG Response: Comments received from the acting Assistant Administrator for Air and Radiation disagreed with the recommendations. In its comments, the agency asserts that the AACM experiments were not equivalent to imminent collapse Asbestos NESHAP demolitions and, as such, do not provide an appropriate basis for comparison. After review and consideration of the agency's comments, we maintain that the AACM experiments provide an appropriate basis for comparison in order to estimate the amount of asbestos released in the runoff wastewater during imminent collapse Asbestos NESHAP demolitions.

- The current Asbestos NESHAP work practice requirements and guidance already address the issue of potential site contamination from water runoff. In addition, action may be taken now under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) to address releases of asbestos.

OIG Response: We agree that guidance exists and we note that the OAR corrective actions will update that guidance.²

Further discussion of each of these points is provided in the attachment.

However, we share the OIG's concern regarding the potential for asbestos exposure. We recognize asbestos as a known human carcinogen, and note that there is no known safe level of exposure to asbestos. As we investigated the existing information to better understand and comment on the OIG's findings, we identified several items where we could enhance implementation of the existing NESHAP.

The asbestos NESHAP was last amended in 1990, and around the early 1990's EPA developed guidance documents to assist in implementing the rule, including demolition work practices, containment of asbestos waste at a demolition site, applicability determinations for specific inquiries regarding application of the rule, and enforcement memoranda regarding prevention of site contamination during demolition activities. A variety of work practices in the field have been

² The guidance is not a part of the NESHAP regulation.

developed to prevent off-site migration of water and contamination of nearby properties, and the science and available technology (i.e., sampling and analysis methods) in some instances may have improved since these documents were last revised. However, these documents are disparate and dated and we believe could be reviewed, revised and consolidated into a single guidance document. We note however that the Administrator, through OAR, has the authority and the responsibility to determine the level of guidance appropriate to accompany existing regulatory actions.

Therefore, we intend to take the following actions, which also address the OIG's concerns raised in this draft report:

- 1- Assemble a team of experienced asbestos experts from the TRW, OECA, OSWER, OGC, on scene coordinators (OSC) and asbestos inspectors (AI) to advise and assist OAR in producing an updated consolidated guidance document which has practical application to the regulated community.
- 2- Review rule applicability regarding containment of asbestos-contaminated waste materials at demolition sites (including, but not limited to, asbestos in demolition water).
- 3- Identify, review and revise as appropriate, the pertinent existing guidance documents.
- 4- Collect, review, and compile existing work practices into a set of implementation guidelines for containment of asbestos-contaminated waste materials, and materials contaminated by asbestos during the demolition process.
- 5- Collect and review existing applicability determinations issued by regional offices and headquarters that have a bearing on this issue.
- 6- Identify and review existing sampling and analysis methods that are applicable to asbestos in various media, and incorporate into the guidance as appropriate.
- 7- Consolidate relevant materials into a single set of guidance materials.
- 8- Implement guidance via outreach to local and state agencies and regional offices through team meetings, monthly RAC/NAC group meetings, technical conferences and symposia, and / or web-based platforms.

Our anticipated milestones are to initiate the above in March 2015 and finish within a year (or by April 2016).

OIG Response: We accept these proposed alternatives and agree that the agency's proposed actions to review, revise and consolidate its existing Asbestos NESHAP guidance may address the issue of mitigating future releases of asbestos-contaminated runoff wastewater into the environment during subsequent Asbestos NESHAP demolitions. In addition, we believe the new guidance should address how it applies to former imminent collapse Asbestos NESHAP demolition sites.

ATTACHMENT

The AACM experiments are not the Equivalent of Imminent Collapse NESHAP demolitions.

According to the Asbestos NESHAP, an ordered demolition may be issued when a building, or portion of the building, is found to be both structurally unsound *and* in danger of imminent collapse. Because inhalation is the route of asbestos exposure, the work practices of the Asbestos NESHAP address this type of exposure. Use of water during ordered demolitions to maintain “adequately wet”³ conditions minimizes release of asbestos to air from asbestos containing materials (ACM). However, to minimize the release of asbestos, the agency previously issued guidance⁴ for demolition contractors and regulatory agencies to use while implementing the requirements of the NESHAP (see References 1 and 2).

We note here, as we did in our meeting with the OIG on January 21, 2015, that the AACM experiments were not the equivalent of imminent collapse NESHAP demolitions because the following provisions required by the NESHAP for a demolition under imminent collapse were not followed.

- (1) 61.145 (c)(6)(ii) requires all RACM, including material that has been removed or stripped, to be carefully lowered to the ground and floor, not dropping, throwing, sliding, or otherwise damaging or disturbing the material. However, photographs taken during the AACM experiments showed heavy demolition equipment being driven over the regulated asbestos-containing materials (RACM).

OIG Response: This Asbestos NESHAP requirement concerns how to handle removed RACM (i.e., carefully lowering removed RACM to the ground). Since Asbestos NESHAP demolitions of structurally unsound and in imminent danger of collapse buildings are not required to remove RACM, this Asbestos NESHAP requirement is immaterial.

- (2) Section 61.150(a) requires no visible emissions to the outside air during the collection, processing packaging, or transporting of any asbestos-containing waste material. However, visible emissions were observed during the demolition(s) and waste collection activities, which is inconsistent with these requirements.

³ 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. 61.141 Definitions.

⁴ Demolition Practices Under The Asbestos NESHAP (EPA 340-1-92-013 and Decision Tree Guidelines (U.S. Environmental Protection Agency, Manufacturing, Energy, and Transportation Division, Office of Compliance. June 1994, were issued shortly after promulgation of the Asbestos NESHAP in 1990 and are used extensively by states and local agencies to whom delegation status has been approved. These materials are also used for training asbestos inspectors and are available on our website (<http://www2.epa.gov/asbestos/building-owners-and-managers#renovation>), which provides further assistance to owners/operators and state and local agencies conducting ordered demolitions.

OIG Response: We do not assert that the AACM experiments followed NESHAP requirements or were equivalent in all respects to NESHAP demolitions. As we have stated, the issue of concern is asbestos contaminating the wastewater when the buildings are demolished with the RACM intact. That occurs under the NESHAP imminent collapse provision and occurred with the AACM experiments.

(3) Sections 61.145 (c)(6)(i) and 61.150(a)(1) require that materials be adequately wet and kept wet until collected or contained or treated in preparation for disposal. Section 61.150(a)(3), which applies specifically to facilities demolished where the RACM is not removed prior to demolition, requires owners/operators to adequately wet asbestos-containing waste material at all times after demolition and keep wet during handling and loading for transport to a disposal site. However, as noted above, visible emissions were observed during the demolition(s) and waste collection activities, which is inconsistent with these requirements.

OIG Response: We do not assert that the AACM experiments followed NESHAP requirements or were equivalent in all respects to NESHAP demolitions. As we have stated the issue of concern is asbestos contaminating the wastewater when the buildings are demolished with the RACM intact. That occurs under the NESHAP imminent collapse provision and occurred with the AACM experiments.

Based on these inconsistencies with the work practice requirements of the asbestos NESHAP, the AACM experiments were not equivalent to demolitions typically conducted under the asbestos NESHAP. We also note that a previous OIG report on these experiments came to the same conclusion.⁵

OIG Response: This quote (see footnote 5) does not appear in the OIG report. Our previous report identified that the AACM is not an approved demolition technique and cannot be used for the demolition of structurally sound buildings where it is safe for contractors to remove the asbestos prior to demolition. Our previous report did not compare or evaluate the AACM experiments against the imminent collapse Asbestos NESHAP demolitions.

The current Asbestos NESHAP rule and guidance address the issue of potential site contamination from water runoff.

The guidance for demolition contractors has several sections devoted to imminent collapse demolitions. The rule includes isolation and proper disposal of RACM contaminated debris, and a post demolition site assessment. The site assessment would include visual evaluations and a comprehensive soil sampling scheme to detect any asbestos remaining in the soil. If asbestos is detected, the guidance states the site should be decontaminated.

⁵ In an OIG early warning report dated December 14, 2011, the OIG stated “it is clear that the AACM demolitions are not representative of Asbestos NESHAP-compliant demolitions.”

OIG Response: EPA's Asbestos NESHAP Demolition Decision Tree Guidance (dated June 29, 1994) recommends any NESHAP demolitions occurring without first removing all of the RACM should undergo a post-demolition site assessment. A site assessment, according to this guidance, is comprised of a visual evaluation and a comprehensive soil sampling. However, since asbestos fibers are too small to be seen by the unaided eye, asbestos soil contamination cannot be identified by a visual inspection. Therefore, we do not believe a visual inspection is health protective.

Soil testing for asbestos contamination can detect asbestos fiber content down to only 1 percent. However, OSWER Directive 9345.4-05 (issued August 10, 2004) identified that the use of the 1 percent threshold for asbestos in soil is not a risk-based site clean-up standard and may not be protective of human health. Therefore, we do not believe the current NESHAP soil testing guidance is health protective.

EPA's Asbestos NESHAP Demolition Decision Tree Guidance (dated June 29, 1994) recommends that imminent collapse Asbestos NESHAP demolition sites "must be cleaned up to background levels of asbestos contamination." This guidance also states that "to clean up the site to background levels, it will probably be necessary to remove all the asbestos contaminated soil." We believe this language acknowledges that imminent collapse Asbestos NESHAP demolitions contaminate the soil and may require it to be removed and disposed of as asbestos-containing waste.

The EPA corrective actions should address these issues.

Regulatory Actions Under CERCLA Also Address Releases of Asbestos

In addition to the work practices of the Asbestos NESHAP, action may be taken under CERCLA to address releases of asbestos. In such enforcement actions, all that must be shown is a failure to adhere to the work practices of the Asbestos NESHAP. If that is the case, then enforcement may proceed under CERCLA's definition of a release and/or failure to notify and report, and the asbestos NESHAP's provisions (61.150(a)) for failure to contain asbestos waste. CERCLA has pursued such cases since the 1980's, and these include instances in which wind blew asbestos off site, leaching of asbestos into the soil, and releases of asbestos into public and private sewer systems. EPA has previously issued guidance on the inclusion of CERCLA counts when an asbestos release has occurred (See Reference 3).

OIG Response: We agree that a failure of demolition contractors to adhere to the Asbestos NESHAP work practices may result in an enforcement action. However, we restate our concern that even fully compliant imminent collapse Asbestos NESHAP demolitions can still release reportable quantities of asbestos through the uncontrolled discharge or unfiltered discharge of the contaminated runoff wastewater. Therefore, even fully compliant imminent collapse Asbestos NESHAP demolitions could be noncompliant with CERCLA's reportable quantity requirements.

The EPA's 1990 guidance on the inclusion of CERCLA 103(a) counts in asbestos NESHAP cases (see reference 3) identifies that regardless of whether a demolition contractor knew of the reportable release of asbestos, the demolition contractor is still liable for any resulting harm from the release. The EPA should consider this in any updated NESHAP guidance issued in response to our report.

REFERENCES

1. Demolition Practices Under The Asbestos NESHAP (EPA 340-1-92-013) - <http://www2.epa.gov/asbestos/building-owners-and-managers#renovation>
2. Decision Tree Guidelines (U.S. Environmental Protection Agency, Manufacturing, Energy, and Transportation Division, Office of Compliance), June 1994 - <http://www2.epa.gov/asbestos/building-owners-and-managers#renovation>
3. Enforcement: Inclusion of CERCLA Section 103(a) Counts in Asbestos NESHAP Cases, Memorandum, June 1990 - <http://www2.epa.gov/asbestos/building-owners-and-managers#renovation>

Distribution

Office of the Administrator
Assistant Administrator for Air and Radiation
Agency Follow-Up Official (the CFO)
Agency Follow-Up Coordinator
General Counsel
Associate Administrator for Congressional and Intergovernmental Relations
Associate Administrator for Public Affairs
Deputy Assistant Administrator for Air and Radiation
Director, Office of Air Quality Planning and Standards, Office of Air and Radiation
Audit Follow-Up Coordinator, Office of Air and Radiation
Audit Follow-Up Coordinator, Office of Air Quality Planning and Standards,
Office of Air and Radiation