

Statement of  
James August, MPH

Before the  
U.S. House of Representatives  
Committee on House Administration

Regarding the  
Management of Asbestos and Hazardous Materials  
at the Smithsonian Institution

April 1, 2009



Statement of James August, MPH  
Before the U.S. House of Representatives Committee on House Administration  
Regarding the Management of Asbestos and Hazardous Materials  
at the Smithsonian Institution

I will attempt to answer this Committee's question, or at least draw reasonable conclusions that can be substantiated on available information, as to whether the Smithsonian's treatment of asbestos and other hazardous materials at the National Air and Space Museum (NASM) put employees and visitors in an unsafe environment.

1. Based on the documents I have reviewed, it appears that there have been serious deficiencies in the implementation of the Smithsonian's policies for addressing the presence of asbestos-containing materials (ACM) over a prolonged period of time.
2. OSHA regulations and the Smithsonian's own policies require notification to building service workers of the locations of ACM, providing training and appropriate equipment, conducting worker exposure monitoring, and ensuring work practices and procedures to prevent uncontrolled disturbances of asbestos.
3. Uncontrolled disturbances of asbestos-containing drywall joint compounds and other ACM that have not been performed in a manner that is prescribed by OSHA regulations and Smithsonian Institution safety policies have in all likelihood resulted in significant, albeit avoidable asbestos exposure to building service workers.
4. The diagnosis of asbestosis of a long-term employee whose job duties involved the disturbance of drywall joint compound that contained asbestos should be regarded as a sentinel health event, and the Smithsonian Institution should conduct medical screening to identify asbestos-related signs, symptoms or disease among other NASM employees, and possibly at other Smithsonian facilities.

5. Activities of building service workers and contractors that result in the uncontrolled disturbance of ACM release asbestos fibers into the surrounding environment, in this case the NASM, but there is inadequate data to make any definitive quantitative or qualitative estimates of any additional risk posed to visitors as the result of such work.

It is easy to quickly become mired in the complexities of regulations, scientific and medical considerations, and the conflicting accounts contained in the correspondence between the parties involved in the story that was reported in the Washington Post on March 15, 2009. Therefore, it is helpful to begin with a brief overview of what is known about the risks of asbestos, protective measures to prevent exposure, and laws governing asbestos-containing materials in buildings to provide some context for assessing the situation at the NASM.

All forms of asbestos, including chrysotile, the most common form of asbestos, and the type of asbestos found in the NASM, pose a serious health risk. Exposure to asbestos can cause a range of signs, symptoms and diseases. Serious and fatal diseases caused by asbestos include asbestosis, lung cancer, and mesothelioma.

No safe threshold of exposure for asbestos has been established. The Occupational Safety and Health Administration's permissible exposure limit (PEL) for asbestos, which means the amount of asbestos that workers can legally be exposed to in the course of their work, is an 8-hour time weighted average (TWA) of 0.1f per cubic centimeter. However, it is critical to emphasize that legal does not mean safe. In its 1990 notice of proposed rulemaking for asbestos, OSHA stated that there would be a serious health risk to workers who were exposed below a proposed lower PEL of 0.1f/cc TWA:

*OSHA's risk assessment also showed the persistence of a significant risk at the 0.1f/cc action level. The excess cancer risk remaining at that level is a lifetime risk of 3.4 per 1,000 workers. OSHA concludes therefore that continued exposure to asbestos at the TWA permitted level and action level presents residual risks to employees which are still significant. (Federal Register Vol. 55 No.140, July 20, 1990, p.29,714)*

The key to protecting building service workers, and by extension other staff and visitors, is to prevent the uncontrolled disturbance of ACM by custodians, maintenance workers, and contractors. The regimen to accomplish this goal involves a building inspection to identify the locations of ACM, an assessment to evaluate the existing and potential for exposure, notification to staff, training of staff appropriate to their likelihood to disturb ACM, work practices and equipment to avoid uncontrolled disturbances of ACM, exposure monitoring and medical surveillance for employees whose duties require them to disturb asbestos, and other measures. There has been a long, and for some of us, an almost torturously protracted regulatory history and development of guidance that has firmly established the necessary and required framework to protect building service workers and other occupants from asbestos. Some of the key events in creating the framework for addressing asbestos hazards in buildings include:

- 1982:

Under Section 6 of the Toxic Substances Control Act, the Environmental Protection Agency (EPA) issued its Final Rule (40 CFR Part 763), Friable Asbestos-Containing Materials in Schools: Identification and Notification. The preamble included this finding:

*EPA finds that the presence of unidentified friable asbestos-containing materials in schools and the absence of notice of their presence and of instructions on proper handling and maintenance procedures to reduce exposure constitute an unreasonable risk to school employees. These unreasonable risks can occur when school employees unknowingly disturb friable asbestos materials or such materials are allowed to deteriorate. When activities of school employees disturb or promote deterioration of friable asbestos materials, risk to users of school buildings may be elevated. (Federal Register Vol. 47 No. 103, May 27, 1982, p.23364).*

- 1985:

EPA published its *Guidance for Controlling Asbestos-Containing Materials in Buildings* (The “Purple Book”). The Purple Book provides comprehensive recommendations on the identification, notification, and various options to remove or contain asbestos-containing materials in buildings.

## 1986:

OSHA issued Final Rules for Occupational Exposure to Asbestos, Tremolite, Anthophyllite, and Actinolite. Appendix G of OSHA's Construction Standard for Asbestos (29 CFR 1926.58) covered Work Practices and Engineering Controls for Small-Scale Short-Duration Asbestos Renovation and Maintenance Activities. Appendix G detailed work practices for maintenance activities, including "installation or removal of a small section of drywall." The work practices described in the Appendix included using wet methods to reduce dust, mini-enclosures, and high-efficiency particulate air (HEPA) filtered vacuums. The Appendix also contained a list of "Prohibited Activities" that included but was not limited to:

- *Not to drill holes in asbestos-containing materials.*
- *Not to dust floors, ceilings, molding, or other surfaces in asbestos-containing environments with a dry brush or sweep with a dry broom.*
- *Not to use an ordinary vacuum to clean up asbestos-containing debris.*

Also in 1986, Congress passed Public Law 99-519, the Asbestos Hazard Emergency Response Act (AHERA), which addressed asbestos in schools and directed EPA to issue regulations.

## 1987

EPA issued its Asbestos-Containing Materials in Schools Final Rule (40 CFR Part 763). EPA established strict and specific requirements for building inspections, hazard assessment, notification, training, air monitoring, work practices, protective equipment, disposal and other measures to address existing and potential asbestos hazards in schools.

In 1987 EPA also issued its Asbestos Abatement Projects; Worker Protection; Final Rule. EPA's action extended the protections in OSHA's 1986 asbestos standards to state and local government workers not covered by OSHA.

## 1988

EPA released its *Study of Asbestos-Containing Materials in Public Buildings – A Report to Congress*, which was required as part of Asbestos Hazard Emergency Response Act). The Report included an estimate of the number of buildings in the United States with ACM, a discussion of risk assessment and management, and recommendations to address asbestos hazards in buildings.

## 1990

EPA published its *Managing Asbestos in Place – A Building Owner’s Guide to Operations and Maintenance Programs for Asbestos-Containing Materials* (The “Green Book”). This document expanded upon but did not replace EPA’s Purple Book. The guidance in this document was designed to assist individuals involved in facilities maintenance how to establish and implement an operations and maintenance program to prevent the uncontrolled disturbance of asbestos, the type of program that covers the NASM.

An important conference was also held in this year under the auspices of the Collegium Ramazzini. A report on the proceedings of the conference, *The Third Wave of Asbestos Disease – Asbestos in Place*, included studies that found evidence of exposure and/or asbestos disease in custodial and maintenance workers who were exposed to asbestos when performing their job duties.

## 1994

OSHA issued revised Final Rules for Asbestos (29 CFR 1910.1001, 1926.1101, and 1915.1001). OSHA’s rules established a lower exposure limit and included stricter requirements for notification and work practices. The OSHA Construction Standard created four categories of asbestos work. [29 CFR 1926.1101(b)]:

*Class III asbestos work means repair and maintenance operations, where, “ACM”, including thermal system insulation and surfacing material, is likely to be disturbed.*

*Class IV asbestos work means maintenance and custodial activities during which employees contact ACM and PACM and activities to clean up waste and debris containing ACM and PACM.*

## 2000

EPA revised its Worker Protection Rule to make it consistent with OSHA's 1994 asbestos regulations.

Now I will return to the opinions I expressed at the beginning of my statement and explain the reasons that led me to these conclusions. First, it certainly appears that there have been serious deficiencies in the implementation of the Smithsonian's policies for addressing the presence of ACM over a prolonged period of time. Based on the asbestos survey report performed by Versar, the Smithsonian knew in 1992, at the very latest, that the National Air and Space Museum was constructed with asbestos-containing building materials. Versar identified several types of building materials containing asbestos, including drywall joint compound. Versar reported (pp.3-4) that the joint compound is found throughout the building where seams and nails are present in drywall.

*...drywall joint compound in stairways 1, 2, 3, 4, 5, 6, 7, rooms P700, P703A, P703D, P703E,...*

Versar designated the drywall joint compound as "Code E" – Materials To Be Monitored For Change in their Condition," and made the following recommendation:

*Drywall joint compound is not a friable material nor is it high in asbestos content. It is unlikely to release asbestos fibers during normal building activities or in the absence of physical disturbance. The majority of this material is classified in Response Code E and therefore should be monitored for change and included in the building's O&M plan. Twenty-four rooms in the NASM have drywall joint compound classified in Response Code F for which no action is required at this time. **Maintenance and custodial personnel should be alerted to the presence of this material and instructed not to disturb it.** (emphasis added)*

I do not know what year the Smithsonian Institution Safety Manual was issued. Chapter 22 of this Manual is a very comprehensive program to protect all building occupants from asbestos. However, it appears there has been a disconnect between stated

policies and actual practices in the NASM for a very long time. I have quoted below selected sections from Chapter 22 that appear not to have been followed:

*C. CHAPTER-SPECIFIC ROLES AND RESPONSIBILITIES*

*1. Directors of buildings containing ACM or PACM shall:*

*b. Be responsible for communicating the Plan to all building occupants.*

*2. Safety Coordinators shall:*

*a. Coordinate with their respective Building Manager to develop, implement and maintain an Asbestos Management Plan per Section E.4. of this Chapter. This plan should contain a record of ACM or PACM in the buildings, including information on the type of asbestos and percentage of each type identified, and sampling and analytical documentation, in accordance with this Chapter.*

*b. Identify all other sources of, or tasks which could result in, asbestos exposure within facility operations (such as brake work or collections handling).*

*c. In coordination with project COTRs, ensure that all contracted work in their facility be assessed as to whether it will impact ACM, and if so, ensure that contractor work involving disturbance of ACM in their facilities is properly reviewed for compliance with the SI Construction Specification 13280, "Asbestos Abatement".*

*d. Ensure that staff within their organization who are assigned tasks that may involve exposure to asbestos are identified to the Office of Safety, Health, and Environmental Management (OSHEM) for exposure assessment and development of exposure controls.*

*e. Ensure SI staff members who work in or near ACM areas are notified of ACM locations and measures to prevent its disturbance. Notify SI staff of asbestos abatement work scheduled near their work areas, in accordance with OSHA requirements.*

*f. Assist supervisors in implementing the hazard controls specified by this Chapter, and by OSHEM, to maintain exposure levels to below those specified in this Chapter.*

*g. Ensure that the training requirements of this Chapter are met.*

*h. Ensure that identified ACM areas are posted with signage when appropriate.*

3. *Supervisors shall:*

- a. *Identify, with the assistance of the Safety Coordinator, work tasks under their control that involve working with or around ACM. Identify employees who may be exposed to asbestos to OSHEM for exposure assessment.*
- b. *Ensure that OSHEM-recommended engineering and other control measures are implemented to reduce asbestos exposures as low as reasonably achievable but, as a minimum, at or below the OSHA Permissible Exposure Limit (PEL) of 0.1 fiber per cubic centimeter of air (f/cc) as an 8-hour time-weighted average (TWA) concentration.*
- c. *Ensure that all employees under their control who are potentially exposed to asbestos concentrations equal to or greater than the OSHA PEL are enrolled, per OSHEM recommendation, in the SI medical surveillance program specified in this Chapter.*
- d. *Suspend work activities when materials suspected of containing asbestos are encountered and likely to be disturbed without proper controls and personal protective equipment (PPE) in place.*
- e. *Ensure that all employees, including themselves, working on or around ACM whose work may disturb ACM, receive initial and annual refresher training in accordance with the requirements of this Chapter.*
- f. *Ensure employees comply with the provisions of this Chapter, including the use of PPE and approved work practices.*

*Attachment 1 – Recommended Safe Practices When Working On or Around ACM*

*Attachment 8 –Asbestos Work Classifications and Training Requirements*

The Washington Post reported on March 15, 2009 that Mr. Richard Pullman, a lighting specialist who had worked in the NASM for 27 years was first informed by the museum’s safety coordinator during a briefing on “asbestos awareness” that there was asbestos in the museum walls. The article quoted Mr. Pullman saying, “Are you telling me that I’ve been working this stuff for that long, drilling into these walls, sawing, and sanding, unprotected?” Pullman recalls asking. “Why didn’t you guys say anything?” An effective asbestos operations and maintenance program cannot be executed unless the locations of asbestos have been identified and employees are notified as to the presence of asbestos and how to avoid uncontrolled disturbance of ACM.

My second conclusion is that a failure to notify building service workers of the locations of ACM, provide training and appropriate equipment, conduct worker exposure monitoring, and ensure work practices and procedures violate OSHA regulations and the Smithsonian's own policies. I have just provided a list of procedures from the Smithsonian Institute's Safety Policy that appears to have been disregarded. There are provisions in the OSHA asbestos standards that correspond to these sections of Chapter 22 of the Safety Manual. As I explained above, OSHA defines Class III work as repair and maintenance operations where ACM is likely to be disturbed. Class IV work refers to maintenance and custodial activities during which employees contact ACM and presumed asbestos-containing materials to clean up waste and debris containing ACM.

OSHA's Construction Standard for Asbestos includes requirements for Class III work 29.:

**1926.1101(g)(9)**

*Work Practices and Engineering Controls for Class III asbestos work. Class III asbestos work shall be conducted using engineering and work practice controls which minimize the exposure to employees performing the asbestos work and to bystander employees.*

**1926.1101(g)(9)(i)**

*The work shall be performed using wet methods.*

**1926.1101(g)(9)(ii)**

*To the extent feasible, the work shall be performed using local exhaust ventilation.*

**1926.1101(g)(9)(iii)**

*Where the disturbance involves drilling, cutting, abrading, sanding, chipping, breaking, or sawing of thermal system insulation or surfacing material, the employer shall use impermeable dropcloths, and shall isolate the operation using mini-enclosures or glove bag systems pursuant to paragraph (g)(5) of this section or another isolation method.*

**1926.1101(g)(9)(iv)**

*Where the employer does not produce a "negative exposure assessment" for a job, or where monitoring results show the PEL has been exceeded, the employer shall contain the area using impermeable dropcloths and plastic barriers or their equivalent, or shall isolate the operation using a control system listed in and in compliance with paragraph (g)(5) of this section.*

**1926.1101(g)(9)(v)**

*Employees performing Class III jobs, which involve the disturbance of thermal system insulation or surfacing material, or where the employer does not produce a "negative exposure assessment" or where monitoring results show a PEL has been exceeded, shall wear respirators which are selected, used and fitted pursuant to provisions of paragraph (h) of this section.*

OSHA further requires that:

**1926.1101(k)(8)(iv)** *Training for Class III employees shall be the equivalent in curriculum and training method to the 16-hour operations and maintenance course developed by EPA for maintenance and custodial workers who conduct activities that will result in the disturbance of ACM.*

OSHA's requirements for Class IV work are as follows:

**1926.1101(g)(10)**

***Class IV asbestos work.*** *Class IV asbestos jobs shall be conducted by employees trained pursuant to the asbestos awareness training program set out in paragraph (k)(9) of this section. In addition, all Class IV jobs shall be conducted in conformity with the requirements set out in paragraph (g)(1) of this section, mandating wet methods, HEPA vacuums, and prompt clean up of debris containing ACM or PACM.*

**1926.1101(g)(10)(i)**

*Employees cleaning up debris and waste in a regulated area where respirators are required shall wear respirators which are selected, used and fitted pursuant to provisions of paragraph (h) of this section.*

**1926.1101(g)(10)(ii)**

*Employers of employees who clean up waste and debris in, and employers in control of, areas where friable thermal system insulation or surfacing material is accessible, shall assume that such waste and debris contain asbestos.*

OSHA inspected the NASM on April 9 and 10 of 2008 and issued citations on July 8, 2008 for unsafe and unhealthful working conditions.

**Citation 1 Item 1a:**

*29 CFR 1926.1101(f)(1)(i): Where exposure monitoring is required under this section the employer did not perform monitoring to determine accurately the airborne concentrations of asbestos to which employees were exposed.*

**Citation 1 Item 1b:**

*29 CFR 1926.1101(k)(3)(ii)(B): Before work subject to this standard had begun, the employer did not notify employees who performed work subject to the standard, of the presence, location and quantity of asbestos or presumed asbestos containing materials.*

*Citation 1 Item 1c:*

*29 CFR 1926.1101(k)(9)(i): The employer did not institute a training program for all employees who performed class I and class IV work.*

My third conclusion is that building service workers have likely been repeatedly exposed to significant asbestos exposure as the result of uncontrolled disturbances of ACM. I cannot answer with any certainty the question of what levels of asbestos workers have been exposed to. Exposure to asbestos in a building where activities disturb ACM is dynamic rather than static. The exposure of building service workers to asbestos is episodic in nature. To determine exposure it is necessary to conduct personal air sampling while the maintenance activity involving ACM is taking place. Personal sampling involves a worker wearing a pump on his or her waste that draws air through a tube with the opening near the workers' nose and mouth, or breathing zone. Asbestos fibers are collected in a cassette and sent off to a lab for analysis. I have not seen any personal sampling data, if it exists, conducted during maintenance activities that disturb ACM at the Smithsonian. However, studies of maintenance tasks which disturb ACM that do not involve proper work wet methods have shown significant exposure during such activities.

The only sampling data I have seen are the measurements obtained by Aerosal Monitoring & Analysis, Inc. (AMA) on December of 9 and 11, 2008. AMA performed ambient air monitoring, which means sampling of an area, in this case 25 areas of the NASM, not personal sampling of workers. The data are irrelevant for making any determination of building service worker's exposure to asbestos, and should not be used to reassure workers about their exposure or risks. The 8-hour samples were collected between approximately 6:00 p.m. and 2:00 a.m. when the museum was closed. There is nothing in AMA's narrative that indicates that any maintenance work involving the disturbance of ACM was being conducted at the time the samples were collected. Since the museum was closed, potential air movement generated by a crowd of visitors was also probably diminished.

OSHA requires clearance sampling after asbestos work is performed. This entails utilizing aggressive air sampling to create a worst case scenario before the plastic containment area is disassembled. The air is stirred up with blowers to make asbestos

fibers that may have settled become airborne. Only when asbestos levels are below established exposure limits while aggressive sampling is performed is an area considered clean and safe to reenter without utilizing protective measures. Taking passive ambient air samples in areas where there is settled dust and no work or other activities being performed that could disturb the dust therefore fails to yield useful determinations of worker exposure.

Rather than drawing comfort from AMA's results, I find the situation quite disconcerting. Sampling was done in areas where there was an accumulation of settled dust, which raises disturbing questions such as: For how long and how often have employees and contractors conducted uncontrolled disturbances of ACM? How long has the asbestos containing dust and debris been accumulating? Have ordinary vacuums and brooms been used to clean up dust and debris instead of HEPA-vacuums and wet methods?

My fourth observation is that the diagnosis of asbestosis of a long-term employee whose job duties involved disturbance of drywall joint compound that contained asbestos should be regarded as a sentinel health event, and medical screening should be conducted to identify the extent, if any, of asbestos-related signs, symptoms or disease among other NASM employees or staff at other Smithsonian facilities. Mr. Pullman's claim for workers compensation is under appeal and I am not commenting on the validity of his claim. I am not familiar with Mr. Pullman's occupational or exposure history. However, the diagnosis of asbestosis in a 27-year worker whose duties involved the uncontrolled disturbance of ACM with saws and drills should be an impetus to determine if other employees are similarly affected. There are well established protocols for conducting medical surveillance programs to identify individuals with signs of asbestos exposure, disease, and impairment.

The last issue concerns whether the treatment of asbestos has put any visitors to the NASM in an unsafe environment. As I have just explained, it is my opinion that previous activities of building service workers and contractors that involved the uncontrolled disturbance of ACM would have released fibers into the surrounding environment. There is insufficient data to characterize the exposures to the workers. Nor do I think there is adequate information to make any definitive quantitative or qualitative estimates of any additional risk posed to visitors that resulted from the activities of building service workers and contractors. The AMA sampling data represent a snapshot of conditions they tested for

on December 9 and 11, 2008. For the reasons stated above, the AMA results do not provide a useful assessment of worker exposure during their normal job activities. As for exposure to visitors, I did not see other data to evaluate whether the sampling results were representative.

Given the information I have reviewed concerning the handling of asbestos at the NASM, I have questions and concerns about possible exposure situations to asbestos in other Smithsonian facilities. Many of the Smithsonian's buildings are much older than the NASM and therefore much more likely to have been constructed with a far greater quantity and variety of asbestos-containing materials for fireproofing, surfacing, thermal insulation, and other purposes.

I thank you for the opportunity to testify and hope that the Committee finds this information useful.