



Agency for Toxic Substances  
and Disease Registry  
Atlanta GA 30333

April 21, 2014

Mr. Harry Daw  
Land and Chemicals Division  
USEPA - Region 3, Mailcode: 3LC60  
1650 Arch Street  
Philadelphia, Pennsylvania 19103-2029

Dear Mr. Daw:

Thank you for including the Agency for Toxic Substances and Disease Registry (ATSDR) in the U.S. Environmental Protection Agency's (EPA's) discussions regarding the response to an asbestos release at the Hunting Point on the Potomac apartment complex in Alexandria, Virginia. EPA inspections in 2014 identified improperly handled asbestos-containing waste materials; this led to the collection of dust and air samples in several potentially affected units and common areas of the two-building complex. You asked ATSDR to review the available data and provide recommendations on actions to be taken to protect residents of the apartments from harmful exposures to asbestos. This letter health consultation provides ATSDR's review based on the information and data we have today and gives public health conclusions and recommendations from our review. If more information becomes available, our conclusions and recommendations could change. To summarize our current conclusions and recommendations:

- EPA identified the areas sampled as those most likely to be affected by improper asbestos handling. Asbestos fibers were detected in air sampling, and asbestos was detected in dust at levels higher than typical background.
- On the basis of air samples collected in these areas, the concentrations of asbestos in air do not appear to be high enough to harm the health of people who breathe this air for relatively short periods of time (weeks to months). However, some of the analytical methods used did not have adequate sensitivity to say with certainty that all the samples were below health-based long-term residential benchmarks for asbestos. Also, only a few locations were sampled, whereas renovation work occurred throughout the buildings. It is possible low levels of asbestos remain in some areas, which could potentially harm people's health if they breathed the air for many years.
- To reduce the potential for long-term exposure, ATSDR recommends cleaning using wet cleaning methods and high efficiency particulate air (HEPA) vacuuming. ATSDR also recommends cleaning be followed up with air sampling to ensure the remaining asbestos air concentrations are below appropriate long-term residential health-based benchmark levels.

It is our understanding that cleanup of the buildings is planned. ATSDR would be glad to continue to provide public health input to EPA and other parties throughout the cleanup and clearance process.

### **Description of Building and Activity Status**

The Hunting Point on the Potomac apartment complex consists of two 8-story buildings (1202 and 1204), with a total of approximately 530 apartment units ranging in size from studio to 2-bedrooms. The buildings were constructed in the 1950s and have been undergoing renovation since being purchased by a new owner about a year ago. In Building 1204, all but two units have had the windows replaced. In

Building 1202, units on various floors have had windows replaced, with several units on the 8<sup>th</sup> floor most recently undergoing window replacement. As apartments are vacated, kitchen and bath renovation involving work with floor tile is being performed.

In March 2014, an EPA inspection identified the window caulk and the materials associated with the floor tiles as containing asbestos. Issues involving improper handling of these asbestos containing materials and insufficient notification led to stoppage of the work. Sampling of several units and common areas was conducted by the owner.

## **Description of Sampling**

### Locations Selected and Sampling Performed

Details of the sampling are presented in a report provided by the apartment owner's consultant.<sup>1</sup> On the basis of visual inspections of renovations involving the extent of work and the largest volumes of asbestos containing materials, five units and three common areas were identified for air and dust sampling. These were:

- Units A and B in Building 1204 – these are two unoccupied units undergoing flooring and window work;
- Unit C in Building 1204 – this is an occupied unit where window replacement occurred and issues were identified during a recent EPA inspection;
- Units D and E in Building 1202 – these are two occupied units that had the most recent window replacement;
- Ground floor hallway in Building 1204 – this is the pathway for waste materials associated with the renovations to be removed from the building;
- Laundry room on the ground floor of Building 1204 – this is a common area with high traffic; and
- 8<sup>th</sup> floor hallway of Building 1202 – this is a common area in the floor of Building 1202 where recent renovations occurred.

Sampling was performed April 4–11, 2014:

- Five dust microvac samples were collected in each unit or common area. EPA representatives selected the sampling locations and reportedly targeted surface areas that contained visible dust.
- Two 8-hour stationary air samples were collected in each room or common area where asbestos containing material disturbing activities took place (some units included more than one room sampled). Before starting sample collection, and at approximately 2-hour intervals during the sampling, sweeping or vacuuming was performed to agitate dust in the room.
- Two personal, or activity-based, air samples were collected in each unit or common area by having personnel wearing air sampling pumps perform typical activities such as vacuuming, dusting, walking, or shuffling papers over a 3-hour period.

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<sup>1</sup> Advantage Environmental Consultants, LLC. Letter from Andrew Owens and Jeff Stein to Scott McMillan of Hunting Point Apartments LLC and Richard Ponak of the U.S. Environmental Protection Agency Region III, RE: Asbestos Abatement Management and Response to Administrative Compliance Order from United States Environmental Protection Agency, Hunting Point on the Potomac, 1202 and 1204 South Washington Street, Alexandria, Virginia 22314, AEC Project No. 14-070. April 14, 2014.

### Analytical Methods Used

- Dust samples were analyzed using a transmission electron microscopy (TEM) method, ASTM D5755-09. The results of this method give structures of asbestos per square centimeter of surface area,  $s/cm^2$ . This method identifies all asbestos structures regardless of length.
- The stationary and personal air samples were analyzed with a TEM method, NIOSH 7402. This method identifies asbestos and other fibers greater than 5 micrometers ( $\mu m$ ) in length that would be measured with traditional phase contrast microscopy (PCM) using the NIOSH 7400 method. In many applications, the fraction of asbestos fibers over total fibers from the NIOSH 7402 method is used in conjunction with PCM results to obtain a concentration of asbestos fibers per cubic centimeter of air ( $f/cc$ ). It is possible to obtain a  $f/cc$  concentration using NIOSH 7402, and this is what was done for this sampling.
- Twenty percent of the air samples were also analyzed by the ISO 10312 TEM method. This method analyzes all visible asbestos structures and also obtains size data on the structures. Because asbestos risk methods are based on PCM concentrations, the PCM equivalent fibers are the only structures from ISO that contribute to estimated risk.

### Results

ATSDR's summary of the results is given in Table 1. (Details of the results can be found in the owner's consultant's report referenced earlier. ATSDR calculated air concentrations from consultant-reported fibers and structures; concentrations in the consultant's report were shown as less than the reporting limit.)

### **Discussion of Results**

Chrysotile asbestos fibers were detected in several dust samples in both buildings. Asbestos in dust presents a potential exposure, since the asbestos in dust could be suspended in air and breathed in. However, the relationship between asbestos in dust and air is not well understood, so asbestos in dust measurements cannot be used to predict or estimate potential inhalation exposure. The asbestos levels detected in several of the dust samples, particularly in Building 1204, are between 10,000 and 100,000  $s/cm^2$ ; this level is considered "generally above background" by Millette and Hays, authors who examined and summarized microvac results for asbestos in dust from a variety of sites with asbestos containing material.<sup>2</sup> These results indicate the presence of asbestos, which may be related to the renovation activities.

Air concentrations best represent inhalation exposures, the pathway of greatest concern for asbestos exposure. Asbestos fibers or structures were detected in some stationary and personal air samples from both buildings. The estimated concentrations of asbestos in these samples were generally below reporting limits. For relatively short-term exposures (months), these low levels would not be expected to contribute significantly to the lifetime risk of cancer or other asbestos-related diseases. This is because the risk of these diseases is most associated with either many years of exposure to asbestos, or very high exposures (such as occupational levels of asbestos) for briefer periods, or

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<sup>2</sup> Millette JR and Hays SM. Settled asbestos dust sampling and analysis. Boca Raton: CRC Press, 1994.

**Table 1. Summary of Asbestos Results in Dust and Air Sampling, Hunting Point on the Potomac Apartment Complex, Alexandria, Virginia**

Location	Dust	Stationary Air			Personal Air		
	Reported Highest Asbestos Dust Concentration in s/cm <sup>2</sup> (# Samples w/ Asbestos Detected)*	Highest # of NIOSH 7402 Fibers	Highest # of ISO 10312 PCM Equivalent Structures (Total Structures)	Calculated NIOSH f/cc or ISO PCMe s/cc Concentration† (s- denotes reported sensitivity if ND)	Highest # of NIOSH 7402 Fibers	Highest # of ISO 10312 PCM Equivalent Structures (Total Structures)	Calculated NIOSH f/cc or ISO PCMe s/cc Concentration† (s- denotes reported sensitivity if ND)
<b>Building 1204</b>							
Ground Floor Hallway	27,370 (2)	0	0 (0)	s- 0.0003 f/cc s- 0.00139 s/cc	0	0 (0)	s- 0.0012 f/cc s- 0.00483 s/cc
Laundry Room	2,600 (0)	0	0 (0)	s- 0.0003 f/cc s- 0.00198 s/cc	0	N/A	s- 0.0012 f/cc N/A s/cc
Unit A	4,880 (1)	2	0 (0)	0.000748 f/cc s- 0.00299 s/cc	1	0 (0)	0.001596 f/cc s- 0.01064 s/cc
Unit B	34,195 (3)	0	0 (1)	s- 0.0004 f/cc s- 0.00298 s/cc	0	N/A	s- 0.0027 f/cc N/A s/cc
Unit C	54,670 (3)	0	0	s- 0.0003 f/cc s- 0.00196 s/cc	0	N/A	s- 0.0012 f/cc N/A s/cc
<b>Building 1202</b>							
Unit D	2,604 (4)	1	0 (1)	0.0003 f/cc s- 0.00171 s/cc	0	N/A	s- 0.0016 f/cc N/A s/cc
Unit E	2,604 (1)	3	0 (4)	0.00089 f/cc s- 0.00155	0	0 (1)	s- 0.0012 f/cc s- 0.00466 s/cc
8 <sup>th</sup> Floor Hallway	<977 (0)	0	N/A	s- 0.0003 f/cc N/A s/cc	0	N/A	s- 0.0016 f/cc N/A s/cc
<b>Comparison Value, Standards, or Experience Standard for Perspective</b>							
	<1,000 - “low” >10,000 - “generally above background” [Millette and Hays, 1994]	Stationary sampling represents long-term exposure level. World Trade Center 30-year residential occupancy benchmark is 0.0009 fibers per cubic centimeter (f/cc) or PCM equivalent structures per cubic centimeter (s/cc).			Personal sampling represents exposures during activities occurring over short time periods. A time-weighted risk estimate is needed to assess appropriate levels. For perspective only, the occupational 8-hour time weighted average permissible exposure limit is 0.1 f/cc.		
* All structures in dust were chrysotile      ND = No asbestos fibers/structures Detected      N/A = not analyzed							

both.<sup>3</sup> The estimated contribution of a year of exposure to the levels of asbestos measured in the sampling to a person's lifetime risk of cancer is very low.<sup>4</sup>

ATSDR would generally evaluate stationary samples using a long-term health-based benchmark such as the residential 30-year occupancy benchmark of 0.0009 phase contrast microscopy equivalent (PCMe) structures per cubic centimeter (s/cc) developed in the wake of the World Trade Center disaster<sup>5</sup>. This benchmark represents a theoretical risk of no more than 1 excess cancer in 10,000 people exposed for a 30-year period. Very few, if any, asbestos fibers or structures were detected in the stationary samples. However, because some of the sensitivities and reporting limits were somewhat higher than the health-based benchmark, some uncertainty exists as to whether the sample concentrations are actually below the benchmark level. In addition, only a few locations were sampled whereas the renovations occurred throughout Building 1204 and an entire floor of Building 1202. Although the locations were selected as those most likely to be affected, we recognize uncertainty about whether the samples truly represent every unit or area of the large complex.

The personal, activity-based samples represent shorter term exposures occurring while doing specific activities. There is no specific health-based benchmark used to compare to activity-based results; rather a risk approach is typically used to assess whether measured concentrations are of concern. The personal samples collected in these sampling events showed very low detections of asbestos and do not indicate a concern with conducting normal activities in the affected units. Similar to the stationary results, uncertainty exists as to whether the personal air samples represent activities that might be conducted in other areas of the complex.

Although the results do not indicate an immediate public health concern, the uncertainties described above make it difficult to say there is no long-term risk from exposure to low levels of asbestos that might remain in the building. The potential for long-term exposures could be effectively mitigated by cleaning units and common areas using wet methods and HEPA vacuuming. After cleaning, air sampling is recommended to ensure the remaining air concentrations are below appropriate long-term residential health-based benchmark levels.

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<sup>3</sup> Agency for Toxic Substances and Disease Registry. Toxicological profile for asbestos (update). Atlanta: U.S. Department of Health and Human Services; September 2001.

<sup>4</sup> The laboratory's reporting limit for the NIOSH 7402 stationary sampling results was 0.0012 f/cc, and all results were less than the reporting limit. Assuming 1 year of exposure to 0.0012 f/cc, the increased lifetime risk of cancer from this exposure can be estimated by multiplying the concentration by EPA's inhalation unit risk of 0.23 (f/cc)<sup>-1</sup> and the fraction (1/70) to account for 1 year of exposure over a 70-year lifetime to obtain an estimated risk of about 4 in 1,000,000. This is very small in comparison with the general lifetime rate of cancer in the U.S. population of about 1 in 2.5, or about 400,000 for every 1,000,000 people.

<sup>5</sup> Contaminants of Potential Concern (COPC) Committee of the World Trade Center Indoor Air Task Force Working Group. World Trade Center indoor environment assessment: selecting contaminants of potential concern and setting health-based benchmarks. Contributors from U.S. Environmental Protection Agency, New York City Department of Public Health and Mental Hygiene, Agency for Toxic Substances and Disease Registry, New York State Department of Health, and Occupational Safety and Health Administration. May 2003.

### **Summary of ATSDR's Conclusions and Recommendations**

These conclusions and recommendations are based on our review of the information and data available at this time. If further information becomes available, our conclusions and recommendations may change.

- EPA identified the areas sampled as those most likely to be affected by improper asbestos handling. Asbestos fibers were detected in air sampling, and asbestos was detected in dust at levels higher than typical background.
- On the basis of air samples collected in these areas, the concentrations of asbestos in air do not appear to be high enough to harm the health of people who breathe this air for relatively short periods of time (weeks to months). However, some of the analytical methods used did not have adequate sensitivity to say with certainty that all the samples were below health-based long-term residential benchmarks for asbestos. Also, only a few locations were sampled, whereas renovation work occurred throughout the buildings. It is possible low levels of asbestos remain in some areas, which could potentially harm people's health if they breathed the air for many years.
- To reduce the potential for long-term exposure, ATSDR recommends cleaning using wet cleaning methods and high efficiency particulate air (HEPA) vacuuming. ATSDR also recommends cleaning be followed up with air sampling to ensure the remaining asbestos air concentrations are below appropriate long-term residential health-based benchmark levels.

It is our understanding that cleanup of the buildings is planned. ATSDR would be glad to continue to provide public health input to EPA and other parties throughout the cleanup and clearance process. Thank you for including ATSDR in your site work. Please do not hesitate to contact me if you have any questions or concerns. I can be reached at (770) 488-0768 or by email at [JDyken@cdc.gov](mailto:JDyken@cdc.gov).

Sincerely,

[signed]

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cc:

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Lora Werner, ATSDR/EB Region 3