



Agency for Toxic Substances  
and Disease Registry  
Atlanta GA 30333

January 9, 2017

Mr. Jack Kelly  
On Scene Coordinator  
Removal Response Program (Mail Code 3HS31)  
USEPA - Region 3  
1650 Arch Street  
Philadelphia, PA 19103-2029

RE: Evaluation of Activity-based Sampling Results from Residences near the BoRit Asbestos Site in Ambler, Pennsylvania

Dear Mr. Kelly:

Thank you for consulting with the Agency for Toxic Substances and Disease Registry (ATSDR) for a public health evaluation of the U.S. Environmental Protection Agency's (EPA's) 2016 sampling activities in residential yards near the BoRit Asbestos National Priorities List (NPL) site in Ambler, PA. I am writing to provide ATSDR's public health conclusions regarding the results of EPA's fall 2016 activity-based sampling (ABS) for asbestos at several residences near the site.

To summarize our findings, the results indicate that *potential asbestos exposures to people performing activities in the residential yards tested are not expected to harm health*. The concentrations of asbestos measured are below the health-based long-term residential screening level. Some yards may contain these low levels of asbestos from nearby past industrial activities or from residential sources. ATSDR has provided recommendations for reducing potential environmental exposures to asbestos in the fact sheet enclosed with this letter. We will continue to work along with our partners at the Pennsylvania Department of Health (PADOH) to evaluate future data and provide information on public health questions related to the site, upon request.

## **Background**

The BoRit site consists of three distinct asbestos-contaminated areas including an asbestos waste pile, a reservoir, and a park along Maple Street in Ambler, Pennsylvania. The BoRit site is a few hundred yards northwest of the Ambler Asbestos Piles site, a former NPL site that remains under ongoing operation and maintenance oversight by EPA. Both the BoRit and Ambler Asbestos Piles sites resulted from past disposal practices of several asbestos manufacturers operating on and near the site from the late 1800s until 1987.

The Centers for Disease Control and Prevention (CDC), PADOH, and ATSDR have conducted public health activities related to the BoRit and Ambler Asbestos Piles sites for many years.

PADOH first examined mortality statistics related to asbestos exposures in the area in 1975, and CDC issued a Public Health Advisory in 1983. Since 2007, ATSDR has been working closely with PADOH to evaluate community exposures to asbestos and respond to health concerns from community members related to the BoRit site. Several site documents can be found at <https://www.atsdr.cdc.gov/HAC/PHA/HCPHA.asp?State=PA>. Past public health evaluations specific to airborne asbestos exposures include:

- Reviews of EPA's ambient air sampling for asbestos from different locations in the Ambler community between 2006 to 2007 and 2008 to 2011. The review concluded that off-site airborne asbestos levels are not expected to harm people's health [1,2].
- An evaluation of ABS air sampling for asbestos in off-site residential areas and along recreational walking trails collected in 2010 and 2011. The evaluation found that activities such as walking on trails and trespassing would not be expected to harm people's health [2].

This letter evaluates recent ABS air sampling for asbestos in residential yards located along the perimeter of the BoRit site. The homes were present while the former asbestos manufacturing activities were in operation and also during the era when asbestos-containing materials were used widely in home construction. EPA conducted this sampling in fall 2016.

## **Discussion**

### *Summary of EPA's 2016 Residential Air Sampling and Results*

EPA conducted air sampling in ten residential yards near the site on September 22, September 23, September 26, and October 6, 2016. To maintain privacy, ATSDR designated these yards units 1 through 10, following the designations in the data validation report [3]. ATSDR notes that the properties sampled are along the perimeter of the BoRit site and would presumably have been more likely affected by past site activities than more distant properties.

Following EPA's standard procedures, ABS sampling was performed only if the average soil moisture of ten random locations in the area to be sampled was less than 30%, and no reading was above 50% [4]. For ABS, contractors conducted a raking scenario in each yard for approximately two hours while wearing personal air monitors [4]. The personal air monitor uses a sample pump to push a volume of air through a filter; asbestos structures are trapped by the filter for later counting. Each contractor wore two sample pumps: one at shoulder level to represent an adult's exposure, and one at waist level to represent child exposures.

Each yard also had three stationary monitors collecting air from the edge of the raking area during the activity to represent exposures at the perimeter of the activity. For both ABS and perimeter samples, duplicate samples were collected at different air flow rates to ensure a sample with adequate particulate loading for analysis would be obtained. On each day of sampling, a "background" stationary sampler collected air from an open lot removed from any of the activities.

Samples were analyzed using the International Standards Organization (ISO) 10312 method. This method reports both total asbestos structures and phase contrast microscopy equivalent (PCMe) asbestos structures. PCMe is a size fraction of asbestos structures that has been historically used as an index of asbestos exposure; most asbestos health information and risk assessment methods are based on PCMe asbestos structures. ISO 10312 reports as PCMe asbestos structures including individual fibers, clusters of fibers, and fibers associated with matrices of other minerals longer than 5 microns, between 0.25 and 3 microns in width, and with a length:width ratio of 3 or greater.

Table 1 summarizes air sample results for total and PCMe asbestos structures per cubic centimeter of air (s/cc) found during the sampling. The PCMe concentrations are compared with a health-based benchmark concentration of 0.0009 phase contrast microscopy equivalent (PCMe) structures per cubic centimeter (s/cc) [5]. The benchmark represents a theoretical risk of no more than 1 excess cancer in 10,000 people exposed for a 30-year period.

### **Evaluation of Potential Risk**

The activity-based sampling simulated raking activities that would likely suspend asbestos fibers from soil, and samples were collected at heights representing both children and adults. ATSDR believes the results of this sampling adequately and conservatively represent potential exposures to homeowners spending time and working in their yards.

Several of the air samples showed asbestos detections, and most of the detections were of chrysotile asbestos, the type of asbestos associated with the BoRit site. However, only a few PCMe structures, the size that contributes risk in current risk assessment methods, were detected. PCMe detections included both chrysotile and amphibole asbestos.

The concentrations of PCMe structures in air are all below the health-based benchmark asbestos concentration for residential reoccupancy developed by EPA Region 2 and partner agencies in the wake of the World Trade Center disaster. This value, 0.0009 PCMe s/cc, represents a theoretical excess cancer risk of no more than 1 in 10,000 people exposed continuously for 30 years [5]. Using the World Trade Center residential reoccupancy level as a screening level for outdoor exposures at the BoRit site is a conservative approach. The risk from exposure in yards near the BoRit site would be much lower than the risk in a residential scenario, because outdoor exposures are intermittent rather than continuous.

We note that the total asbestos detections indicate structures shorter than PCMe structures are present in several yards and the background sample. In these samples, PCMe structures were not detected. The fact that PCMe structures were not detected indicates that exposures in these areas are below levels of health concern. Residents may consider taking actions to limit any potential exposures to asbestos in the environment to ensure that any chances for harmful health effects are minimized.

**Table 1. Summary of Activity-Based and Perimeter Air Sample Results from EPA Sampling in Residential Yards near the BoRit Asbestos Site, Fall 2016**

Sample	Total asbestos structures detected? (maximum detected)		PCMe asbestos structures detected? (maximum detected)		PCMe concentrations above 0.0009 PCMe s/cc (long-term screening level)?*
	Activity – Adult or child	Perimeter	Activity – Adult or child	Perimeter	
Unit 1	No	Yes (0.002 s/cc)	No	No	No
Unit 2	No	Yes (0.0009 s/cc)	No	No	No
Unit 3	No	No	No	No	No
Unit 4	No	Yes (0.002 s/cc)	No	No	No
Unit 5	Yes (0.03 s/cc)	Yes (0.004 s/cc)	No	Yes (0.0003 s/cc)	No
Unit 6	Yes (0.05 s/cc)	Yes (0.006 s/cc)	No	Yes (0.0003 s/cc)	No
Unit 7	No	Yes (0.001 s/cc)	No	No	No
Unit 8	Yes (0.02 s/cc)	Yes (0.01 s/cc)	No	Yes (0.0006 s/cc)	No
Unit 9	No	Yes (0.005 s/cc)	No	No	No
Unit 10	No	No	No	No	No
Background	Yes (0.0003 s/cc)		No		No

*Activity* samples were collected from the breathing zone of personnel raking in the yards sampled.  
*Perimeter* samples were collected from three stationary monitors placed at the edge of the raking area.  
*Background* samples were collected from a stationary monitor placed in an open lot on the same street as most of the residential yards sampled.

s/cc = asbestos structures per cubic centimeter of air  
 PCMe = phase contrast microscopy equivalent (PCMe) asbestos structures per cubic centimeter (s/cc) as measured with the ISO 10312 method. PCMe columns are highlighted because these are the results that are used for risk assessment. PCMe structures include asbestos individual fibers, clusters of fibers, and fibers associated with matrices of other minerals longer than 5 microns, between 0.25 and 3 microns in width, and with a length:width ratio of 3 or greater.

\*Health-based benchmark for PCMe asbestos, based on 30-year, continuous exposure [5]

## Conclusions and Recommendations

- Potential asbestos exposures to people performing activities in the residential yards tested are not expected to harm health. The concentrations of asbestos measured are below the health-based long-term residential screening level.
- Due to the detections of low levels of PCMe and total asbestos in the air samples, the homes' proximity to a former asbestos processing facility, and possible presence of other residential sources of asbestos due to the homes' age, residents may consider taking action to reduce potential exposure to asbestos in the environment.

## Future Public Health Activities

- PADOH, in collaboration with ATSDR, will consider producing a community fact sheet summarizing this evaluation.
- ATSDR and PADOH will remain available to discuss any public health questions related to the site with community members and local authorities, including continued participation on the BoRit Community Advisory Group.
- ATSDR and PADOH will consider evaluating future environmental sampling data collected near the BoRit site, if requested by EPA or community members.

ATSDR has developed a fact sheet for the public on limiting exposure to asbestos in the environment. It can be downloaded or printed from [https://www.atsdr.cdc.gov/asbestos/docs/limitingenvironmentalexposures\\_factsheet-508.pdf](https://www.atsdr.cdc.gov/asbestos/docs/limitingenvironmentalexposures_factsheet-508.pdf), and I've also enclosed a copy with this letter.

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). We are still working closely with PADOH. Your PADOH contact for the BoRit site is Bevin Durant ([bdurant@pa.gov](mailto:bdurant@pa.gov)).

Sincerely,



Jill J. Dyken, PhD, PE  
Environmental Health Scientist  
Eastern Branch  
Division of Community Health Investigations

cc:  
Lora Werner, ATSDR Region 3  
Farhad Ahmed, PADOH

Enclosure

## References Cited

1. Pennsylvania Department of Health. Health consultation, BoRit Asbestos air sampling results from 2006-2007, response to public comments. Prepared under a cooperative agreement with the Agency for Toxic Substances and Disease Registry. March 17, 2009.
2. Pennsylvania Department of Health. Public health assessment for BoRit Asbestos National Priorities List site. Prepared under a cooperative agreement with the Agency for Toxic Substances and Disease Registry. January 9, 2015.
3. Lockheed Martin Scientific, Engineering, Response and Analytical Services. (Varsolona R memo to Solinski P, Subject: asbestos air sampling, BoRit activity-based asbestos sampling site, Ambler, Pennsylvania, work assignment #SERAS-311 – validation report. Edison (NJ): December 2, 2016.
4. Lockheed Martin Scientific, Engineering, Response and Analytical Services. Quality assurance project plan, BoRit activity-based asbestos sampling site, Ambler, Pennsylvania. Edison (NJ): September 14, 2016.
5. 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.

# Asbestos in Your Environment: What You Can Do to Limit Exposure

*Asbestos may be present in your environment because it can be released from natural deposits or asbestos-containing products. Breathing asbestos could harm you. Avoiding asbestos and keeping dust down are the best ways to keep from breathing asbestos.*

## What is asbestos?

Asbestos is a general name given to a group of six different minerals made up of fibers and occurring naturally in the environment. Asbestos minerals do not dissolve in water or evaporate. They resist heat and fire and cannot be broken down easily by chemicals or bacteria.

## Where is asbestos in the environment?

- Asbestos is made up of tiny fibers, too small to be seen with the naked eye. Disturbing natural asbestos deposits or asbestos-containing consumer products can spread the asbestos throughout soils in an area and release the tiny asbestos fibers into the air.
- Asbestos forms naturally in certain types of rock and is more often found near fault zones. If rocks containing asbestos are at the ground surface, you might be able to see veins of asbestos in them. Asbestos might also be present in waste piles from old asbestos mining operations or in other products such as talc or vermiculite.



***A geologist can tell if the rocks in an area are more likely to contain asbestos.***

***A laboratory can test samples of rock, soil, or other materials to see if they have asbestos in them.***

- In the past, companies mined asbestos minerals to use in making many types of consumer products. Although most products no longer contain asbestos, it's still used in a few products in the United States and in some other countries. Asbestos is present in old asbestos-containing consumer products. As these old products break down due to age or improper disposal, asbestos fibers can be spread throughout the environment.



## How can I be exposed to asbestos?



You might breathe in asbestos fibers if asbestos-containing products or rocks are disturbed in some way. In areas that have natural asbestos or low-level asbestos contamination of soil, you could be exposed by

- Digging or shoveling dirt or using a leaf blower
- Running, hiking, bicycling, or riding off-road vehicles on unpaved surface

You can also breathe in asbestos indoors if old asbestos materials are present or if someone has tracked asbestos into the house from outside.

### What should I do if I suspect asbestos might be present in my home or environment?

- **Be concerned.** Breathing asbestos can cause cancer and other diseases. Current science indicates that breathing any type of asbestos at any level can increase the risk of disease.
- **Don't panic.** In most cases, asbestos-related diseases develop after many years of regular exposure to relatively high levels of asbestos. Years (sometimes decades) may pass before disease develops, if it ever does.
- **Take action.** Reducing possible asbestos exposure now will minimize your risk of developing any asbestos disease in the future.



# How can I reduce asbestos exposure outside?

## Cover up possible sources.



Wet the ground before gardening or playing.



Drive slowly on unpaved roads.



Support ordinances and regulations to reduce the level of construction dust.

## Keep dust down.

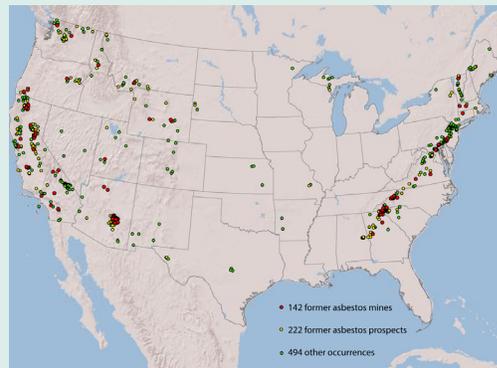


Use asbestos-free soil or landscape materials to cover gardens and yards that might have asbestos-containing rock or soil.



Pave walkways, driveways, or roadways that might have asbestos-containing rock or soil.

## Plan your outdoor activities.



Learn if natural asbestos might be found in your area or areas you visit. The US Geological Survey has a national map of reported natural asbestos occurrences (<http://mrddata.usgs.gov/asbestos/>), and some states and counties have more-detailed maps of areas more likely to contain asbestos.



If asbestos might be present, stay on paved trails or areas with ground covering over the native soil.



Avoid old building sites or places with visible waste.

# How can I reduce asbestos exposure inside?

## Minimize possible sources.



Avoid touching or disturbing any possible asbestos-containing materials in your home. Pictures clockwise show examples of old pipe insulation, textured ceilings, damaged floor tiles, and vermiculite attic insulation.



Talk to your local or state environmental agency or an asbestos contractor about having asbestos-containing materials safely removed.

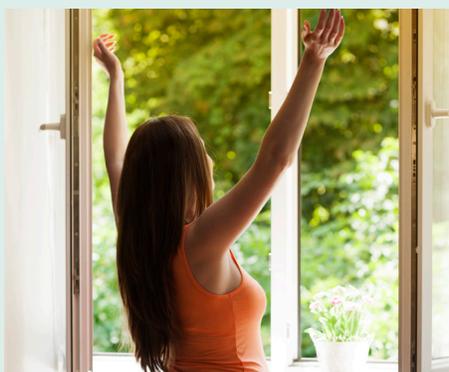
## Prevent dirt and dust from entering your home.



Use doormats and remove shoes before entering.



Wipe your pets with a damp cloth.



Keep windows and doors closed on windy days and during nearby construction.

## Clean properly.



Use a wet rag to dust, instead of a dry rag or duster.



Use a wet mop on non-carpeted floors.



Vacuum often using a vacuum with a high efficiency HEPA filter.



Use washable area rugs on your floors, and wash them regularly.