

ATSDR Record of Activity

Site: Crowson Avenue **Activity:** Technical Assist **Date:** 01/22/2013 **Time:** 1:30 PM
UID: gfu6 **Date:** 01/22/2013 **Time:** 1:30 PM

Site Name: Crowson Avenue Mercury
City: Baltimore **County:** State: MD
CERCLIS: Cost Recovery: 3AVG **Region:** 1

Site Status (1): Non-NPL **Site Status (2):** Removal

Record of Activity Type= General AROA
Activity: Health Consultation

Requestor: EPA
Contacts and Affiliation: Greg Ham, OSC EPA R3
Address: 1650 Arch Street
City: Philadelphia **State:** PA **Zip:** 19103

Request:

On 01/07/2013, EPA R3 OSC Greg Ham contacted ATSDR R3 requesting (1) a review of limited Lumex mercury vapor monitor readings from a residence and (2) a recommendation for addressing this contamination to protect the health of the residents.¹

Narrative Summary

Background:

On September 27th, 2012, a plumber released an unknown quantity of elemental mercury within a residence on Crowson Avenue in Baltimore, Maryland. The release occurred while dismantling a hot water heating system expansion tank in a closet on the second floor of the house. The heating system pipes contained mercury, which was released when the system was being dismantled. The plumber removed the tank and took it to their shop.

The husband was the only family member at the residence at the time of the release. He contacted the Maryland Department of the Environment (MDE) for assistance. MDE responded and observed a trail of visible mercury from the 2nd floor closet to the front door. Mercury beads were visible on the basement, 1st and 2nd floors--particularly in the basement near the "source pipe." Via visible inspections and air monitoring, MDE followed the off-site trail of mercury and assessed the plumber's staff and vehicles. MDE conducted air monitoring and noted elevated mercury levels on workers' clothing and condemned their clothing before they left work for the day. MDE also verified the plumber's van was not grossly contaminated and suggested continued ventilation of the vehicle to remove vapors. MDE collected the expansion tank and will dispose of the tank due to mercury contamination being present.^{1,2}

The family voluntarily evacuated their home the day after the mercury spill; the home has not been occupied since September 28th. The family consists of a husband, pregnant wife (due in April) and a three year old child.

MDE notified EPA of this mercury release in September 2012, specifically noting the

state would be unable to address the contamination at this residence. EPA OSC Ham conducted a site visit on October 1, 2012, and notified the property owner that EPA was able to assist with a cleanup if requested by the owner. The property owner did not request assistance from EPA until late December 2012.¹ OSC Ham requested that EPA's contractors conduct air monitoring at the residence on 1/4/13. OSC Ham shared the Lumex mercury vapor monitor readings from the residence with ATSDR for public health evaluation on 1/7/13. Table 1 summarizes the mercury vapor concentrations documented by EPA's contractor in January 2013. Note, these readings were collected from a vacant home with low indoor air ambient temperatures. Therefore, breathing zone mercury vapor concentrations under normal living conditions (higher indoor air ambient temperature) would be expected to be considerably higher.

Table 1
Summary of EPA Contractor's Lumex Mercury Vapor Monitoring
Crowson Avenue Mercury Site³

Location	Concentration (µg/m3)*	Comments
Basement (unfinished) - stair landing	7.0 maximum; 4.2 median	
Basement - Clothes (near dryer)	>39 maximum; 23 median	
Source pipe	>100 maximum	Mercury beads present
1 st floor - Living room rug	2.4 maximum; 2.1 median	
1 st floor - Dining room floor	2.7 maximum; 1.5 median	
1 st floor – stairs	0.2 median	Micro-bead of mercury on step
2 nd floor – Hallway floor	5.8 maximum	
2 nd floor - Inside closet	3.5 median	
2 nd floor – closet floor	94.5 maximum; 46.8 median	Mercury beads observed in floor joints
2 nd floor – floor under clothes	22 median	
2 nd floor – inside cabinet	13.1 maximum; 9.8 median	½ Centimeter-wide mercury bead
Stairs to attic	10.9 median	
Attic – radiator	2.3 median	
Attic – rug	5.6 maximum; 4.8 median	
Attic – breathing zone	2.4 median	

*Vaporization of mercury will be highly influenced by room temperatures and will not provide a representative concentration under normal living conditions (room temperature of 68-72 degrees Fahrenheit). START documented room temperatures of 51-53 degrees Fahrenheit.

Discussion:

Elemental mercury vapor can easily cross the blood brain and placental barriers. However, much of the inhaled mercury will be quickly oxidized to the divalent cationic form that does not readily cross either barrier. Inhalation of mercury vapors at extremely high concentrations may produce acute, corrosive bronchitis (inflammation of the lung bronchioles) and, if not fatal, may be associated with adverse symptoms of the central nervous system (CNS). The vapors primarily adversely affect the CNS and kidneys. ATSDR's chronic minimal risk level (MRL) for mercury inhalation exposure is set at 0.2 µg/m3. An inhalation MRL is an estimate of daily exposure to a chemical that is not likely to result in non-cancerous adverse health effects over a specified duration for populations, including sensitive sub-populations (i.e. children, pregnant woman). A chronic MRL is based on exposure which exceeds one year. Mercury levels in the air at this residence were detected at levels exceeding 10 micrograms per cubic meter (µg/m3). Per ATSDR's document: Chemical-Specific Health Consultation, Action

Levels For Elemental Mercury Spills, ATSDR considers a concentration of residential indoor air mercury vapor at or above 10 µg/m³ a level at which intervention is recommended to protect public health.⁴


Action Required/Recommendations:

ATSDR concludes that the Crowson Avenue residence mercury air monitoring results are currently a public health hazard for building occupants and/or visitors. Therefore, ATSDR concurs with the current re-location of the residents and recommends mitigation of these exposures prior to re-occupancy of the home. ATSDR supports EPA's planned action to remove the elemental mercury contamination in the residence, treat the home to remove mercury vapors, and sufficiently assess the house and its contents (i.e., furniture, rugs, etc.) under normal living conditions (68-72 degree Fahrenheit room temperatures and little to no ventilation for up to 8 hours prior to sampling) to confirm the residence is safe for re-occupancy.

References:

1. US EPA. 2013. Verbal communications between EPA R3 OSC Greg Ham and ATSDR Lora Werner and Robert Helverson. January 7 and 8.
2. Maryland Department of Environment (MDE). 2012. MDE Amended Report of Observations. Last updated October 1, 2012.
3. U.S. Environmental Protection Agency (EPA). 2012. Lumex Mercury Vapor Summary Table.
4. ATSDR. 2012. Chemical-Specific Health Consultation for Joint EPA/ATSDR National Mercury Cleanup Policy Workgroup - Action Levels For Elemental Mercury Spills. March 22.

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