

Health Advisory:

Mercury Spills in the St Louis Area

December 8, 2021

This document will be updated as new information becomes available. The current version can always be viewed at <http://www.health.mo.gov>.

The Missouri Department of Health and Senior Services (DHSS) is now using four types of documents to provide important information to medical and public health professionals, and to other interested persons.

Health Alerts convey information of the highest level of importance which warrants immediate action or attention from Missouri health providers, emergency responders, public health agencies, and/or the public.

Health Advisories provide important information for a specific incident or situation, including that impacting neighboring states; may not require immediate action.

Health Guidances contain comprehensive information pertaining to a particular disease or condition, and include recommendations, guidelines, etc. endorsed by DHSS.

Health Updates provide new or updated information on an incident or situation; can also provide information to update a previously sent Health Alert, Health Advisory, or Health Guidance: unlikely to require

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Health Advisory
December 8, 2021

FROM: DONALD KAUEAUF, DHSS DIRECTOR

SUBJECT: Mercury Spills in the St. Louis Area

Recently, two separate mercury spills have been reported in the St. Louis area (St. Charles county and St. Louis City). In both instances, mercury was spilled in a residential setting and further tracked or taken to other residential properties, and thus impacted those properties.

Residents of those homes have been tested for mercury poisoning, and some of the impacted individuals required treatment and hospitalization after showing symptoms of mercury toxicity. In all, nine school settings were evaluated to determine if mercury had been tracked to them. No mercury levels requiring remediation were found in schools.

The U.S. Environmental Protection Agency (EPA) and Missouri Department of Natural Resources (DNR) have completed investigation of these spill and no additional individuals exposed from these events are expected to present for medical care. However, these two events provide examples that mercury spills are still possible and should remain a consideration when patients present with mercury exposure symptoms.

These particular spill scenarios involved elemental mercury, the silver-gray metal used in some thermometers, thermostats, fluorescent lamps, among other things. The nervous system is very sensitive to this type of mercury. Inhaling elemental mercury vapors is more of an exposure concern than dermal or ingestion routes. There are several reasons for why this occurs: elemental mercury in its liquid form is poorly absorbed, elemental mercury produces mercury vapors at room temperature which are readily absorbed through mucous membranes in the lungs, and elemental mercury is highly diffusible and able to pass through cell membranes and blood-brain barriers. The symptoms described below are all associated with the inhalation exposure route.

According to the Agency for Toxic Substances and Disease Registry (ATSDR), "Inhalation of high concentrations of elemental mercury vapor may rapidly produce cough, dyspnea, chest pain, nausea, vomiting, stomatitis, diarrhea, fever, and a metallic taste in the mouth." ATSDR also has found that eye irritation and vision problems are possible. Children younger than 30 months are particularly vulnerable and at an increased risk for pulmonary toxicity. Exposures to large amounts of mercury can happen suddenly because mercury vaporizes rapidly into the air. For chronic exposures, ATSDR states "Chronic exposure primarily affects the central nervous system. Chronic exposure produces a classic triad of tremor, gingivitis, and erethism (insomnia, excessive shyness, and emotional lability). Other psychological findings include headache, short-term memory loss, and anorexia. Fine tremors in the fingers, eyelids, and lips are early signs of mercury toxicity." These symptoms may progressively evolve to more severe symptoms such as depression, significant tremors, and severe nervous system disturbances as mercury accumulates in the body over time. A decreased kidney function and signs of inflammation may be indicative of higher levels of mercury accumulation. However, some individuals with high mercury levels may not exhibit symptoms.

Both urine and blood can be tested to confirm mercury exposure. Urine tests are the most appropriate, and can be used to diagnose both acute and chronic exposures. Any urine measurement above 2 micrograms/liter is considered elevated above the background level. Mercury has a short lifespan in blood, so tests must be administered within three days of exposure. The 95th percentile of blood mercury level in the United States is 5 micrograms/liter.

Low level exposures to mercury may not need to be treated if no symptoms are exhibited as mercury exits the body on its own by urination. The half-life of elimination for whole body mercury is estimated at 60 to 90 days. Individuals with severe symptoms may need to be hospitalized and receive supportive care and be monitored. In some cases, drug chelation may be appropriate.

For more information, see:

ATSDR's Evaluating Mercury Exposure: Information for Health Care Providers

https://www.atsdr.cdc.gov/mercury/docs/11-229617-b_mercury_508_healthcare_providers.pdf

ATSDR's Mercury Quick Facts for School Nurses

https://www.atsdr.cdc.gov/mercury/docs/11-229617-H-508_SchoolNurse.pdf

Missouri Department of Natural Resources Bulletin

<https://content.govdelivery.com/accounts/MODNR/bulletins/2fd1364>

Missouri healthcare providers and public health practitioners: Please contact the Missouri Department of Health and Senior Services' (DHSS') Bureau of Environmental Epidemiology at 573-751-6102 with questions regarding this health advisory.