Medical Treatment for an Elemental Mercury Exposure Incident

This fact sheet only addresses elemental mercury (the pure form of the metal, when it is not combined with other chemicals). There are other forms of mercury, such as compounds found in contaminated fish, known as organic mercury.

What is elemental mercury?
Elemental mercury is a silver, odorless liquid. At room temperature, it will partly vaporize to a colorless, odorless gas. The hotter it is, the more it will evaporate into the air. It is found in old thermometers, old blood pressure machines, dental amalgam, fluorescent light bulbs, batteries, switches (including thermostats), meters, science classrooms and laboratories, industrial and electronic waste, and materials used in certain religious rituals.

Breathing in elemental mercury is the most common route of exposure. Improper clean-up of spills can lead to overexposures. If you get it on your skin, small amounts of it may be absorbed slowly and may cause skin irritation. If swallowed in small amounts, it will pass through your body with almost no absorption as long as your gastrointestinal tract is normal.

What are the symptoms and health effects of mercury exposure?
Short term (hours) inhalational exposure to high levels of elemental mercury can result in cough, chills, fever, shortness of breath, and sometimes nausea, vomiting, and diarrhea. Other symptoms may include weakness, headache, metallic taste, visual disturbance, wheezing, high blood pressure, irregular heartbeat, personality changes, tremors, and redness of the skin. Following exposure, you may develop lung damage, excessive salivation, gastrointestinal problems, and kidney damage. Years of exposure to low levels of mercury can result in damage of the lining of the mouth and/or the lungs, as well as brain, kidney, and nerve damage.

Individuals who experience a one-time sudden exposure to elemental mercury at work, should:

- Gather as much information as you can about the type and amount of exposure, including labels, Safety Data Sheets (SDS), and the medical emergency phone number on the SDS.
- If you are feeling ill, seek medical attention at an emergency room immediately.
- Contact Poison Control at 1-800-222-1222 for advice about treatment and follow their recommendations.
- Once the urgent situation has been taken care of, you may contact the nearest occupational health clinic in New York State (http://www.health.state.ny.us/environmental/workplace/clinic.htm) or in the country (http://www.aoec.org/directory.htm) for recommendations and follow-up.
- Report any exposure to your employer immediately. Complete an incident or exposure form. If neither are available, write a memo informing them of the exposure incident (date, time, location, what you were doing in the area, and for how long). Keep copies.
Do I need medical attention?

If you have been exposed to elemental mercury and develop cough, chest tightness or pain, shortness of breath, excessive saliva, decreased urine, or change in urine color within hours or days, you need immediate medical care. If you have been exposed in an enclosed area where mercury has been recently heated, you should seek immediate care. If mercury liquid gets in your eye or large amounts get on your skin, decontaminate the area by flushing with water, and proceed to seek medical care as above. Low-level exposures (such as a broken light bulb or thermometer) usually lead to no lasting health effects, and medical treatment is not needed.

You should see a specialist in occupational and environmental medicine or in medical toxicology if you continue to have symptoms. If you were exposed to large amounts of mercury in an area where mercury was heated or vacuumed or swept with a broom, evaluation by such a physician is recommended even if you are not presenting any symptoms. If you are pregnant and have been exposed, you should see your obstetrician even if you have no symptoms. The physician should do a thorough exam and pay special attention to your lungs, kidney, nervous system, heart, mouth, and eyes.

Specific tests for the presence of mercury in blood and urine can be useful to assess your level of exposure. In cases of severe mercury poisoning, your physician may recommend a complete blood count, blood tests for kidney and liver function, and urine tests. For severe inhalation exposures, a chest x-ray and blood gases are recommended. Lung function tests can assess lung damage. Abdominal x-rays should be ordered if you have ingested more than a small amount of elemental mercury (more than the contents of a thermometer). Neurobehavioral tests, nerve conduction tests, and urine tests for certain proteins can assess long term nervous system and kidney effects.

Are there tests that would prove I have recently been exposed?

Blood tests can show recent exposure, but must be done quickly since half of the mercury will be gone from the blood within 3 days. Blood tests may, however, be positive from eating contaminated fish. Urine tests are used to detect elemental mercury (not dietary) exposures. Since it takes 60 to 90 days to rid half the mercury from your body by urination, urine tests can be compared to normal population levels to prove whether you have been exposed in the last couple of months.

What is the treatment for acute exposures?

If elemental mercury is inhaled, patients are removed from exposure and may need rescue breathing, oxygen, mechanical ventilation, or medicine to open up the breathing passages. If mercury gets on the skin, it should be washed to prevent further exposure. If mercury is swallowed, one should NOT induce vomiting or give activated charcoal. Treatment is not necessary for ingestion, unless extremely large amounts are swallowed or you have a prior serious gastrointestinal tract condition (such as active ulcerative colitis). Symptomatic patients may be treated by chelation therapy (removal of the metal by binding it to another chemical that is easily eliminated from the body). Chelation is generally reserved for life-threatening cases and should not be used simply to reduce levels in the absence of symptoms. It should be administered by doctors with expertise in this type of treatment and usually in consultation with a medical toxicologist or poison control center.

Follow-up by an occupational or environmental physician or medical toxicologist should be conducted if you had a large exposure, or if you have symptoms or elevated urine levels.

Suggested further readings:


Environmental Protection Agency: http://www.epa.gov/mercury/about.htm

This information is intended for general reference purposes only and is not intended to address specific medical conditions. It is not the intention of this fact sheet to provide specific medical advice, but rather to provide users with information to better understand workplace exposures. This information is not intended to be used as a substitute for professional medical advice or a medical exam.

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