

U.S. Environmental Protection Agency
Office of Pollution Prevention and Toxics
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INFORMATION FACT SHEET: HAZARDS TO CONSUMERS **USING METALLIC MERCURY IN THE** **HOME ENVIRONMENT**

HAZARD WARNING

Avoid all contact with metallic mercury. Do not swallow mercury or rub it on the skin. Inhaling mercury vapor is particularly dangerous because mercury is most easily absorbed by this route. Exposure to high concentrations of mercury vapor may occur when mercury is heated; this can cause serious lung damage and sometimes death. Small amounts of mercury spilled or spread in the home may produce low concentrations of mercury vapor. If this mercury vapor is inhaled over a period of time, mercury accumulates in the body and damages the brain, nerves, kidney and lungs. Young children are particularly sensitive.

WHAT IS MERCURY?

Elemental or metallic mercury (also known as Azogue, Hg, or quicksilver), is a silvery metal which is liquid at room temperature. Some household items, such as thermometers, contain mercury and are safe to use unless broken. Mercury is heavy and when dropped breaks up into smaller droplets which can rejoin easily, travel through small cracks and crevices, or become strongly attached to certain materials. Mercury can evaporate and produce invisible, odorless toxic vapors when exposed to air. If mercury is spilled or otherwise exposed to air in a home, these toxic vapors can form in the house and cause serious health effects for inhabitants, especially children and infants.

Although the subject of this fact sheet and warning is the elemental, metallic form of mercury, other forms of mercury exist and they are also toxic. The nature and degree of toxicity of these different forms of mercury vary due to differences in physical and chemical properties, absorption potential, metabolism and mechanisms of action. Medical treatment also varies. Inorganic salts of mercury were used in the past as biocides and medicines. Organic forms of mercury such as methyl mercury are toxic to many species in the environment and present a problem for the human population primarily through the consumption of contaminated fish and shellfish.

WHAT ARE DANGEROUS USES OF METALLIC MERCURY IN THE HOME?

Any use of uncontained mercury in the home can be dangerous. A number of unsafe household uses have been identified:

- * sprinkling or spreading mercury in the house or car
- * mixing mercury with water or other liquids and using this mixture as a washing solution in the home
- * burning mercury in candles for good luck (white magic)
- * using it for hobbies, for example, heating mercury on a stove to purify gold or silver
- * swallowing mercury as a folk remedy (Azogue) to treat constipation, colic, or stomach ache (empacho)
- * playing with it as a novelty
- * carrying it as a charm

WHAT HAPPENS WHEN YOU USE METALLIC MERCURY UNSAFELY IN THE HOME?

If metallic mercury is heated or burned, it vaporizes quickly, creating a concentrated vapor which can cause serious lung damage and death if inhaled. In addition, as the heated vapors cool, the mercury condenses on household surfaces such as rugs, walls, and furniture. These household surfaces continue to release low concentrations of mercury vapor at a slow rate. If mercury is spilled and exposed to the air it will vaporize slowly and taint the air in the house. Metallic mercury may have a metallic taste, but mercury vapor is invisible and has no odor or taste. Adults and children breathing mercury vapor at low levels for weeks or months will accumulate mercury in their bodies and eventually get sick. Metallic mercury can also enter the body by absorption through the skin, or if swallowed, by absorption through the stomach; however, the amount of mercury that can enter the body by these routes is extremely small (for ingestion approximately 0.01%). Larger amounts of mercury (approximately 80%) can enter the body when mercury vapor is inhaled. Once mercury enters the body, it is excreted slowly.

WHAT ARE THE SYMPTOMS OF METALLIC MERCURY POISONING?

When metallic mercury enters the body it can cause brain, nerve, kidney, and lung damage, and in extreme cases, death. Mercury is especially toxic to young children and infants. You may not have any symptoms indicating that you have been poisoned, or your symptoms may seem unimportant or hard to distinguish from other common ailments.

If you are exposed to low levels of mercury vapor, it may take a while for mercury to accumulate in the body and cause toxic effects. However, when symptoms are present, they often include the following:

- * skin rashes, particularly redness and peeling of the hands and feet in children
- * tremors
- * muscular weakness
- * depression
- * personality changes
- * short-term memory loss

WHAT IS THE MEDICAL TREATMENT FOR METALLIC MERCURY POISONING?

If your doctor suspects metallic mercury poisoning, he may test your blood or urine to detect elevated mercury levels in the body. For acute effects due to exposure to high levels of mercury, physicians often test whole blood. If exposure to low levels of mercury vapor occurs over a period of time, a 24-hour urine sample is preferred. Blood levels rarely exceed more than 1.5 micrograms per deciliter in the unexposed population, and a blood concentration of 5 micrograms per deciliter or greater is considered the threshold for symptoms of toxicity. For urine samples, values less than 20 micrograms per liter are considered background. Values in excess of 20 micrograms per liter are associated with a range of symptoms.

If the level of mercury detected in the blood or urine is considered high, the doctor may prescribe chelating agents which bind mercury ions to them. The mercury and the chelating agent are then excreted from the body together. If no chelating agents are used, mercury can be excreted by the body but not as quickly. The excretion half-life for mercury is 33.1 days. A number of chelating agents are available and some can increase the excretion rate threefold. As with any medicine, chelating agents may cause side effects.

WHAT SHOULD YOU DO IF YOU HAVE USED METALLIC MERCURY UNSAFELY OR SPILLED IT IN YOUR HOME?

If you have burned, heated, sprinkled, or spilled mercury in your home, you should consult a medical professional as soon as possible in order to determine if your family has been affected by mercury. Depending on a number of factors in your home, even small amounts of metallic mercury can cause serious problems, especially for children. Call your doctor, clinic, local Poison Control Center, or local health department for more information on symptoms, proper evaluation, and treatment.

If you have burned, heated, sprinkled, or spilled mercury in your home and mercury vapor can be detected, you may need to clean your house and, in some cases, the furniture. Mercury vapor is odorless and invisible and special equipment is required in order to measure the mercury concentrations in the house. A good first step is to get as much fresh air into the house as possible, as a temporary measure, until your house can be

assessed and cleaned by a professional. Mercury could take years to evaporate. If pools of mercury are visible, the mercury should be captured and placed in a closed container. If the mercury was spilled on a rug, the rug should be carefully removed and placed in a plastic bag for disposal or special cleaning. Do not send the rug to the dry cleaners. The floor beneath the carpet should also be inspected for mercury. Do not try to remove mercury with a vacuum cleaner or other household vacuum appliance. This will only spread mercury in the house and contaminate your appliance. Only a special mercury vacuum should be used. Because burning or heating mercury in the home may cause mercury to condense on all household surfaces, special cleaning agents may be needed to clean those surfaces, including walls, toys, furniture, drapes, upholstery, etc. In this case, it is best to check for the presence of mercury vapor in the home before initiating clean-up.

HOW DO YOU CLEAN-UP MERCURY IN A HOME OR CAR?

Your home must first be evaluated to determine if mercury vapor is present. A professional can determine what areas of the house are affected by measuring the level of mercury vapor with special equipment, and by learning about how mercury was used in the house. To evaluate or remove mercury from your home, you should contact private testing services, which are often listed in the yellow pages under "environmental or ecological services," or refer to EPA's publication Survey of Indoor Air Quality Diagnostic And Mitigation Firms (#EPA 402-R-93-075), which lists firms in each state. The EPA has not established a "safe" clean-up level for metallic mercury.

Contact your local sanitation or integrated waste management authorities for information on the disposal of rugs or other household furnishings that may contain mercury. It may be illegal to dispose of mercury contaminated articles in the trash. Some states provide hazardous waste disposal services.

WHOM CAN I CONTACT FOR MORE INFORMATION ABOUT MERCURY?

- * County or State health department (see your phone directory)
- * Local Poison Control Center (see your phone directory)
- * Local Fire Department
- * Environmental Protection Agency TSCA hotline: (202) 554-1404

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