



Information for Health Care Providers on Mercury Exposure and Poisoning

Mercury exists in three forms: elemental, inorganic, and organic. Because mercury occurs naturally in the environment, everyone is exposed to low levels of mercury in the air, water, and food. Health effects caused by mercury exposure depend on the form and dose of the mercury, the duration and route of exposure to the mercury, and the age of the person exposed.

Since mercury exposure and poisoning can be very dangerous, health care providers should:

- Be able to recognize the three forms of mercury and their associated exposure risks and health effects.
- Order appropriate laboratory tests when exposures occur or when patients have symptoms suggestive of mercury poisoning.
- Guide patients to appropriate patient education materials to help prevent mercury exposure.

Elemental Mercury¹

Sources:

- Mercury-containing devices, such as thermometers, barometers, sphygmomanometers, thermostats, and fluorescent light bulbs
 - These devices can release elemental mercury when broken.
- Occupational exposures, such as in dental offices, thermometer factories, and other industrial settings
- Some cultural or spiritual practices
- Dental amalgam fillings
 - These fillings release elemental mercury, but there is no evidence of associated toxicity.
- Mercury-containing skin-lightening creams
 - Elemental mercury vapors can be emitted from these creams or the skin of people who use them and contaminate indoor air, clothing, bedding, towels, and washing machines.

Route of exposure: Elemental mercury is a liquid at room temperature, can vaporize into the air, and is well absorbed by inhalation. Elemental mercury vapor is tasteless, odorless, and colorless and can accumulate in poorly ventilated indoor spaces. Ingestion presents minimal

¹ Also known as metallic mercury, quicksilver, liquid silver, azogue, mercurio, and vidajan.

health risks in most people because gastrointestinal absorption is poor. Dermal absorption is also limited, but exposure to elemental mercury may cause skin and eye irritation.

Health effects:

- Acute exposure: Weakness, chills, dyspnea, nausea, vomiting, diarrhea, and visual disturbances
- Chronic exposure: Tremors, gingivostomatitis, anxiety, emotional lability, forgetfulness, insomnia, anorexia, erethism, and acrodynia (in young children)

Laboratory testing:

- Screening can be performed with a spot urine sample from the first morning void. Results should be corrected for creatinine. If the mercury concentration is elevated, perform a 24-hour urine collection.
- Twenty-four-hour urine mercury measurement is the gold standard diagnostic test.
- Blood testing for elemental mercury is of limited value.

Prevention:

- Carefully handle and properly dispose of mercury-containing products.
- Do not vacuum spilled mercury. Vacuuming will cause the mercury to vaporize and increase exposure.
- Call **311** for mercury spills larger than the amount found in a fever thermometer.

Inorganic Mercury

Sources: Some imported health remedies, mercury-containing skin-lightening creams, and antiseptics

Route of exposure: Ingestion or skin absorption. Many inorganic mercury salts are corrosive to the skin and gastrointestinal tract. People who live in the same household as people who use skin-lightening creams can be exposed through skin-to-skin contact.

Health effects:

- Acute exposure: Nausea, vomiting, severe abdominal pain, and bloody diarrhea
- Chronic exposure: Proteinuria, acute tubular necrosis, nephrotic syndrome, metallic taste, gingivostomatitis, rash, paresthesia, irritability, difficulty concentrating, tremors, memory loss, depression, insomnia, weight loss, and fatigue

Laboratory testing:

- Screening can be performed with a spot urine sample from the first morning void. Results should be corrected for creatinine. If the mercury concentration is elevated, perform a 24-hour urine collection.
- Twenty-four-hour urine mercury measurement is the gold standard diagnostic test.
- Blood testing for inorganic mercury is of limited value.

Prevention: Avoid imported health remedies and cosmetics that may contain mercury. For more information, see [Resources for Providers](#) on Page 4.

Organic Mercury²

Sources: Most fish and shellfish contain some organic mercury. Large predatory fish, such as shark, swordfish, king mackerel, tilefish, tuna used for sushi or tuna steaks, grouper, orange roughy, marlin, and Chilean sea bass, accumulate high organic mercury levels in their bodies. Some skin-lightening creams also contain organic mercury.

Route of exposure: Ingestion through seafood.

Health effects: Most people do not experience toxicity from organic mercury ingestion. Chronic exposure to very high amounts of organic mercury can cause neurotoxicity, including perioral paresthesia, visual field constriction, deafness, and ataxia. Fetuses and young children are more susceptible to toxicity, and very high concentrations of organic mercury can cause irreversible damage via in utero exposure, even if a pregnant person is asymptomatic.

Laboratory testing: A blood mercury measurement can be obtained for screening purposes. Blood mercury can be elevated for up to five days after eating a seafood meal, so results should be interpreted in the context of recent diet. If the blood mercury concentration is elevated, perform a 24-hour urine collection.

Prevention: Pregnant or breastfeeding people and young children are encouraged to eat fish as an excellent source of nutrition but should avoid fish containing the highest levels of mercury. They should use the Eat Fish, Choose Wisely brochure available at on.nyc.gov/eat-fish-brochure to select appropriate types of fish and serving sizes and adhere to local fish advisories when consuming locally caught fish.

Management of Mercury Poisoning

- Symptoms generally resolve once the exposure is stopped.
- Call the NYC Poison Center at 212-POISONS (212-764-7667), 24/7, for guidance or consultation on:
 - o Diagnosing or treating mercury poisoning
 - o Chelation therapy (which is warranted in some cases)
- Call the NYC Health Department at 646-632-6102 during regular business hours for guidance on the decontamination of mercury spills.
- Laboratories are mandated to report mercury levels ≥ 5 nanograms per milliliter (ng/mL) in blood and ≥ 20 ng/mL in urine to the New York State (NYS) Heavy Metals Registry.³ For patients with elevated mercury levels, a representative from the NYC Health Department

² Also known as methylmercury.

³ For more information, visit health.ny.gov/environmental/workplace/heavy_metals_registry.

or NYS Department of Health may follow up with them.

Resources for Providers

- NYC Health Department — Hazardous Consumer Products
nyc.gov/hazardousproducts
- Centers for Disease Control and Prevention — Toxicological Profile for Mercury
www.cdc.gov/TSP/ToxProfiles/ToxProfiles.aspx?id=115&tid=24
- U.S. Food and Drug Administration — Mercury Poisoning Linked to Skin Products
fda.gov/consumers/consumer-updates/mercury-poisoning-linked-skin-products
- To find an NYS-certified laboratory to analyze mercury specimens, visit
wadsworth.org/regulatory/clep/approved-labs or call 518-485-5378.

Resources for Patients

- NYC Health Department — Eat Fish, Choose Wisely brochure
on.nyc.gov/eat-fish-brochure
- NYC Health Department — Hazardous Products: Mercury in Soaps and Creams
nyc.gov/site/doh/health/health-topics/mercury-in-soaps-and-creams.page
- NYC Health Department — Hazardous Products: Dietary Supplements and Remedies
nyc.gov/site/doh/health/health-topics/hazardous-supplements-remedies.page
- NYS Department of Health — Health Advice on Eating Fish You Catch
health.ny.gov/environmental/outdoors/fish/health_advisories
- U.S. Environmental Protection Agency — Choose Fish and Shellfish Wisely
water.epa.gov/scitech/swguidance/fishshellfish/fishadvisories/index.cfm

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