



CDC's Third National Report on Human Exposure to Environmental Chemicals

Spotlight on Mercury

Mercury is a naturally occurring metal found in air, water, and soil. It exists in several forms:

- **Elemental or metallic mercury.** This is a shiny, silver-white metal that is liquid at room temperature. It is used in thermometers, fluorescent light bulbs, and some electrical switches.
- **Inorganic mercury compounds.** Mercury combines with other elements, such as chlorine, sulfur, or oxygen, to form inorganic mercury compounds or "salts," which are usually powders or crystals. Mercury salts sometimes are used in antiseptic creams and ointments and in preservatives. Mercury salts once were used in nonapproved skin-lightening creams.
- **Organic mercury compounds.** When mercury combines with carbon, it forms organic mercury compounds. Methylmercury is produced mainly by microscopic organisms in contaminated water and soil, which can build up in fish, shellfish, and animals that eat fish.

How People Are Exposed to Mercury

People can be exposed to mercury by

- Eating fish or shellfish contaminated with methylmercury.
- Breathing vapors from spills, incinerators, or industries that burn mercury-containing fuels.
- Breathing contaminated air in the workplace or coming into contact with mercury during its use in the workplace (e.g., in dental offices, health services, chemical or other industries that use mercury).
- Breathing mercury vapor from dental fillings or medical treatments.
- Practicing culturally based or religious rituals that include mercury.

How Mercury Affects People's Health

- The nervous system is sensitive to all forms of mercury. Methylmercury and metallic mercury vapors are more harmful than other forms because more mercury in these forms reaches the brain. Very young children are more sensitive than adults to mercury. Mercury in the mother's body passes to the fetus and may accumulate there.
- Prolonged exposure to high levels of metallic, inorganic, or organic mercury can permanently damage the brain, kidneys, and developing fetus.
- Short-term exposure to high levels of metallic mercury vapors may cause effects including lung damage, nausea, vomiting, diarrhea, increases in blood pressure or heart rate, skin rashes, and eye irritation.
- Not enough information is available about people's exposure to all forms of mercury and cancer. The U.S. Environmental Protection Agency has determined that mercuric chloride and methylmercury may possibly cause cancer in people.

Levels of Mercury in the U.S. Population

- For the *Third Report*, scientists tested levels of mercury in blood of children aged 1-5 years and in women aged 16-49 years who took part in CDC's national study known as the National Health and Nutrition Examination Survey.
- Measurement of total blood mercury includes both inorganic and organic forms.
- Mercury exposure is important to monitor in women of childbearing age because mercury can cause adverse neurodevelopmental effects in the developing fetus at blood levels potentially attainable through dietary sources. Data from the *Third Report* for the period 1999-2002 show that all women of childbearing age had levels below 58 micrograms per liter ($\mu\text{g/L}$), a concentration associated with neurodevelopmental effects in the fetus.
- However, mercury levels in these women merit close monitoring because 5.7% of women of childbearing age had levels within a factor of 10 of those associated with neurodevelopmental effects. Defining safe levels of mercury in blood continues to be an active research area.

For More Information

- **Agency for Toxic Substances and Disease Registry**
Toxicological Profile for Mercury:
<http://www.atsdr.cdc.gov/toxprofiles/tp46.html>
ToxFAQs for Mercury:
<http://www.atsdr.cdc.gov/tfacts46.html>

■ **U.S. Environmental Protection Agency**

Mercury:

<http://www.epa.gov/mercury/>

■ **Food and Drug Administration**

What You Need to Know About Mercury in Fish and Shellfish:

<http://www.cfsan.fda.gov/~dms/admehg3.html>

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