



# REDUCING YOUR EXPOSURE TO HEAVY METALS IN OREGON

## WHAT ARE THE METALS OF CONCERN?

### Arsenic

Arsenic is a naturally occurring metal found in groundwater, mining ores and soil in Oregon. In its solid state, arsenic appears as a silver-gray, brittle semi-metal that tarnishes in the air. A major exposure pathway for arsenic is in contaminated well water and dust.



Mercury droplets on cinnabar

### Mercury

Mercury is an elemental liquid that is found mainly in cinnabar ore. At ordinary temperatures, it is a shiny, mobile liquid that is silver in color and has no odor. A major exposure pathway for mercury is through the ingestion of fish.

### Other metals

Antimony, copper, zinc, lead, and nickel are other metals that are common in Oregon soils. Follow the steps in this brochure to reduce your family's exposure to all heavy metals.

## WHEN ARE THESE METALS DANGEROUS?

### Arsenic

Arsenic and all of its compounds are poisonous but the toxicity varies. Inorganic arsenic, or arsenic combined with oxygen, chlorine, or sulphur, is thought to be the most toxic while most organic forms of arsenic are less toxic.

temperature, so breathing in vapors in the air is a health concern. The form of mercury found in fish is organic mercury and is consumed when fish are eaten.

### Other metals

Other metals can be poisonous but the toxicity varies depending on exposure route and how available the metal is in the environment.

### Mercury

Mercury and all of its compounds are poisonous but the toxicity varies. Metallic mercury can produce vapors at room

### Special points of interest::

- Information about how your family might be exposed and health effects of metals
- Steps to limit your family's exposure to metals in the soil, water and air
- Steps to limit your family's exposure to metals tracked into your home

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## HOW MIGHT I BE EXPOSED TO HEAVY METALS AROUND MY HOME?



At room temperature, mercury is a shiny, mobile metal.

Metals are found throughout the environment, but the risk they pose may or may not be significant. Risk depends on the concentration of the metals and the length of time someone is exposed to them. In general, the greater the amount of metals a person is exposed to, the greater the risk of developing health effects. Exposures can happen in a variety of ways, from children playing in the dirt to metal contaminated dust being tracked into homes.

For individuals living in areas

contaminated with metals, there are many ways to come into contact with metals in the soil. People are mainly exposed to metals through ingestion of contaminated soil, fish or water. Swallowing or breathing contaminated soils during normal activities like gardening is one way to ingest metals. Drinking water that is contaminated with metals and eating fish with high metal content are other ways that you might be exposed to metals.

## WHAT ARE THE HEALTH EFFECTS OF METALS?

### Arsenic

Short term arsenic poisoning may cause nausea, vomiting, diarrhea, weakness, loss of appetite, shaking, cough and headache.

Long-term exposure may lead to skin pigmentation, numbness, cardiovascular and vascular disease or diabetes. Arsenic is also known to cause several types of cancers.

### Mercury

Short-term effects of mercury poisoning include headaches, cough, fever, tremors, metallic taste in the mouth, salivation, chills, nausea, diarrhea, vomiting, lung irritation, difficulty breathing or fatigue.

Exposures to mercury that occur over a longer time period may include central nervous system effects, kidney damage, birth defects, tremors, or changes in behavior or vision. Pregnant women need to be extra careful to avoid exposure to mercury because small amounts can damage a brain

that is starting to form and grow.

### Other metals

Breathing high levels of antimony over a long time can irritate your eyes and lungs, can cause heart and lung problems, stomach pain, diarrhea, vomiting and stomach ulcers.

Copper is essential for good health, but high amounts can be harmful. Long-term exposure to copper dust or drinking water with higher than normal levels of copper can irritate your nose, mouth, and eyes, and cause headaches, cramps, dizziness, nausea, and diarrhea.

Nickel is required to maintain health in animals. The most common adverse health effect of nickel in humans is an allergic reaction.

Zinc is also an essential element, but large amounts of zinc can cause cramps, nausea, and vomiting.

Ingestion of lead can lead to a variety of adverse health effects, such as impacts on behavior and brain function.

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*To limit the potential for your family's exposure to metals, the guidelines in this fact sheet should be observed.*

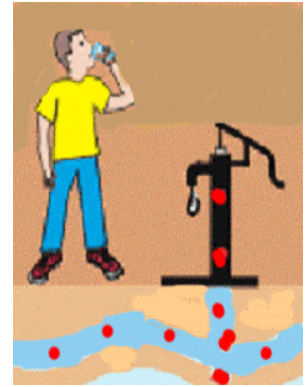
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## WHAT ABOUT METALS IN MY DRINKING WATER?

Activities such as mining or natural sources may result in high levels heavy metals into nearby ground water sources. At high levels, these metals may pose a health risk if they contaminate drinking water. In addition to man-made activities, underground rocks and soils may contain arsenic and lead. Household plumbing materials are the most common source of lead and copper in home drinking water, because they are often used in pipes, solder, or plumbing fixtures. Corrosive water may cause metals in pipes or soldered joints to leach into tap water. Finally, your water's acidity or alkalinity (often measured as pH) greatly affects corrosion.

The following advised steps can help you to learn more about the presence of metals in your water.

- Test your water for metals (see back of fact sheet for resources).
- Inspect exposed parts of the well for problems such as cracked, corroded, or damaged well casing, broken or missing well cap and settling and cracking of surface seals.
- To reduce the chance of contaminated run-off entering the well, slope the area around the well to drain surface runoff away from the well.
- If a well is contaminated at levels of health concern, use bottled water until the problem can be addressed.
- In general, water high in metals is suitable for use in bathing, laundry and non-agricultural irrigation.



**Test your water for heavy metals.**

## HOW CAN I REDUCE MY EXPOSURE TO CONTAMINATED SOILS NEAR MY HOME?

Since metals in soils can be a health hazard, gardeners and others who work or play in contaminated soils should take precautions to limit the amount of soils they swallow or breathe.

- Keep children from playing in contaminated dirt. The most likely way to become exposed to metals is from eating dirt; children tend to play in dirt and then put their hands or toys in their mouths.
  - Frequently wash toys, pacifiers and other items that go into children's mouths.
  - Cover bare soils with grass or other materials where possible.
  - Do not eat, chew, or smoke in areas with contaminated soil.
  - Consider wearing a mask if you spend time in dusty environments.
- The suggestions below are to help reduce exposure if you garden around your home.
- Wear gloves while gardening.
  - Wash all vegetables and fruits carefully (especially inside the crevices of broccoli or cauliflower) and peel them where possible.
  - Add clean soils to your garden
  - Consider establishing a raised bed using clean soils.
  - Dampen soils with water before you garden to limit the amount of dust you inhale.
  - Do not garden in soils with arsenic in excess of 20 ppm.

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*Children tend to play in the dirt and then put their hands or toys in their mouths. The most likely way to be exposed to metals in the soil is from eating dirt.*

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## WHAT DOES HEAVY METAL CONTAMINATION MEAN FOR MY HOME?

For homes built on or near contaminated soil, metals can be tracked into the home. Once these metals are indoors, normal household activities, such as vacuuming and dry dusting will simply move them around your home. The following steps will help to minimize indoor exposure.

- Have family members and guests remove shoes at the door to reduce tracking in metals from soils
- Prevent pets from tracking soils into your home and keep them out of areas with exposed dirt
- Use outside door mats to wipe feet
- Wash face and hands regularly, especially before meals
- Keep windows and doors closed on windy days and when soil may be disturbed, such as during construction
- Use a wet rag to dust all surfaces instead of a duster
- Use washable area rugs on your floors
- Do not dry sweep, but try wet mopping instead
- Do not use a vacuum to clean up contaminated dust, because they do not reduce dust and tend to stir it up. If you prefer to use a vacuum cleaner, consider fitting your vacuum with a High Efficiency Particulate Air (HEPA) filter
- Wash soil-laden clothes separately from other clothes.

We're on the web:  
[www.healthoregon.org/superfund](http://www.healthoregon.org/superfund)

## WHO CAN I CONTACT FOR MORE INFORMATION?

For health information on heavy metal exposures, contact the Superfund Health Investigation and Education (SHINE) Program within the Oregon Department of Human Services at 503-731-4012.

The Oregon Department of Environmental Quality is working with stakeholders, including local, state, and federal partners to identify and implement cleanup work at abandoned mine sites. For more information contact Jeff Christensen, DEQ Land Quality Division in Portland, 503-229-6391.

To learn more about safe well water or well water tests, contact the Oregon Well Water Program at 541-737-6294 or visit [www.wellwater.orst.edu](http://www.wellwater.orst.edu).

For more information about health effects from lead and testing information, please call the hotline at 1-800-368-5060.

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