

## **Heavy Metals**

### **What are heavy metals?**

Heavy metals are generally defined as metals with relatively high densities, atomic weights, or atomic numbers. Heavy metals are relatively uncommon in the Earth's crust but are present in many aspects of modern life. Some heavy metals are either essential for human health (such as iron, cobalt, and zinc) but can be toxic in larger amounts or certain forms. Other heavy metals, such as cadmium, mercury, lead, and arsenic are highly poisonous.

### **How could I be exposed to heavy metals?**

Heavy metals are found naturally in the earth, and become concentrated as a result of human activities. People may be exposed to small amounts of heavy metals through food, water, air, and commercial products. Potential sources of heavy metals include mining, tailings, industrial wastes, agricultural runoff, lead acid batteries, aging water supply systems, occupational exposure, paints and treated timber.

Of the numerous heavy metals, chromium, arsenic, cadmium, mercury, and lead have the greatest potential to cause health effects because of their widespread use, the harmfulness of some of their forms, and their frequency in the environment. Lead is the most prevalent heavy metal contaminant you are likely to encounter.

### **What is heavy metal poisoning?**

Overexposure to heavy metals can result in either acute or chronic poisoning. Whether poisoning occurs depends upon many factors including the amount you are exposed to, how you are exposed, and chemical form of the metal, as well as your age, nutritional and health status.

Acute poisoning is usually the result of high exposure to a metal at one time or over a short period of time. For example, swallowing a toy coated with lead or cadmium may cause severe symptoms. Acute exposures may be dangerous and cause serious health effects or even death. Chronic poisoning results from long term exposure to lower levels of heavy metals. Symptoms from chronic poisoning often develop more slowly over time but can be severe as well. An example of chronic poisoning includes regularly ingesting fish with high levels of mercury or arsenic in their tissue leading to adverse health effects on the nervous system.

### **How do I know if my symptoms are due to heavy metals instead of other common causes?**

Diagnosing a person with chronic heavy metal poisoning is often difficult and delayed. The correct diagnosis depends on a history of exposure, symptoms and appropriate testing. Symptoms may be varied and nonspecific and differ among the heavy metals. Your health care provider must take a detailed occupational and environmental history to determine how, and to what you may have been exposed. Tests may include sampling blood, urine, hair, and even nails

for heavy metals. Additional tests may be done to evaluate damage to your body from exposure to heavy metals such as testing your muscles and nerves if you have tingling or weakness in your arms or legs.

### **Are treatments available if I have been diagnosed with heavy metal poisoning?**

For many metals, there are treatments available that can remove the metal from your body. These treatments often use a drug known as a chelator. The chelator binds to the heavy metal and helps your body excrete the heavy metal, usually through the urine or feces. However, chelation therapy must be closely managed by your health care provider as the use of chelators may also cause harm if not used appropriately. Chelators not only bind to the toxic heavy metal to which you were exposed, but may also bind to important minerals in your body such as calcium and iron that you do not want to lose. Adverse effects from chelation therapy can include allergic reactions, dehydration, kidney damage and even death.

### **How can I prevent heavy metal poisoning?**

The most important step is to determine the source and remove it to stop any further exposure. This includes recognition of exposures in the home, but also at work, and in your surrounding environment.

Some simple ways to prevent exposure to heavy metals include:

- Limit dust in the home and remove your shoes when you go inside since metals can collect in dust and dirt.
- Be aware of local fish advisories for mercury or arsenic.
- Be aware of lead sources that may be in the home such as peeling paint, imported toys, or imported candies.
- If your job involves working with metals, make sure you do not bring any metal residue or powder home. This may include showering and changing clothes at work before coming home.
- Be aware of any industrial sources (operating or closed) that may be close to your home or neighborhood.
- If you have hobbies that involve working with metals, make sure the area is well ventilated. Wash your hands when you are finished.
- If you have older plumbing in your home, consider having your drinking water tested for metals.
- If you are using a well for your drinking water, you may want it tested for inorganics (includes metals)

**For additional information:**

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