

## Manganese

Manganese is a naturally-occurring element that can be found in the air, soil and water and is the second most common metal in water, after iron. Manganese is on the secondary drinking water regulation list provided by the EPA because there are not serious health concerns associated with its consumption. It can, however, cause staining of sinks or other plumbing fixtures. Manganese can also give the water a bitter metallic taste. The level where noticeable effects to the water may occur is 50 parts per billion.

## Zinc

Zinc is used in the production of corrosion-resistant alloys and brass, and for galvanizing steel and iron products. Zinc falls under the secondary drinking water regulation list provided by EPA, as zinc does not appear to cause adverse health effects but can cause other issues such as a bad metallic taste, color or odor. At higher levels, zinc can also cause corrosion in plumbing systems. Zinc's secondary maximum contaminant level is 5000 parts per billion

### **What is a MAXIMUM CONTAMINANT LEVEL (MCL) and what does it mean?**

*An MCL is the legal threshold on the amount of a substance that is allowed in a public water system. It is set based on the premise that a person could safely drink water for a lifetime with the substance present at that level.*

## Prevention Environmental Health Services

*Lake County Central Permit Facility  
500 W Winchester Road  
Libertyville, IL 60048  
Phone 847-377-8020*

*lakecountyil.gov/health*

*For more information about the information  
in this brochure:*

*water.epa.gov/drink*

*dph.illinois.gov/topics-services/  
environmental-health-protection*

- ◇ Water well owners may pick up sterile **metals** bottles to be filled and returned to our Environmental Laboratory in Libertyville.
- ◇ All metals analyses take approximately 2-3 weeks to obtain results.

Information provided by:



# COMMONLY FOUND METALS IN DRINKING WATER



**Assuring Safe Drinking  
Water**

## Arsenic

Arsenic can enter groundwater from natural deposits in the earth or from agricultural and industrial practices. The EPA has set the arsenic standard for drinking water at 10 parts per billion to protect consumers served by public water systems from the effects of long-term, chronic exposure to arsenic. Effects of exposure to arsenic include gastrointestinal distress, skin discoloration, circulatory problems, paralysis, blindness, along with several different forms of cancer.

## Cadmium

The major sources of cadmium in drinking water are corrosion of galvanized pipes, erosion of natural deposits, discharge from metal refineries, runoff from waste batteries and paints. A federal law called the Emergency Planning and Community Right to Know Act requires facilities in certain industries that manufacture, process or use significant amounts of toxic chemicals, to report annually on their releases of these chemicals. The EPA's maximum contaminant level for cadmium is 5 parts per billion. Long term exposure to cadmium could lead to possible kidney damage.

### **What is a PART PER BILLION?**

- ◇ **A part per billion is a very low concentration. It is roughly equivalent to:**
  - **1 inch in 16,000 miles**
  - **1 minute in 2 years**

## Copper

The major sources of copper in drinking water are corrosion of household plumbing systems and erosion of natural deposits. Copper mainly enters drinking water through contact with plumbing. The amount of copper in your water is primarily dependent on the minerals in your water, how long the water stays in your pipes, the temperature of the



**Drinking water pipes with visible copper corrosion.**

water, and the acidity of your water. Consumption of copper in your water can cause damaging health effects. These include gastrointestinal distress along with liver or kidney damage. Copper is undetectable by sight, taste and smell so if you suspect copper in your drinking water it is a good idea to have the water tested. The maximum contaminant level set by EPA is 1.3 parts per billion.

## Iron

Iron makes up 5% of the earth's crust and is very abundant in our soil. Iron is listed in the secondary drinking water regulation list provided by EPA. This means iron does not appear to cause detrimental adverse health effect but can create other issues. Iron-rich water is recognized for its unpleasant odor, taste and unusual reddish-brown color. Iron also has the ability to cause scale inside of water pipes which, when it builds up, can cause restricted or diminished flow. The secondary maximum detection limit for iron is 0.3 parts per billion.

## Lead

Lead can cause serious damage to the brain, kidneys, nervous system and red blood cells. Even in relatively low amounts lead can be harmful. EPA rules under the Safe Drinking Water Act limit lead in drinking water to 15 parts per billion.

Household plumbing materials are the most common source of lead in home drinking water. Corrosive water may cause metals in pipes or soldered joints to leach into your drinking water. The water's acidity or alkalinity (often measured as pH), temperature and mineral content greatly affect corrosion. The age of plumbing materials, in particular, copper pipes soldered with lead, is also important. Since 1988 the Act only allows "lead free" pipe, solder and flux in drinking water systems.

## Nickel

The primary source of nickel in drinking water is leaching from metals that enter the water from contacting pipes or other plumbing fittings. However, nickel may also be present in some ground waters as a consequence of dissolution from nickel ore-bearing rocks.

Overexposure to nickel can cause gastrointestinal distress and skin irritation. The maximum contaminant level of 100 parts per billion was dropped by the EPA in 1995. There are currently no limitations set by the EPA for levels of nickel in drinking water.