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## Fact Sheet

# Copper in Drinking Water

Copper is a mineral that occurs naturally in soil. It is an essential nutrient for humans and plants. The National Academy of Science recommends 2 to 3 milligrams (mg) of copper in the daily diet. Major food sources of copper are shellfish, nuts, grains, leafy vegetables, and stone fruits. Typical sources of copper from food range from less than 2 to 5 mg. per day.

Too much copper, however, can cause health problems.

## Health Issues

Health studies found copper in drinking water could add up to 45 percent more copper to a person's diet. A single dose of 15 mg of copper can cause nausea, vomiting, diarrhea, and intestinal cramps. Studies indicate the body excretes about half of ingested copper, which offers some protection against copper poisoning. However, it does tend to accumulate in the liver and kidneys.

Severe cases of copper poisoning can cause anemia and disrupt liver and kidney functions. Individuals with Wilson's and Menke's diseases (genetic disorders resulting in abnormal copper absorption and metabolism) are at higher risk from copper exposure than the general public, and can have serious health problems.

## How Copper Gets Into Drinking Water

In Washington, copper does not commonly occur in surface water or groundwater. Instead, most copper in drinking water results when household plumbing, faucets, and water fixtures corrode. Public water suppliers must monitor copper levels in drinking water to determine whether the water they distribute is corrosive. Water systems must treat the water to reduce corrosion when more than 10 percent of the tap water samples exceed 1.3 parts per million of copper.

Copper from plumbing corrosion can accumulate overnight. Running cold water from the tap for about one minute can reduce the copper that accumulates when the household plumbing is not in use.



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## **Detecting Copper in Drinking Water**

Blue-green stains on plumbing fixtures usually indicate the presence of copper in drinking water. Some factors that affect copper levels in household drinking water are:

- Acidic water (low pH)
- Soft water (low in calcium and magnesium)
- High chlorine residual levels
- Long standing time in pipes
- Elevated water temperature

## **Backflow Prevention for Carbonated Beverage Dispensers**

There is a risk of copper contamination from carbonated or acidic beverages that contact copper tubing, fixtures, or containers. Carbon dioxide used in soft drink dispensers is under pressure, often much higher pressure than the incoming water supply. This pressure difference creates the potential for carbon dioxide or carbonated water to backflow into the incoming water supply. The carbon dioxide mixture can leach copper from piping and fixtures into the water supply.

If you have a soft drink dispenser, the Uniform Plumbing Code requires you to install a reduced-pressure backflow prevention assembly (RPBA) to protect the water supply. You should install the assembly on the incoming water-supply pipe before the carbon dioxide injection point. Copper or other metallic piping should not be used past the RPBA. To ensure the assembly is working correctly, state regulations require you to have a certified Backflow Assembly Tester test the RPBA annually. Contact your water utility for more information about RPBAs and how to get them tested.

### **For More Information Washington State Department of Health:**

Southwest Region, Tumwater: (360) 236-3030

Northwest Region, Kent: (253) 395-6750

Eastern Region, Spokane Valley: (509) 329-2100

General Information: (800) 521-0323

Office of Drinking Water Web site: <http://www.doh.wa.gov/chp/dw>

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