wellcare® information for you about

Copper in Drinking Water

What is Copper?

Copper is a reddish metal that occurs naturally in rock, soil, water, sediment and air. It is commonly found in pennies, electrical wiring and water pipes. It is an essential element for living organisms, including humans. In small amounts, copper is a necessary part of our diet to ensure good health.

Copper occurs in drinking water primarily due to its use in plumbing materials and the subsequent corrosion of copper pipes. As with lead, all water is corrosive toward copper to some degree, even water termed non-corrosive or water that is treated to make it less corrosive.

Corrosivity toward copper depends primarily on the pH (acidity) of the water; acidic water (very low pH) is associated with the highest levels of copper corrosion. Many of the other factors that affect the corrosivity of water toward lead can also be expected to affect the corrosion of copper.

What are the health effects of Copper?

While copper is an essential nutrient, too much copper can cause adverse health effects, including vomiting, diarrhea, stomach cramps and nausea. Long-term exposure (more than 2 weeks) to copper also is associated with liver damage and kidney disease in infants under 1 year. People with liver damage or Wilson's disease are also more susceptible to copper toxicity.

The U.S. Environmental Protection Agency (EPA) set a limit of 1.3 parts per million for levels of copper in public water supplies, at which steps must be taken to control corrosivity in the water. This standard can be used as a guideline for tests on the water from your private well.

How do I test for Copper?

Before copper levels are high enough to harm your health, you may notice a metallic taste in your drinking water. You may also notice blue or blue-green stains around sinks and plumbing fixtures. The only way to be certain of the copper level in your drinking water supply is to have the water tested. Contact your state or local health department for a list of state-certified laboratories in your area.

The EPA's scientific data indicate that the newer the home, the greater the risk of copper contamination from new pipes. Copper levels decrease as a building ages. Over time, mineral deposits form a coating on the inside of the pipes, as long as the water is not corrosive. This coating insulates the water from the copper. However, during the five years it takes for this coating to form, water is in direct contact with the copper.

You should be concerned if your home has copper pipes, if you see signs of corrosion, such as frequent leaks, rust-colored water, stained dishes or laundry, or if your non-plastic plumbing is less than five years old. Your plumber or water well professional may have useful information, including whether or not the piping used in your home or area is made of copper.

If your tests show elevated levels of copper in your drinking water, it is likely that your lead levels may also be elevated, since lead and copper enter water under similar conditions. For this reason, you may wish to test your water for lead when you test for copper.

What are the treatments for Copper in drinking water?

Take the following steps to reduce your household's exposure to copper:

- **Run water for at least 15 to 30 seconds before drinking it, especially if you have not used your water for a few hours.**

Refrain from consuming water that has been in contact with your home's plumbing for more than six hours, such as overnight or during your work day. Before using water for drinking or cooking, "flush" the cold water faucet by allowing the water to run until you can feel that the water has become as cold as it will get. You must do this for each drinking water faucet. Taking a shower will not flush your kitchen tap.

Flushing is important because the longer water is exposed to copper pipes, the greater the possible contamination. The water that comes out after flushing will not have been in extended contact with copper pipes.

Once you have flushed a tap, fill one or more bottles with water and put them in the refrigerator for use later in the day. Don't waste the water that was flushed, usually one to two gallons. Use it for non-consumptive purposes, such as washing dishes or clothes or watering plants.

- **Use only cold water for drinking and cooking.**

Never cook with or consume water from the hot-water tap. Hot water dissolves more copper more quickly than cold water. If you need hot water, draw water from the cold tap and heat it on the stove or in the microwave. Use only thoroughly flushed water from the cold tap for any consumption.

- **Take steps to reduce the corrosivity of your household water.**

Well owners can treat their water to make it less corrosive. Corrosion control devices include calcite filters and other devices. Calcite filters should be installed in the line between the well and any copper pipe. Your health department or a well professional may be able to assist you in finding these products.

- **Consider point-of-use filters on household faucets in the kitchen and bath.**

There are a number of water filtering devices available. These employ media, such as carbon, ion exchange resins or activated alumina to filter copper from water. Remember to replace the filter periodically, as specified by the manufacturer. The effectiveness of these devices to reduce copper exposure at the tap can vary greatly. Before purchasing a filter, verify the copper treatment claims made by the vendor by researching the product on the Water Quality Association website and the NSF International website.

- **Address the presence of copper in your household plumbing.**

Contact a plumber in your area for more information.

For more information about Copper and Groundwater

Wisconsin Department of Natural Resources. Copper and your health. Retrieved on May 30, 2007 from www.dnr.wi.gov/water/dwg/copper.htm

U.S. Environmental Protection Agency (EPA). Consumer Factsheet on: COPPER. Retrieved on May 25, 2007 from www.epa.gov/safewater/contaminants/dw_contamfs/copper.html

For more information on your drinking water

Contact your local water well professional or health department for information on ground water in your area. The following websites provide up-to-date information on efforts to protect drinking water supplies and steps you can take as a private well owner. In addition, you may contact the wellcare® hotline at 1-888-395-1033.

Underwriters Laboratories Inc. Drink Well™ Well Water Testing	www.uldrinkwell.com
U.S. Environmental Protection Agency	www.epa.gov
Water Quality Association	www.wqa.org

For more information about wells and other wellcare® publications

wellcare® is a program of the Water Systems Council (WSC). WSC is a national nonprofit organization dedicated to promoting the wider use of wells as modern and affordable safe drinking water systems and to protecting ground water resources nationwide. This publication is one in a series of wellcare® information sheets. There were more than 60 available at the time this document was published. They can be downloaded FREE from the WSC website at www.watersystemscouncil.org. Well owners and others with questions about wells or ground water can also contact the wellcare® hotline at 1-888-395-1033 or visit www.wellcarehotline.org

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