

QUESTIONS & ANSWERS ABOUTCOPPER IN THE CT WATER COMPANY
AMSTON LAKE WATER SYSTEM

This fact sheet has been written to provide information about high levels of copper that were found in the CT Water Company (CWC) Amston Lake Public Water System, which serves 147 customers in Hebron, 32 customers in Lebanon and 2 customers in Colchester. This fact sheet should help answer questions about copper exposure, health effects, and regulation of copper in public drinking water.

MAIN POINTS

- ◆ For a few weeks (late November 2011 to January 2012), copper levels in drinking water at some homes served by the CWC Amston Lake Water System were significantly higher than the Environmental Protection Agency (EPA) drinking water Action Level of 1.3 milligrams per liter (mg/L).
- ◆ Copper levels in drinking water were high enough that they could have caused gastrointestinal symptoms such as nausea, vomiting, abdominal pain and diarrhea.
- ◆ The potential for gastrointestinal symptoms prompted a “Do Not Drink” advisory to the 181 year-round customers of the CWC Amston Lake Water System on January 6, 2012.
- ◆ The CWC Amston Lake Water System took measures to reduce copper levels so that by January 18, 2012, water testing showed that copper levels had stabilized. The “Do Not Drink” advisory was lifted at that time. Water samples continue to be collected on a twice weekly basis to ensure that copper levels continue to be stable.
- ◆ Copper levels were highest in the morning, before first use of the water. Running the water for a few minutes significantly reduced the copper levels. For this reason, the copper levels most people would have been exposed to throughout the day were well below the EPA Action Level.
- ◆ Copper levels in the CWC Amston Lake Water System were not high enough to cause liver or kidney damage, or any other permanent health effects.
- ◆ No medical monitoring is recommended for Amston Lake customers.
- ◆ Federal and state law requires the CWC Amston Lake water system to routinely test for many water quality parameters including copper. Historic copper test results meet federal and state law. The CWC is required to continue testing the water for copper.

BACKGROUND

In December 2011, Connecticut Water Company (which owns and operates the water system) conducted investigatory sampling in a few homes served by the CWC - Amston Lake Water System to investigate a customer complaint they received. These initial sample results indicated the presence of copper at levels greater than the Action Level set by the U.S. Environmental Protection Agency. These results prompted the CWC to test drinking water in more homes. The additional tests showed that copper was present at elevated levels in some homes throughout the water system. These tests prompted the CWC to issue a "Do Not Drink" advisory to its customers on January 6, 2012. The advisory was lifted on January 18, 2012, when water testing showed that copper levels had stabilized as a result of treatment installed at both sources of supply to increase pH levels and reduce the corrosivity of the water.

WHAT IS COPPER?



Copper is a metal that occurs naturally in the environment. Copper is an essential element, which means that everyone must get small amounts of copper in their diets in order to be healthy. Copper is used to make products such as wire, plumbing pipes and sheet metal. Copper is also combined with other metals to make brass and bronze pipes and faucets. Copper compounds are used in agriculture to treat plant diseases like mildew and for wood, leather and fabric preservatives.

HOW MIGHT I BE EXPOSED TO COPPER?

Everyone gets small amounts of copper in their diet, which is necessary for good health. For more information about nutrition and copper, visit this web site: <http://www.nlm.nih.gov/medlineplus/ency/article/002419.htm>. Besides your diet, the most likely way to be exposed to copper is from drinking water, especially if your water is corrosive (has low pH) and your water travels through copper pipes.

It is important to remember that copper levels in drinking water are highest when the water sits in copper pipes overnight. Running the water in the morning for a few minutes before you use it will reduce the copper level in your water.

When you have copper in your drinking water, the main way it gets into your body is through ingestion (consuming the water). Copper does not easily evaporate from water so inhalation (breathing it into your lungs) is not a concern. Copper does not pass through the skin very easily so dermal exposure (skin contact) is not a concern either. It takes several days for copper to be eliminated from your body.

IS THERE A SAFE LEVEL OF COPPER IN DRINKING WATER?

Yes. A copper level below 1.3 milligrams per liter (mg/L, parts-per-million, ppm) is considered safe. The copper concentration of 1.3 mg/L is the U.S. Environmental Protection Agency Action Level for public water systems, which is set to protect people from health problems.



HOW CAN COPPER AFFECT MY HEALTH?

Small amounts of copper are essential for good health. Ingesting high levels of copper in drinking water (above 3-5 mg/L) can cause nausea, vomiting, abdominal pain and diarrhea. These symptoms disappear when exposure to copper stops. Ingesting much higher levels of copper can theoretically cause damage to the liver and kidney. However, liver or kidney damage in healthy people exposed to copper in drinking water has not been reported in the scientific literature. People who have a rare genetic disorder (Wilson's disease) are particularly sensitive to liver damage from copper exposure. At extremely high levels, copper can cause death, but this has only been reported in people intentionally ingesting large doses of copper.

DOES COPPER CAUSE CANCER?

Animal studies have not found increased cancer risks from copper exposure. Based upon these findings and knowledge of how copper acts in the body, there is no reason to think copper is a carcinogen in people.

WERE COPPER LEVELS IN THE CWC AMSTON LAKE WATER SYSTEM HIGH ENOUGH TO CAUSE HEALTH EFFECTS?

Based on water quality test results, for a period of a few weeks (late November 2011 to January 2012), copper levels were above the EPA Action Level. These levels raised the possibility of gastrointestinal symptoms such as nausea, vomiting, abdominal pain and diarrhea. The potential for these symptoms is what prompted the “Do Not Drink” advisory issued on January 6, 2012. Copper levels in the CWC Amston Lake Water System were not high enough to cause liver or kidney damage, or any other permanent health effects. Historical testing data indicates that copper concentrations in the drinking water were high for only a relatively short period of time.

COULD COPPER IN MY WATER CAUSE A SKIN RASH?

Some people are sensitive to copper and can get a skin rash from jewelry containing copper. This symptom is not likely to occur from skin contact with your drinking water because copper levels were not high enough.

HOW CAN COPPER AFFECT YOUNG CHILDREN?

A very small percentage of infants and children are unusually sensitive to copper because of genetic disorders. Otherwise, exposure to copper has the same types of health effects in children and adults. Studies in young animals suggest that young animals may have more severe effects than adult animals. However, we do not know if this would also be true in humans.



IS THERE A MEDICAL TEST FOR COPPER?

Copper is normally found in hair, nails, blood, urine and other tissues. High levels of copper in blood, urine, hair or nails can show that you have been recently exposed to higher than normal levels of copper. These tests cannot tell whether you will experience harmful effects.

SHOULD THERE BE MEDICAL MONITORING FOR CUSTOMERS OF THE CWC AMSTON LAKE WATER SYSTEM?

Medical monitoring is not recommended. Copper levels in the water system were not high enough to cause health symptoms other than temporary gastrointestinal effects. Actions taken by the CT Water Company have reduced copper levels to well below the Action Level so copper exposures have ceased. Therefore, medical monitoring in the community would not provide useful information. If you have specific questions about your health, you should seek the advice of your health care provider.



WHAT ARE THE CURRENT DRINKING WATER REGULATIONS FOR COPPER?

The federal Environmental Protection Agency (EPA) is required to determine the level of contaminants in drinking water at which no adverse health effects are likely to occur. Contaminants are any physical, chemical, biological or radiological substances or matter in water. The level for copper is 1.3 milligrams per Liter (mg/L), or 1.3 ppm. EPA has set this level of protection based on the best available science to prevent potential health problems. Public drinking water systems must comply with standards set by the EPA and state regulators based on these levels. Federal regulations require public drinking water systems to monitor these levels by collecting and testing routine tap samples from sites served by the system. If more than 10 percent of tap water samples exceed the copper action level, water systems must take steps to reduce these levels.

WHAT IS DPH DOING TO ENSURE THAT THE REGULATIONS ARE MET?

The DPH Drinking Water Section (DWS) has regulatory oversight of approximately 2,500 public water systems in the state to ensure the purity and adequacy of drinking water. The DWS is responsible for the administration of state and federal drinking water regulations and is dedicated to assuring the quality and adequacy of our State's public drinking water sources. We provide oversight of drinking water quality, technical assistance, education and regulatory enforcement, conduct sanitary surveys, review proposed water and treatment works projects, and customer complaint response for the public water systems that provide drinking water to approximately 2.8 million persons on a daily basis. The CWC - Amston Lake System is a community public water system serving approximately 325 customers, approximately half of which are seasonal. This community public water system is one of approximately 559 community public water systems that the DWS regulates. During CWC's on-going investigation of the elevated copper levels, DWS has been consistently reviewing water quality information and operations plans submitted by CWC to ensure regulatory compliance and public health protection.

The CWC, like many public water supplies in CT, is required to monitor for Lead and Copper within their distribution system and must report the results to DPH. Samples for lead and copper have been collected from the CWC - Amston Lake public water system since the inception of the federal lead and copper rule in 1991. Several consecutive rounds of samples, where results for both lead and copper were within acceptable levels, have allowed for a reduction in the frequency of sampling, as allowed by regulation, to the collection of 10 samples once every 3 years. Reports of samples collected from throughout the water distribution system during the triennial monitoring periods in 2003, 2006 and 2009 were in compliance with the treatment technique level of 1.3 mg/l for copper. The CWC Amston Lake system is required to collect the next round of compliance lead and copper samples by 12/31/12.

DPH received a consumer complaint of blue staining on December 28, 2011. As a result, DPH instructed the CWC to investigate the customer complaint. The initial investigation by CWC included the investigation of stray electrical currents which have been documented to contribute to leaching of copper into a water supply. In addition, investigatory samples were collected by CWC on 11/30/11, 12/7/11 and 12/29/11 from several homes, which showed that copper levels were elevated. CWC provided the elevated copper results to DPH on 1/6/12, at which time DPH concurred with CWC to issue a "DO NOT DRINK" advisory and to install an interim pH adjustment treatment system to control the corrosivity of the water. The interim treatment and control measures, as approved by DPH and instituted by CWC, have increased the pH levels in the water system and stabilized the copper levels, which in turn demonstrated that the "DO NOT DRINK" advisory was no longer necessary. While the interim measures are in place and the copper levels are under control, the CWC is conducting a comprehensive investigation of the root cause of the elevated copper levels of this recent event.

The DPH has requested that CWC file its report and findings, once available, with DPH so that that long term measures and the corresponding monitoring plan can be reviewed and approved by DPH and implemented by CWC. CWC will be required per regulation to revert to baseline monitoring for lead and copper which will require CWC to collect at least 20 first draw lead and copper samples from customer homes for the next two six month monitoring periods (1/1/12 – 6/30/12 and 7/1/12 – 12/31/12).



FOR MORE INFORMATION

Health Questions	Regulatory Questions	Water System Questions
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