

A hand is shown holding a clear glass under a chrome faucet. Water is flowing from the faucet into the glass. The background is a light-colored wall with a subtle pattern.

Cu

**Copper Development  
Association Inc.**  
Copper Alliance

## Health Effects and Safe Drinking Water: The Real Story

Despite the fact that copper is regulated by the U.S. Environmental Protection Agency Lead and Copper Rule, its consumption is necessary for human health. The ingestion of lead, on the other hand, poses real, chronic health risks to the public.

### Copper: Essential for Human Health

Copper is a necessary nutrient for human life and development. Regular ingestion is needed to remain healthy. Copper is essential for the development of bone, red blood cells, connective tissues, brain, heart and other organs; it is also necessary in the absorption of other minerals and in the metabolism of cholesterol and glucose. Sources of dietary copper include:

- Seafood (especially shellfish)
- Organ Meats (liver)
- Whole Grains
- Legumes (beans and lentils)
- Chocolate
- Nuts
- Wheat
- Rye
- Lemons
- Raisins

### Unlikely Health Effects of Copper

However, too much copper can pose a health risk. For the majority of the population, these health effects are acute and do not cause long-term health issues. The amount of copper in drinking water that can result in an acute effect is well above the regulated level allowed in drinking water; 4 to 5 times higher. The conservative regulatory level included in the Lead and Copper Rule is a maximum of 1,300 micrograms per liter of water, which is 86 times higher than the 15 micrograms per liter maximum for lead.

This copper level was set to protect against chronic effects such as liver and kidney damage that could occur after prolonged exposure at high levels. This is particularly true for a very small part of the population who has the genetic condition Wilson's Disease, which affects an estimated 1 in 30,000 people in the U.S. These sensitive individuals cannot automatically regulate the levels of copper in the body. This can lead to a long-term buildup of copper and increase the likelihood of these chronic effects.

### Copper Leaching is Understood. Plastic Leaching Isn't.

The conditions that may cause copper leaching, as well as the potential health effects of copper, are long-established and well-known. The same cannot be said for plastics, the material some municipalities are considering for the replacement of lead pipes.

Recent studies indicate that plastic materials can leach chemicals that affect taste and odor, but are difficult to identify, inconsistent between type of plastic and manufacturer and, most importantly, have little to no information on how they might affect human health<sup>1</sup>. In underground installations, plastics have been known to allow organics, pesticides, petroleum products, and other contaminants to penetrate through the wall of the piping and into the water being delivered through the system.

### More Information

Visit [www.CopperServiceLines.org](http://www.CopperServiceLines.org) to learn more about why copper is the preferred material for water service lines.

<sup>1</sup> Connell, M.; Stenson, A.; Weinrich, L.; LeChevallier, M.; Boyd, S.; Ghosal, R.; Dey, R.; Whelton, A.; PEX and PP Water Pipes: Assimilable Carbon, Chemicals, and Odors; Journal AWWA, April 2016