Frequently Asked Questions (FAQs)

Copper in Drinking Water

Metals can be present in drinking water but they are only allowed to be present up to specific legal limits. Copper is an example of a metal that may be found in drinking water.
The following Frequently Asked Questions have been developed to give you more information if high levels of copper are found in your drinking water (whether you are on a public or private water supply).

Where is Copper found, and what is it used for?

Copper is a reddish-brown metal that has many industrial applications and is widely used in electrical wiring, switches, electroplating, plumbing pipes, coins, metal alloys and fireworks. Copper can be released into the environment from natural sources such as volcanoes, forest fires, dust and decaying vegetation and from mining and industrial use. People can be exposed from air, drinking water and food.

How does Copper get into drinking water?

The primary source in drinking water is the corrosion of copper plumbing materials within homes.

What's the acceptable level of Copper in drinking water?

In Ireland, the European Union (Drinking Water) Regulations 2023 have set a copper limit of 2mg/l (milligrams per litre). This matches the health based guideline value set by the World Health Organization (WHO) [1] to protect health. Copper is an essential element in all living organisms and therefore small amounts are needed in the body.

Can Copper affect my health?

Water is safe to drink when the level is below the Irish limit of 2mg/l (milligrams per litre). Acute copper toxicity is rare as water with levels above the safe limit has a bitter unpleasant taste and because in higher quantities it induces vomiting[1].

Who is most affected by Copper in drinking water?

People with chronic liver disease are potentially more sensitive to copper levels in drinking water exceeding the Irish standard.

Very high levels of copper in drinking water can be associated with anaemia and haemolysis (a condition where red blood cells are broken down) in patients on home haemodialysis that use drinking water for their dialysis.

[1] World Health Organization. Guidelines for drinking-water quality. 4th edition. Geneva: WHO; 2011 Available at: https://apps.who.int/iris/rest/bitstreams/1414381/retrieve

People with genetic defects which make them susceptible to adverse effects of copper are also more at risk, such as individuals with Wilsons Disease (an inherited disorder in which too much copper is retained in the body's tissues), and Idiopathic Copper Toxicosis (ICT), when copper accumulates in the liver. If you are more susceptible to the adverse effects of copper, continuing to consume higher levels of copper over time can lead to kidney and liver damage. If you consider yourself to be included in the "at-risk" group you may wish to contact your general practitioner for medical advice.

Are children at risk of Copper toxicity?

There is a small possibility that children may be more at risk of copper toxicity as their uptake system is more efficient and because the mechanism for excreting copper from their bodies is not fully developed. There is very little data showing any adverse effects occurring in children consuming drinking water with levels of copper above the standard.

How would I know Copper levels in my drinking water are a concern

Copper at levels above 1mg/l can cause staining of your laundry. You should contact your water supplier for advice on testing your water.

If I find Copper in my drinking water what should I do?

You can continue to drink water containing copper levels below 2mg/l (milligrams per litre) providing you have not suffered stomach upsets from drinking this water and do not have any of the health conditions mentioned in this leaflet

If the level of copper from the cold water tap in the kitchen is above the legal level (2mg/l), running (flushing) the water before using it for drinking or cooking may lower the level of copper.

How will I know if flushing has reduced the Copper level?

The only way to know if flushing works is by testing. Your water supplier should advise you on appropriate testing, flushing and re-testing. This will tell you how much water needs to be run off before using it for drinking or cooking. Whether running the water reduces the level of copper in the water, or not, will depend on the length of the copper pipes or on where the copper is coming from the plumbing system.

What do I do if flushing doesn't work?

If, after running the water, the level of copper stays above 2mg/l, you should use safe drinking water from some other source. This is especially important for bottle fed infants, young children and pregnant women.

What should patients on Dialysis or with genetic disorders do if Copper levels remains elevated?

If the level of copper in your tap exceeds 2mg/l after flushing patients undergoing dialysis treatment

should not use tap water with this level of copper for dialysis – if you have used your tap water for dialysis then you should seek medical advice and alternative arrangements for dialysis should be made.
Patients with genetic disorders that make them susceptible to adverse effects of copper such as sufferers with Wilsons Disease or Idiopathic Copper Toxicosis (IDC) should make sure their GP is aware of the issue.

How can I find out more on Copper

Uisce Éireann
www.water.ie/help/treatment-and-testing/drinking-water-tests/

Environmental Protection Agency
www.epa.ie/publications/