

Plumbosolvency

Frequently asked questions

What are plumbosolvent waters?

Plumbosolvent waters can dissolve very small amounts of metals if they come into contact with them. This can result in small amounts of heavy metals entering the water. In New Zealand, the heavy metals found in drinking water are lead, nickel, cadmium, copper and antimony. All waters are plumbosolvent to some extent, but soft, slightly acidic waters dissolve metals most readily.

Do heavy metals affect my health?

Heavy metals are a health concern, whether they come from drinking-water, air or food. It is possible to take steps to reduce exposure to heavy metals in drinking waters (see the question: What can I do to avoid drinking water containing heavy metals?).

Lead is the heavy metal that poses the greatest health concern and is found most frequently in drinking waters. Lead builds up in the skeleton, can affect the brain, and it may depress the intellectual capacity of children. Infants, children and pregnant women are most susceptible to lead's toxic effects, so steps should be taken to reduce heavy metal concentrations in water that may be consumed by any of this group.

Drinking water contributes little to the average daily intake of the heavy metals listed in the previous answer, except lead.

Where do lead and other heavy metals in my drinking water come from?

Plumbing materials in contact with drinking water are usually the source of heavy metals. In most houses, heavy metals come from taps, or fittings that connect the taps to the pipes. The brass alloy used to make the taps contains a low percentage of lead, and a very small amount of this lead is released into the water when the water stands in the tap.

There are two other sources of heavy metals that could be a health concern in relation to water. Copper may come from the cold water pipes in houses if they are made of copper, and the roof and guttering materials may leach heavy metals into rainwater collected for water supply.

What are the health authorities doing to address the problem of heavy metals in water?

To comply with the Ministry of Health's *Drinking-water Standards for New Zealand* a water supply authority with plumbosolvent water must provide their consumers with advice about the steps to take to avoid having high heavy metal levels in the water they use. (See the question: What can I do to avoid drinking water containing heavy metals?)

What can I do to avoid drinking water containing heavy metals?

Taps contain the heavy metals, and are main sources of heavy metals that are found in drinking water in most houses. Water with safe¹ levels of metals can be obtained by flushing a small volume of water – 500ml- from the cold tap before water is drawn for drinking, cooking, or brushing your teeth.

If your house has a rainwater supply, check your roof and guttering for materials that may contain metals that could contaminate the water: lead flashing, lead-headed nails, and lead paint, for example. These should be replaced if you find them.

Flushing cannot easily rid drinking water of copper. If copper is being released from copper pipes. Copper is much less of a health concern than the other heavy metals, and levels that might be a health concern do not arise often.

Do I need to flush the hot water tap?

Heavy metals are likely to be at higher levels in water from the hot tap than the cold tap because of the higher temperature. This is one of the reasons you should not use water from the hot tap for drinking or preparing food. Therefore, there is no need to flush the hot tap.

What if I accidentally ingest some hot water while taking a bath/shower?

The health effects of metals generally develop over a long period of time. Swallowing a small amount of water, even if it contains a high metal concentration, will not have a health effect. The one exception to this is copper. This metal, if present at a high enough concentration, can have short-term effects, such as vomiting. Vomiting is the body's way of protecting itself against high copper concentrations.

Will boiling the water reduce the risk to my health from heavy metals?

No. Unlike bacteria, the heavy metal concentration in the water is not reduced by boiling. In fact, because of the loss of water as steam, boiling may slightly increase the metal concentration.

Does flushing the tap waste very much water?

Everybody should try to save water whenever they can. However, the recommended 500ml you should flush away to protect your health is only a small fraction (0.25%) of the estimated 200-250L of water each person uses each day.

If you are worried about throwing away the water you flush from the tap, you could collect it and use it for some other purpose, such as watering plants – but not the veggie garden.

¹ Safe means a concentration less than the maximum acceptable value (MAV) listed in the *Drinking-water Standards for New Zealand*. The MAV is the concentration of a metal that, on the basis of present knowledge, is not considered to cause a health risk even if the water with that concentration of the metal is consumed for a lifetime.

Are plumbosolvent waters poor quality waters?

Plumbosolvent waters are usually of good chemical quality so long as they have not had prolonged contact with metals.

How do I know whether or not my water is plumbosolvent?

Natural waters used for water supply in New Zealand are often soft and mildly acidic. All water supplies are therefore classified as plumbosolvent until the water supply authority can show that their supply is not plumbosolvent. If your water is plumbosolvent, and your water supplier is complying with the *Drinking-water Standards for New Zealand*, they will advise you twice a year about what to do to reduce the concentrations of heavy metals in the water to safe levels.

Blue staining in the sink, often under the hot tap, is an indication that the water is plumbosolvent to a degree (and that the washer should be changed!)

Can I check the metal content of our water myself, and how do I do it?

Yes, you can check the water yourself, but you will need a laboratory to test the water, someone to explain what the results mean, and money to pay the laboratory. A health protection officer from the district health board may be able to help with explaining the results.

To collect the sample:

- i) Contact the environmental health officer at your council offices and ask for the address of a testing laboratory.
- ii) Collect the correct sampling containers from the laboratory; a container you have cleaned yourself will not give reliable results.
- iii) Allow the water to stand overnight before taking the sample first thing in the morning. Take the sample from the kitchen tap. Make sure nobody uses the tap during the night before the sample is taken.
- iv) Fill the sample bottle almost to the top but without it overflowing.
- v) Take the sample to the laboratory for testing. You will need to tell them which metals you want tested. Lead is most important, but you may also wish to check on the levels of nickel, cadmium and copper in the water.

The results from this sample will tell you how much heavy metal would be in the water that is standing in the tap if you do not flush the tap first.

If you wish to know what the metal concentration will be after you have flushed the tap, flush away two glasses of water before taking the sample. You may wish to get two sampling containers from the laboratory so you can take the second sample after you have taken the first sample and flushed the tap.