

Corrosivity in Drinking Water

Corrosive water, also known as “aggressive water,” is water that will dissolve materials it comes in contact with and is a naturally occurring water condition.

Corrosion is a natural process that occurs when metals react with oxygen and form metal oxides. All water contains some dissolved oxygen and is therefore somewhat corrosive. The rate of corrosion depends on many factors including the water’s pH, electrical conductivity, oxygen concentration, and temperature.

In addition to corrosion, metals dissolve when the water is extremely low in dissolved salts and in the presence of certain water-borne ions. This process causes the plumbing material to gradually dissolve. Though corrosion and dissolution are fundamentally different, the result is similar, and they are generally discussed as corrosion.

The most common symptoms of corrosive water are:

- Cold water tastes bitter at first use in the morning, and the taste improves after running the water for a few seconds.
- Blue-green stains in sinks and/or at the joints of copper piping.
- Water leaks in floor, wall or ceiling areas from pin-size or larger holes in metal pipes.

What are the known health effects?

Copper and lead can be toxic and can leach into tap water in older or in new homes. This leaching is caused by corrosion. Copper contamination can cause gastrointestinal problems in the short term and damage the liver and kidneys over time.

Lead contamination can cause physical and mental development problems in children. In adults, it can lead to high blood pressure and kidney problems.

Is this contaminant regulated?

Corrosion is a secondary contaminant by USEPA, and which is a non-enforceable guideline for aesthetics. The recommended upper limit is 0.20 ppm because of it affects the color of water; the water supplied to Mount Laurel MUA customers is below the recommended limit, with a maximum detection of 0.046 ppm.

How can I reduce exposure?

Alkalinity in drinking water can be reduced at point of use by lime softening.

Additional information regarding the alkalinity of water, including the information referenced, can be found at:

http://publications.tamu.edu/WATER/PUB_water_Drinking%20Water%20Problems%20Corrosion.pdf
Handbook of Drinking Water Quality, Second Edition by John DeZuane