

Zinc

Zinc is a naturally occurring metallic element. Although it is commonly found in rocks and minerals, zinc is seldom found naturally in well waters in more than trace amounts. The recommended limit for zinc in drinking water is 5 milligrams per liter (mg/l).

CAUSE:

The principal cause of zinc in drinking water is the corrosion of galvanized metal. When galvanized metal is exposed to an acidic water, zinc is dissolved from the exposed surface, along with iron and trace amounts of lead and cadmium. The concentration of zinc in the water will be highest after the water has been in contact with the metal for long periods of time.

Water having high concentrations of total dissolved solids or chlorides will also dissolve zinc from galvanized metal. Elevated levels of dissolved solids and chlorides increases the electrical conductivity of the water, making it easier for the chemical reactions involved in corrosion to occur.

EFFECTS:

Zinc is an essential and beneficial element in human metabolism. The average diet will provide an adult with 10 to 15 milligrams (mg) of zinc per day.

At the levels normally found in drinking water, zinc is not a health hazard. At extremely high concentrations (675 mg/l and above), zinc can act as an intestinal irritant, causing nausea and vomiting. However, there is a wide safety margin between these levels and the amount found in drinking water.

Dissolved zinc can cause the water to have a bitter, medicinal taste. Concentrations of 30 mg/L may give the water a milky appearance. When the water is heated, elevated levels of zinc may produce a greasy film on top of the water.

TREATMENT:

Acidic Water: Zinc present as the result of an acidic water may be eliminated by neutralizing the acidity of the water. This may be done by using a metering pump to add small amounts of an alkaline solution (such as soda ash and water) to the water, or by using a neutralizing filter. For further information, please refer to the Section entitled “Corrosive (Acidic) Water.”

Dissolved Solids: Corrosion due to a high concentration of dissolved solids or chlorides may be treated by using a reverse osmosis filter to drastically reduce the solids content. However, this method of treatment is very expensive.

An alternative treatment would be to use a polyphosphate compound. Polyphosphates are known as corrosion inhibitors. They will not reduce the dissolved solids content of the water, but will help to protect the plumbing from corrosion by forming a protective coating on the exposed metal surfaces. For additional information, please refer to the Section entitled “Total Dissolved Solids.”