Lead

USEPA Contaminant Classification: Primary, (health-related)
EPA Maximum "Safe" Levels: 15.0 μg/l, (parts/billion)

Source: The most common source of Lead in drinking water is from the residential plumbing itself. Copper and brass fixtures, brass O-rings, 50/50 solder that is used to hold galvanized pipes together are all sources of lead contamination in residential drinking water. When acidic well water runs through metallic pipes, metals, (mainly Lead and Copper) are leeched out of the metal and into the water. New homes are using low lead solder or even C-PVC (Chlorinated- Polyvinyl Chloride) plastic pipes to reduce or eliminate lead contamination into the water. Lead pipes and valves were sometimes used in older municipal systems, but most have been replaced.

Lead may also exist in some aquifer systems that are fed by areas close to highways, (auto exhaust). Other sources of Lead contamination in water may come from automobile junkyards, (lead batteries), and manufacturing facilities.

Health Effects: Lead ingestion is a serious health concern. A safe amount is estimated to be 300 μg per day or up to 15 parts per billion in your drinking water. Chronic Lead ingestion, (known as Plumbism) occurs when the rate of Lead ingested exceeds the rate the body can remove it. Humans primarily store excess lead in the skeletal system, (bones). When the body cannot store any more in the bones, the excess is put into tissues and the circulatory system. In the blood, Lead interferes with the binding of Oxygen to Red Blood Cells leading to anemia. Lead also damages the kidneys, resulting in the abnormal secretion of Glucose, Proteins, and Amino Acids. Excess Lead consumption mainly effects the neurological system damaging the brain and causing behavior changes, mental retardation, blindness, coma and even death.

Home Damage Effects: While the presence of Lead in the water has no known home damage effects, we must look at the cause or source of the Lead. The majority of Lead occurring in the water of a residential well is usually from the home's deteriorating plumbing. When acidic water dissolves the metals from the pipes into the water, leaks may occur. Blue-green staining on fixtures and in sinks is evidence of pipe deterioration. While the blue/green color is actually caused by Copper, colorless Lead may also be present in the water in such cases.

How to Fix Contaminated Water:

1. Reverse Osmosis Systems, (ROs)- These units very effective at removing Nitrate nitrogen, (95-98%) from drinking water. These units are usually installed under the sink and have a separate demand faucet to use for drinking and cooking. They can also be hooked up to your automatic icemaker to remove nitrate as nitrogen in the ice. These systems are usually limited by the daily amount of product water they can produce and are usually only a one-location potable water source.

2. Neutralizers- These systems are designed to raise the pH to a neutral level so as to limit the Corrosivity of the water. This is a whole house approach to Lead and acidic water treatment. This approach is not guaranteed to lower Lead below the EPA's MCL level, because it is not specifically removing Lead.