

Contaminant: Lead

Lead is generally found in water due to the corrosion of lead from solder and pipes found in many older buildings. This corrosion is due, in most cases, to an acidic environment (pH below 7). Lead in drinking water can also cause a variety of adverse health effects. In babies and children, exposure to lead in drinking water above the action level can result in delays in physical and mental development, along with slight deficits in attention span and learning abilities. In adults, it can cause increases in blood pressure. Adults who drink this water over many years could develop kidney problems or high blood pressure.



Lead is rarely found in source water, but enters tap water through corrosion of plumbing materials. Homes built before 1986 are more likely to have lead pipes, fixtures and solder. However, new homes are also at risk: even legally "lead-free" plumbing may contain up to 8 percent lead. The most common problem is with brass or chrome-plated brass faucets and fixtures which can leach significant amounts of lead into the water, especially hot water.

EPA Standards:

When testing water for the presence of lead, RAdata looks for the number of ppm, or parts per million of lead in the water. The EPA has set the regulatory standard, or action level, at 0.015 ppm at first draw (the residual water in a fixture from overnight), or 0.010 ppm in a standard well water sample.

Treatment: Cation Exchange Water Softener

If the problem is not due to the corrosion of pipes and solder in the home, it is often best to use a Cation Exchange Water Softener at the point of entry, or when the water enters the home. If the pipes are, in fact, to corroding, it will often be necessary to install a point of use treatment system as well. These are both only used if the pH of the water is below 7.

A water softener uses the principle of ion-exchange – in this case, cations – to remove lead from raw water. The equipment contains a "bed" of softening material known as 'resin' through which the untreated water



flows.

As water passes through the resin, the lead in the water attaches itself to this material. At the same time, sodium in the resin is released into the water. This ion-exchange process occurs literally billions of times during the softening process.

Regeneration:

Eventually, such a great quantity of lead collects on the resin that the unit can no longer soften the water, and is now considered "exhausted." Regeneration, or recharging, is now necessary. To recharge the resin, it must be rinsed with a rich brine solution. This washes out the minerals and replaces them with sodium, so the resin is once again ready to remove minerals, and 'soften' the 'hard' water.

During the recharging cycle, the unit is also backwashed. Reversing the normal flow of water also serves to remove any turbidity and sediment which may have accumulated during the softening process due to the filtering action of the ion exchange material. Backwashing also loosens and fluffs up the bed of resin.

Care of Equipment

General maintenance: A softener should be kept recharged at all times. Failure to do so permits contaminated water to flow into the pipes and water heater.

All water treatment equipment requires service. Whether removing a secondary standard like iron or manganese or killing coli form bacteria, the importance of proper maintenance can't be emphasized strongly enough.

When you receive the bill each month the cost of water is obvious if your source is a municipal supplier. The fact your water comes from a private well does not exclude the need for maintenance on a regular basis. While most home owners prefer a contracted service plan from Radata, appointments on an as needed basis are also available. RAdata has service programs that include salt deliveries. Where this periodic testing is included in the initial installation cost supplemental testing after the first year are the expense of the homeowner or can be included in the service contracts.

Treatment: Block Carbon Filters

If the pH of the water is over 7, the lead will be in the form of sediment. In this state, an ion exchanger is ineffective for purifying the water. In these cases, block carbon filters are used to remove the lead sediment.



Carbon filters are created by tightly packing carbon particles together to filter out minerals, bacteria, and other harmful substances from your home's water supply. A block carbon filter is a very densely packed filter formed into a block with a binding medium.

There are numerous advantages to block carbon filters. They are able to filter out much smaller particles than other filters. They are also not subject to bacterial growth inside of the filter like other carbon filters.

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