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## **Contaminant: Manganese**

Manganese is a rare metal that is brought into water by dissolving in acidic rain. Like iron, manganese oxidizes when exposed to air or heat. The oxidizing of manganese will cause black stains on any surface it touches at levels as low as 0.05 parts per million. To put this into perspective, it is not uncommon to find levels as high as 2 parts per million, 40 times higher than the level at which it starts staining.



Though the US EPA considers manganese to be a secondary standard and currently only recognizes it as an aesthetically damaging contaminant, recent research has demonstrated likely health risks from manganese.

### **EPA Standards:**

When testing water for the presence of manganese, RAdata looks for the number of ppm, or parts per million of iron in the water. Because manganese can stain clothes and appliances at .05 ppm, the EPA has set the regulatory standard at .05 ppm.

## **Treatment: Cation Exchange Water Softener**

A water softener uses the principle of ion-exchange – in this case, cations – to remove manganese 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 manganese 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 manganese 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. RAdat 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.

**Call Our Information Hotline: 1-800-723-6641**

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