

**Other Methods for Removing  
Iron, Manganese and Sulfur from your Water Supply and  
Why this makes Krudico Air Charger the "FINEST" Innovation today.**

### **Greensand Filters**

Greensand filters have been used for years with mixed results. In this method the greensand has a coating of Magnesium Dioxide that releases oxygen into the ions of iron and manganese for conversion. The enlarged ions are then trapped lower in the media bed. As the oxygen becomes depleted, it must be replaced. This is accomplished by flooding the greensand media with Potassium Permanganate on a regular basis. While an effective way of removing the iron and manganese, there are several limitations with this process for homeowners:

- ◆ The injectors tend to plug requiring frequent servicing of the equipment.
- ◆ Average households will spend from \$75.00 to \$100.00 per year in Potassium Permanganate.
- ◆ The Potassium Permanganate tank should be cleaned annually. A very messy job.
- ◆ The pH of the water should be over 7 or complete oxidation may not take place.
- ◆ Service flow rates are low for quality water. Five gallon per sq. ft. of media is recommended (a ten inch diameter tank has just 0.55 sq. ft.).
- ◆ The greensand needs to be replaced as the manganese dioxide coating will wear off. Average replacement of the media is five years for best results.

### **In Line Air Injectors (Micronizers)**

Another way to oxidize the iron and manganese is to induce air in front of the pressure tank with an air injector device. While an inexpensive process it also has limitations:

- ◆ The injector needs to be built with a restrictive orifice to create back pressure on the water flow in order to induce the air.
- ◆ This back pressure may reduce the water flow to five gallons per minute or lower, too low for many farm or home needs. Also, five gallons per minute is not enough to backwash filters over 10" in diameter.
- ◆ If the backwash flow is not sufficient, iron and manganese will not be flushed from the filter media. Continued use will soon foul the filter bed allowing the iron and manganese to pass through and into the household water lines.

### **Chlorination and Filtration**

Chlorine will oxidize the iron and manganese ions, but is dependent on the pH of the water. A very high additional cost for the homeowner:

- ◆ A pH of 7.0 requires a retention time of 20 minutes to enlarge the iron and manganese ions to the size needed for removal by a filter. In periods of heavy use, as when the family is taking showers, flushing stools or washing clothes the household may require five to seven gallons per minute of water. In order to provide quality water at a 5 gallon per minute flow rate for 20 minutes, a 150 gallon retention tank is needed (24"x60").