

## Water Treatment

There are water treatment options available to remove many of the dissolved minerals in drinking water that cause concerns for homeowners.

**Hardness:** Traditional ion exchange softeners are most commonly used to treat hardness, though there are other systems available that do not use salt as the exchange medium.

**Iron:** Ion exchange softeners remove some iron, but at higher levels, it generally needs to be forced out of solution by oxidation and then filtered. Common oxidizers are potassium permanganate, air and chlorine.

**Sulfate:** Ion exchange softeners remove some sulfate, but reverse osmosis and distillation treatments are more effective.

**Total Dissolved Solids:** The only effective means of removing virtually all total dissolved solids is by using reverse osmosis or distillation.

### To check for dissolved minerals in your drinking water:

- Sterile bottles to be filled and returned may be picked up at our Environmental Laboratory in Libertyville.
- Sulfate, Total Dissolved Solids, and Hardness analyses take approximately 2-3 weeks to obtain results.
- Iron analyses take approximately 2-3 weeks to obtain results.

## Prevention

### Environmental Health Services

#### Lake County Central Permit Facility

500 W. Winchester Road

Libertyville, IL 60048

847.377.8020 (phone)

847.984.5622 (fax)

Visit our website:

[www.lakecountyil.gov/health](http://www.lakecountyil.gov/health)

For more information about the information presented, visit:

<http://water.epa.gov/drink/>

<http://www.dph.illinois.gov/topics-services/environmental-health-protection>

<http://www.water-research.net/index.php/water-treatment/tools/hard-water-hardness>

Information provided by:



## Commonly Found Dissolved Minerals in Drinking Water



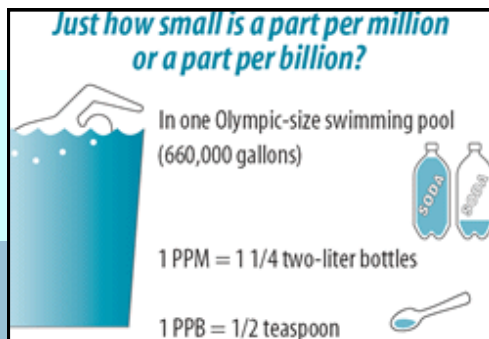
Assuring Safe Drinking Water

## Iron

Iron makes up 5% of the earth's crust and is very abundant in the soil in Lake County. While iron is frequently found in water due to earth's generous soil deposits, it can also enter the water distribution system through iron pipes.

Iron also has the ability to cause scale inside of water pipes which, when built up, can cause restricted or diminished water flow. If there is a problem with your water supply and you suspect it may be from iron, the first step is to determine the source. The source of iron may be from iron pipes, especially in an acidic environment, with pH values lower than 6.5. To help determine the source, you can test your water for pH, alkalinity, and hardness.

The EPA indicates that iron does not appear to cause detrimental adverse health effects but can create other issues. Iron-rich water is recognized for its unpleasant odor, taste, and unusual reddish-brown color. The secondary maximum detection limit for iron is **0.3 parts per million**.



## Hardness

The hardness of your drinking water is a measurement of the amount of minerals present, most commonly calcium and magnesium ions. These minerals do not pose any health concerns but often leave mineral deposits on plumbing fixtures. Dealing with "hard water" can be a nuisance in the home, creating such concerns as:

- ◇ Residue on dishes
- ◇ Scratchy laundry
- ◇ Unmanageable hair
- ◇ Irritated skin

Hard water can also cause economic distress by creating problems with water-using appliances and by forming scale on the inner lining of pipes, leading to clogging and perhaps eventual replacement.

LCHD Hardness Scale			
SOFT	MODERATELY HARD	HARD	VERY HARD
0-75 MG/L	75-150 MG/L	150-300 MG/L	>300 MG/L

Hardness in water is measured by using parts per million (ppm). Drinking water is categorized as "hard" when it reaches **120 ppm**. Water is considered "very hard" when it is **above 180ppm**. It is quite common for well water in Lake County to be at this level.

## Total Dissolved Solids

The total dissolved solids (TDS) test measures the total amount of all dissolved minerals in water. The solids can be iron, chlorides, sulfates, calcium or other minerals found on the earth's surface. The dissolved minerals can produce an unpleasant taste or appearance and can contribute to scale deposits on pipe walls. Water that is high in TDS may taste bitter, salty, or metallic and may have unpleasant odors. The EPA's suggested limit for total dissolved solids is **500 parts per million**.

## Sulfate

Sulfate in groundwater is caused by natural deposits of magnesium sulfate, calcium sulfate or sodium sulfate. The maximum contaminant level set by the EPA is **250 parts per million**. This contaminant level is based on the taste and odor drinking water will exhibit at this level. Higher concentrations of sulfate are also undesirable because of their potential laxative effects.

What is a **MAXIMUM CONTAMINANT LEVEL (MCL)** and what does it mean?

- An MCL is the legal threshold on the amount of a substance that is allowed in a public water system. It is set based on the premise that a person could safely drink water for a lifetime with the substance present at that level.