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Scale Deposits

Scale deposits are a typical indicator of hard water.

Hard water is a common quality of water which contains dissolved compounds of calcium and magnesium and, sometimes, other divalent and trivalent metallic elements.

The term hardness was originally applied to waters that were hard to wash in, referring to the soap wasting properties of hard water. Hardness prevents soap from lathering by causing the development of an insoluble curdy precipitate in the water; hardness typically causes the buildup of hardness scale (such as seen in cooking pans). Dissolved calcium and magnesium salts are primarily responsible for most scaling in pipes and water heaters and cause numerous problems in laundry, kitchen, and bath. Hardness is usually expressed in grains per gallon (or ppm) as calcium carbonate equivalent.

The degree of hardness standard as established by the American Society of Agricultural Engineers (S-339) and the Water Quality Association (WQA) is:

Degree of Hardness	Grains per Gallon (gpg)	ppm (or mg/L)
Soft	<1.0	<17.0
Slightly Hard	1.0-3.5	17.1-60
Moderately Hard	3.5-7.0	60-120
Hard	7.0-10.5	120-180
Very Hard	>10.5	>180

Symptoms include:

- Stiff, dingy laundry
- Mineral deposits on dishes and glassware
- High soap usage & need for fabric softeners
- Dry, itchy skin and scalp
- Unmanageable hair
- Extra work to remove soap curd on bathtubs & shower stalls
- High energy costs, possibly due to scale build-up in pipes and on appliances
- Scale build up in sinks, tubs, faucets & appliances

Click here (<http://water.usgs.gov/owq/hardness-alkalinity.html#hardness>) **for national data on hard**

Action Level - the concentration of a contaminant which if exceeded, triggers treatment or other requirements which a water system must follow.

Maximum Contaminant Level (MCL) - The “Maximum Allowed” (MCL) is the highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Contaminant Level Goal (MCLG) - The “Goal” (MCLG) is the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Maximum Residual Disinfectant Level (MRDL) – The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfectant Level Goal (MRDLG) – The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

TEST RESULTS						
Contaminant	Violation Y/N	Level Detected	Unit Measurement	MCLG/ MRDLG	MCL/ MRDL	Likely Source of Contamination
Disinfectants						
Chlorine (CL2)	N	0.45-0.76	Ppm	4	4	Water additive used to control microbes
Inorganic Contaminants						
14. Chromium	N	1.8	ppb	100	100	Discharge from steel and pulp mills; erosion of natural deposits
15. Copper (0 sites of 10 sites sampled exceeded the AL)	N	0.0467 (90 th Percentile)	ppm	1.3	AL=1.3	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
17. Fluoride	N	0-0.1	ppm	0.8-1.2	2	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
18. Lead (0 of 10 sites sampled exceeded the AL)	N	ND	ppb	0	AL=15	Corrosion of household plumbing systems, erosion of natural deposits
Nickel	N	2.3	ppb		100	Naturally occurring
Unregulated Inorganic Contaminants						
Contaminant	Violation Y/N	Level Detected	Unit Measurement	Average Level detected	MCL/ MRDL	Likely Source of Contamination
81. Sodium (Na)	N	9.7	ppm		N/A	
82. Alkalinity (Alk)	N	151	ppm		N/A	
83. pH	N	8	ppm		6.5 – 8.5	
84. Chloride (Cl)	N	4.2-5.5 (average 4.9)	ppm		250	
85. Hardness	N	89.7* (2009)	ppm		N/A	

Contaminant	Violation Y/N	Level Detected	Unit Measurement	MCLG/MRDLG	MCL/MRDL	Likely Source of Contamination
86. Total Dissolved Solids (TDS)	N	244* (2010)	ppm		500	
Manganese	N	63.9	ppb		50	

*The state allows us to monitor for some contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of our data, though representative, are more than one year old.

All other contaminants were ND in compliance with the Safe Drinking Water Act.

Lead: If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. Frederica Water Department is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline (1-800-426-4791 or at www.epa.gov/safewater/lead).

As you can see by the table, our system had no violations. We're proud that your drinking water meets or exceeds all Federal and State requirements. We have learned through our monitoring and testing that some constituents have been detected. The EPA has determined that level in your water is below the MCL.

MCL's are set at very stringent levels. To understand the possible health effects described for many regulated constituents, a person would have to drink 2 liters of water every day at the MCL level for a lifetime to have a one-in-a-million chance of having the described health effect.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. In order to insure tap water is safe to drink, EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration regulations established limits for contaminants in bottled water, which must provide the same protection for public health. Contaminants that may be present in source water include:

- 1) Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operation, and wildlife.
- 2) Inorganic contaminants, such as salts and metals can be naturally[occurring or result from urban storm water runoff, industrial or domestic wastewater discharge, oil and gas production, mining, or farming.
- 3) Pesticides and herbicides, which may come from a variety of sources, such as agricultural, urban storm water runoff, and residential uses.
- 4) Organic chemical contaminants, including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, and septic systems.
- 5) Radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities.