

Well Disinfection

April 2025

A Fact Sheet For Well Drillers And Pump Installers

REGULATIONS

- **NR 812.12 (17)** Wis. Adm. Code - Specific requirements for post-well construction well disinfection. (Procedure)
- **NR 812.27 (5)** Wis. Adm. Code - Specific requirements for new pump installation.
- **NR 812.41** Wis. Admin Code - Specific requirements for well disinfection following all pump installation activities. (Procedure)
- **NR 812.42 (13)** Wis. Admin Code - Specific requirements for well disinfection on existing systems.

Disinfecting wells is important but not always a simple task. A disinfection procedure should be tailored to the well and its unique requirements. Simply adding chlorine to the well, waiting and flushing the system will often work – but it is not always successful. In some cases, it can even cause new problems.

WHO CAN DISINFECT WELLS?

- Disinfection and post-disinfection flushing must be performed by a licensed well driller for all new well construction (NR 812.12 (17)).
- Disinfection must be performed by a licensed pump installer for all disinfections performed after all regulated pump installing activities, but they may designate the well owner or others to flush the system (NR 812.27 (5), NR 812.41 (1) and NR 812.42 (13)).
- Disinfection can be performed by the well owner or designees for all other disinfection, such as the annual disinfection of a seasonal well. It is still highly recommended that well owners hire a licensed well driller or pump installer to perform any well disinfections.

IMPORTANT FACTS ABOUT WELL DISINFECTION

- **Bacteria Positive Wells (NR 812.10 (12))** – Well drillers or well constructors are required to return to the site to diagnose and attempt to correct a problem if the initial sample from a potable well tests positive for total coliform bacteria. After corrective action and before resampling, the well must be disinfected and flushed in accordance with NR 812.12 (17).
- **Problem Wells (NR 812.10 (13))** – Well drillers or well constructors are required to return to the site to diagnose and attempt to correct problems soon after construction if the well produces sandy or turbid water, fails due to caving or sloughing formations or has water flowing up outside the casing. In such cases, post-corrective action disinfection is not required but may be warranted.
- **Geology High In Arsenic** - Excessive chlorination used to combat a bacteriological problem can increase arsenic concentrations in drinking water. Extra care should be taken when disinfecting with chlorine in high arsenic areas.
- **Thoroughly Flush The System** – Many post-disinfection water samples are rejected by laboratories due to residual chlorine in the sample. Make sure the well and system have been thoroughly flushed before taking samples and putting them into operation.
- **Additional Disinfection Considerations**
 - **More Chlorine Is Not Necessarily Better** – Using too much chlorine can damage the well and pump system, as well as cause other issues with the water, such as elevating arsenic concentrations. NR 812, Table D provides desired chlorine concentrations for well disinfection.*
 - **Remember To Bypass Water Softeners And Iron Filters** – Disinfection products can damage parts and media.
 - **pH** - Chlorine solutions are most effective at a pH between 6 and 7; however, chlorine products can quickly raise the pH of the water (especially in hard water) to a level where the chlorine solution becomes ineffective. The pH may be adjusted with an acid product that has been approved by the DNR Drinking Water and Groundwater Program. A licensed professional should administer these acid products.

- **Physical Treatment (Brushing & Scrubbing)** – It is common for iron and sulfur bacteria to build up over time, often in layers of slime. Other bacteria will colonize the slime and can lead to recurring total coliform-positive results. In many cases, it is only possible to control severe bacterial infestations rather than completely eradicate them. For these cases, a more aggressive approach involving chemical and mechanical treatment (usually brushing and scrubbing) followed by a thorough flushing may allow for less frequent treatment.
- **Air Lift** - Thick layers of sediment can accumulate on the bottom of some wells, creating a substrate that disinfecting chemicals cannot penetrate. Air lifting can suck out this substrate. Air lifting is different from **air surging**, which blows compressed air in the well using drill rods on an air rotary rig to create surging and jetting action in the well. Air lift uses a vacuum to suck out the sediment and debris, which reduces the chances of forcing bacteria and debris out into the well screen and/or rock formation.
- **Salt** – Can also be effective when used in conjunction with chlorine but can cause extreme corrosion problems in the well and distribution system if not properly flushed after use.
- **Protect Pitless Adapter** – When dry chlorine tablets or liquid bleach are dumped directly into the well, concentrated bleach can land on the pitless adapter and corrode through if not adequately rinsed. Avoid this by pre-mixing the bleach solution at the surface or using a drop tube to pour the chlorine through so that it gets past the pitless adapter.
- **Other Disinfection Materials** – These options should be researched thoroughly, and disinfection should be performed by trained personnel.
 - Chlorine + muriatic acid + salt
 - Chloramines
 - Dry ice (to loosen any debris that may harbor bacteria)

*NR 812, Table D			
Disinfection Of Wells			
Desired Chlorine Concentration (mg/L)	Quarts of Liquid Sodium Hypochlorite Household Bleach per 100 Gallons of Water (approximately 5% available chlorine 'regular strength')	Quarts of Liquid Sodium Hypochlorite Household Bleach per 100 Gallons of Water (approximately 8% available chlorine 'extra strength')	Pounds of Dry Calcium Hypochlorite Tablets per 100 Gallons of Water (Approximately 70% available chlorine)
100	0.7	0.4	0.14 (about 3 oz.)
200	1.4	1.0	0.30 (about 5 oz.)
300	2.2	1.5	0.40 (about 7 oz.)
400	2.9	2.0	0.50 (about 8 oz.)
500	3.6	2.4	0.60 (about 10 oz.)
Note: mg/L = milligrams per liter (parts per million)			

Well Fill & Seal is required after three failed batch chlorination attempts to address coliform bacteria, viruses or parasites (ref. Ch. NR 812.26(4)(a)1 Wis. Adm. Code)

If you have additional questions about well disinfection, please contact your regional private water supply specialist.

This document is intended solely as guidance and does not contain any mandatory requirements except where requirements found in statute or administrative rule are referenced. Any regulatory decisions made by the Department of Natural Resources in any matter addressed by this guidance will be made by applying the governing statutes and administrative rules to the relevant facts.

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