North Dakota Laboratories

Nitrate and Bacteriological Testing

Astro-Chem Lab Inc.
4102 Second Ave. W.
Williston, N.D. 58801
701.572.7355

Fargo Cass Public Health
401 Third Ave. N.
Fargo, N.D. 58102
701.241.1360

First District Health Unit
801 11th Ave. S.W.
Minot, N.D. 58701
701.852.1376

City of Grand Forks Environmental Laboratory
503 S. Fourth St.
Grand Forks, N.D. 58206
701.746.2594

Minnesota Valley Testing Laboratories Inc.
1411 S. 12th St.
Bismarck, N.D. 58504
800.279.6885

Southwestern District Health Unit
2869 Third Ave. W.
Dickinson, N.D. 58601
701.483.0171

Mineralogical Testing

Astro-Chem Lab Inc.
4102 Second Ave. W.
Williston, N.D. 58801
701.572.7355

Minnesota Valley Testing Laboratories Inc.
1411 S. 12th St.
Bismarck, N.D. 58504
800.279.6885

North Dakota Department of Health Division of Chemistry
2635 E. Main Ave.
Bismarck, N.D. 58501
701.328.6140

City of Fargo Chemistry Lab
435 14th Ave. S.
Fargo, N.D. 58103
701.298.6997

City of Grand Forks Environmental Laboratory
503 S. Fourth St.
Grand Forks, N.D. 58206
701.746.2594

For More Information ...

For more information about private-well testing, call the North Dakota Department of Health, Division of Water Quality, at 701.328.5210.

For a list of certified well drillers, call the North Dakota Board of Water Well Contractors at 701.328.2754.

Additional information can be found at the following websites:

North Dakota Department of Health (NDDoH):
www.health.state.nd.us

NDDoH Division of Chemistry:
www.health.state.nd.us/lab

North Dakota State Water Commission:
www.swc.state.nd.us

NDSU Extension Service:
www.ag.ndsu.nodak.edu/farmranch.htm

Minnesota Department of Health:
www.health.state.mn.us/divs/eh/wells

Wisconsin Department of Natural Resources:
www.dnr.state.wi.us/org/water/dwg

Environmental Protection Agency:
www.epa.gov/safewater/dwhealth.html

Wellowner.org (sponsored by the National Ground Water Association):
www.wellowner.org

Private-Well Testing

For Safe Drinking Water

North Dakota Department of Health
Division of Water Quality
1200 Missouri Ave.
Bismarck, N.D. 58506-5520
701.328.5210

Private-Well Testing

Unlike public water systems, private water systems are not required to be tested routinely. Periodic testing will confirm the safety and quality of your well water.

The recommended types of testing are bacteriological, nitrate and mineralogical. Each of these types is described in this pamphlet.

The first step in testing your private well is to contact a laboratory for the test that you need. (Several are listed in this pamphlet.) The laboratory will provide you with a sterile sample bottle for collecting a water sample for bacteriological testing. A plastic distilled water container is recommended for collecting a water sample for mineralogical testing.

Bacteriological Testing

Human and animal wastes are the main sources of bacteria in water and can contaminate wells through runoff from feedlots and pastures, seepage or discharge from septic systems, and inundation or infiltration of flood waters.

Bacteria can contaminate wells that:
- Are open at the land surface.
- Do not have watertight casings or caps.
- Do not have grout seals between the borehole and the outside of the well casing.
- Are hand dug and cased with rocks or bricks
- Are shallow
- Are located where surface runoff can enter the well.

Bacteriological testing detects coliform bacteria, found in the intestinal tracts and waste of warm-blooded animals, as well as in soil and vegetation. Coliform bacteria usually do not cause disease, but their presence indicates that the water may contain disease-causing organisms.

A positive total coliform test indicates that disease-causing organisms may be present in the water.

If your well tests positive for coliform:
- Boil water before consuming.
- Disinfect the well and water distribution system.
- After disinfection, retest the well for bacterial contamination.

Repeat positive total coliform tests often are related to well disrepair or poor well construction. You may need to repair or replace the well to eliminate the cause of bacterial contamination.

Bacteriological testing should be part of routine home maintenance. A bacteriological test should be done every year, or whenever:
- There is a noticeable change in the odor, color or taste of your well water.
- Flooding has occurred near the well.
- A household member experiences unexplained gastrointestinal illness.
- Maintenance has been conducted on the water system.

Nitrate Testing

Contamination from sources such as feedlots, septic systems and fertilized cropland may lead to high nitrate levels in well water. As with bacerial contamination, high nitrate levels also may be associated with well disrepair or poor well construction.

Infants younger than 6 months are most susceptible to the effects of ingesting water with high nitrate levels. Bacteria in their digestive systems transform nitrate to nitrite, which oxidizes iron in the blood to form methomoglobin. Because methemoglobin lacks the oxygen-carrying ability of hemoglobin, it creates the condition known as "blue-baby syndrome," which generally does not affect older children or adults.

Because of the health threat to infants, the U.S. Environmental Protection Agency has established a maximum level of 10 milligrams per liter (mg/l) of nitrate as nitrogen for public water systems. Although private wells are not subject to this regulation, well water with levels higher than 10 mg/l should not be given to infants younger than 6 months, nor should it be used to prepare infant formula.

Annual nitrate testing is recommended for well water used by infants, pregnant women or nursing mothers. When arranging for a bacteriological test, ask the lab about nitrate testing, as well. Wells that test high for nitrate should be retested. Quarterly testing may help identify seasonal conditions that contribute to high nitrate levels. You may need to repair or replace the well to correct the cause of high nitrate levels.

Mineralogical Testing

Mineralogical testing identifies the dissolved minerals in your water, such as calcium, magnesium, iron, manganese, sodium and sulfate. Highly mineralized ground water occurs naturally in many areas of North Dakota.

Dissolved minerals affect the usefulness of the ground water for various purposes. Some type of treatment may be necessary to improve the water quality if one or more minerals are in excess of the amount that can be tolerated for a given use.

Several laboratories listed in this pamphlet perform mineralogical testing and offer several types of analysis to fit your needs.