

Manure Contamination of Residential Wells

This fact sheet provides answers to health questions about contamination of residential wells by manure and agricultural runoff. For more information about what to do if your well, or a nearby well, is contaminated by manure and agricultural runoff, see the Department of Health Services (DHS) [“Addressing Manure Contamination in Residential Wells” fact sheet](#).

KEY MESSAGES

- All private residential wells should be tested at least once a year for bacteria (total coliform and *E. coli*). Wells should also be tested for bacteria whenever changes in water quality (for example, changes in color, taste, or smell) are noticed. DHS also recommends that wells be tested at the same time for other chemicals that may be found in the area, such as nitrate.
- Manure contamination of well water is a serious short-term health risk because it means that illness-causing bacteria and other organisms can be in the water.
- If your well water test results come back “unsafe,” use water from a known safe source (such as bottled water) for drinking and food preparation until the problem is corrected.
- If you know that your well is at risk of contamination from manure runoff, the water should be tested more than once per year.

What causes manure-related contamination to get into my well?

Wells can become contaminated when water from the surface that is contaminated with manure is able to travel down and mix with the underground water supply (groundwater) that your well uses or enter into the well itself. Manure-related problems can occur when manure is spread during the late winter and early spring months. During these times, manure cannot be tilled in, held in place by growing plants, or completely soak into the ground. Problems can also occur when heavy rain or snowmelt causes the manure to run off fields or when there are spills of stored or transported waste.

Some common factors that can lead to contamination of a residential well include:

- Thin or sandy soils in the area, especially if there is fractured or karst bedrock underneath.
- Groundwater near the surface.
- Low spots or depressions on the ground where runoff water can pool (or drain into the ground).
- Sink holes.
- Winter or early spring spreading of manure nearby (especially liquid manure).
- Winter and early spring rains or snowmelt causing runoff from nearby fields.
- Nearby unused or improperly abandoned wells, which can act as direct links between the surface and groundwater.
- Poor well construction or wells with cracked casings.
- Residential wells with shallow casings.

A licensed well or pump professional can help you get more information about the risk factors for your well that you can’t readily see. The list at <http://dnr.wi.gov/topic/Wells/homeowners.html> can help you find a licensed professional in your area.

What are the potential health concerns?

People can become very sick if they drink water that is contaminated with manure. Manure contains bacteria and other organisms that can cause diseases. Some of the more familiar germs include *Campylobacter*, *Cryptosporidium*, *E. coli O157:H7*, and *Salmonella*. Common symptoms include diarrhea, nausea, vomiting, cramps, or fever. When people bathe or shower in contaminated water, they are less likely to get sick. However, they can still get ear and respiratory infections, skin rashes, or infections in open wounds.

Young children, the elderly, and people with weakened immune systems can be more at risk of getting infections and developing illness. If your household has one of these individuals, you should consider testing your well water more than once per year.

If you or a family member has the symptoms listed above, see a doctor right away and let them know if you think it is related to your well water. This information can be very important for figuring out and treating your symptoms. Your doctor may ask you for a stool sample. With a water test and a stool sample, it may be possible to tell if your illness is related to contamination in your well.

Also, be sure to tell your local health department if you or a family member develops an illness that you believe is related to a contaminated well. For a listing of local health departments and their contact information, see <http://dhs.wisconsin.gov/localhealth/>.

How do I know if my water is safe?

Owning a private well is like owning your own private water utility company. It is up to well owners to test their well water to make sure that it is okay to drink. Well owners are also responsible for keeping the well in good condition and fixing any well problems.

The Department of Health Services recommends that all wells get tested at least once a year for bacteria (total coliform and *E. coli*), and anytime you notice a change in the water quality (changes in taste, color, or smell).

When runoff from fields or other potential sources of pollutants gets into well water, you may notice that the taste, smell, color, or clarity (cloudiness) of the water changes. However, your well can be contaminated even if you don't notice changes. This is why regular testing is important for making sure that your well water is safe.

If you live in an area with any of the risk factors listed in the "What causes contamination to get into my well?" section on page 1, or your well has had a history of problems, you should test your well more than once per year. You may want to test your well after the spring snow melt or after heavy rains in the spring and fall.

In addition to regular annual well testing, test your well water for total coliform, *E. coli*, and nitrate whenever any of the following changes occur in your household:

- Planning for pregnancy in the household.
- New nursing or formula-fed infant.
- New child under 18 years old in the household.
- A household member has a new condition that weakens the immune system (for example, going through chemotherapy, HIV/AIDS, taking organ transplant medications).
- New elderly family member living in the household.
- Before moving into a new home or seasonal vacation home with a well.
- If someone has an ongoing unexplained stomach illness that you think may be related to the water.

What should I test for?

Well owners who are concerned that their well may have become contaminated by manure should test for total coliform and *E. coli* bacteria. A positive test for total coliform or *E. coli* means you need to take action to make sure you have safe water to reduce your risk of getting sick.

The Total Coliform Test: This test is used to look for signs of possible water contamination by soil and feces. However, most coliform bacteria are a normal part of the environment and do not cause disease. If coliform bacteria are found in your well water, this means that the water might be contaminated by soil or feces. It may also mean that the structure of your well is damaged and is letting surface water get into the well.

The *E. coli* Test: This test is used to look for more specific signs that the source of the contamination is human or animal feces. If *E. coli* is found in your well water, it is more likely that harmful bacteria or other organisms may also be in the water.

How do I test my well water?

You should contact a certified water testing laboratory to ask for a test kit and testing instructions. You can also contact your local health department for assistance. For a list of certified water testing labs, see <http://dnr.wi.gov/topic/Wells/documents/PrivateLabs.pdf>. Often, the total coliform and *E. coli* tests are offered together for one price.

Follow the instructions provided by the laboratory for collecting the sample. When possible, ask the laboratory to provide “counts” for the bacteria results. “Counts” can help show how contaminated your well is.

What do the test results mean?

Test results say “safe”: If the test results report the sample was bacteriologically “safe,” this means that coliform and *E. coli* bacteria were not found in your water.

Test results say “at risk” or “unsafe”: If the test results say that the sample was “at risk” or “unsafe,” then coliform and/or *E. coli* bacteria were found in the water. You should not drink the water. Collect another sample and have it tested to double-check the result.

If your results come back “unsafe,” and you suspect manure spreading is the source of the problem, contact your local DNR office (www.dnr.wi.gov). Based on your well testing results and other observations about your water quality (taste, smell, color, cloudiness), you may be referred to the state or local health department for more advice.

The presence of bacteria in a well does not always mean that manure has contaminated your well.

Other possible sources include septic systems and surface water that moves into groundwater too quickly to be filtered by the ground. If your well is at risk of contamination from surface runoff and manure, you should test it more than once per year.

For more information on what to do if your well tests “unsafe,” see the DHS fact sheet “Addressing Manure Contamination in Residential Wells” (www.dhs.wisconsin.gov/publications/p01096.pdf).

Can these problems be prevented?

YES. If the source of the problem can be identified, steps can be taken to prevent future contamination. Identifying the source(s) of contamination can be difficult. It will help if you take notes about changes with your water, the weather conditions, and your nearby activities or activities of others that took place around the time you became concerned about contamination. At the same time, be sure to maintain your well, septic system, and property—and discuss water quality concerns with your neighbors.

Contamination events can show us where groundwater quality is more at risk. Once at-risk areas are known, local soil and water conservation and/or DNR staff can work with farmers to help them apply manure using safer land-spreading practices. By evaluating land-application practices on nearby fields and addressing improper practices, many of these incidents can be prevented.

For more information

For health related questions, contact:

- Your local health department: www.dhs.wisconsin.gov/lh-depts/counties/index.htm
- The Wisconsin Department of Health Services: 608-266-1120 or www.dhs.wisconsin.gov

For questions about your well, contact DNR website: dnr.wi.gov/, search keyword “wells”

To report a manure spill, contact the DNR Spills Hotline: 1-800-943-0003

For questions about manure management, contact the Department of Agriculture, Trade, and Consumer Protection (DATCP): 608-224-4501 or http://datcp.wi.gov/Farms/Nutrient_Management/index.aspx