

NE Iowa Private Well Water Quality Warning

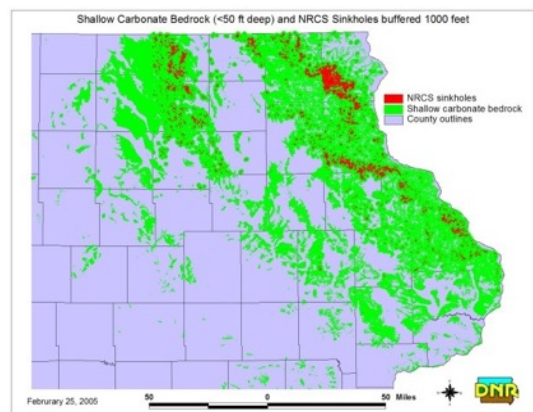
This is a notice for private well users in NE Iowa.

Why are you being contacted? The quality of the water coming out of the tap is something that every well owner should understand. We are reaching out to people who use private wells as a source of drinking water. If you have a private well, you are responsible for testing your own water supply to ensure it is safe to consume. Understanding the quality and safety of your water supply is an important part of maintaining good health. As a private well user, the only way you will know your water is safe to drink is to sample the well water and send it to a certified drinking water lab for drinking water analysis.

Even though the water may look clear and taste good, it may not be safe to drink because it contains one or more contaminants at levels above the Environmental Protection Agency (EPA) maximum contaminant level (MCL) recommendations. Consuming water that is not safe is bad for your health and can cause illness and disease.

What areas may be affected? The area of the state that is the focus of this notice is the northeast part of Iowa. Specifically the areas shown in red and green shading on the map located to the right of this text. If you live in this area of the state and obtain your water from a private well, you need to know if your well obtains any of its water from a shallow bedrock aquifer. If it does, your water may be influenced by surface water and run-off that drains into "karst" bedrock features.

The term "karst" refers to geologic landforms characterized by the presence of easily dissolved bedrock (limestone and dolomite) near the ground surface. Because the bedrock is easily dissolved by the natural chemical properties of water, karst areas often have sinkholes at the land surface, springs that flow from rocky hillsides, and streams that disappear into the ground. During rain events, water from the land surface easily enter karst bedrock and become part of the shallow aquifers that serve as water sources for some well owners.



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When contaminated water from the land surface enters the ground through karst geologic features, like sinkholes, the shallow aquifers become contaminated. When present in ground water, Anhydrous Ammonia can draw lead and arsenic and other contaminants into our ground water. Contaminated aquifers should not be used for drinking water or any other consumable purpose unless the water is properly treated and proven safe by water testing.

Are all wells affected? The main focuses of this notice are the wells that obtain part or all of their water from shallow bedrock sources. Not all wells in or near karst geological features will be affected by the poor quality groundwater. Wells that have well casing placed deeper into bedrock help insure that the aquifer is protected so the contamination does not influence your water supply. If your well is cased deeply into the rock, utilizes a deep aquifer and is in good condition, there is much less risk for potential exposure.

Here are some basic guidelines to help you.

Have your drinking water well tested as soon as possible. You should contact a County Sanitarian, the State Hygienic Laboratory at the University of Iowa, or any other Iowa DNR Iowa Certified drinking water laboratory to inquire about water testing. This testing should be done at least once each year – more often if you know that your well is finished in shallow bedrock or previous tests indicate you may have a water quality problem. You should ensure you test for the following: Bacteria, Nitrates (measured as NO₃ – N or Nitrogen), Nitrites, Ammonia Nitrogen as (N) (aka Anhydrous Ammonia), or the Nitrogen Spectrum Test (5 tests for different Nitrogen), and other contaminants depending on the depth of your well, land use in your area and the location of the nearest karst geologic features. For additional information on what your water testing options are, please contact the State Hygienic Laboratory at 800-421-4692.

You may choose to test for additional contaminants such as metals like lead, and arsenic and chemicals like Atrazine and other herbicides and pesticides that have previously tested at unsafe levels in the NE Iowa area. There are National Primary Drinking Water Regulations developed and published by the EPA. Please go to the EPA's website for additional information on water testing and safe contaminant levels.

<https://www.epa.gov/dwstandardsregulations>

Interpreting your test results. Even though private wells do not have defined drinking water standards, we recommend that you follow the public drinking water standards to help ensure that your water is safe to drink. You should familiarize yourself with the Maximum Contaminant Levels (MCLs) for public water supplies as established by the EPA. Depending on which specific tests you request, you should look for:

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- Nitrate - Nitrogen ($\text{NO}_3 - \text{N}$ or Nitrogen) should be 10 mg/L (PPM) or less (also referred to as “Nitrate as (N)” test). (This newer Nitrate testing method is preferred to other Nitrate testing as it is more precisely indicative of harmful contamination from herbicides (like Atrazine) and pesticides used in farming.)
- Your Nitrite test result should be less than 1 mg/L (or PPM) (also referred to as “Nitrite as (N)” test).
- If you add together the Nitrate + Nitrite test results, or also + Ammonia Nitrogen as (N) test result the total should be less than 10 mg/L (or PPM).
- Other test results should be compared against the Maximum Contaminant Limits as established by the EPA – see list at the end of this document.

If your well water analysis report indicates a positive result in any area tested, it means that a contaminant is present. You should confirm whether it is within the EPA established safe levels as described on their website or by the tables at the end of this document. If any of your levels exceed the MCL limits established by the EPA, your water is not safe to drink and you need to obtain your water from a known safe water source like a well that was recently proven safe by water testing, using bottled water, or install and maintain an approved water treatment device capable of treating all of your consumable water. Please keep in mind that many contaminants do not affect the look or taste of water. Because of this, you may assume your water supply is safe when it really isn't.

Care should be used when using well chlorinators to control bacteria and shock chlorinating your well if your water analysis indicates the water also contains anhydrous ammonia, other ammonias or arsenic. Using the wrong type of chlorine or using too much chlorine can increase the levels of cancer causing decontaminants like deadly Trihalomethanes to be present in the water.

What you should do in the future:

1. Monitor your well and water test results. Watch for changes in the water quality that increase your potential exposure to contamination. At a minimum, you should test your well water at least once each year, normally in the wet seasons of spring and fall. If your well water analysis indicates that the water is near the MCL, you should test your water more frequently – at least twice a year (during the wet periods of spring and fall) to ensure the water continues to be safe. You should also consider testing after any major rain events because these events can cause large amounts of surface run-off to enter the shallow bedrock aquifers and affect water quality. Due to a variety of factors occurring above the shallow aquifer that influence the shallow aquifer, it is essential that you continue to retest for bacteria, nitrates, nitrites, Ammonia Nitrogen as (N), and any other tests you choose to ensure your

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water quality continues to be safe for you and your family. There may be additional analysis you should consider with your location. You can contact the State Hygienic Laboratory at the University of Iowa for advice on what to test for. Iowa City gets its well water from deep aquifers that have tested positive for Anhydrous Ammonia Nitrogen fertilizer and is Downstream from rural NE Iowa farms thus this man-made nitrogen fertilizer is infiltrating the deeper aquifers and there is now no feasible filter system to remove Anhydrous Ammonia Nitrogen fertilizer. Farmers that apply it or CAFO nitrogen fertilizer should be using legal/permitted drainage outlets as both of these two fertilizers are very water soluble. Later downstream the most water soluble Nitrogen fertilizers are the main cause of the Dead Zones in the Gulf.

2. Understand the age and depth of your well and if possible, the protective features used in the well's construction. Your local Iowa DNR Certified Well Contractors understand your local geology and well construction and can discuss your well and help address water quality concerns. You can find local certified well contractors at the following web addresses:
 - a. Well Drillers (insert new dedicated short web link for contact information)
 - b. Pump Installers (insert new dedicated short web link for contact information)
3. If your well does not provide safe drinking water, use an alternative source of known safe drinking water. This can be water from a deeper, more protected well that is known to be safe by recent testing, bottled water, or water filtered by an approved water treatment device.
4. If you suspect your groundwater is being contaminated by local land based activities (like AG drainage wells, French drains, or channels built to drain down sinkholes), you should contact the Iowa Department of Natural Resources and/or the United States Environmental Protection Agency for guidance and enforcement of the Clean Water Act and Iowa's Drainage Laws. These laws work to protect your Source Water from continuing contamination (see The New Wetland Permitting Page for 401 and 404 Permitting regulations).

Additional information that may help:

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- Maximum Contaminant Level Goal (MCLG) - 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 and are non-enforceable public health goals.
- Maximum Contaminant Level (MCL) - The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to MCLGs as feasible using the best available treatment technology and taking cost into consideration. MCLs are enforceable standards.
- 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.)
- Treatment Technique (TT) - A required process intended to reduce the level of a contaminant in drinking water.
- 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.
- Units are in milligrams per liter (mg/L) unless otherwise noted. Milligrams per liter are equivalent to parts per million (PPM).

| Contaminant | MCLG¹ (mg/ L)² | MCL or TT¹ (mg/L)² | Potential Health Effects from Long- Term Exposure Above the MCL (unless specified as short-term) | Sources of Contaminant in Drinking Water |
|--------------------------------------------------------|-----------------------------------------------------|---------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| Lead | zero | TT ⁷ ; Action Level=0. 015 | Infants and children: Delays in physical or mental development; children could show slight deficits in attention span and learning abilities Adults: Kidney problems; high blood pressure | Corrosion of household plumbing systems; erosion of natural deposits |
| Nitrate (measured as Nitrogen) | 10 | 10 | Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome. | Runoff from fertilizer use; leaking from septic tanks, sewage; erosion of natural deposits |
| Nitrite (measured as Nitrogen) | 1 | 1 | Infants below the age of six months who drink water containing nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome. | Runoff from fertilizer use; leaking from septic tanks, sewage; erosion of natural deposits |
| Alachlor | zero | 0.002 | Eye, liver, kidney or spleen problems; anemia; increased risk of cancer | Runoff from herbicide used on row crops |
| Atrazine | 0.003 | 0.003 | Cardiovascular system or reproductive problems | Runoff from herbicide used on row crops |
| 2,4-D | 0.07 | 0.07 | Kidney, liver, or adrenal gland problems | Runoff from herbicide used on row crops |
| Dalapon | 0.2 | 0.2 | Minor kidney changes | Runoff from herbicide used on rights of way |

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| Contaminant | MCLG ¹ (mg/L) ² | MCL or TT ¹ (mg/L) ² | Potential Health Effects from Long-Term Exposure Above the MCL (unless specified as short-term) | Sources of Contaminant in Drinking Water |
|----------------------------------------------------|------------------------------------------|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| 1,2-Dibromo-3-chloropropane (DBCP) | zero | 0.0002 | Reproductive difficulties; increased risk of cancer | Runoff/leaching from soil fumigant used on soybeans, cotton, pineapples, and orchards |
| Dinoseb | 0.007 | 0.007 | Reproductive difficulties | Runoff from herbicide used on soybeans and vegetables |
| Ammonia Nitrogen as (N) | No known safe range | Not supposed to be in our water | Burns skin, eyes, lining of throat, digestive tract, rashes, increased risk of cancer, hair loss, bone loss, asthma, cardio-pulmonary issues, COPD; as its concentration builds up | Run-off from highly water soluble Anhydrous Ammonia and CAFO Nitrogen fertilizers |
| Diquat | 0.02 | 0.02 | Cataracts | Runoff from herbicide use |
| Endothall | 0.1 | 0.1 | Stomach and intestinal problems | Runoff from herbicide use |
| Endrin | 0.002 | 0.002 | Liver problems | Residue of banned insecticide |
| Epichlorohydrin | zero | TT ⁸ | Increased cancer risk, and over a long period of time, stomach problems | Discharge from industrial chemical factories; an impurity of some water treatment chemicals |
| Glyphosate | 0.7 | 0.7 | Kidney problems; reproductive difficulties | Runoff from herbicide use |
| Lindane | 0.0002 | 0.0002 | Liver or kidney problems | Runoff/leaching from insecticide used on cattle, lumber, gardens |
| Picloram | 0.5 | 0.5 | Liver problems | Herbicide runoff |
| Simazine | 0.004 | 0.004 | Problems with blood | Herbicide runoff |
| Arsenic | 0 | 0.010 as of 1/23/06 | Skin damage or problems with circulatory systems, and may have increased risk of getting cancer | Erosion of natural deposits; runoff from orchards, runoff from glass and electronics production wastes |
| Toluene | 1 | 1 | Nervous system, kidney, or liver problems | Spills from gas stations or from solvents |

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| Contaminant | MCLG ¹ (mg/L) ² | MCL or TT ¹ (mg/L) ² | Potential Health Effects from Long-Term Exposure Above the MCL (unless specified as short-term) | Sources of Contaminant in Drinking Water |
|-----------------------------------|------------------------------------------|--------------------------------------------------|----------------------------------------------------------------------------------------------------|------------------------------------------------------------|
| Toxaphene | zero | 0.003 | Kidney, liver, or thyroid problems; increased risk of cancer | Runoff/leaching from insecticide used on cotton and cattle |
| 2,4,5-TP (Silvex) | 0.05 | 0.05 | Liver problems | Residue of banned herbicide |

Additional information on this notice can be found at the Iowa DNR Contamination in Karst web site: (note-short link will be created)

<http://www.iowadnr.gov/InsideDNR/RegulatoryWater/PrivateWellProgram/PrivateWellTesting/ContaminationinKarst.aspx>

Additional Phone and Web Resources:

Iowa DNR Private Well Program

515-725-0462

Web site: <http://www.iowadnr.gov/InsideDNR/RegulatoryWater/PrivateWellProgram.aspx>

Iowa Department of Public Health

515-281-7689

Web site: <http://www.idph.state.ia.us/eh/grants.asp>

Environmental Protection Agency

800-426-4791

Web site: <https://www.epa.gov/aboutepa/epa-region-7-midwest>