

Flood



NORTH DAKOTA
DEPARTMENT OF HEALTH

701.328.5210 701.328.5211
701.328.2378 701.328.1291

INFORMATION

Emergency Health Precautions for Flooded Areas

Flooding can cause many potential health hazards. Residents of flood-stricken areas can protect their health by following the recommendations below.

Personal

After handling contaminated materials, wash your hands thoroughly with soap and uncontaminated water before touching yourself or anyone else, particularly on the face, mouth, eyes or nose. Do not touch or handle food and eating or cooking utensils until you have washed your hands thoroughly. Immediately report to your doctor or public health professional any diarrhea, stomach upset, sudden illness or infection you observe. Children should not be allowed to play in floodwater because of its disease transmission potential. Some diseases associated with flood waters include typhoid fever, dysentery and infectious hepatitis.

Power

Electrical power and natural gas or propane tanks should be shut off to avoid fire, electrocution or explosions. Try to return to your home during the day so that you do not have to use any lights. Use battery-powered flashlights and lanterns, rather than candles, gas lanterns or torches. If you smell gas or suspect a leak, turn off the main gas valve, open all windows and leave the house immediately. Notify the gas company, the police or fire department. Do not turn on the lights or do

anything that could cause a spark. Do not return to the house until you are told it is safe. Your electrical system also may be damaged. If you see frayed wiring or sparks, or if there is an odor of something burning but no visible fire, you should immediately shut off the electrical system at the circuit breaker.

Flooded, Frozen and Refrigerated Food

Do not eat any food that may have come in contact with flood water. Discard any food without a waterproof



container if there is any chance it has come into contact with flood water. Undamaged, commercially canned foods can be saved if you remove the can labels, thoroughly wash the cans, and then disinfect them with a solution consisting of 1 cup of bleach to 5 gallons of water. Re-label your cans, including expiration date and maker. Home-canned foods and food containers with screw caps, snap lids, crimped caps (soda pop bottles), twist caps and flip tops should be discarded if they have come into contact with flood water because they cannot be disinfected. For infants, use only

canned baby formula that requires no added water.

If your refrigerator or freezer is without power for a long period:

- Divide your frozen foods among friends' freezers if they have electricity.
- Seek freezer space in a store, church, school or commercial freezer that has electrical service.
- Use dry ice: 25 pounds of dry ice will keep a cubic-foot freezer below freezing for three to four days. (Be careful with dry ice because it freezes everything it touches. Wear dry, heavy gloves to avoid injury.)

Thawed food usually can be eaten or refrozen if it is still “refrigerator cold” or if it still contains ice crystals. To be safe, remember, **“When in doubt, throw it out.”** Discard any food that has been at room temperature for two hours or more and any food that has an unusual odor, color or texture. Your refrigerator will keep foods cool for about four hours without power if it is unopened. Add block or dry ice to your refrigerator if the electricity is off longer than four hours.

Drinking Water Supply

Community: Your community drinking water supply has many safeguards to protect water quality. However, this protection may be compromised during floods and other emergencies. Public water system officials will notify you of possible problems and instruct you how to ensure safety of the drinking water. If you have safety concerns, contact your public water system to determine if any precautions are necessary.

Private: Floodwaters can transport disease-carrying materials from barnyards, feedlots or sewage disposal systems into drinking water wells. Water from a well that may have been flooded should not be used for drinking until the well has been tested and found to be safe by state or local health officials. It may be best to use bottled water for drinking and cooking until your water supply is proven to be safe. When in doubt about the **bacteriological** safety of your water, take the following precautions:

- Strain the water through a clean cloth to remove any sediment and floating matter.
- Bring water to a rolling boil for one full minute.
- If boiling is not possible, disinfect the water with any of the following chemicals:
 - Laundry bleach (5.25 percent sodium hypochlorite) – Mix 1/8 teaspoon of household bleach (with no artificial scents) per gallon of water and let stand for 30 minutes before using. Double the amount of bleach added to the water if the water is colored or cloudy.
 - Tincture of iodine – Add 10 drops to each quart of water, mix thoroughly, and let stand for 30 minutes before using.
 - Iodine/chlorine tablets (obtained from drug or sporting goods store) – Follow package instructions.

To have the bacteriological safety of your drinking water analyzed, contact one of the laboratories below for a special sample container and further instructions.

Astro-Chem Lab, Inc.
4102 Second Ave W
PO Box 972
Williston, ND 58801
701.572.7355

Fargo Cass Public Health
435 14th Ave S
Fargo, ND 58103
701.298.6986

First District Health Unit
801 11th Ave SW
PO Box 1268
Minot, ND 58702-1268
701.852.1376

Grand Forks Environmental
Laboratory
503 South 4th St
PO Box 5200
Grand Forks, ND 58206
701.746.2594

Division of Laboratory
Services
North Dakota
Department of Health
2635 E Main Ave
PO Box 5520
Bismarck, ND 58502-5520
701.328.6272

Minnesota Valley
Testing Laboratories
1411 S 12th St
Bismarck, ND 58504
701.258.9720
800.279.6885

Southwestern District
Health Unit
2869 3rd Ave W
Dickinson, ND 58601
701.483.0171
800.697.3145

In addition to bacteria, a well may become contaminated with certain chemicals during flooding. Of special concern is **nitrate** which, if carried into drinking water, can cause a serious condition in infants. Methemoglobinemia destroys the oxygen-carrying capacity of blood, causing the infant to appear blue. Serious poisonings, sometimes fatal, have occurred in infants younger than 6 months old after drinking water containing nitrate (as nitrogen) at concentrations greater than 10 milligrams per liter.

Assistance

If you have questions or need assistance, call your local public health unit or the North Dakota Department of Health:

Water Quality – 701.328.5210
Municipal Facilities – 701.328.5211
Disease Control – 701.328.2378
Food and Lodging – 701.328.1291

Safe Water



NORTH DAKOTA
DEPARTMENT OF HEALTH
701.328.5210
701.328.5211

INFORMATION

Proper Well Disinfection

A water well can become contaminated during construction or repair. Flooding also can contaminate a well. Contamination may be bacterial, chemical or both.

For bacterial contamination (no chemical contamination suspected), the simplest and most effective way to destroy harmful bacteria in a well and plumbing is disinfection with a chlorine solution. Before disinfecting, the well should first be pumped to remove as much contaminated water as possible. After pumping, the well can be treated with a chlorine solution. The effectiveness of disinfection depends on the concentration of disinfectant, the time it is allowed to remain in the water, well construction and overall water quality. Follow the procedure below to ensure effective disinfection.

If chemical contamination is suspected, contact your local public health unit or the North Dakota Department of Health for sampling and testing advice. This would apply, for example, if your well water has an uncharacteristic and strong chemical taste and/or odor. If you suspect a problem with a specific chemical, analysis can be targeted toward that chemical. Do not drink the water until it is determined to be chemically safe.

Procedure for Disinfecting a Well

1. Before you start, you need to know (a) the diameter of your well casing pipe, (b) the depth to water in your well and (c) the total depth of your well. This information should be noted on your well driller's log if it is available. If not, measure the diameter of the well casing pipe, the depth to the top of the water in your well and the total depth of your well. Subtract the depth to the top of the water from the total depth of your well to get the thickness of the water column in your well.

Once you know the thickness of the water column in the well and the casing pipe diameter, use the table provided in this fact sheet to determine how much chlorine you need for every 10 feet of water in your well.

Measure enough disinfectant for every 10 feet of water in your well and add it to 5 gallons of water in a bucket. You can find chlorine at most grocery stores in the form of laundry bleach (with no artificial scents), sold under such trade names as Hilex, Clorox and

Purex. Sixty-five percent calcium hypochlorite powder or tablets are available from water treatment or swimming pool companies.

2. Pour the chlorine and water mixture into the well casing pipe. If you are repairing or constructing a well, chlorine should be added just before you install the pumping equipment.

3. Bacteria are destroyed when they come into contact with chlorine. Agitate the water in the well to ensure thorough mixing. To do this, turn on your outside faucet. Using a hose, rinse down the inside of the well casing until you can

smell the chlorine in the water coming out of the hose.

If you have a deep well with a high water level, you may need to add chlorine through a hose inserted down the well casing pipe. Or you can drop calcium hypochlorite tablets down the well casing pipe to ensure proper mixing.

4. The tanks, pipes and fixtures in your water system should be disinfected at the same time as the well. Open all faucets and let the water run until chlorine can be smelled at each faucet.

5. Turn off all faucets. Allow the chlorine solution to remain in the well and piping system for 12 to 24 hours. Before drinking the water or using the well, pump the well and run all faucets until you can no longer smell chlorine. To prevent hydraulic overload, do not discharge large volumes of chlorinated water to your septic system.



In addition, do not discharge the water onto delicate plants or lawns, as chlorine will kill vegetation.

6. When time does not permit well disinfection by this procedure, you can superchlorinate the well by using four times the amount of chlorine listed on the table. Allow the chlorine solution to remain in the well and piping system for at least two hours. Pump the well and run all faucets to remove any trace of chlorine.

For assistance in disinfecting your well, call a certified well driller, your local public health unit or the North Dakota Department of Health.

Proper well construction is critical to the safety of drinking water. If your well is not properly sealed and protected, it can become contaminated at any time.

Procedure for Laboratory Testing

After flushing your drinking water system to remove all chlorine, a water sample should be submitted to a laboratory for bacteriological analysis. Special sample containers for this test are available from the laboratory. If the test shows that harmful bacteria are still present in the water, chlorination should be repeated. Do not drink the water until you get a test result showing the water is free from harmful bacteria.

Certified Bacteriological Laboratories

Astro-Chem Lab, Inc.
4102 Second Ave W
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1411 S 12th St
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800.279.6885

Southwestern District
Health Unit
2869 3rd Ave W
Dickinson, ND 58601
701.483.0171
800.697.3145

Charges for services will vary. Check with the laboratory to ensure it can perform the tests you need.

QUANTITY OF DISINFECTANT REQUIRED

(provides a concentration of about 100 milligrams per liter or 100 parts per million)

| Diameter of Well Pipe in Inches | Disinfectant for every 10 feet of water in your well | | |
|---------------------------------|--|---------------------------------------|-------------------|
| | 5 1/4% Sodium Hypochlorite* | 65% Calcium Hypochlorite** Tablets | Powder |
| 2 | 2 1/2 teaspoons | 1/4 tablet | 1/2 teaspoon |
| 3 | 2 Tablespoons | 1/2 tablet | 3/4 teaspoon |
| 4 | 1/4 cup | 1 tablet | 1 1/4 teaspoons |
| 5 | 1/3 cup | 1 1/4 tablets | 2 teaspoons |
| 6 | 1/2 cup | 1 3/4 tablets | 1 Tablespoon |
| 8 | 1 cup | 3 1/4 tablets | 1 1/2 Tablespoons |
| 10 | 1 1/4 cup | 5 tablets | 2 Tablespoons |
| 12 | 2 cups | 8 tablets | 3 Tablespoons |
| 18 | 4 cups | 16 tablets | 1/2 cup |
| 24 | 1/2 gallon | 30 tablets | 1 cup |
| 36 | 1 gallon | 65 tablets | 2 cups |
| 48 | 2 gallons | 116 tablets | 3 1/2 cups |

*Sodium hypochlorite or laundry bleach can be purchased at most grocery stores.

**65% calcium hypochlorite powder and tablets are available from water treatment or swimming pool companies.

Flood



NORTH DAKOTA
DEPARTMENT OF HEALTH
701.328.5188

INFORMATION

Mold in Homes

About Mold

What is mold?

Molds are simple, microscopic organisms found virtually everywhere, indoors and outdoors. Molds are an important part of the life cycle because they decompose organic matter. Molds can be found on plants, foods, dry leaves and other organic material. Because mold spores are tiny and lightweight, they can travel through the air. Mold growths often can be seen in the form of discoloration ranging from white to orange and from green to brown or black.

Should I be concerned about mold in my home?

Yes, if contamination is extensive. When airborne mold particles, such as mold spores, are present in large numbers, they can cause allergic reactions, asthma episodes, infections and other respiratory problems for people. Mold also can cause structural damage to your home.

Why does mold grow?

Mold grows when environmental conditions are favorable. Those conditions include a food source, the right temperature and the presence of moisture. Because molds will decompose a wide variety of materials and many molds thrive at room temperature, moisture control becomes the key factor in preventing indoor mold growth.

Can mold be a problem in my home?

Yes, if moisture is available to allow mold to thrive and multiply. Common moisture sources include:

- Backed-up sewers.
- Leaky roofs.
- Humidifiers.
- Damp basements or crawl spaces.
- Constant plumbing leaks.
- Shower/bath steam and leaks.
- Clothes dryers and combustion appliances (stove, furnace, water heater, etc.) not exhausted to the outdoors.

Health Effects

How am I exposed to indoor mold?

It is common to find mold spores in the air of homes and growing on damp surfaces. Much of the mold indoors originates from an outdoor source; therefore, everyone is exposed to some mold on a daily basis. Because people spend a great deal of time indoors and buildings tend to have limited outdoor air ventilation, an indoor source of mold can create higher indoor concentrations of airborne mold spores.

How much can make me sick?

It depends. Mold spores primarily cause health problems when they become airborne and are inhaled in large numbers. For some people, a relatively small number of mold spores can cause health problems. For others, it may take much more. There are no health-based standards or exposure limits for mold. The basic rule is: If you can see or smell mold, take steps to eliminate the excess moisture and to clean up and remove the mold.

Who is at greatest risk?

Exposure to elevated concentrations of mold is not healthy for anyone. The following individuals appear to be at higher risk for adverse health effects of molds:

- Immune-compromised patients (people with HIV infection, cancer chemotherapy, liver disease, etc.)
- Pregnant women
- Individuals with existing respiratory conditions such as asthma, allergies and multiple chemical sensitivities

What symptoms are common?

Typical symptoms (alone or in combination) include:

- Respiratory problems, such as wheezing and difficulty breathing.
- Nasal and sinus congestion.
- Eye problems, such as burning, watering, reddening, blurred vision and light sensitivity.
- Dry, hacking cough.
- Sore throat.
- Nose and throat irritation.
- Shortness of breath.
- Skin irritation.
- Aches and pains.
- Fever.

The symptoms above can be attributed to many causes. People who are experiencing one or more of these symptoms should seek assistance from a physician.

Are some molds more hazardous?

Yes. All molds can cause health problems; however, some species of mold are more capable of causing infections than others. In addition, some molds produce mycotoxins. Although the health effects from exposure to mycotoxins are unclear at this point, people should exercise added caution when dealing with a mold species known to produce a mycotoxin.

- Flooding.

- Infants and children
- Elderly

Detection of Mold

How can I tell if I have mold in my house?

The easiest way is if you see mold growth. If there is a musty or earthy odor, or if the house exhibits chronic moisture problems, you can assume you have a mold problem. In addition, allergic individuals may experience symptoms listed on the front of this sheet. Mold may be found behind walls or underneath materials where water has damaged the surface. Look for discoloration of drywall or plaster.

Should I test my home for mold?

Testing is not recommended as the first step to determine if you have a mold problem. Reliable sampling for mold can be expensive and requires equipment not usually available to the general public.

Few standards are available for judging what is an acceptable quantity of mold. All locations contain some mold. The simplest approach is: If you can see or smell mold, you have a problem. Unless the source of moisture is found and removed and the contaminated area cleaned and disinfected, mold growth is likely to recur. Once you know the problem exists, follow the clean-up steps below.

General Cleanup

Identify and fix the moisture source. Remove the mold. Clean, disinfect and dry the area.

It is most critical to remove the source of the moisture to ensure that the mold will not re-grow. Removing the source of moisture is especially important before replacing any discarded items with new materials, so the new materials will not become moldy.

What should I discard? Save?

Porous materials such as paper, wallboard, carpet, sheetrock and insulation that exhibit mold growth should be discarded. Because of the porous nature of these items, mold growth is typically throughout the material, making them very diffi-

cult to clean thoroughly. Harder-surfaced materials such as glass, plastic or metal can be kept after they are cleaned and disinfected. Foundation materials that are impractical to remove should be assessed on a case-by-case basis and may need to be inspected by a building inspector for structural damage.

When considering what to keep and what to discard, the important thing to remember is that the mold must be removed. Simply killing the mold may be inadequate because it does not remove the mold allergens from the environment.

What should be removed?

Remove all porous materials such as ceiling tile, sheetrock, carpet and insulation that exhibit mold growth. Bag and seal all moldy material before removal from the work area. A vacuum can be used to clean up, but only a vacuum with a high efficiency particulate air (HEPA) filter.

How do I clean the affected areas?

Before disinfecting contaminated areas, clean the areas to remove as much mold (and material it is growing on) as possible. Clean with a non-ammonia detergent in hot water.

Scrub the entire area affected by the moisture. Use a stiff brush or cleaning pad on block walls or uneven surfaces. Rinse the area with clean water. Thoroughly dry the area as quickly as possible. Repeat cleaning as necessary to remove mold.

What is the best way to disinfect?

After removing as much of the mold as possible, a disinfectant can be used to kill mold that might remain. A 10 percent bleach solution (1 cup of bleach to 1 gallon of water) is recommended as a disinfectant for mold cleanup.

Apply a thin coat of bleach solution to the entire area, ensuring that the entire area is cleaned, not just where the moisture problem occurred and the mold growth was removed. Use a sprayer or a sponge to apply the solution liberally, but avoid exces-

sive amounts of runoff or standing pools. Allow the area to dry naturally. Drying time is important for the disinfectant to be effective at killing mold and bacteria.

WARNING!

*Never mix bleach and ammonia.
The fumes are toxic!*

After cleaning thoroughly, can I still have mold odors?

Yes. It is possible that odors may persist. Continue to dry out the area and search for any hidden areas of mold growth. If the area continues to smell musty, you may have to clean the area again. Follow the cleaning steps on this fact sheet. Continue to dry and ventilate the area. Do not replace flooring or begin to rebuild with finish materials until the area has dried completely.

Can mold cleanup be a health hazard?

Yes, exposure to mold can occur during the mold removal and cleaning stage. Whether you or a professional contractor is doing the cleanup, steps should be taken to protect the health of the workers and other occupants. Have mold-sensitive people leave the area while the work is performed. Wear protective clothing (that can be cleaned thoroughly or discarded), gloves, goggles and breathing protection. Seal off the area as much as possible. Cover any air vents near the work area. Remove any furnishings from the area for later cleaning. Use negative pressure in the work area if possible, or at least provide ventilation (open window, etc.). Use a HEPA air filter in the work area if one is available.

Assistance

For more information or further assistance, contact your local public health unit or the North Dakota Department of Health, or visit the Indoor Air Quality Program website at: www.ndhealth.gov/AQ. The NDSU Extension service also provides helpful information at: www.ag.ndsu.edu/disaster/flood.html.



NORTH DAKOTA
DEPARTMENT *of* HEALTH

Do I Need a Tetanus Shot?

Information for People Cleaning Up After a Flood

- Tetanus is a disease that causes painful tightening of the muscles all over the body.
- Adults should receive a tetanus shot every 10 years.
- Because of debris and the possibility for cuts and wounds, all cleanup workers and volunteers who are not up-to-date on their vaccinations should contact their doctor or local public health unit before arriving in the flooded area.
- Tetanus bacteria enter the body through cuts or wounds.
- Tetanus is sometimes called lockjaw because infected people cannot open their mouths or swallow.
- Tetanus is a serious illness and often results in death.
- A more detailed fact sheet about tetanus can be found at www.ndhealth.gov/Disease

For more information, please contact the North Dakota Department of Health, Division of Disease Control at 701.328.2378.

Fargo Cass Public Health has tetanus vaccine available by appointment. Tetanus, Diphtheria, & Pertussis (Tdap) is \$55 for people age 11-64. The cost for tetanus vaccine alone for people age 65 & older is \$40. Please bring Blue Cross Blue Shield card.

Free vaccine is available for the following North Dakota groups: Uninsured or underinsured ND residents; parents/guardians of infants under 12 months; childcare providers, and expecting fathers. There is an administration fee of \$13.90.

For an appointment call 701.241.1383.



Public Health
Prevent. Promote. Protect.
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