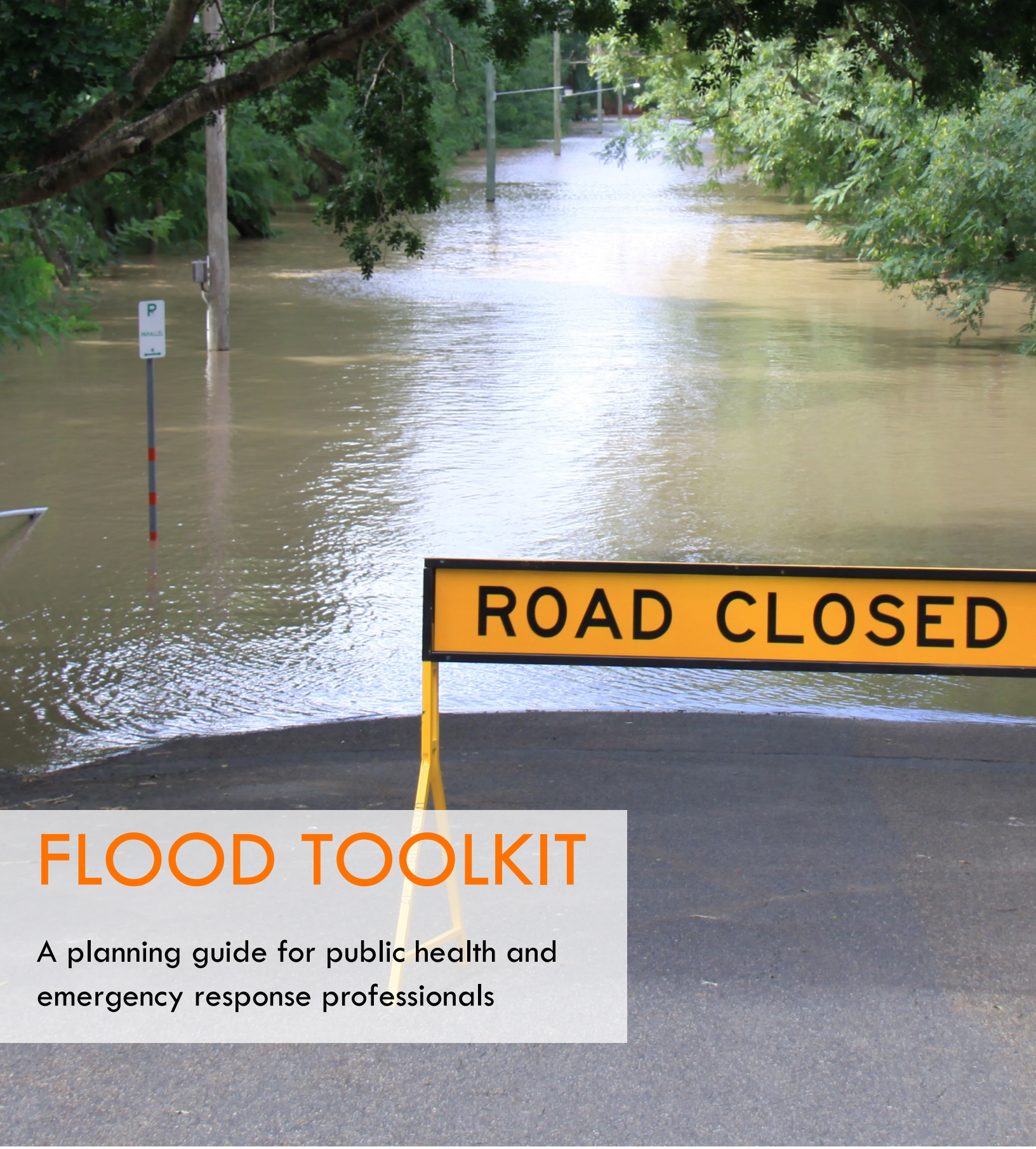

FLOOD TOOLKIT

A planning guide for public health and emergency response professionals

WISCONSIN CLIMATE AND HEALTH PROGRAM
Bureau of Environmental and Occupational Health

dhs.wisconsin.gov/climate | SEPTEMBER 2016 | dhsclimate@wi.gov

State of Wisconsin | Department of Health Services | Division of Public Health | P-00631 (Rev. 09/2016)

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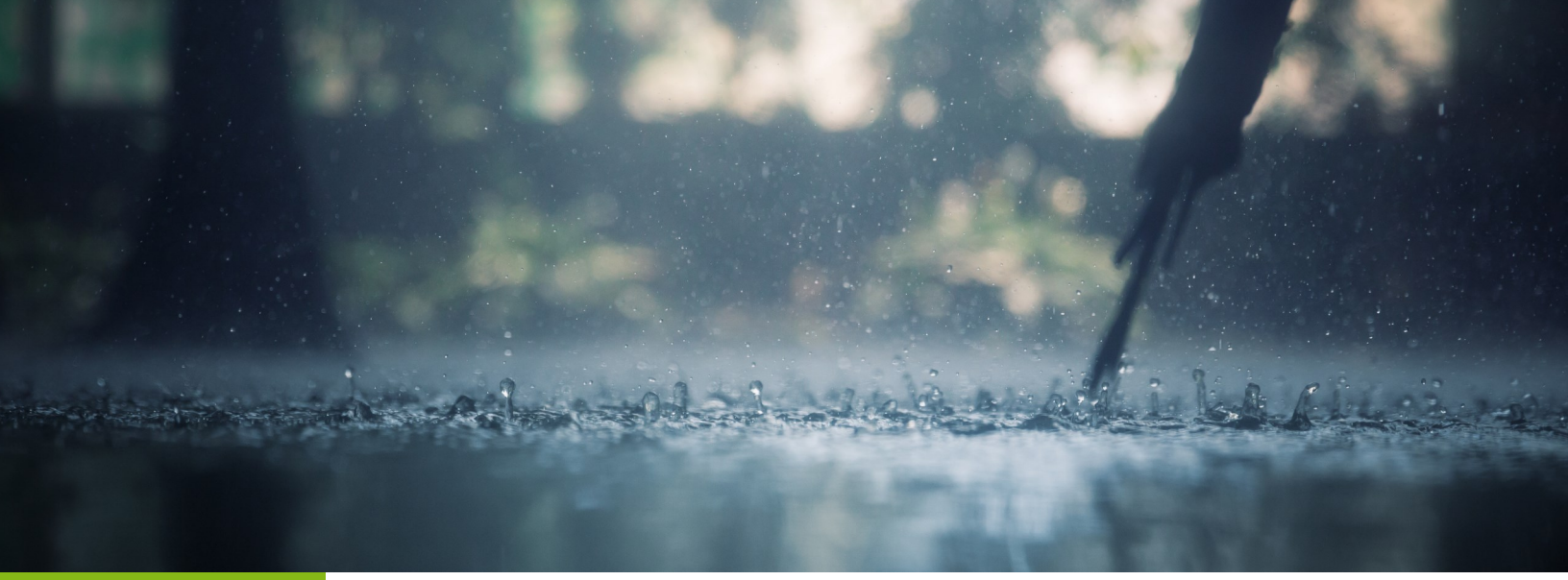


INTRODUCTION

Purpose

The purpose of this flood toolkit is to provide information to local governments, health departments, and citizens about preparing for and responding to flood events. The toolkit focuses on providing background information, practical guidance, strategies, media releases, talking points, definitions, and useful reference materials on this topic. The guides in this toolkit may be copied and printed onto local government or health agency letterhead for distribution to flood-impacted residents. Additional documents can be found in Appendix A, Additional Resources.

Background

Although Wisconsin does not have exceptionally steep terrain, mountain slopes, or low-lying coastlands, significant areas of the state are flooded every year. Flooding in Wisconsin is generally caused by the accumulation of excessive surface run-off in low-lying flat areas or the over-flowing of rivers and lakes. Routine annual flooding poses a danger to human life and safety, causes significant damage to property and infrastructure, and negatively impacts the state's economy. From 1990 to 2008, Wisconsin experienced eight flood-related fatalities,[1] and countless injuries caused by responding to and recovering from flood events. Flooding in Southwestern Wisconsin in 2008 was responsible for property damage, agricultural losses, and business losses with an estimated value of $764 million to $1 billion.[2]

Routine annual flooding poses a danger to human life and safety, causes significant damage to property and infrastructure, and negatively impacts the state's economy.

Climate Trends

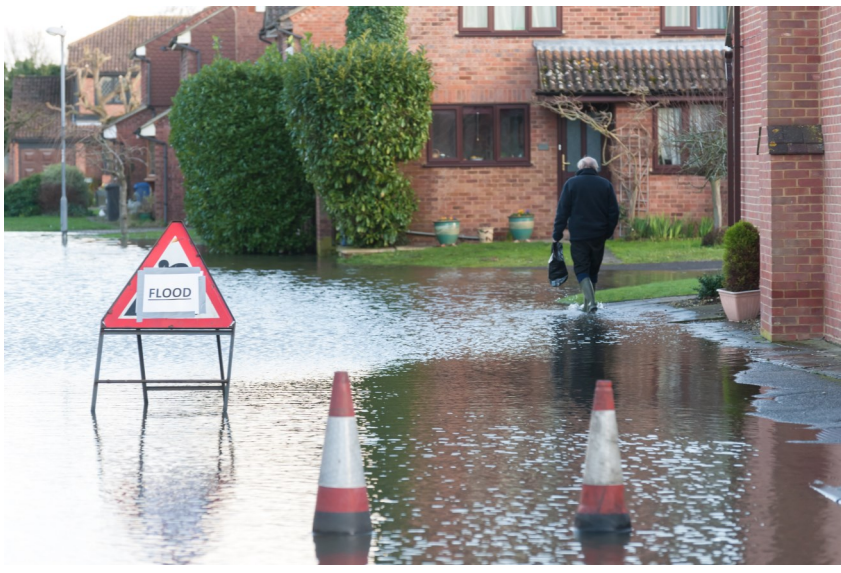
Long-term trend analysis of Wisconsin's climate indicates that the state is becoming warmer and wetter. Climate data has provided evidence that parts of southern and western Wisconsin have had an increase in annual precipitation that is 7 inches more than the 1950-2006 average. After analyzing historical climate data from 1950 to 2006 and developing downscaled local climate models, University of Wisconsin climate scientists created potential climate projections based on the historical trends and scientifically validated models.[3] Several of the modeled outcomes indicate that flooding may become much more likely, and more intense, in coming years.

Health Impacts

These projections suggest that Wisconsin will need to prepare for many more public health impacts due to flooding, including drowning, contaminated drinking water, damaged and dangerous property, and exposure to mold. Emergency planning must consider flooding needs such as access to safe food and drinking water, safe usage of electrical and heating appliances, and transportation out of flood zones.

Flood Response and Recovery Guidance

Under the Wisconsin "Home Rule" principle, flood preparedness and response are considered local activities. The local or county emergency management office, health agency, or police/fire first responders will be the lead agency during a flood event. However, when requested, state resources will be provided to assist and support the local response.



DEFINITIONS

Surface Water Flooding

Flooding due to increased flow volumes in river and stream beds reaching over their banks, increased flow volumes released from breached dams and impoundments, high volumes of overland flow (runoff), or increased recharge causing lake water levels to rise over their shorelines.

Ground Water Flooding

Flooding due to increased recharge causing the water table to rapidly rise, either forcing water to flood above the ground surface, or to force water by hydraulic pressure through cracks and crevices and into basements.

Septic System

A privately owned and operated home wastewater disposal system, including: conventional septic tank/drain field systems, dry wells, holding tanks, mound systems, and alternative treatment systems.

Safe Water Supply

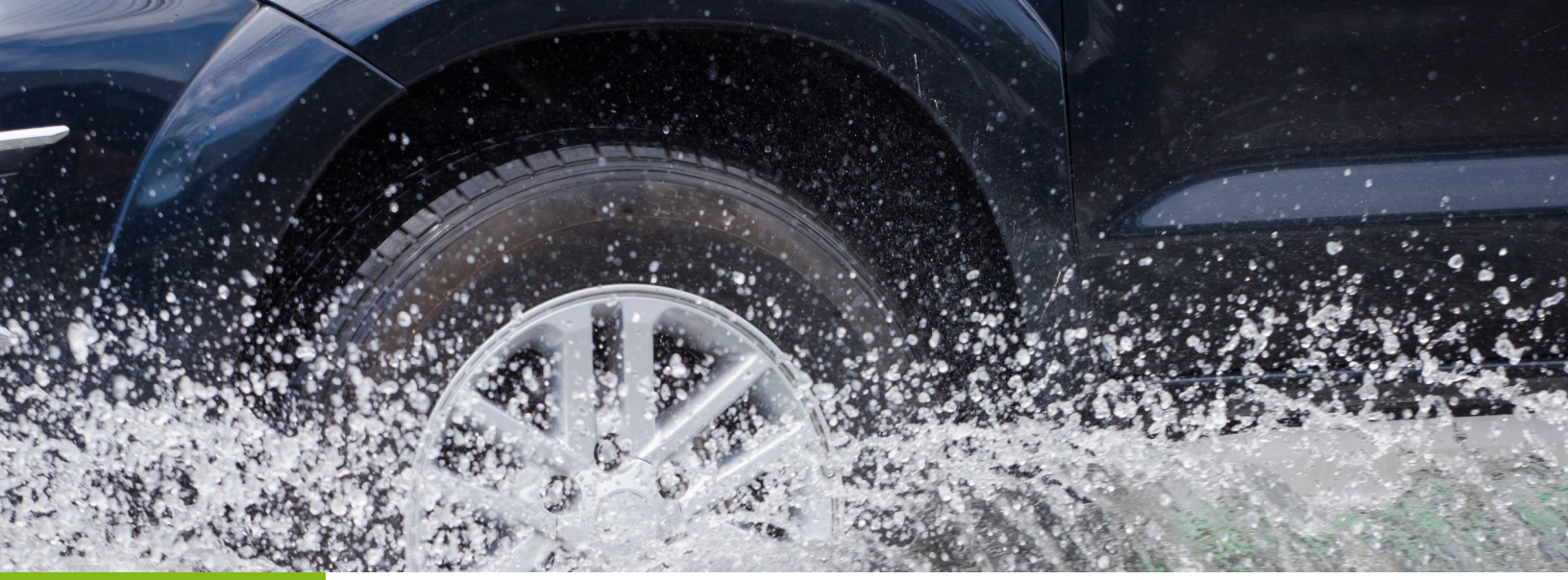
Drinking water is considered to be “safe” when it is determined to be free of coliform bacteria by a certified laboratory following approved standard methods. The accepted standard is “0” colony forming units (cfu) of coliform bacteria per 100 ml of water, or a “negative” result using a presence/absence sampling medium.

Flood/Flash Flood Watch

Flooding or flash flooding is possible in the flood watch area.

Flood/Flash Food Warning

Flooding or flash flooding is already occurring or will occur soon in the warning area.



GUIDE 1

GUIDE 1: GENERAL FLOOD INFORMATION

Avoid Flooded Areas

- **Do not swim or bathe in rivers, streams, creeks, or lakes in flooded areas.** Flood waters may contain sewage, fertilizer, manure, gas, pesticides, hazardous materials, large pieces of debris (such as tree limbs, boulders, metal objects, and sharp objects like glass, nails, fence posts, etc.).
- **Contact your local parks department for monitoring information about public beaches and access points to surface water.** Additional information on recreational water can also be found at the Wisconsin State Lab of Hygiene webpage (slh.wisc.edu).

Ensure You Have Safe Water

Municipal Water Users

- Turn on and run faucets for at least five minutes before using water for drinking or food preparation.
- If a "boil water" notice is issued, follow any directions given by the Wisconsin Department of Natural Resources, local water utility, or local health department.

Private Well Owners

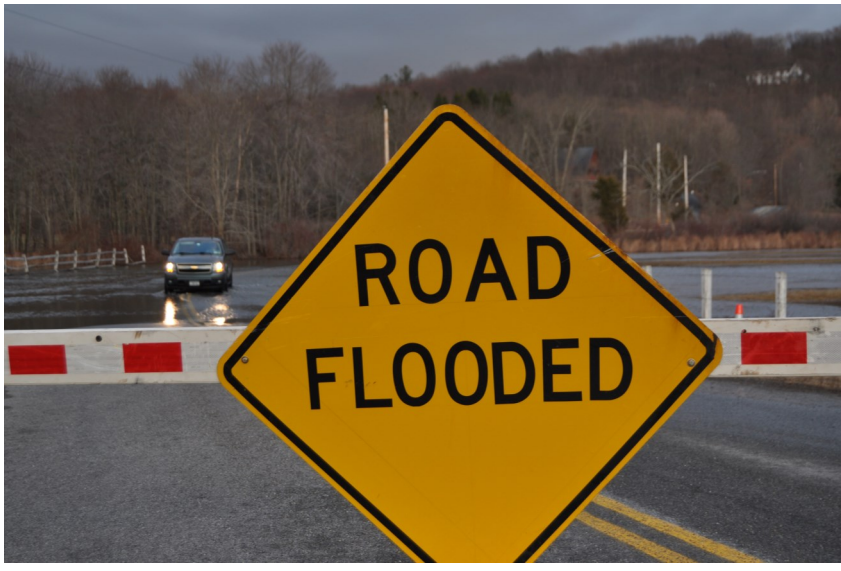
- Private well owners that are concerned that their well has been affected by a flood should assume that the well is contaminated. Signs that a well may be affected by a flood include:
    - Floodwaters come into contact or run over the top of a well
    - You notice changes in the taste, smell, or color of the water
    - You have a shallow well and live near areas that have been flooded.
- Do not drink or bathe in water from a private well that has been or is flooded.

GUIDE 1

- Disinfect your well and plumbing system if you suspect your well has been affected by a flood. This procedure is best done by a licensed well driller or pump installer with the expertise and equipment. However, if you decide to do disinfect the well by yourself, carefully follow the steps in Guide 3 on Well Disinfection.
- After the well is disinfected, wait about a week before testing your water for bacteria contamination. To test your water supply yourself, obtain a well water sampling kit from your local public health department.
- Until the test results are known, follow these procedures to ensure safe drinking water:
    - Drink bottled water or water from a known, safe source.
    - If necessary, you can make water safe to drink by boiling it for five minutes.
- If the test results come back negative or "safe," the water may be safe to drink, but re-test the water in another month to be sure. Also, be on the lookout for changes in taste, smell, or color.
- If the test results come back positive or "unsafe":
    - Re-test the well to be sure of the result.
    - If the re-test is also positive or "unsafe," do not use the well water for drinking or food preparation.
    - Work with a licensed well driller or pump installer to try to figure out what's wrong and take steps to address the problem. You can find one of these professionals by visiting dnr.wi.gov/topic/wells/contacts.html or searching "well drilling service" or "pump service" in the phone book.
- When in doubt, if the water is cloudy, smells bad, or colored, do not drink it!

Clean Up If Your Sewage System Floods

- After a flood, private sewage systems are no longer reliable. Portable toilets or other facilities should be used.
- Any areas with sewage backflow from your septic or municipal water system through flood drains, toilets, etc., such as basements, must be cleaned and disinfected with a chlorine solution. Anything that cannot be cleaned should be thrown out.



GUIDE 2

GUIDE 2: FLOOD PREPAREDNESS

Secure your home

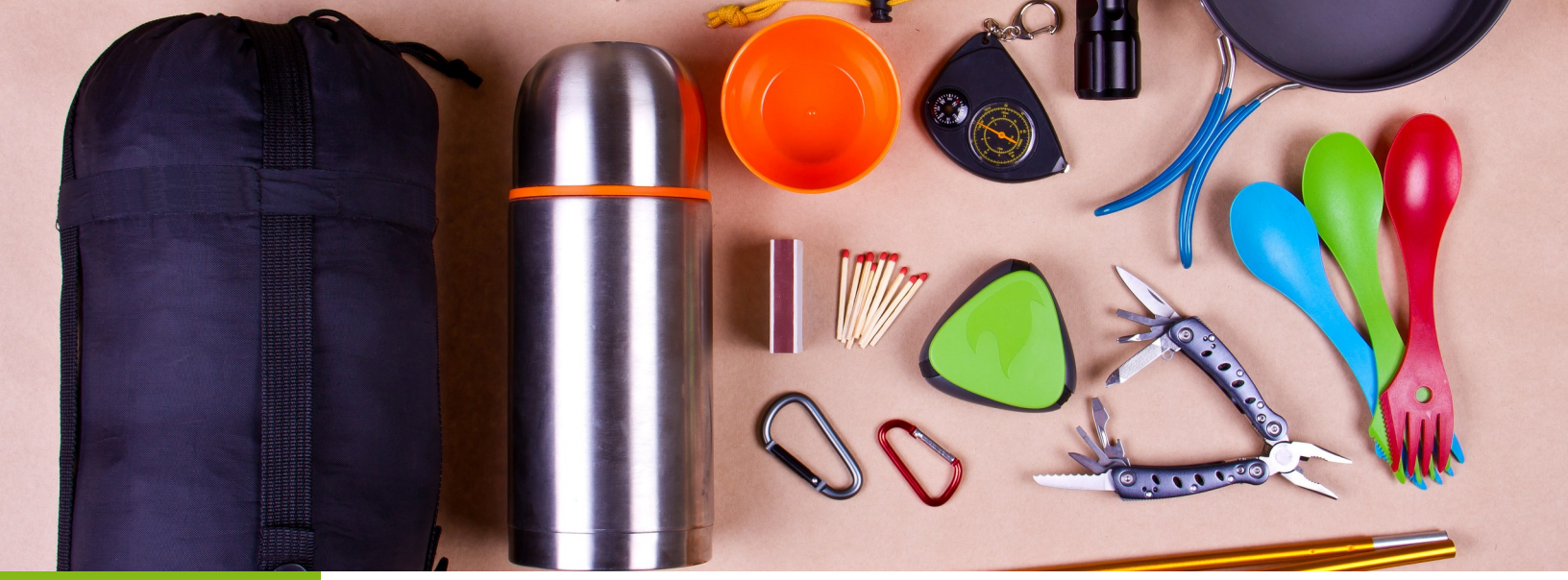
- Contact your local health department to familiarize yourself with community emergency plans.
- Speak to your insurance company about flood coverage.
- List emergency numbers and contacts near phones.
- If you live in a flood zone, raise electrical components, furnace, and water heater above flood zone level.
- Install backflow valves for drains, toilets, and other sewer connections.
- Install sump pumps with back-up power.

In the case of a flood watch or warning:

- Gather emergency supplies (see next page).
- Stay informed. Listen to local weather reports.
- Turn off power.
- If time allows:
    - Bring outdoor possessions indoors and secure them.
    - Fill bathtubs, sinks, and plastic bottles with clean water.
    - **Do not walk through water.** If water levels begin to rise, immediately seek higher ground.
    - Prepare for evacuation.
    - Make transportation arrangements and make sure the gas tank is full.
    - Check on friends, family, and neighbors that may be isolated or unaware of the situation.
    - Collect important documents including ID cards, insurance cards, and medical records.

In the case of an ordered evacuation:

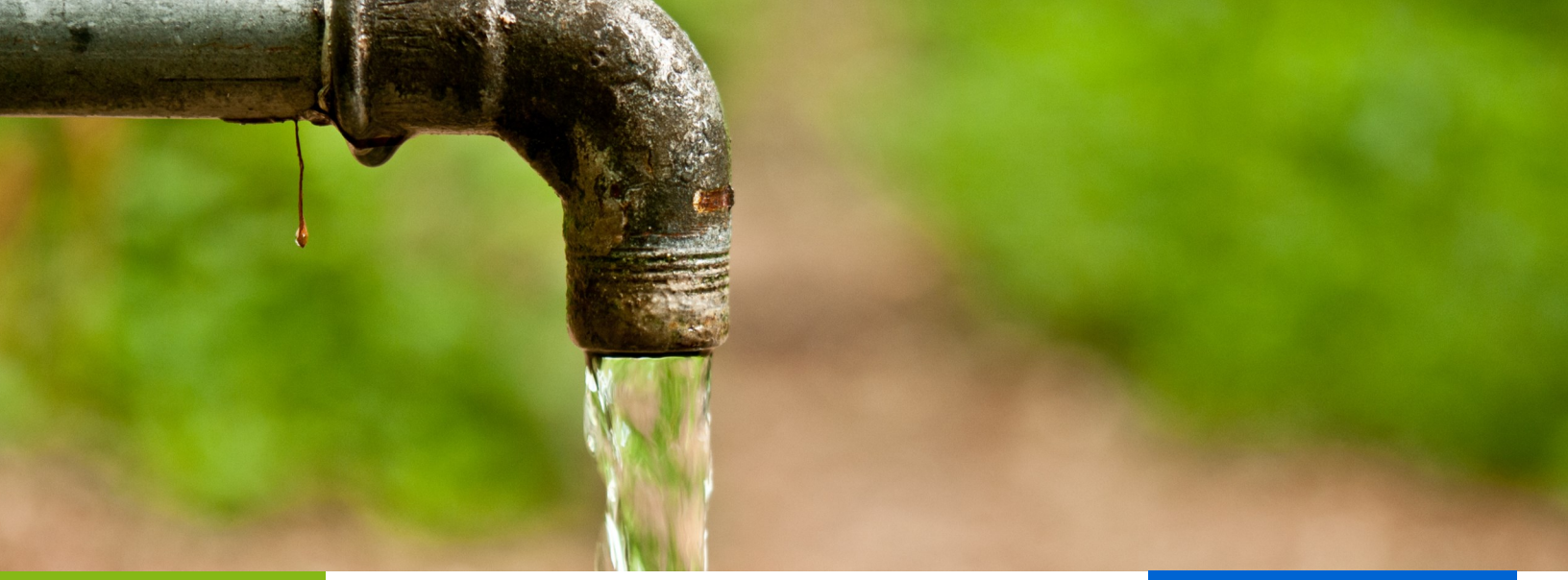
- Turn off the gas, electricity, and water.
- Disconnect appliances.
- Listen to evacuation orders and follow evacuation route.
- Take emergency supplies (see next page).
- Avoid flood zones and remain informed by listening to weather reports.
- Map a safe evacuation route in advance.



GUIDE 2

Assemble a Disaster Emergency Kit

- [ ] 3-day supply of water (one gallon of water per person, per day)
- [ ] 3-day supply of non-perishable food (and can opener)
- [ ] Battery-operated radio and extra batteries
- [ ] Cell phone and charger
- [ ] Flashlight and batteries
- [ ] First aid kit (bandages, gauze, tweezers, disinfectant, gloves, pain relievers, thermometer, etc.)
- [ ] Whistle to signal for help
- [ ] Dust mask
- [ ] Survival blanket (also known as a space blanket)
- [ ] Extra cash (about $50)
- [ ] Pocket knife
- [ ] Wrench to turn off utilities
- [ ] Medications, hand sanitizer, moist towelettes, plastic ties, and garbage bags
- [ ] Local maps for evacuation
- [ ] Change of clothes (including rain jacket, gloves, hat, etc.)



GUIDE 3

GUIDE 3: DISINFECTING YOUR WELL AND WATER SYSTEM

This procedure is best done by a licensed well driller or pump installer with the expertise and equipment. However, if you decide to disinfect the well by yourself, carefully follow these steps.

1. Do not turn on the pump.
2. Close the valves so you will bypass your water softener and any other water treatment equipment. A strong chlorine solution can damage this equipment. You should disinfect these devices separately following the manufacturer's instructions.
3. Calculate the amount of bleach needed for your well according to the following table:

Depth of Water	Diameter of Well					
	0.5 foot	**1 foot**	**2 feet**	**3 feet**	**4 feet**	**5 feet**
10 Feet	1/2 cup	1-3/4 cups	7 cups	1 gallon	1-3/4 gallons	2-3/4 gallons
20 feet	1 cup	3-1/2 cups	14 cups	2 gallons	3-1/2 gallons	5-1/2 gallons
30 feet	1-1/2 cups	5-1/4 cups	1-1/4 gallons	3 gallons	5-1/4 gallons	8-1/4 gallons
40 feet	2 cups	7 cups	1-3/4 gallons	4 gallons	7 gallons	11 gallons
50 feet	2-1/2 cups	8-3/4 cups	2-1/4 gallons	5 gallons	8-3/4 gallons	13-3/4 gallons

Notes:

- Use only unscented, household liquid chlorine bleach.
- Bleach concentrations can vary between 5% and 6%.
- Quantities given in this table are approximate and are rounded to the nearest practical measurement. Amounts given are calculated in accordance with reaching a chlorine concentration of 100 mg/L.

Key: 1 cup = 8 fluid ounces | 16 cups = 1 gallon

GUIDE 3

4. Using water from a known safe source, add a volume of water—at least as great as the volume of water standing in the well—and the bleach into a clean, new garbage can or other comparable containers. When handling bleach, wear rubber gloves and eye protection.
5. Turn off the power supply to the well, remove your well cap or seal, and note any issues with the well that may need repair.
6. Carefully pour the bleach solution down the well in one continuous pour.
7. Connect a new, clean hose to a nearby hose faucet and turn the electrical power back on.
8. Turn the water faucet on and recirculate the chlorinated solution through the hose and back to the well. Be sure you rinse the inside surface of the casing, all the way down to the bottom of the well.
9. Turn off the electrical power and drain both the pressure tank and water heater. Doing this will allow the water from these tanks to be totally replaced by the chlorinated solution.
10. Turn the electrical power to the pump back on. Let the well water refill the pressure tank and water heater.
11. Turn on every water faucet, both inside and outside, until you can smell chlorine in each one.
12. Turn off every faucet, and allow the chlorine solution to remain in the well and plumbing system at least overnight, but preferably for 24 hours.
13. Flush the chlorine solution from the entire water system by using a hose connected to an outside faucet. Run the chlorinated water out of the system, but not into your septic system or into surface waters.
14. Keep running the water until you can no longer notice the smell of chlorine at any faucets.
15. Wait a few days, and then resample your well water to make sure it is bacteriologically safe to drink.

Read more about well cleaning at:
bit.ly/postfloodwellcleaning

GUIDE 4

GUIDE 4: RE-ENTERING YOUR HOME

A home that is flooded might be contaminated with mold or sewage, which can cause health risks for your family. There might also be safety risks if your gas and electric service was interrupted. The following tips will help you avoid or reduce health and safety risks as you re-enter your home.

Avoid the Flood Zone

- Turn around, don't drown. The Centers for Disease Control and Prevention (CDC) reports that half of all flood-related drowning occurs when a vehicle is driven into flood waters. The next highest percentage is due to walking into or nearby flood waters.
- Two feet of rushing water can carry away most vehicles. Six inches of water can knock over an adult.
- Stay out of areas that are barricaded or closed.

Practice Natural Gas Safety

- Do not enter your home if you notice a natural gas odor. Immediately call your local utility company or fire department.
- Have your furnace and gas appliances inspected by a professional repair person. Have them re-light the appliance or furnace.
- While waiting for your furnace to be re-lit, do not use other heating sources, such as gas space heaters, grills, or other appliances that can give off dangerous fumes.
- Keep portable generators outside and at least 20 feet from structures, with exhaust pointing away from other people or homes. Gas appliances make carbon monoxide, which is dangerous and can be deadly. Read more about carbon monoxide in this fact sheet (INSERT LINK TO NEW CO FACT SHEET).

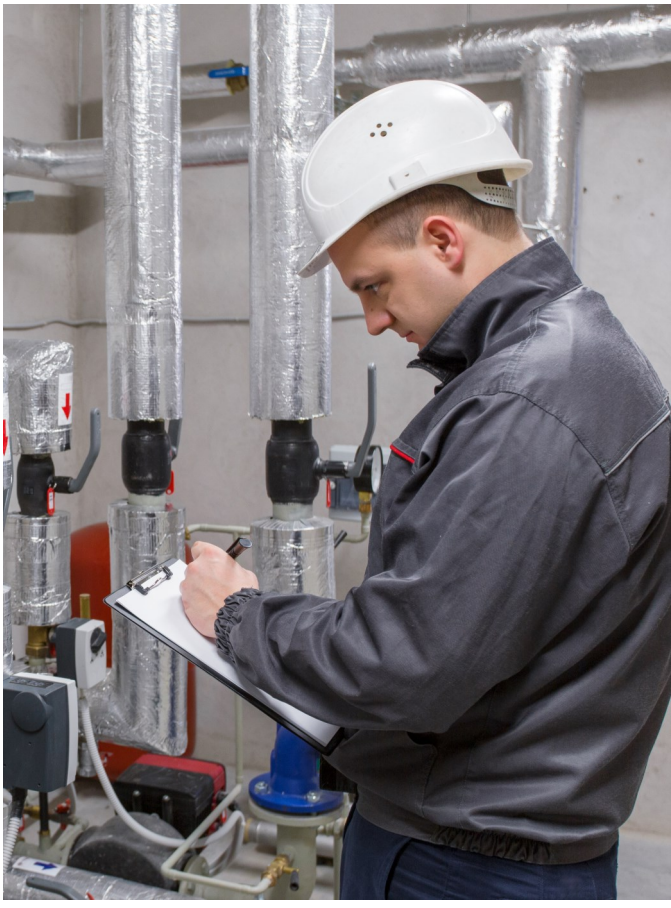
GUIDE 4

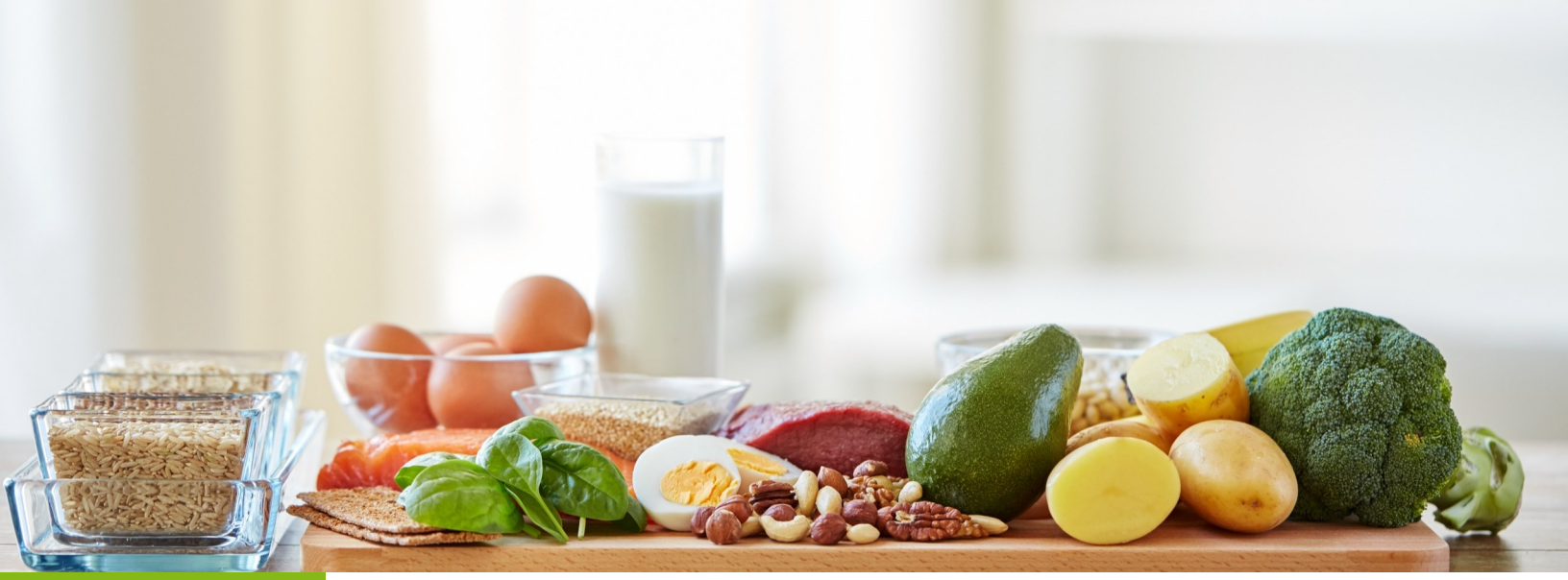
Practice Electrical Safety

- Never turn power on or off while standing in water.
- Have your electrical system inspected by an electrical contractor or building inspector.
- Any electrical outlets that were submerged MUST be inspected for safety.
- If you have electrical problems, call your local utility company.
- Electrical appliances that were exposed to water must be completely dry before use. *Note*: Electrical motors that were submerged probably will not work (e.g., refrigerator motor).
- If you use electric heaters, be careful to place them away from items that can burn. Do not leave electric heaters unattended.

Clean Up After Water Damage

- Buildings that have been flooded should be inspected by a building inspector for structural damage before re-occupancy.
- If your basement is flooded, don't rush to pump it out. If you drain your basement too quickly, the pressure outside the walls will be greater than the pressure inside, which may cause the basement floor and walls to crack and collapse.
- Broken water pipes may have created puddles in your home. Using electrical appliances while standing in water can cause electric shock or electrocution.
- If you receive a cut or puncture wound while cleaning your home, tetanus shots are available through your local public health department (dhs.wisconsin.gov/lh-depts/counties.htm).
- If you are on municipal water, run water faucets for at least five minutes before using water for drinking or food preparation. If a "boil water" notice is issued, follow any directions given by the Department of Natural Resources, the local utility company, or your local health department.
- Damaged or wet flooring, carpeting, furniture, drywall, insulation, etc. should be moved and disposed of to prevent mold growth.

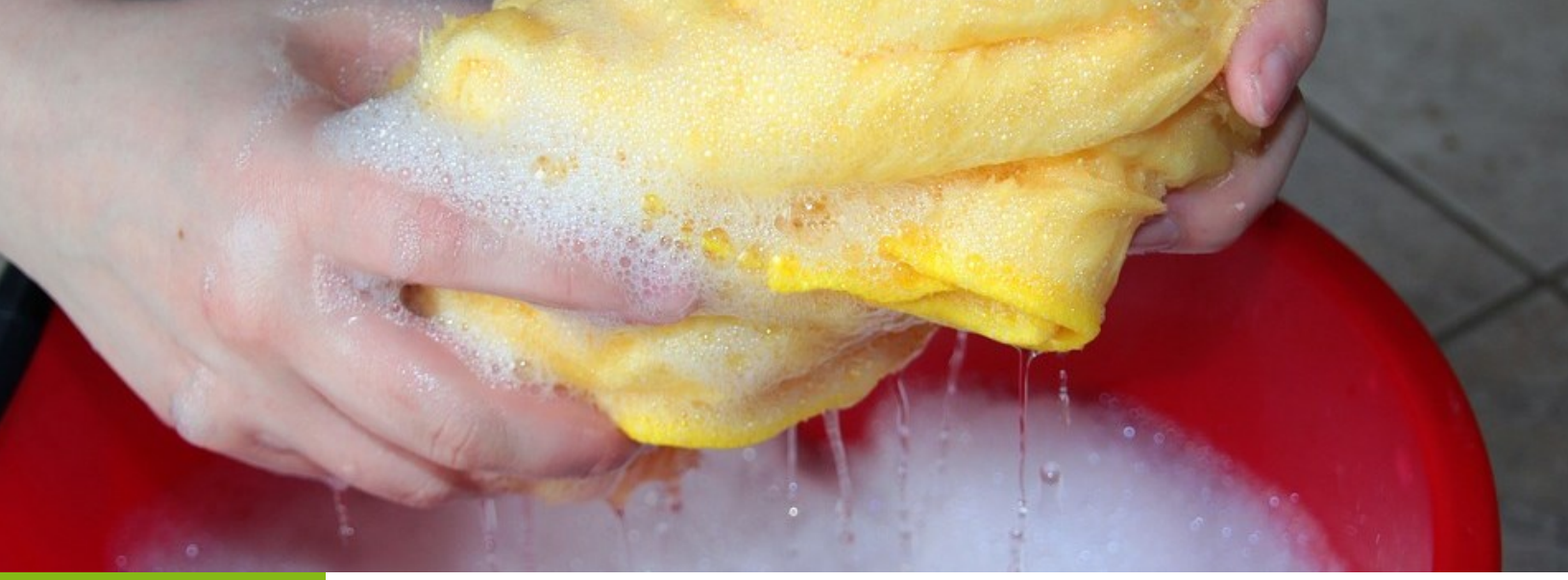




GUIDE 5

GUIDE 5: WHAT TO DO WITH FOOD AFTER A FLOOD

Type of Food	Proper Action after Flood
Baby formula	Use only prepared, canned baby formula that requires no added water.
Food not found in waterproof containers	Discard if they have come into contact with flood water.
Canned foods	• Discard if damaged. • Undamaged, commercially canned foods can be saved if you remove the can labels, wash cans, disinfect with one cup bleach to five gallons of water. Re-label cans, including expiration date, with a
Screw-caps, snap-lids, crimped caps (soda pop bottles), twist caps, flip tops, and home canned foods	Discard if they have come into contact with flood water.
Refrigerated or frozen food	• Check food for spoilage by their odor and appearance. • Perishable foods left at room temperature for more than two hours should be thrown out. • Frozen food that has thawed should be thrown out.



GUIDE 6

GUIDE 6: CLEANING AND SANITIZING WITH BLEACH AFTER AN EMERGENCY

Cleaning and sanitizing your household after an emergency is important to help prevent the spread of illness and disease.

Using Cleaning and Sanitizing Products

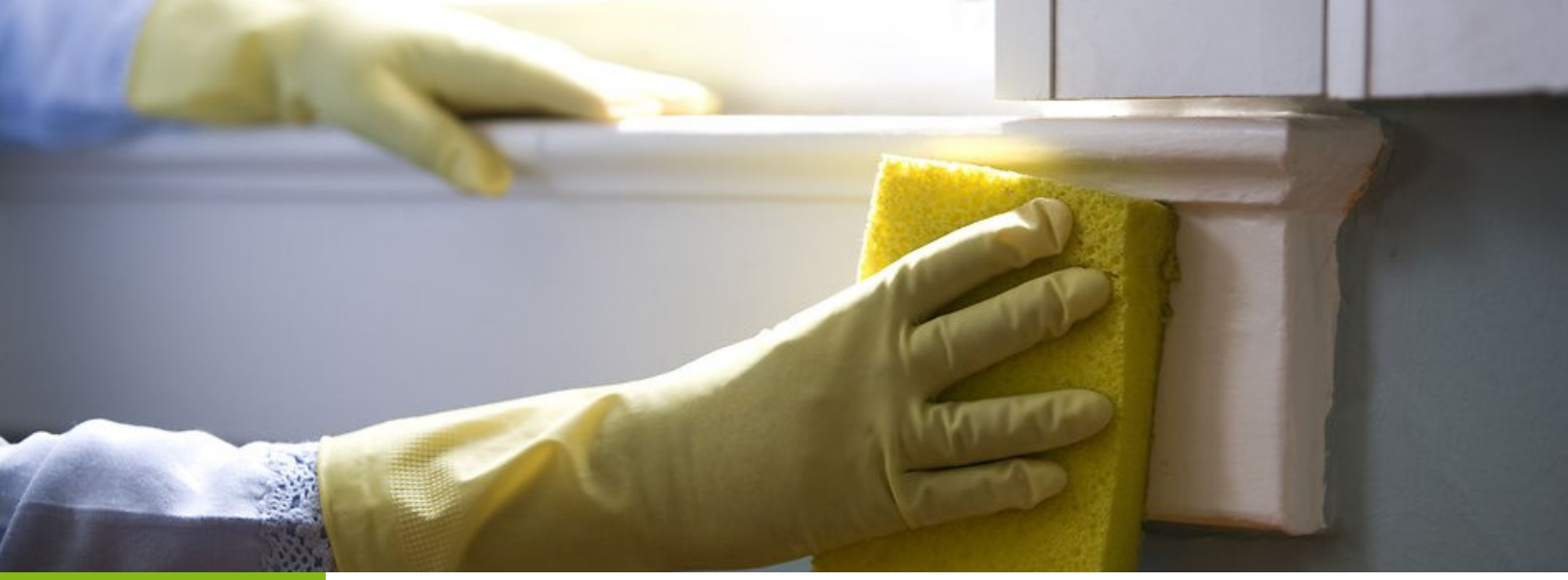
- Wash surfaces with soap and warm, clean water to remove dirt and debris.
- Sanitize surfaces with a bleach solution (see below).
- It is critical to read and follow the safety instructions on any product you use. Below are important safety guidelines when using sanitizing products.
- Never mix bleach with ammonia or any other cleaner. This creates toxic gases that are dangerous and can cause serious injury. Ammonia is commonly found in window cleaner. Check the cleaner bottle to see if it contains ammonia.
- Wear rubber boots, gloves, and eye protection.
- If using bleach mixtures indoors, open windows and doors to allow fresh air to enter.

GUIDE 6

Cleaning and Sanitizing with Bleach

Use regular, unscented 5% household bleach and follow the instructions below:

Area or Item to be Cleaned	Amount of Bleach and Water to Mix		Cleaning Steps
	Amount of Bleach	Amount of Water	
Food surfaces that may have touched flood water Examples: countertops, cups and plates, flatware. Note: Throw away wooden cutting boards, infant toys, baby bottle nipples, and pacifiers.	1 teaspoon	1 gallon	• Wash with soap and warm, clean water. • Rinse with clean water. • Dip or rinse in a sanitizing solution of 1 teaspoon of bleach per 1 gallon of clean water. • Allow to air dry.
Food cans that are not bulging, open, or damaged	1 cup	5 gallons	• Remove can labels. • Wash cans with soap and warm, clean water. • Dip cans in mixture of 1 cup of bleach per 5 gallons of water. • Allow to air-dry. • Re-label cans with permanent marker.
Surfaces that do not soak up water and that may have touched floodwater Examples: floors, stoves, sinks, certain toys, countertops, and tools.	1 cup	5 gallons	• Clean surface with soap and warm, clean water. • Rinse with clean water. • Sanitize using a mixture of 1 cup of bleach to 5 gallons of water. • Allow to air dry.
Mold growth on hard surfaces Examples: floors, walls, windows, stoves, sinks, certain toys, countertops, flatware, plates, and tools.	1 cup	1 gallon	• Mix 1 cup of bleach in 1 gallon of water. • Wash surfaces with the bleach/ water mixture. • If surfaces are rough, scrub them with a stiff brush. • Rinse surfaces with clean water. • Allow to air dry.



GUIDE 7

GUIDE 7: MOLD CLEAN UP WITH BLEACH

Before You Clean

Fungi (or mold) need a source of moisture, a source of organic matter, and proper temperature. After a flood event, the flood waters will have soaked carpeting, furniture, and building materials (drywall, wood studs, flooring, etc.), creating a suitable environment for mold growth.

These materials must be removed or completely dried out to prevent mold from growing. Areas inside your home that have poor air movement and retain moisture are likely areas for future mold growth. Remove any sources of moisture and repair damages that may contribute to moisture.

Testing for Mold

Testing for mold is generally not necessary. If you can **see and smell it**, you have a mold problem. In flood situations, mold growth may begin on the backside of wet drywall, between building substrates, or under wet carpeting. It may not be visible, but you may be able to notice a musty or moldy smell.

Elimination of wet, flood-damaged building materials, furnishings, and personal items will be necessary to prevent mold problems. If ongoing mold problems occur, it is recommended that you have a thorough inspection to determine the cause of the mold growth. DHS recommends that you hire a consultant specializing in building assessments to evaluate your entire house.

Cleaning Up Mold

- Take things that were wet for two or more days outside. Things that stayed wet for two days have mold growing on them, even if you can't see it.
- Take out stuff made of cloth, unless you can wash them in hot water. Also take out stuff that can't be cleaned easily (like leather, paper, wood, and carpet).
- Use bleach to clean mold off hard things (like floors, stoves, sinks, certain toys, countertops, flatware, plates, and tools).

GUIDE 7

- Never mix bleach with ammonia or other cleaners.
- Wear rubber boots, rubber gloves, goggles, and an N-95 mask.
- Open windows and doors to get fresh air in while you use bleach.
- Mix no more than one cup of bleach in one gallon of water.
- Wash the item with the bleach and water.
- If the surface of the item is rough, scrub the surface with a stiff brush.
- Rinse the item with clean water.
- Dry the item or leave it out to dry.

Occasionally, mold can be found in the bathroom, on a windowsill, shower curtain, or wall. This mold can be wiped off the surface with a damp cloth and cleaning agent (e.g., window or bathroom cleaner).

Preventing mold growth requires controlling the moisture source. This may be as simple as using a dehumidifier or fixing a simple leak. For larger mold problems (about 10 square feet), follow these instructions:

1. Preparation Phase

- Plastic sheets, at least 4 mm thick, to cover door openings, floors, and vents
- A breathing respirator that covers mouth and nose with HEPA cartridges
- Three spray bottles/plant misters
- Paper towels or disposable rags
- Heavy duty plastic garbage bags
- General household cleaner (without ammonia)
- Regular household bleach (between 1% to 5% chlorine). Bleach is typically not necessary to clean up mold, unless a sewage release occurred. In this case, both mold and bacteria can be reduced by using a bleach solution as a final disinfecting rinse.
- Latex or rubber gloves and goggles
- A one-cup measuring container
- Three buckets that will hold at least a gallon of water each
- Commercial grade HEPA vacuum. Do not use a home vacuum since it is not designed for this type of work.
- Dehumidifier

GUIDE 7

2. Mixing Phase

- **Spray bottle #1:** Mix general household cleaner and water in a bucket, then transfer to spray bottle (follow manufacturer's instructions). Remember not to mix bleach with household cleaners; if ammonia is mixed with bleach, a toxic gas can form.
- **Spray bottle #2:** Add 1 cup bleach to every gallon of tap water in a bucket, then transfer to spray bottle. Bleach is necessary when there has been a gray (laundry) or black (sewage) water release. Use gloves and eyewear when handling bleach.
- **Spray Bottle #3:** Clean, warm water for rinsing.

3. Application and Cleaning Phase

- The bleach solution is irritating and harmful to the skin, eyes, and clothing. Avoid direct contact with the bleach by wearing rubber gloves, respirator, and goggles during the entire mixing and cleaning process.
- Prepare the work area.
    - Seal off the room from the rest of the house with the plastic and tape.
    - Keep children and animals out of the work area.
    - Do not eat, drink, use gum/tobacco, or smoke at any time during cleaning.
    - Use a dehumidifier prior to, during, and after the clean-up to keep areas dry and prevent mold from reoccurring.
- Removing the mold.
    - Removing visible mold. Spray with general household cleaner (spray bottle #1). Start from the top and work down, changing towels frequently. Discard towels in a plastic bag. Rinse the same area with clean water on a damp towel or lightly spray with warm rinse water in a spray bottle (spray bottle #3) and wipe with a clean towel. Repeat until all visible mold is gone.
    - Removing mold and water release. Spray with bleach solution (spray bottle #2), wipe affected area of mold and let set for 15 minutes. Rinse the area with a damp towel using clean warm water or by lightly spraying with warm rinse water in a spray bottle (spray bottle #3) and wiping with a clean towel.

4. Cleaning Up the Work Area

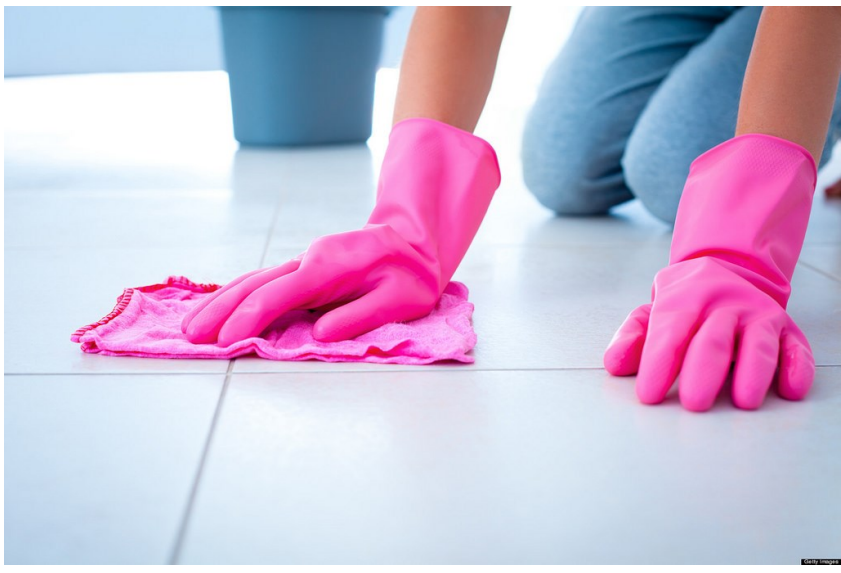
- Once the surface is dry to the touch, use the HEPA vacuum to remove allergens. Place the HEPA vacuum bag into a garbage bag and dispose of it as you would normal garbage.
- Flush wastewater down a toilet, utility sink, or floor drain.
- Change out of your cleaning clothes and wash them separate from your family's laundry.
- Wash hands and face.

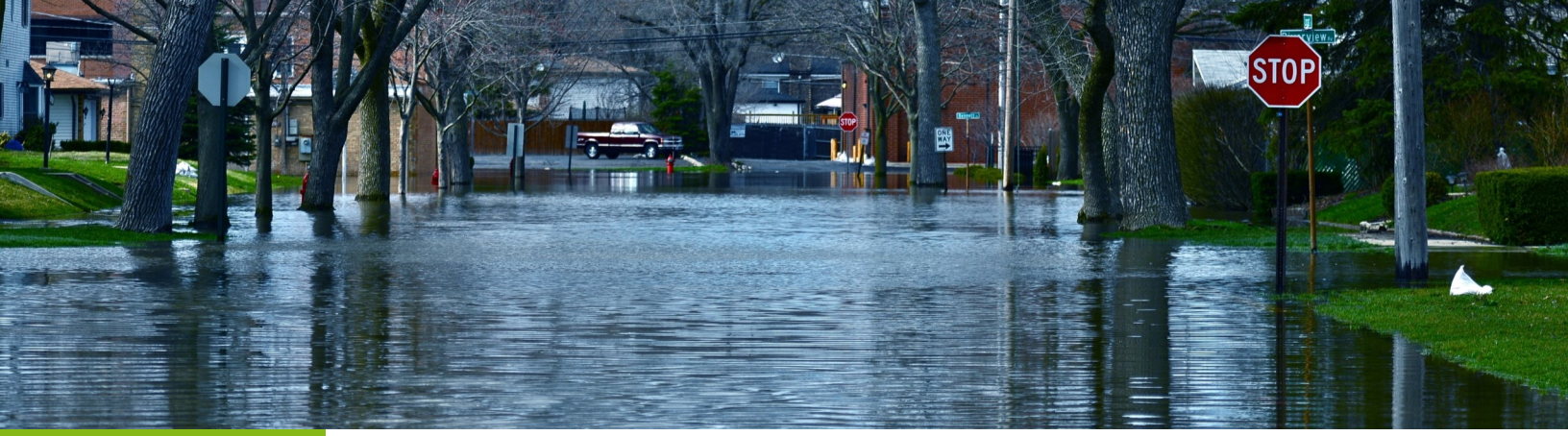
GUIDE 7

At this point, you can apply paint or other coating to the surface. You may wish to use a paint or coating that contains a fungicide to prevent future mold growth. Be sure to follow the manufacturer's instructions and recommendations when using any mold-resistant paint or paint additive. Remember, these are also pesticides and may have adverse health effects on some individuals.

Use of Ozone Air Cleaners

Do not use ozone air cleaners to kill mold. Ozone air cleaners generate ozone, a known respiratory irritant. The U.S. Environmental Protection Agency (EPA) does not recommend using ozone-generating air cleaners for treating indoor mold problems. If a contractor recommends the use of an ozone-generating air cleaner to treat mold problems in your home, please file a complaint with the Department of Agriculture, Trade, and Consumer Protection at 1-800-422-7128.





GUIDE 8

GUIDE 8: TALKING POINTS REGARDING FLOODS

These talking points may be inserted into message maps for outreach broadcasts pre-flood, during the flood, and post-flood.

Pre-Flood Event Messages

- Prepare a family plan and have emergency telephone numbers available.
- Assemble a disaster supply kit with enough food, water, and other supplies for at least 72 hours.
- Obtain a National Weather Service (NWS) Emergency Band Radio or portable radio. Have extra batteries.
- Follow the guidance provided in broadcasted flood warnings.

During the Flood Event Messages

- Follow broadcasted evacuation guidance.
- Stay out of flood waters if possible. Flood waters may contain bacterial contaminants, hazardous substances, and debris or sharp objects.
- Don't travel into or through flood waters, if possible. Obey warning and road closed signs.
- Don't attempt to save household possessions during the flood event. Wait until dangerous flood conditions have passed.

Post-Flood Event Messages

- Be sure the flood zone has been secured and that hazardous conditions (e.g., downed power lines) have been eliminated.
- Before entering into any buildings, be sure that the building has been inspected for structural integrity and that hazards (e.g., natural gas leaks) have been eliminated.
- Attempt to assess damage and losses and estimate value of damage to provide a community-wide damage assessment.
- Attempt to begin clean-up assessment and identify options quickly to minimize water damage and environmental contamination issues.

GUIDE 9

GUIDE 9: MESSAGE MAPS DURING A FLOOD EVENT

Message mapping is one of the most important risk communication tools that public health agencies can employ. The goal of a message map is to convey important information in a concise and easy to understand fashion.

General Guidelines for Completing a Message Map

- Stick to three key messages or one key message with three parts for each underlying concern or specific question.
- Keep key messages brief. The reader should ideally spend less than 10 seconds per line.
- Develop messages that are easily understood by the target audience. (For communications with the general public, use a 6th to 8th grade readability level.)
- Place messages within a message set. The most important messages should occupy the first and last positions.
- Develop key messages that cite credible third parties.
- Use graphics and other visual aids to enhance key messages.
- Keep a positive tone. Messages should be solution oriented and constructive. Try to balance negative messages with positive ones.
- Avoid unnecessary use of “absolute” words, such as no, not, never, nothing, and none.

GUIDE 9

The following is a message map that could be used when addressing the general public regarding flood response and safety.

Main message: "At this time, the City/County of _____ has experienced significant flooding. To help you and your loved ones stay safe during this event…"

Key Messages *Three key messages*	**Supporting Information** *Three pieces of supporting information for each key message*
Message 1 Follow broadcasted evacuation guidance.	**Supporting Info 1** Listen to messages being broadcast by emergency management, your local news media, or your local governmental leaders regarding evacuation procedures. **Supporting Info 2** Those living alone can be isolated and unaware of the dangers posed by flooding. **Supporting Info 3** Check on your neighbors, friends, and relatives.
Message 2 Stay out of flood waters, if at all possible.	**Supporting Info 1** Flood waters may contain many contaminants, including bacteria, viruses, hazardous wastes, debris, and sharp objects. **Supporting Info 2** Half of all flood-related drowning occur when a vehicle is driven into flood waters. Turn around, don't drown. **Supporting Info 3** The next highest percentage of drowning is due to walking into or nearby flood waters.
Message 3 Don't attempt to save or salvage personal belongings during a flood.	**Supporting Info 1** Wait until the flooding has receded before attempting to salvage. **Supporting Info 2** Don't attempt to enter the flood zone until authorities have declared the area safe. **Supporting Info 3** Don't return to a flood damaged home until it has been inspected for structural safety and hazards.

APPENDIX A: REFERENCES

1. National Oceanic and Atmospheric Administration: Flash Flood Information. http://www.crh.noaa.gov/mkx/?n=flashfloodflyer.
2. NOAA and National Weather Service: Hydrologic Information Center – Flood Loss Data. http://www.nws.noaa.gov/hic/index.shtml
3. Climate projections noted within this toolkit come from: Wisconsin's Changing Climate: Impacts and Adaptation. 2011. WI Initiative on Climate Change Impacts. Nelson Institute for Environmental Studies. UW-Madison and WI DNR, Madison, WI. http://www.wicci.wisc.edu/report/2011_WICCI-Report.pdf
4. Covello VT. Message mapping. Available at: http://www.orau.gov/cdcynergy/erc/content/activeinformation/resources/Covello_message_mapping.pdf
5. Icons from The Noun Project

APPENDIX B: ADDITIONAL RESOURCES

Wisconsin Department of Health Services (DHS)
dhs.wisconsin.gov/flood
608-266-1120

West Nile Virus and Mosquito Bite Prevention Website
dhs.wisconsin.gov/arboviral/westnilevirus.htm

List of Wisconsin Local Health Departments
dhs.wisconsin.gov/lh-depts/counties.htm

List of Wisconsin Tribal Health Directors
dhs.wisconsin.gov/lh-depts/contacts/tribal-health-directors.pdf

Ready Wisconsin
readywisconsin.wi.gov/flooding

American Red Cross Flood Safety
rdcrss.org/2bDQaTw

American Red Cross Flood Information in Other Languages
redcross.org/prepare/disaster-safety-library

American Red Cross Flood Safety Checklist
rdcrss.org/2bkZ7kg

Federal Emergency Management Agency
fema.gov

Federal Emergency Management Agency Spanish Language Portal
fema.gov/es

Centers for Disease Control and Prevention Flood Disasters
emergency.cdc.gov/disasters/floods

Environmental Protection Agency Flood Clean-Up Booklet
epa.gov/indoor-air-quality-iaq

Environmental Protection Agency Mold Guide
epa.gov/mold

Environmental Protection Agency National Stormwater Calculator
epa.gov/water-research/national-stormwater-calculator

List of County Building, Code, and Zoning Officials
wccadm.com