

South Dakota State University
**Open PRAIRIE: Open Public Research Access Institutional
Repository and Information Exchange**

SDSU Extension Special Series

SDSU Extension

3-1-2010

Flooding: Response and Recovery

E. Kim Cassel
South Dakota State University

Donna Bittiker

Sharon Guthmiller

Follow this and additional works at: http://openprairie.sdstate.edu/extension_ss

Recommended Citation

Cassel, E. Kim; Bittiker, Donna; and Guthmiller, Sharon, "Flooding: Response and Recovery" (2010). *SDSU Extension Special Series*. Paper 26.
http://openprairie.sdstate.edu/extension_ss/26

This Other is brought to you for free and open access by the SDSU Extension at Open PRAIRIE: Open Public Research Access Institutional Repository and Information Exchange. It has been accepted for inclusion in SDSU Extension Special Series by an authorized administrator of Open PRAIRIE: Open Public Research Access Institutional Repository and Information Exchange. For more information, please contact michael.biondo@sdstate.edu.

FLOODING: RESPONSE AND RECOVERY

Information and Resources for Individuals and Families

TOPICS COVERED

Immunizations; Mental Health; Safety When Re-entering Flooded Buildings; Food and Water Safety; Inside the Home; Salvaging Keepsakes and Furniture; Large Appliances; Carpet and Flooring; Wallboard and Insulation; Cleaning Clothes/Bedding After a Flood; Repairing Flood-damaged walls, floors, and ceilings; Using a Moisture Meter Before Rebuilding; Mold; Avoid Scams

E. Kim Cassel, Extension Specialist
 Donna Bittiker, Family and Consumer Sciences Extension Educator
 Sharon Guthmiller, Family and Consumer Sciences Extension Educator

INTRODUCTION

Floods are the most common natural disaster, but not all floods are alike. Regardless of the cause of flooding, disaster planning and preparation will reduce the impact of flooding and enhance response and recovery. In the event of moderate-to-severe flooding, total mitigation may not be possible. If your property has sustained flood damage, the following are issues to consider as you begin cleanup:

1 Immunizations. Outbreaks of communicable diseases after floods are not common; however, leftover remains and residue from flood may be contaminated with feces, soil, or saliva. Receiving a puncture wound during the process of cleanup would be a concern for an individual, due to the possibility of tetanus. If you live in a flood-prone area, it is recommended that you check on the status of your tetanus vaccination. The South Dakota Department of Health or local health care agencies may make recommendations for additional vaccinations.

2 Mental Health. Take care of yourself and your family members. The stress of dealing with a disaster is not the same stress many of us experience in our daily lives. It is okay to ask for help, as there are professionals in your community that can help, if only even to just listen. Any time you are feeling overwhelmed, call the Rural Helpline at 1-800-664-1349. Trained counselors answer calls 7 days a week, 24 hours a day. If you are in the Sioux Falls area, call the **South Dakota HELP!Line Center**¹ at 211. For additional disaster mental health resources, see **Coping with a Disaster or Traumatic Event**².

Disasters disrupt the routine of a family and children, whether those affected are sheltering in place or living in an evacuation shelter. Make time for the children, talking and listening to them. They may have trouble expressing their fear. Be honest with children, and speak in words they can understand.

Keep a routine as much as possible, and if there are family pets, make sure you have planned for their care. Pets can be a comfort if their care is planned for as part of disaster preparation, or they may be a major source of anxiety if they must be abandoned. For more information, see **Helping Children Through the Flood**³.

¹ **South Dakota HELP!Line Center** <http://www.helplinecenter.org>

² **Coping with a Disaster or Traumatic Event** <http://www.bt.cdc.gov/mentalhealth>

³ **Helping Children Through the Flood** <http://www.ag.ndsu.edu/flood/family/helping-children-through-the-flood>

FOR MORE INFORMATION OR PRINTING OF ANY PUBLICATION:

OFFICE:
 <<OFFICE>>

ADDRESS:
 <<STREET>>
 <<CITY>>

PHONE:
 <<PHONE>>

3 Safety When Re-entering Flooded Buildings. Do not enter a flooded building until authorities have given permission to do so. Re-enter during daylight hours, and be certain your home or property is safe to enter. Check with authorities about safety and dealing with power and gas lines. Do not turn power on or off or use an electric tool or appliance while standing in water.

Stay out of the structure if floodwater remains. It is not safe to enter. If your house has been closed up for more than a 2 days, enter briefly to open the doors and windows. Allow air to circulate for at least 30 minutes before re-entry.

Look for animals such as snakes or rodents that may have entered the home. Make noise as you remove debris to move animals out.

Upon entering: 1) unplug (make sure power is off) all appliances, 2) take photos to document damage, 3) remove valuables and keepsakes left behind, and 4) start removing debris and mud from the structure while damp.

For more information, see **First Steps to Flood Recovery**⁴.

4 Food and Water Safety. Throw out all food that has been damaged or spoiled by the flood. Keep only the food in commercial cans, and only if you plan to sanitize those cans prior to opening. Sanitize cans by washing in a strong detergent solution using a scrub brush (one that was not in flood water). Immerse cans for 15 minutes in a room-temperature solution of 2 teaspoons chlorine bleach in a gallon of water. Air-dry the washed cans.

Discard produce that has been in a flooded garden.

For more information, see ExEx14107, **After a Flood: Keeping Food Safe**⁵.

Any cooking items or eating utensils that have come in contact with floodwater must be washed and disinfected prior to use. For more information, see **Disinfecting Dishes, Cookware, and Utensils**⁶.

If there is water around your well, it is likely that the well has been flooded. Take steps to disinfect after floodwaters have receded. For more information and to submit a water sample for testing, go to the South Dakota Department of Health's **Food Cleanup: Water for Drinking and Cooking**⁷ site or call 1-800-738-2301. Though you may have taken steps to disinfect the well, do not drink or cook with the water until testing deems

the water safe for human consumption.

For more information on disinfecting your well, see **First Steps to Flood Recovery**⁴.

5 Inside the Home. Keep children and pets out of the affected area until cleanup has been completed. Child care during cleanup often poses an issue, and in some instances, relief agencies or community organizations may provide this service. Neighbors may also share this responsibility as they share cleanup duties.

Wear rubber gloves and boots and protective eyewear when cleaning flood-damaged structures or items.

Remove and discard items that cannot be properly washed and disinfected (e.g., mattresses, carpeting, carpet padding, rugs, upholstered furniture, cosmetics, stuffed animals, baby toys, pillows, foam-rubber items, wall coverings, and most paper products).

Thoroughly clean all hard surfaces (e.g., flooring, concrete, molding, wood and metal furniture, countertops, appliances, sinks, and other plumbing fixtures).

For specific information related to surface and cleaning/disinfecting agents, see **Cleaning and Sanitizing with Bleach After an Emergency**⁸.

6 Salvaging Keepsakes and Furniture. The first step in salvaging property is carefully determining what to keep and what to discard. These decisions may add to the stress you and your family are experiencing already, so if possible, make these decisions when you are as rested, fed, and hydrated as possible.

Weather permitting, move to the outdoors all non-upholstered furniture that is wet or has been in water. Take drawers and any removable parts out of or off the furniture. Remove any mud, allow the furniture to dry, and re-glue if necessary.

For information on treating furniture that is covered with film or white spots, see **First Steps to Flood Recovery**⁴.

7 Large Appliances. Large appliances that have been submerged in floodwater are often not repairable. Most experts agree that even appliances that may be repaired will have a shortened operational expectancy. Small appliances such as radios, televisions, microwaves, grills, turkey fryers, and others

⁴ **First Steps to Flood Recovery** <http://www.ces.purdue.edu/floodpub/foursteps.html>

⁵ **After a Flood: Keeping Food Safe** <http://agbiopubs.sdstate.edu/articles/ExEx14107.pdf>

⁶ **Disinfecting Dishes, Cookware, and Utensils** <http://www.ag.ndsu.edu/flood/home/disinfecting-dishes-cookware-and-utensils>

⁷ **Food Cleanup: Water for Drinking and Cooking** <http://doh.sd.gov/Flood/Water.aspx>

⁸ **Cleaning and Sanitizing with Bleach After an Emergency** <http://www.bt.cdc.gov/disasters/bleach.asp>

may be more expensive to fix than to replace. They may also be contaminated and serve as a source of mold after the flood.

For more information on salvaging large appliances, see **First Steps to Flood Recovery**⁴.

If you have appliances with wet insulation, consult the owner's manual before removing the insulation. Do not remove insulation unless you are wearing gloves. If you cannot remove the insulation, discard the appliance. If this is not possible, see **First Steps to Flood Recovery**⁴ for detailed instructions on how to proceed.

8 Carpet and Flooring. Carpets or carpeting that cannot be properly washed and disinfected should be discarded. You may wish to consult professionals for carpet cleaning after a flood, but beware of and avoid unknown services or scams that may arrive in your community after the flood.

If professional carpet cleaning is not an option, pull up wet carpeting and rugs. Put them outside. Spray off the mud with a hose. Use a broom to work a disinfecting, low-sudsing carpet cleaner into soiled areas. To reduce the risk of mildew, rinse the back of the carpet with a solution of 2 tablespoons of bleach to 1 gallon of water. Do not use bleach on wool carpet. Refer to manufacturer's recommendations for cleaning wool carpet. Discard all carpet padding.

All floors must be clean and dry before attempting repairs. Refer to the manufacturer's recommendations for cleaning and replacing flood-damaged flooring. If you cannot locate these recommendations and want additional information on floor cleaning and replacement, see **First Steps to Flood Recovery**⁴.

9 Wallboard and Insulation. Wallboard, insulation, and all porous materials can harbor bacteria and mold and thus be harmful to humans. Replace any and all of these materials if they have come in contact with floodwater.

10 Cleaning Clothes/Bedding After a Flood. Most clothing and bedding can be salvaged after a flood, if the clothing and bedding is properly cleaned and disinfected. Materials such as pillows that are stuffed with porous materials must be discarded, as proper sanitation and reclamation is not possible. Separate items that are washable from items that must be dry-cleaned. Thoroughly dry items before taking them to be dry-cleaned.

Washable items should be sorted by color and rinsed or pre-soaked to remove mud and debris. Pre-treat stains and wash and dry items using the hottest water safe for the fabric. Wash items in small loads, using adequate water.

If clothing has been contaminated with sewage, chemicals, or other toxic materials, disinfectant must be used in the wash. For colorfast or white textiles, add 1 cup chlorine bleach in the wash cycle. If your water is high in iron, as some South Dakota water is, chlorine bleach can cause rust stains to appear on fabrics. For fabrics that cannot be washed with bleach, add 1 cup of pine-oil disinfectant or one cup of a phenolic disinfectant to the wash.

Do not dry items until they are as clean as you can get them, as the heat from the dryer will set stains. However, high-temperature drying will also help sanitize clothing. For more information, see **Cleaning and Disinfecting Textiles After the Flood**⁹.

11 Repairing Flood-damaged Walls, Floors, and Ceilings.

You will be anxious to return to your home, but be prepared to let floors, walls, and ceilings dry for several weeks. If rebuilding and/or repairs begin before drying is complete, mold and mildew will grow, causing not only human health issues but also structural damage.

Remove all water as soon as possible from your home, including furnishings and carpeting, as described above. The next step is to remove moisture that has been absorbed by wood, plaster, and other materials. If weather permits, open doors and windows to remove moisture and odors from the home. If at any time the outside humidity becomes greater than the inside humidity, close all doors and windows. Similarly, close up the house overnight if the temperature drops, or moist air might be drawn indoors. Use caution when opening windows and doors that may be stuck shut.

Consider using dehumidifiers to speed drying when outside humidity levels are high. While non-commercial dehumidifiers will work, commercial dehumidifiers, if available, will remove more water more quickly. When using dehumidifiers, shut windows and doors.

In the event of severe flooding, you may want to consider hiring a commercial firm to do the cleanup and drying, as they often can do it both in less time and more effectively.

For specific information on cleaning and disinfecting walls, floors and ceilings, see **Flood-damaged Walls, Ceilings, and Floors**¹⁰.

⁹ **Cleaning and Disinfecting Textiles After the Flood** <http://www.ag.ndsu.edu/flood/home/cleaning-and-disinfecting-textiles-after-the-flood>

¹⁰ **Flood-damaged Walls, Ceilings, and Floors** [<http://www.ag.ndsu.edu/flood/home/flood-damaged-walls-ceilings-and-floors>]

12 Using a Moisture Meter Before Rebuilding. It is only natural that, as with cleanup, people are anxious to start the damage repair or rebuilding process while floodwaters are still receding.

Rebuilding needs to be delayed until moisture is no longer coming through concrete in the basement and wood has dried to at least 15 percent moisture content. Wood submerged in water will absorb a large amount of water, and drying may take weeks.

If rebuilding occurs too quickly, it is likely there will be mold growth within closed cavities, such as on the back of drywall (sheetrock). Mold can trigger allergic reactions, asthma episodes, and other respiratory problems.

For proper use of moisture meters, see the video **Using a Moisture Meter Before Rebuilding**¹¹.

13 Mold. Exposure to mold is common both inside and outside the home. Some people, especially those with allergies and asthma, are more sensitive to mold than others. In addition, some may be strongly affected when exposed to larger quantities of mold. Molds can usually be detected by a musty odor, and discoloration of surfaces is common with mold growth. Mold may be found in shades of whites, greens, browns, blacks,

or oranges. For more information, see **What Does Indoor Mold Look Like?**¹²

The prevention, identification, and proper cleanup of mold cannot be properly covered here. For in-depth information developed by experts from across the country, see the **Extension Disaster Education Network (EDEN) Mold topic page**¹³ and the South Dakota Department of Health's **Flood Cleanup: Water Damage and Mold**¹⁴.

14 Avoid Scams. One caution as you repair your home or property after flooding: Beware of con artists and scams for products and services. If you have any questions about a product or service being offered, check with the Better Business Bureau or the South Dakota Attorney General's office.

Beware of identification theft by people selling products and services face-to-face or by telephone solicitations. Identity thieves may pose as government officials or representatives of government agencies. Always ask for identification. You may also ask for a number or Web site to verify the product or service.

Your local emergency management office will be able to verify what government or reputable non-profit agencies are working as part of flood preparation, response and recovery.

¹¹ **Using a Moisture Meter Before Rebuilding** <http://www.ag.ndsu.edu/flood/home/using-a-moisture-meter-before-rebuilding-video>

¹² **What Does Indoor Mold Look Like?** <http://www.inspectapedia.com/sickhouse/mold.htm>

¹³ **Extension Disaster Education Network's (EDEN) Mold topic page** <http://eden.lsu.edu/Topics/HumanHealth/Mold/Pages/default.aspx>

¹⁴ **Flood Cleanup: Water Damage and Mold page** <http://doh.sd.gov/Flood/Mold.aspx>

RESOURCES

SDCES National Preparedness Resources, EDEN Flood and Mold Topic Pages, EDEN eXtension Flooding COP, NSDU Flood Resources, UMN Flood Resources, South Dakota Department of Health, Centers for Disease Control and Prevention, American Red Cross, and the United States Environmental Protection Agency.

SDCES Flood – <http://sdces.edu/flood/>



South Dakota
Cooperative Extension Service

Available electronically on the Internet at <http://agbiopubs.sdstate.edu/articles/ESS1519.pdf>

South Dakota State University, South Dakota counties, and U.S. Department of Agriculture cooperating. South Dakota State University is an Affirmative Action/Equal Opportunity Employer and offers all benefits, services, education, and employment opportunities without regard for race, color, creed, religion, national origin, ancestry, citizenship, age, gender, sexual orientation, disability, or Vietnam Era veteran status.