

# Basement Flooding

## Four Immediate Steps involving Home and Basement Flooding

### Step #1: Stay SAFE!

Don't risk serious injury if your basement floods. A flooded basement can be a serious health and safety risk. If your basement floods, follow these rules to make sure your family stays safe.

- Avoid venturing down into the basement if possible. In a severe basement flooding situation (water covering the basement floor to a depth of an inch or more), it's best to stay out of the basement until the water is pumped out. Standing water in your basement can contain harmful bacteria.
- Never touch electrical wiring or fixtures. If you must venture down into a flooded basement, wear waterproof rubber boots. Avoid touching or using electrical devices (except for a battery-powered flashlight) because this puts you at risk of electrical shock or electrocution.
- Have standing water pumped out as soon as possible.

### Step #2: Determine the cause of your flooded basement.

Sometimes the source of unwanted water is obvious –as with a burst water line or sewer backup. In other cases, water may be leaking into your basement for different reasons. If it is not obvious what caused your flooding, contact a licensed professional for an inspection.

### Step #3. Remove water-damaged items and begin cleanup.

Are there wood-framed walls finished with drywall in your basement? If so, the lower section of these walls is likely to retain moisture and attract mold –even without a major basement flood. Take precautions for safety, but begin clean up as soon as possible. Eliminate the source of the flooding first, then clean up and toss out anything that is contaminated, using bleach and similar household cleaners. Bleach is the best cleaning product to kill mold, mildew and bacteria.

### Step #4. Mitigate future flooding.

There are a number of ways you can mitigate future flooding loss by installing preventive equipment and valves, raising the height of critical utilities and appliances off the floor or out of your basement entirely, and simply keeping gutters clean. Make sure the ground around your home slopes away from your foundation. Raising the electrical outlets in your basement can also alleviate electrical shorts and injury due to shock. Acquire flood insurance.

## Basement Flood Prevention

A flooded basement cannot only destroy household items, keepsakes and furniture, it can destroy the foundation of the home and require repairs that can cost tens of thousands of dollars. Being an aware homeowner and taking a few steps to prevent basement flooding can save money and eliminate property loss.

### Rain Gutters

Keeping rain gutters free of leaves and debris and ensuring they are well connected and properly angled will prevent voluminous amounts of rainwater from falling on the ground next to the foundation. Even if you have guards on the gutters to trap leaves, clean the gutters at least twice a year to keep them fully operational.

### Downspouts

Properly installed downspouts should direct rainwater a minimum of 10 feet away from the home's foundation and onto an area that is properly sloped away from the home. Avoid connecting downspouts to dry wells, as these will quickly fill during heavy rains and force waves of water against the ground near the foundation. The exit ends of downspouts should be visible, empty over a defined slope and be easily accessible to remove accumulated leaves and debris. Installing a free-flowing screen or back flow valve deters small animals and rodents from climbing into the downspouts.

### Settling Ground

The backfill that surrounds homes, especially recently constructed ones, frequently settles and creates concave areas in which water accumulates. This problem can be remedied by adding more top soil and planting grass to prevent further erosion. Avoid overdoing the backfill as elevations that exceed the height of the foundation can cause other adverse draining issues.

### Poorly Pitched Yards

If the pitch of your yard is off and directs rainwater toward the house instead of away from it, the water will eventually spill over the foundation and penetrate the sill plates. This will not only flood the basement but may cause its walls to buckle or collapse. This can be prevented by re-excavating the yard.

### Sump Pumps

A sump pump will automatically collect water that comes into a basement and pump it to an appropriate outside destination. Its installation is straightforward and the system is easy to maintain.

### Backflow Preventers

A Backflow Preventer is a device that stops the backward flow of sewage water through floor drains and utilities pipes into your home. This situation can occur in your home in the event of heavy rain water main bursts or if there's an unexpectedly high demand on the water system. The device contains a flapper that blocks any water to back up into a home or basement in the event of back pressure due to groundwater flooding or a plugged sewer system. They are designed to be installed easily outside a home or business without using a costly manhole. The device is designed for readily accessibility for maintenance and cleaning. Backflow preventers should be installed by a qualified technician, and can make the difference between having your basement flooded knee deep with water or staying dry.

**Note:** Check with local ordinances, as some communities do not allow the use of these devices.

## How to Remove Odors from Flooded Basements

Cleaning up a flooded basement is not easy. You may end up having to throw away any items that were stored there. You may think that once you clean up the basement your job is done – until you begin to smell the nasty odor in the basement. Flooded basements need to be deodorized once they are cleaned.

### Instructions:

1. Remove any leftover floodwater and any mud that it may have left in your basement. You cannot begin to deodorize your basement until you have gotten rid of whatever water is causing the odor.
2. Fill an empty spray bottle one quarter of the way full with bleach. Then fill the rest of the bottle with hot water. Screw the top back on and shake to combine the two liquids.
3. Spray the bleach solution on the basement floors first and scrub with a coarse brush. Then move to the walls.
4. Finish scrubbing the basement by spraying the solution on the ceiling and scrubbing it. You may need to use a broom to reach certain areas.
5. Set up a few fans to dry out the room. You want to get rid of all of the moisture because it can cause mold and strong odors.
6. Find some old tin coffee cans and place a few pieces of charcoal in each. If you have five cans, place one in each corner of the room and one in the center of the room. The charcoal will absorb any leftover odors. Remember to keep the lids off the cans.
7. **Additional Tip:** Use a dehumidifier to keep humidity out of the basement.

## How to Remove the Mildew Smell from a Flooded Basement

Flooding in the basement due to inclement weather or a plumbing malfunction causes damage to flooring, furniture and belongings. Once the flood waters have been cleared with the use of a pump or professional assistance, you must deal with the aftermath and determine

what belongings are salvageable and what are not. Flood cleanup involves preventing and removing mildew and mold that may have formed as a result of the flood waters. When mildew smell lingers after the cleanup is finished, it is important to check for any remaining mildew while treating the odor.

• **Materials:** Dehumidifier; Vacuum; Trash Bags; Buckets; Bleach; Rubber Gloves; Clean Cloths; Rubbing Alcohol; Disinfectant Spray (i.e. Lysol); Baking Soda; Bowls; White Vinegar

1. Run a dehumidifier to maintain a dry basement once the flood water has been cleaned up. Keeping the air moisture level low will prevent mildew from returning or spreading.
2. Vacuum all surfaces to remove mildew spores. In addition to vacuuming the carpet and area rugs, vacuum upholstered surfaces to remove mildew and mold. Discard the vacuum bag when you are finished to prevent the mildew spores from transferring elsewhere when you vacuum again.
3. Mix ½ cup of bleach in 1 gallon of hot water to kill any mildew remaining from the flood. Before cleaning, wear rubber gloves to protect the skin from bleach and mildew. Dip a clean cloth in the diluted bleach solution, and then wring out excess moisture. Wash hard surfaces, such as walls and flooring, to remove mildew stains and odor.
4. Remove mildew odors and stains from upholstery by sponging it with a solution made from 1 cup rubbing alcohol and 1 cup water. Blot the upholstery to kill any lingering mildew. All the upholstery to air-dry.
5. Spray hard to reach corners and crevices with disinfectant spray to deodorize the areas and ensure that mildew spores cannot reestablish a colony there.
6. Sprinkle baking soda over dried carpets, rugs and upholstery and leave it on the surface overnight to absorb remaining mildew smells. Vacuum the baking soda up the next day.
7. Fill shallow bowls halfway with white vinegar and set the bowls throughout the basement. Allow the vinegar to neutralize mildew odor overnight.

**Tip & Warnings:**

- If a bleach solution is not safe for your flooring or walls, you can substitute undiluted vinegar, diluted ammonia or a solution made from disinfectant cleaner. Three alternate solutions also effectively kill mildew and deodorize the smell. DO NOT mix ammonia with bleach, as they create toxic fumes when combined.
- Mildew smell that remains after you've followed these removal techniques may indicate the existence of mildew and mold under the floorboards or in the walls. Consult with a mold remediation specialist to ensure you don't have mold growing in hidden places.

## How to Get a Mildew Smell Out of a Basement Carpet

Mold and mildew are attracted to poorly lit, damp, warm places. Basements are a prime place for mold and mildew growth because basements are often dark and poorly aired. If mildew is permitted to grow, it can leave musty odors in basement carpeting. In extreme cases, mildew can even discolor or rot basement carpet. First treat the mildew before trying to remove the odors, as the odors will return.

**Materials:** Dehumidifier; Chlorinated Lime; Vacuum; Wet Vacuum; Hot Water Extraction Unit

1. Remove the mildew from the basement by letting sunlight through the windows. Raise the shades, draw back the drapes and let the sun beat down onto the carpet.
2. Open all of the windows in the basement to let in fresh air, which will help ventilate the room and remove any mildew smells from the carpet.
3. Put a dehumidifier in the basement to circulate the air in the room. It is pointless to only remove the odor without getting rid of the mildew first.
4. Sprinkle chlorinated lime all over the basement carpet, and leave it on the carpet until the smell is gone. After the odor subsides, sweep the chlorinated lime up with a vacuum.
5. Lift up a corner of the carpet to see if the carpet padding is wet if the smell persists. If the carpet padding is wet, vacuum the basement carpet with a wet vacuum, using a hot water extraction unit for water removal. Water under the carpet can cause mildew odors.

**Tips & Warnings:**

- Rent a wet vacuum from a hardware store
- Sprinkle baking soda on the carpet and then vacuum it up.
- If the carpet padding is still wet after vacuuming, you may need to replace the padding.

## How to Kill Mold on Basement Walls

Mold is a type of fungus that can begin to grow in your home. This is particularly true of homes that have excess moisture. If you let mold grow in your basement for a long period of time it can affect the health of susceptible individuals such as the elderly, pregnant women or those with asthma or other respiratory issues. Remove mold growth as soon as you notice it to prevent these health issues. Prevent mold from growing back by installing a dehumidifier or by increasing the ventilation in your home.

**Materials:** 1 gallon lukewarm water; Bleach; Spray Bottles; Gloves; Plastic Trash Bags; Paper Towels; Scrub brush

1. Open your basement windows, but keep interior doors closed. This will encourage the mold spores to leave the basement and not spread to other rooms in your home.
2. Mix 1 gallon of lukewarm water with 1 cup of bleach.
3. Pour some of the solution into a Spray Bottle. This will allow you to apply the cleaning solution easier.
4. Spray the solution directly onto the mold growth until it is completely soaked.
5. Let the solution sit on the mold for at least 20 minutes. This will give the solution time to loosen the mold's hold on the walls.
6. Scrub the mold growth off with a scrubbing brush.
7. Wipe down the walls with paper towels. Throw the paper towels away immediately after using them.
8. Mist the walls with clear water from another spray bottle.
9. Wipe the walls with a clean cloth until they are completely dry. Do not leave the walls wet as this could encourage more mold growth.

## How to Remove a Mildew Smell from a Flooded Dirt Floor Basement

Dirt floor basements are commonly found in older homes. When these basements flood from the presence of high water outdoors or the backup of water from the sewer system indoors, the result can be a musty smell from the formation of mold. This musty smell is not only unpleasant; it is irritating to people suffering from mold allergies. The following are ways to remove the musty odor from a flooded basement with a dirt floor.

**Materials:** Shovel; Plastic Sheet; Wire mesh; Concrete; Dehumidifier; Bleach; Scrub Brush; Coal; Gloves; Open Metal Containers (i.e. old coffee can)

1. Remove all of the muddy dirt from the basement. Attempt this only after any water found outside of the walls has dissipated. Remove with a shovel and allow walls and floor to dry.
2. Cover the dirt floor with a vapor barrier. Construct the vapor barrier by setting down a layer of plastic sheeting on the dirt floor. Cover this plastic sheet with wire mesh. Pour a thin layer of concrete onto the mesh. The vapor barrier will not only protect the dirt floor from water damage, it will prevent any unwanted visitors (such as rodents) from entering through the dirt floor.
3. Place a dehumidifier in the basement. This will draw out any remaining moisture from the air and on the walls to help cut down on any further mold and mildew formation.
4. Open all doors and windows in the basement. This will help optimize air flow into the area, which will remove mold and mildew odor.

5. Prepare a solution of 1 cup bleach for every 1 gallon of water. Use this solution to scrub down the walls of the basement. Let the solution sit for 20 minutes, then rinse away with water. This will kill any mold spores that are causing the musty odor.
6. Place 3 to 4 lumps of coal into individual uncovered metal containers (i.e. empty coffee cans). Place these containers throughout the basement. The coal will absorb some of the unwanted mildew odor.

## Mitigation and Basement Flooding



### Protecting Your Property – Mitigate....Before the Storm A little time just cleaning your gutters can save a lot!

Gutters can play a huge role in keeping basements dry and foundations stable. Water damage caused by clogged gutters can be severe.

\* Install gutters and downspouts. \* Repair them as the need arises. \* Keep them free of debris.



#### Window Well Covers Guard Against Snow, Rain and Debris

Gravel bottoms promote good drainage. Many varieties of sturdy window well covers are available, simple to install and hinged for easy access. Wells should be constructed with gravel bottoms to promote drainage. Remove organic growth to permit sunlight and ventilation.



#### Raise Or Relocate Electrical Components

Any receptacles that could get wet should be connected to a ground fault interrupter (GFI) to prevent the risk of shock or electrocution. A basement's circuitry can be elevated above the flood risk. Consider elevating the main electric panel, all outlets, switches, wiring and electric baseboard heating at least one foot above the projected flood elevation. Mark the breaker box for the circuits that feed the basement and shut off the power before entering a flooded basement.



#### Elevate or Relocate Mechanicals

Consider raising or relocating your air conditioner, furnace or hot water heater in order to avoid water damage. Don't dismiss the attic as an area for utilities. Have a qualified technician inspect mechanical systems exposed to water



#### Protect Your Furnace with a Barrier Wall

When elevating is not an option, a barrier wall can provide protection from encroaching water and debris. Consider building a concrete or masonry floodwall around the furnace or water heater. The wall may not be water tight, but it could save your equipment from serious damage.



#### Consider installing a tankless water heater.

- Tankless models do not store hot water, do not have a tank and can be elevated above the flood risk. Consumers have a choice between whole house systems or individual units mounted at each water source. Users have reported savings of from \$40-80 per year with electric systems and \$50-100 per year with gas-powered models.



#### Raise or Relocate Appliances

- Elevate the height of your washer/dryer units above the flood risk level, which is approximately 1 foot in this location.
- Simple stacked masonry blocks can be effective at elevating the units.
- Relocate appliances to upper floors if possible.



#### Install a Sump Pump

... Keep it Free of Debris. Does your pump have a battery backup?

Heavy rains result in soil saturation and can cause groundwater to enter through the sump.

Your basement can become flooded when your primary pump stops working, when the power goes out or when torrential rains overload the pump beyond its capacity.

A battery backup pump is an inexpensive safeguard against basement flooding and should begin pumping. The backup goes to work when water in the sump reaches the float switch. Some of the newer models have a unique monitoring system that sounds an alarm when a maintenance issue arises.



#### Act Fast! Cut away wet wallboard and fiber insulation 12" above waterline.

Fans and a dehumidifier can be worth the investment

- Apply bactericide
- Ventilate well.
- When the water recedes, cleanup must begin. Time is critical to combat the threat of mold, which can appear in one or two days.
- All wet materials, mud and debris must be removed to the outside of the home.
- Cut away wet wallboard and fiber insulation at minimum one foot above the high water line. In the case of low level flooding, homeowners only need to pop off the four by eight-foot sheet of wallboard to expose the lower portion of the wall. No cutting is necessary.
- Scrub every surface touched by contaminated water and check for hidden pockets of water in places such as the furnace and clothes dryer. Vacuum any remaining water and run fans and dehumidifiers.

#### **Mold Can Be Toxic if left to grow - Clean Immediately!**

Scrub with 1 1/2 cup bleach per gallon sudsy water.

Let dry completely.

Treat again as necessary.

Standing water and wet materials are a breeding ground for microorganisms such as viruses, bacteria and mold.

A good bactericide can be made with household materials. Dilute 1 1/2 cups bleach per gallon of water in a bucket or garden sprayer. A couple drops of liquid soap will slow evaporation while increasing kill time. Spray first, and then agitate mold patches with a stiff brush.

Let the affected area air dry. Don't rinse. If it takes a week for visible moisture to dry, it will take at least another week for unseen parts to dry.



**FloodSmart.gov**  
The official site of the NFIP

