

## Cleaning the House after a Flood

### **FOOD**

Because floodwaters carry disease germs from raw sewage, the only safe flood-exposed foods are those sealed in metal cans. These may be safe to use if the seal is undamaged and the outside of the container is properly cleaned and sanitized. Damaged or blown (bulged) cans should be discarded.

Undamaged cans may be washed in a warm detergent solution. A firm brush will be required to cleanse the area around the rims and caps. Clean cans may be soaked in a solution containing chlorine (Javex, Perfex, etc.) or other good disinfectant. They should be rinsed and dried before storing to prevent metal corrosion.

You must dispose of the following if they have come into contact with flood waters:

- the contents of your freezer or refrigerator;
- all meats, fresh fruits and vegetables;
- all boxed foods;
- all products in jars, including home preserves, and all bottled drinks (the area under the seal of jars and bottles cannot be adequately disinfected);
- all medicines, cosmetics and other toilet items.

### **FLOORS**

Floors often get more badly soiled than other surfaces. To prepare for cleaning, move furniture and all removable floor coverings outdoors. It is very important to move wet carpets and other sponge-like materials off floors as soon as possible, so that the floor does not start to distort or delaminate. This unnecessary damage will dramatically increase repair costs. These items will be very heavy. Save your back by dragging them on a plastic sheet instead of carrying them.

Quickly clean board, particleboard, or plywood floors, then disinfect and dry them. Pay special attention to cleaning and drying cracks, where dirt may hide from earlier attempts at removing muck.

Sheet floor coverings, such as vinyl, linoleum, or other materials, pose specific questions: Have they protected the underfloor from dirt and soaking? Have they lifted somewhat and created pockets of dirt and water? Will they prevent rapid drying?

If dirt and water have been kept out of all but a few locations, treat only those local areas. If the floor coverings are trapping dirt and water, remove them. They may have to be scrapped. If they have not prevented severe wetting of the wooden sub-floor, remove them to allow rapid drying.

Treat each case as unique, and examine the situation carefully before you decide on a course of action. Sometimes wet floors can successfully dry downwards toward a removed or missing ceiling below, but they are quite likely to buckle when dried that way. Fixing a buckled floor will be more trouble and expense than scrapping floor tiles or sheet flooring.

Remove tile flooring unless you are certain that no water has gone through. Most often, tiles do not prevent soiling but do get in the way of cleaning and retard drying.

## **CARPETS**

You cannot successfully clean flooded carpets without professional help. Ship them to a cleaner who has experience with wet carpets. It is important to remove all carpets to the outdoors as soon as furniture is out of the way and most muck has been removed. If they are to be salvaged, wet-clean and rinse them again. Dry cheap carpets rapidly to the point where they can be moved, if that is possible.

Carpet underpads cannot be saved and must be removed and discarded. They will be very heavy to move and will likely disintegrate during removal. Remove all of the bits that remain, as they store water, dirt, and microbes.

Only very expensive carpets are worth saving when they have been contaminated with soil or sewage. Carefully rough-clean rare and expensive carpets and throw rugs, then move them outdoors and rinse them several times from both sides. Contact an appropriate cleaning company and ask about subsequent steps.

The cleaner may request that only simple measures be used for preliminary drying, to reduce shrinkage and fading. Wrapping the carpets in heavy plastic or bags is usually required and rapid transport is vital, as this is a race against deterioration from dirt and microbes as well as water damage.

## **WALLS**

Clean walls above the flood line as soon as possible, to prevent the growth of microbes that could cause health problems to workers or occupants. Break out walls that have been soaked or that have absorbed water up from the flood line, so those interior cavities may be cleaned. Replace surfaces afterward. Do not just clean the surfaces!

In a major flood, wash walls that are not soaked, using both a detergent and some chlorine bleach. To prevent lap marks, move from the floor upward and ensure an overlap of cleaning.

Clean all walls in a flooded house, even those that are on floors above the water line, since they will have been exposed to excessive humidity for long enough to start mould growth. This growth is often difficult to see without special instruments and techniques. Don't assume that surfaces are all right because they are one floor above the obvious problem zone.

If only the floor has been flooded, and only for minutes, then the above steps are unnecessary. However, you may have to remove baseboards and mouldings to check for trapped dirt and water.

## **INSIDE WALL AND FLOOR CAVITIES**

When flooding backs water into the insides of walls and the cavities between ceilings and floors, hidden materials usually become waterlogged and contaminated with dirt or other organic materials. If these cavities are not opened, then cleaned and thoroughly dried, bacterial and mould contamination may become severe, leading to serious health problems for occupants. Too often, such contaminated cavities are left closed.

Whenever there is the suspicion that a cavity has become wet, probe or open it to find out whether materials are wet. Soon after the main floodwater is removed, use small holes near the

bottom of cavities to allow drainage from within. Later, use moisture probes or check drillings for dampness. Whenever wet material is found in these cavities, open them to allow cleaning and drying.

Once walls are opened, or ceilings are torn down for access to the underfloor area, empty the cavity of any insulation, debris, or dirt, and dry all interior materials. If wood structural members have become saturated, it may take days or weeks for them to dry completely, before the cavity can be closed again. The more quickly hidden spaces are opened, the less water saturation will take place and the quicker materials can be dried to safe levels.

### ***WET INSULATION***

Fibrous insulation materials (such as glass fibre, mineral wool, and cellulose) pick up surface contamination even without being wetted in a flood. During flooding, their vast surfaces can pick up large amounts of contamination and trap it during draining. If they stay wet for extended periods of time, moulds and other microbes can grow. They also lose their insulation capabilities, even after drying, so replace them.

Board insulation, such as Styrofoam and urethane, can also become saturated, although urethane and extruded Styrofoam become saturated more slowly than bead-board-type Styrofoam. To be safe, remove and replace these materials unless it can be shown that they are not trapping water or dirt.

Given enough time, all of these insulation materials will wick water up above the high-water mark. That rising damp region can reach half a metre (1 to 2 feet) in a few days under some conditions. For that reason, remove the insulation above the obvious high-water mark and replace it with new material once the cavity materials dry sufficiently.

Clean and dry cavities to the same standards that you use for other surfaces and materials, or better. Otherwise, once cavities are closed again, developing problems will remain unseen and unchecked until they have become severe.

### ***CEILINGS***

Ceilings above the high-water mark may be reasonably dry and undamaged, but they still require checking and cleaning. Because water can wick up walls and around corners into ceiling materials, check the condition of drywall and plaster to ensure that the cores of these materials are not saturated beneath the surface. If they are, replace them.

Carefully clean ceilings that are only surface damp, to ensure that a thin film of mould did not grow when the air was very wet or muggy. Good spring-cleaning practices should suffice if chlorine bleach is added to the water. Dry rapidly, of course.

### ***APPLIANCES AND ELECTRICAL EQUIPMENT***

Do not venture into a flooded basement until the electrical utility has shut off the power to your house and the utility pole or substation. Do not attempt to have house power reconnected until the utility inspects your house and declares it safe.

Do not use flooded appliances and other electrical equipment (such as outlets and switch boxes or fuse/ breaker panels) until they have been inspected and passed by the electrical utility or an electrician approved by the utility. They are not safe when they are wet and dirty! Wet dirt is an

excellent conductor of electricity and could either short out the power or leave some surfaces electrically “live” and dangerous to touch.

Once small appliances have been rinsed, send them to a repair shop. Be sure to tag these items and tell the repair shop that they have been flooded. If sewage has been involved, it may not make sense to attempt cleaning and repair, because of the risk to the repair staff. Old equipment may cost more to repair than it is worth, so do not waste good money on it. Get an estimate first. Once the power is off, wash and rinse electrical outlet and switch boxes. Be VERY sure the power is off, and be sure that all electrical supply materials and equipment are perfectly clean and dry before power is turned on again. Remember that wet floors conduct electricity well, so be extra careful. Electricity can kill.

If they were in anyway submerged, do not use larger appliances (washing machines, dryers, etc.) dirt in motors and switches can cause severe damage and electrical shock. Get these appliances overhauled before use, and be sure to tell the repair shop about any known or suspected contamination. Give priority to the washer and drier, since you could then use them to salvage clothes, but only if a day or two-turnaround time is possible. Otherwise, find another way to clean and dry your clothing.

### ***FURNACES AND WATER HEATERS***

You will need heat, but not hot water, as soon as you can get it. Don't use flooded furnaces and water heaters until they have been serviced and certified safe by a trained repairperson. Take no shortcuts.

Have the furnace blower motor replaced, as well as all switches and controls (and there are several of them inside a typical furnace). Sometimes, to get heat going in short order, the service person will replace your appliance with an overhauled one of a similar rating. This is normally a good practice, since you need heat to dry things out in all but the hottest of weather. Water evaporation will cool the indoors by several degrees, and ventilation can cool it by much more during most of the year. After it has been serviced, check to ensure that the inside of the furnace case is as clean and dry as the other surfaces in your house. These surfaces are indoors too.

Replace the furnace filter often over the next few days and weeks, and use a better one than the cheap and ineffective glass fibre filter that comes as standard.

Water heaters are insulated with glass fibre, which can become soggy and saturated under its cover if flooded. Do not allow a service person to leave it to dry out. The insulation may well dry, but it could be badly contaminated with whatever was in the flood waters, and you don't need that indoors forever.

Do not use hot water on most materials, since hot water sets stains from many contaminants (including clays) in floodwater. Cold will do just fine, although barely-warm water will aid drying slightly.

### ***LIGHTS, FIXTURES, AND WIRING***

Light fixtures and sockets left dirty after a flooding sometimes cause shocks and equipment damage. It is amazing just how small a space dirt can get into and how long it can stay wet, when almost closed off from the drying effect of room air.

Once the power is off, or after you have disconnected your lamps, take them apart and check for dirt and wetness. Do the same with your ceiling fixtures after you have taken them down. Clean and dry thoroughly before use. Expect some burnt-out bulbs and cracked or broken bulb glass. Some apparently good bulbs will shatter the first time they are turned on, so get a shade between you and the bulb for that first trial.

Connections in wiring of lights and small appliances can be wet and soggy even after the cover tape looks dry. Be sure they are dry! Don't just hope they are.

### ***DUCTING AND PLUMBING***

The forced-air heating ducts in most houses routinely become dirty. Once they have been flooded, they are wet as well. Have them carefully cleaned out, then inspected. This is no time to guess that the vents are really clean. Check and be sure.

Ducts are much cleaner after they are taken apart, and then reassembled, than if they are cleaned with a vacuum hose. Choose a contractor who can do the job properly. Ducts that become wet during a flood should be left shiny-clean.

Return-duct pans that are nailed to the bottom of floor joists are not very airtight in the first place and will be less so after the joists have been wetted and dried again. Have them taken down and reinstalled after cleaning. This time, make sure that they are installed with crimps and a sealing gasket that will keep them tight and less noisy during operation. Take the opportunity to have leaks from the ducting to the outdoors, as well as to the indoors, sealed. This will reduce future heating costs and usually improve comfort.

During a flood, the water pressure in plumbing pipes can reverse, and water in hot and cold places may be contaminated with floodwater. Do not trust your water system to be clean until you have a plumber introduce bleach into the lines to disinfect them. Normal use of water afterward should keep the pipes clean and well flushed.

### ***FLOOR AND FOOTING DRAINS***

During a flood, water may well up through flood drains and sump holes, bringing materials into the house that should never be there. As the water subsides, indoor materials may be sucked or washed into drainage systems and partly block them or just sit there and rot. For health reasons, carefully flush and disinfect floor drains and sump pits. Some physical scrubbing may be needed to get greasy dirt and grime off surfaces that can release pollutants into the indoor air.

This is also the time to check for priming of the floor drains. Install some method to ensure that water stays in these drains, so that sewer gasses cannot move up into the house when the drains dry out. If you do not have a flush line installed, be sure to check the drains regularly, pouring some water and chlorine bleach into them to keep them primed and disinfected.

The footing drains outside your foundations may have seen more water and dirt than they could cope with during the flood. Have them checked out by a person trained in plumbing and drains. They can often be cleaned out through special clean-out pipes, or from the connection to the storm sewer. If they cannot, you should be ready for problems in the spring or very rainy periods, when they will not drain as well as they should. Keep stored materials away from basement walls and off basement floors. This will reduce future damage, but remain alert for problems.

## ***WHAT TO DISCARD AND WHAT TO SAVE***

Many materials cannot be reasonably cleaned and dried once they have been soaked. It may be impossible to get plush furniture, magazines and books, beds and fluffy bedding (such as duvets and comforters) thoroughly clean. It will usually take days to get them dry, even in optimum conditions. Conditions for drying may not be very good just after a flood, when the air is saturated and cold, or when electrical power and heating fuel are scarce.

Immediately discard inexpensive possessions that have been soaked. Don't waste time on them when there are so many other important things to do. Cheap particleboard furniture will likely be unusable after drying, so make no effort to save it. Use your energy to save antique or solid wood furniture instead. Save only very expensive throw carpets. Get regular broom and underpad out the door as soon as possible. With them may go piles of dirt and thousands of litres of water, so that cleaning and drying become much easier. To save your back, slide or drag heavy items, don't lift them!

Dispose of wet glass fibre, mineral wool, and cellulose fibre insulation as soon as possible. Such materials will never be good insulation again, even once dried. They may also support extensive mould growth for years and cause serious health problems.

Finally, do not attempt to save any electrical equipment that has been inundated and water-filled. Some companies can overhaul motors and other expensive electrical equipment, but that is not a home project.

### ***FURNITURE:***

Furniture may be difficult or almost impossible to clean if it is upholstered or if sewage and other organic materials are involved. Antiques may warrant the expensive treatment that is required to remove organic debris, including sewage. Other upholstered furniture does not. Be sure to advise the restorers if sewage is involved. Act rapidly and follow their instructions precisely.

Furniture made of particleboard is unlikely to warrant the work and expense required bringing it back to full service unless the dunking was short and no swelling is apparent. In that case, rinse well, disinfect and then dry rapidly, but not in the sun or with direct heat. Both can cause warping. Watch carefully and slow down the drying process (by temporarily covering furniture) if distress shows on surfaces or warping starts. Open drawers to speed drying, but not to fully disassemble them, because of possible distortion.

Clean, disinfect, and rinse good-quality wood furniture, then place it where it can get good ventilation, away from the sun and direct heat. Again, leave drawers or other movable parts open but in place and slow the drying process at the first sign of warping or distress to the surface finish. If necessary, apply surface waxes to slow drying of outside surfaces, and allow inside ones to catch up. Professional care may be warranted for better-quality items. Decide quickly.

### ***BEDS AND BEDDING***

Do not save mattresses and box springs. They are too difficult to clean, disinfect, and dry before a mould problem occurs. Very expensive units can sometimes be rebuilt, since only the frames are saved. Check costs carefully.



Partly dry, shake clean, and wash bedding several times in cold water that contains a small amount of chlorine bleach. Then rinse and carefully dry to avoid stretching fabrics out of shape.

Air drying in a power drier may be the best way to minimize damage. If no power exists, carefully remove most water by pressing fragile items and wringing more robust fabrics. Hang over several lines to distribute the weight of the wet item over several supports. This should reduce stretching.

Pillows cannot be safely cleaned and dried. Although some authorities recommend special cleaning techniques, the risks of having mouldy materials on or near our beds remain. Scrap flood-damaged pillows! They almost surely harbour dangerous bacteria or moulds.

Speed is of the essence with bedding. If it is not possible to start cleaning within hours of water damage, use a weak bleach solution to slow the growth of bacteria and moulds until washing can be attempted. It is better to lose some colour than to risk heavy contamination because of delay.

### ***CLOTHES AND OTHER FABRICS***

When contaminated, only experts can clean silks and woolsens. Some decorative cottons are also at risk, since they may not survive treatment with chlorine bleach without excessive fabric damage. Send these materials to a professional right away. Ask for an estimate before agreeing to a massive cleaning bill. Warn the cleaners if sewage has been involved.

Dry clean non-washable clothes that were above the high-water line, if they are otherwise serviceable. Warn the cleaners if sewage has been involved.

Scrape off heavy dirt and thoroughly rinse washable clothes as soon as possible, then wash them several times in cold water treated with a small amount of chlorine bleach. After rinsing, dry these clothes as rapidly as you can without risking shrinkage. Do not use much heat at any time – only as much as is needed for rapid drying.

Many well-worn clothes may not warrant the time and effort required for adequate cleaning, disinfecting, and drying. They should be discarded, or at least left until more valuable items have been salvaged. If necessary, keep them in lightly bleached-treated water until you can get to them.

### ***PAPER AND PAPER GOODS***

Most paper items that have been saturated by floodwaters are not worth the time, energy, and effort needed to save them. First, identify valuable materials and treat them. Then focus on items that are less wet and worth saving. Finally, get to the soaked items of lesser value.

At the same time that you want to expose paper to drying processes, you also wish to keep it pressed to prevent wrinkling. Obviously, you cannot do both. First, get the worst of the water out of the paper. Begin with blank paper or thin blotting materials between sheets. Some recommend using a light sprinkle of baking soda to help change surface chemistry and deter mould growth. However, any such chemical makes it possible that the inks will be affected, and that the chemistry of the paper will change. Test a spot to see if there are any dramatic effects before you use a chemical generally on your valuable paper goods.

Opening books to the breeze and the sun may speed drying. Remember to close and press them at night, or more often if wrinkling starts to appear. Too rapid drying may be hard on bindings, so

be cautious about drying them in full sun. Getting paper dry quickly is important, but so is preventing damage. Paper that is kept together wet for days may meld into a solid mass and become unsalvageable. Act quickly.

### ***FREEZE DRYING***

If you cannot take much time for wet paper goods in the first day or so, wrap and freeze them until you can get to them. Rinse off as much of the dirt as possible and towel dry by blotting, not rubbing. If sewage was involved, wrap materials carefully in freezer bags and clean off the outside of the bags before freezing.

Because of the high risk of contamination, never mix these bags with food bags. When a freezer can be used only for wet papers, it may be best to leave items unwrapped or lightly wrapped, as they will dry slightly during storage. This technique is used, in combination with a vacuum, to remove water from extremely valuable documents.

Later, remove items one or two at a time and carefully thaw and dry. Again, a balance will have to be found between too rapid and too slow drying. If paper is dried too slowly, mould will grow: if too rapidly, bindings may distort and pages wrinkle.

After the task is over, clean and disinfect all surfaces, especially those that will come in contact with food. All surfaces should be considered contaminated until they have been thoroughly cleaned and disinfected, then dried.

### ***LEGAL DOCUMENTS AND OTHER VALUABLE PAPERS:***

Some of your documents are valuable for legal or financial reasons. Others have important sentimental value. If they cannot be saved without some damage, all is not lost.

Make every attempt to clean and dry them as instructed previously. Saving documents through such efforts will be less costly than paying to replace them. Once it becomes clear that mould damage has occurred, or that distortion is going to be severe, focus on saving the information, not the paper.

Some documents can be preserved if true copies are notarized. The damaged originals can then be destroyed and the certified copies preserved. Check with a lawyer to determine which documents can be preserved this way.

Other documents, such as birth records, passports, and other government certificate-type documents, can be replaced, and the damaged versions destroyed. Check with local government offices to ascertain which documents can be replaced this way.

Certain large documents can be substantially preserved if pressed through hot rollers at a copy house that makes blueprints. This could be worthwhile for maps or other large documents that are worth keeping for sentimental or historical reasons. The cost may not be as high as you thought, but the paper will have to be roll pressed before it has dried, so act quickly.

**For more information, please contact your nearest Environmental Public Health office.**

Calgary Main Office 403-943-2295  
Lethbridge Main Office 403-388-6689  
Edmonton Main Office 780-735-1800



Grande Prairie Main Office 780-513-7517  
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