



CLEANING AND REPAIRING FLOODED BASEMENTS

Entering

Before you enter a flooded basement:

- 1) Turn off the electricity, preferably at the meter.
- 2) Check outside cellar walls for possible cave-ins, evidence of structural damage, or other hazards.
- 3) Turn off gas or fuel service valves.
- 4) Open doors and windows, or use blowers to force fresh air into the basement.

Pumping

Do not use an electric pump powered by your own electrical system. Use a gas-powered pump, or one connected to an outside line. Fire departments in some communities may help with such services.

More damage may be done by pumping water from the basement too soon or too quickly, than from letting the floodwater remain. Water in the basement helps brace the walls against the extra pressure of water-logged soil outside. If water is pumped out too soon, walls may be pushed up.

To help prevent such structural damage, pump the water from the basement in stages. Remove about a third of the water each day. Watch walls for signs of failing. If the outside water level rises again after the day's pumping, start with a new water line. The soil may be very slow to drain, but do not hurry the pumping. Whatever is submerged in the flooded basement will not be damaged further by delaying the pumping; serious structural damage may be prevented.

Cleaning

After water has been pumped from the basement, shovel out the mud and debris while it is still moist. Hose down walls to remove as much silt as possible before it dries. Floors and walls may need sanitizing, particularly if sewage has entered the basement. Scrub walls and floors with one of these sanitizing solutions:

- 1) *Chloride of lime* (25% available chlorine). Dissolve a 12-ounce can in 2 gallons of water.
- 2) *High test hypochlorite* (65% available chlorine). Stir 5 ounces into 2 gallons of water.

Oil stains in basements caused by overturned or damaged oil tanks may also be a problem following flooding. Commercial products (such as Neutroda) will help neutralize fuel oil. Products are available in powder form or an aerosol spray for hard to reach places. To remove oil stains and destroy odor, wipe up excess oil, shake or spray product on the spot according to manufacturer's directions, and let it set.

Repairing

Check supporting columns, beams, walls, and floors. Structural damage to flooded basements usually includes buckled walls, settled walls, or heaved floors.

1) *Buckled walls* are evidenced by horizontal cracking and walls moving out of plumb. When this condition is minor, you need not repair the wall immediately. However, any noticeably buckled wall will eventually collapse from normal ground pressures and seasonal temperature changes. When buckling has seriously weakened the wall, rebuild the damaged parts immediately. Build pilasters into walls over 15 feet long for reinforcement. Pilaster spacing should be 12 to 15 feet.

2) *Settled walls and footings* are indicated by vertical cracks either in small areas or throughout the structure. Repairs are difficult without special equipment. Contact a reliable contractor for this work.

3) *Heaved floors* are those that have not returned to their original level, or have cracked badly. You may need to construct a new floor:

- a) Remove old, broken concrete.
- b) Place 6 inches of gravel fill on the basement floor surface.
- c) Cover area with a polyethylene vapor barrier.
- d) Lay a 4-inch concrete floor with mastic joints between the floor and walls. The floor should be reinforced with steel. Welded wire reinforcement placed at mid-height in the slab is a minimum reinforcement.

If a floor is badly cracked, but has returned to its original level, and if there is sufficient headroom, place a new floor over the old one. Add a vapor barrier between the two floors. The new floor should be at least 2 inches thick.

In houses without basements the area below the floor may be completely filled with mud. Remove the mud as soon as possible to avoid rotting joists or foundation wood.



RECOMMENDATIONS FOR EQUIPMENT SUBJECTED TO FLOOD WATER

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- Determine the extent of the contamination, length of exposure and the type and age of the equipment.
- Domestic equipment subject to a significant flood water exposure should be considered no longer in good repair and replaced with NSF or similar equipment.
- Wood walk-in refrigerators and freezers should be removed and replaced with NSF or similar units.
- Commercial approved walk-in refrigerators and freezers can be cleaned by dismantling the panels and cleaning and sanitizing exposed areas. This would require a qualified manufacturer technician.
- Reach in refrigerators and freezers should be evaluated. If flooding was minimal, reconditioning may be possible. If flooding involved several feet of water for an extended time period, the insulation would be exposed which will make reconditioning difficult if not impossible. Foam insulation should be less absorbent than fiber insulation. The insulation value of fiber insulation may also be adversely affected by water exposure
- Interior and exterior surfaces of reconditioned reach-in refrigerators and freezers should be thoroughly cleaned and sanitized. Interior panels should be free of cracks or other damage. There should be no odor after reconditioning, and the units should be tested for temperature maintenance prior to being placed into service.
- Refrigerator and freezer compressors should be water tight. An appliance repair technician should verify that no electrical hazards exist for all electrical appliances.
- Most other commercial equipment including stoves, steam tables, preparation tables, fryer etc. should be capable of being cleaned and sanitized.
- Equipment can also be evaluated by the equipment manufacturer or an appliance repair service in your area.



Rehabilitation of Buildings, Furnaces, Furniture Rugs and Clothing

REHABILITATION OF BUILDINGS, FURNACES, FURNITURE, RUGS AND CLOTHING

Buildings Subjected to Floods:

Buildings which have been flooded should be examined carefully before being used for living quarters to make sure that they are safe and will not collapse. Loose plaster should be removed from the walls and ceilings so that it will not fall on occupants. Swollen doors and window sashes should be removed and allowed to thoroughly dry.

If water remains in the basement, it should be drained or pumped out as soon as possible. As the water is being removed, the mud should be stirred and carried away with it. After the basement has been allowed to thoroughly dry, floors and walls should be washed down with a solution of one pound of chloride of lime to six gallons of water or with a solution prepared from a commercial laundry bleach containing chlorine. Laundry bleaches, having 5.25% sodium hypochlorite, are good for this purpose. For use in basements as mentioned above, add one part of liquid chlorine laundry bleach to nine parts of water. Keep windows open for ventilation. Chlorine solutions are corrosive and should be mixed in plastic containers, enamel-lined metal pails or pans, or stoneware crocks. Do not apply solution to metal surfaces. Follow precautions printed on the chlorine container.

Walls, Woodwork, and Floors:

Walls and woodwork, while still damp, should be thoroughly scrubbed with a stiff fiber brush and water to remove all mud and silt. Particular attention should be given to all corners, cracks, and crevices which should receive careful scrubbing. Floors should be cleaned of all mud and dirt and allowed to thoroughly dry. Artificial heat may be used with caution, however the temperature should not get high enough to cause steam (vapor) to rise from the floor and cause buckling or warping.

Redecorating should not be attempted for some time as it is useless to try to paint damp surfaces. Three or four months' drying time may be necessary before redecorating can be done satisfactorily.



Rehabilitation of Buildings, Furnaces, Furniture Rugs and Clothing (Cont'd)

Furnaces:

All parts of the heating system exposed to flood water should be thoroughly cleaned and dried. The smoke pipe and chimney should be inspected and cleaned, if necessary, and furnace doors or covers left open to ventilate the system. Burners should be removed if possible; cleaned, and allowed to dry to prevent rust and clogging of orifices.

Furniture should be moved to the sunshine and fresh air. Drawer-slides and other working parts should be stacked separately and allowed to air dry. All mud and silt should then be removed. Remove the furniture from the direct rays of the sun before it is subject to warping. Stoves and other metal fixtures should first have all the mud and silt removed and wiped with an oiled rag, polished or painted. Books should be allowed to dry carefully and slowly with alternate exposing to air and pressing. Toward the end of this treatment, books may be subjected to small amounts of artificial heat.

Rugs and Carpets:

Rugs and carpets should be stretched out on a flat surface and allowed to thoroughly dry with alternate turning to prevent mold; followed by beating, sweeping or vacuum cleaning. Rugs that require shampooing should be washed with commercial rug shampoo products or with a soap jelly, and then wiped off, rinsed with clean water, and allowed to thoroughly dry. Soap jelly may be prepared by mixing one pint of mild soap powder or flakes with five parts of hot water and beat with an egg beater until a stiff lather is formed. Resizing may be done with a commercial or home-made material. Home made sizing may be prepared by mixing one-half pound of granulated glue to one gallon of boiling water. Stretch the rug out flat where it will not be disturbed, apply with a wide brush and allow to thoroughly dry. When practical, upholstery may be cleaned by following the procedures outlined for rugs.

Clothing and Bedding:

Flood-soiled clothing and bedding require considerable care to obtain satisfactory results. All loose dirt should be brushed off, followed by thorough cleaning.