Part 2: Drying Out Your Home

Now you're ready to begin drying out your home and establishing your plan for rebuilding. The information contained in this section will help you to dry out and decontaminate your home, sort through the debris, and get ready to rebuild your home with energy efficiency in mind.

Drying and Disinfecting Your Home

Flooding in your home has several consequences. Materials submerged in flood water can decay, swell, and warp. Electrical equipment and components can become damaged and may cause fires or electrical shock if not replaced after a flood. Wet surfaces encourage mold growth, which discolors surfaces, leads to odor problems, deteriorates building materials, and may cause allergic reactions and other health problems in susceptible individuals. Mud leaves things dirty and the contaminants that may be contained in this mud can pose potential health threats.

Controlling and preventing decay is easier to accomplish and reduces the health risks to occupants if done correctly. Control and prevention of the effects of mold and other contaminants is more difficult to accomplish. However, the stakes are much higher. You can minimize these risks by reducing moisture levels in your house through drying, **and** by decontaminating building surfaces.

After a flood, you must both dry and decontaminate your home. Either measure alone is not enough.

Because flood water and mud contain sewage, hazardous and toxic materials released upriver, micro-organisms, and other contaminants, it is essential to both dry and decontaminate your home. Drying without decontamination, or decontamination without drying, are ineffective. Remember too, that all materials and tools you use in the process, such as clothing, wet/dry vacuums, etc., will become contaminated and in need of disinfecting when you are finished.

CAUTION: Contact with flood water may result in severe health risks. Contaminants in flood water can induce cancer, induce birth defects, reduce immune system performance, poison tissues, cause "sick building syndrome," tuberculosis, Legionnaire's disease, aspergillosis, hypersensitivity pneumonia, allergic rhinitis, and viral respiratory infection.

Measures to Help Dry the House

Ventilate the building as soon as possible. Open doors and windows, as well as cabinets, drawers, and closets. Circulate

as much air as possible through the building and its cavities, such as walls and attics.

Heat the building as soon as possible. Moisture will move from inside the home if the indoor temperature is warmer than the outside temperature.

Ventilating and heating are more effective when done together than either is alone.

If your electricity has been safely restored, use portable fans, window air conditioners (set on fan exhaust only), and dehumidifiers to help speed drying. Remember that it is more effective to remove air from the building than to bring air in. Therefore, if you are using a fan to speed drying, aim it toward the outside to move moist air out.

Use a wet-vacuum to remove as much water as possible from the floors and carpets.

CAUTION: Don't use a regular vacuum cleaner on wet carpet. Regular vacuum cleaners are not designed to remove water and mud and attempting this may result in electric shock.

The central fans and blowers of forced-air heating and air-conditioning systems can be disconnected from contaminated ductwork and can be operated for exhausting moist air. Temporary ducts can be connected in such a way that the central blower removes air from the building and discharges it through a temporary duct installed through a window or other opening. This procedure should only be attempted by individuals confident in their ability to rewire electrical systems. If you're unsure how to do this, contact a professional. Also remember that if the fan or blower motor has been submerged, it will need attention by a professional before it can be safely operated.

Also, while forced-air heating and air-conditioning systems can be used to help dry your home, because duct work will likely have become wet and contaminated from mud and debris, you will need to clean the ducts before using them. Sheet metal ducts must be hosed out and decontaminated. If liners or insulation are present in sheet metal ducts, remove and discard them. Also remove and discard fiberglass ducts, as they cannot be properly decontaminated.

CAUTION: Powerful exhaust fans can cause harmful flue gases to be drawn down chimneys and into the living space if the house is closed up tight. If you are using a powerful exhaust fan when heating systems with chimneys are also present, proper venting, such as opening doors and windows, is essential.

How can you tell when your home is dry?

Depending on things such as the extent of flooding and the weather, drying your home after a flood could take anywhere from several days to several months, or even longer. To determine whether your house is adequately dried, you should consult with a professional, such as a local contractor, your county extension agent, or the local building inspector,

who may have a moisture meter to test your home's moisture level.

Since acceptable moisture levels vary in different parts of the country, also consult with these professionals about the recommended levels for your area.

If you're unable to locate anyone in your community who offers moisture level testing, see the list of moisture meter manufacturers in Appendix 1.

How can you prevent recurrent moisture problems in the future?

Moisture may persist as a problem in your home even after you feel that you have dried out everything that can be dried. Excessive moisture that remains in your home can lead to mold, mildew and rot, causing damage that goes beyond the initial mess caused by the flood if it is left unattended.

For human health and comfort, relative humidity in a home should be kept between 30 and 50 percent. During winter months, when outdoor temperatures are colder, relative humidity should be kept as close to 40 percent as possible. You can buy simple inexpensive instruments to measure indoor relative humidity at a local hardware store.

If you find that the relative humidity of your home is higher than 50 to 60 percent, you should take steps to reduce it, as this might be the source of problems.

Take care not to aggravate any moisture problems in your home as well. Seek out and reduce the causes of dampness: a lot of cooking with uncovered pots; unrepaired leaks; hanging clothes indoors to dry; long, hot showers without adequate venting. These few examples might not apply exactly in your case, but they may point you toward potential sources in your home.
One suggestion is to open your windows and doors once or twice a day during milder weather to provide a complete change of air. Good circulation of indoor air prevents trapped pockets of moist air from causing problems.

Measures to Help Decontaminate the House

Your home should be cleaned from mud and silt immediately to remove any sewage and micro-organisms that may have been deposited on building surfaces by flood water. However, removing mud and debris is only the first step. Surfaces that have been cleaned will still be wet and will require time to dry. As these surfaces dry, they will become hosts for mold and other biological growth. Therefore, your home may have to be decontaminated again once it is dry.

Cleaning or decontamination alone is not sufficient. You will need to do both.

To decontaminate surfaces, apply a solution of diluted chlorine bleach on surfaces that have come in contact with flood water or mud.

Experts suggest a solution of 5 to 10 percent bleach. If you can respond right away, the 5 percent solution will be enough. The higher concentration is recommended for surfaces that have heavier contamination. In all cases, repeat the treatment at least twice within a 30-minute period.

Be sure the area is well-ventilated, and wear a mask and gloves to protect yourself when doing any cleaning or decontamination work.

New decontamination techniques done by trained professionals are also an option to consider. For more information, check your Yellow Pages under "Restoration," "Fire Restoration," or "Carpet Cleaning," or see Appendix 2. Some products and materials, such as some carpets, ceiling tiles, upholstered furniture, and mattresses, will be virtually impossible to dry and effectively decontaminate after a flood. Such products should be removed and discarded.

Removing Debris

Before installing new materials in your house, remove and dispose of the wet, broken, and unusable materials.

Since flood damage is usually widespread throughout affected areas, there will be a significant impact on local landfills.

Check with your local health department and sanitarian for recommendations on how best to dispose of debris.

Federal Occupational Health Protocol for Controlling Microbial Growth After a Flood

1. Inventory all flooded areas so that every water damaged area is treated and cleaned.

2. Remove and dispose of wet ceiling tiles and drywall within 24 hours of water contact.

3. Remove and replace all drywall and insulation damaged by water up to 12 inches above the water line. Wicking can cause water to move up several inches above the water level.

4. Dry all wet light fixtures.

5. Water damaged furniture should be replaced or cleaned with a diluted 10% bleach solution. Furniture made of particle board or pressed wafer board should be discarded. Wood furniture can be salvaged by removing microbial growth with a bleach solution. However, check to see whether the solution will damage the furniture finish. Fabrics soaked in standing water should be treated the same as carpets (see below).

6. Leave all cabinets and drawers open to facilitate air flow for drying. All surfaces of cabinets and drawers should be wiped and disinfected with a diluted bleach solution.

7. Remove any essential wet paper from the flooded area to a location where it can be dried, photocopied, and then discarded.

8. If a large amount of files and paperwork cannot be dried within two days, essential files and paperwork may be rinsed with clean water and temporarily frozen until proper drying of the files and paperwork can be completed. Never let paper products become moldy.

9. Immediately remove as much water as possible from wet carpeting using wet vacuums.

10. Upon completion of the wet vacuuming, shampoo the carpet with a 10-percent bleach solution twice within a 30-minute period. Begin shampooing as soon as the wet vacuuming is finished. Before beginning the bleach treatment, conduct a spot test in an inconspicuous area to see if the bleach fades the carpet.

11. If the carpet fades with the bleach solution, then the area must be immediately dried and treated with an alternate biocide. *Consult a microbiologist to determine what type of biocide to use, since certain biocides are inhibitors and may not effectively kill microbes.*

12. Rinse the carpet with clear water to remove the bleach solution. Take steps to ensure that the carpet is *totally dry within 12-24 hours of treatment.*

13. Increase air circulation and ventilation if any biocide is used.

14. Air and material testing for microorganisms should be performed immediately after the flood and periodically thereafter by a trained environmental health professional to ensure that no microbial amplification and excessive human exposure occur. Post-cleanup clearance sampling and inspection are necessary to ensure that no excessive concentrations of microbes still exist in the building.

15. Use dehumidifiers and air conditioning/ventilation to speed up the drying process.