



## **Hurricane Aftermath—Health and Housing Flooding**

Flooding and the serious water intrusion that accompanies it is perhaps the most serious healthy homes impact of a hurricane strike. Large and widespread mold infestations, bacterial growth, pest infestations, release of toxic substances from wet building materials, and deteriorated structural integrity can all follow water intrusion of residential buildings. The water itself can carry an unknown mix of toxic chemicals, waste, and bacteria that can contaminate houses and apartments, personal belongings, and yards, even after the flood recedes.

To minimize the impacts of flooding and water intrusion for homes and apartment buildings in which structural integrity has *not* been weakened beyond repair, property owners should take the following steps:

- Before entering any house or apartment building, protect yourself by wearing rubber boots, rubber gloves, goggles, and a respirator.
- Children, the elderly, and persons with compromised immune systems should not return to flood-damaged buildings until all repair and rehabilitation work is completed. People with severe asthma should also avoid flood-damaged structures.
- Remove all standing water as quickly as possible, even if the amount of standing water is small. Standing water can be a breeding ground for bacteria and some pests, it can harbor dangerous contaminants, and it can provide a source of moisture for mold growth.
- Remove all wet materials and personal belongings from the house or apartment building. This includes all wet wallpaper, wallboard, carpeting, throw rugs, bedding, mattresses, box springs, stuffed toys, clothing, and any other wet materials that cannot be adequately dried and wiped clean. All of these materials can become food sources for mold, they can “off-gas” significant amounts of toxic chemicals. Inadequate drying of these materials can attract large cockroach infestations. Where possible, professional contractors trained in materials removal and mold clean-up should perform this work.
- Remove all porous materials that demonstrate significant mold growth. Again, where possible, professional contractors trained in these tasks should perform this work.
- Take appropriate measures to dry out the entire structure of the house or apartment building. As soon as safe, reliable power is restored, fans; dehumidifiers; window air conditioners; and undamaged, uncontaminated, properly filtered HVAC systems can be used to dry out a building. All houses and apartments buildings should also have ventilation systems repaired if damaged.

- The scope of the flood damage and resultant mold growth following Hurricanes Katrina and Rita are unprecedented in many areas along the Gulf Coast. However, for those homeowners who suffered only minimal water intrusion from minor flooding or other damage to their homes, cleaning all nonporous, wipeable materials and surfaces with a hot water and detergent solution can help. If a hot water and detergent solution does not clean these surfaces, a very dilute bleach solution (1 cup bleach to 9 cups water) can be used. *Remember that this pertains **only** to homes where mold growth is impacting small, easily contained areas. If using a dilute bleach solution, **NEVER MIX BLEACH WITH ANY OTHER CLEANING PRODUCT OR DETERGENT!***
- Chemical fungicides should be used only as a **last resort** against mold, and only the lowest-toxicity fungicides should be used in these circumstances. Mold removal efforts should focus on a) removing all water-damaged materials from the home, b) removing all materials demonstrating significant mold growth, and c) removing all sources of standing water and excessive moisture from the home.

### **Resources**

- For information on making homes healthy following a hurricane strike, visit the EPA's Hurricane Katrina response page, linked from [www.epa.gov](http://www.epa.gov).
- For specific information on returning home following a major flood event, visit [www.cmhc-schl.gc.ca/en/burema/coem/flood/flwhbeaf/index.cfm](http://www.cmhc-schl.gc.ca/en/burema/coem/flood/flwhbeaf/index.cfm).
- The Alliance for Healthy Homes and the National Center for Healthy Housing provide more detailed information on health and housing on their websites, [www.afhh.org](http://www.afhh.org) and [www.centerforhealthyhousing.org](http://www.centerforhealthyhousing.org).