



### *Water-borne risks*

Flood waters and water damage from this emergency will pose special problems for the thousands of people with existing lung disease and may increase the likelihood of the development of lung disease. Water damage from rains associated with a hurricane can pose risks to the public well outside of the floodwater area.

- Standing water remaining from any flood is a breeding ground for microorganisms. Bacteria, viruses, and mold can become airborne and be inhaled, putting people at risk for lung disease. With the reports of sewage and toxins in the water, the floodwaters here will likely exacerbate the growth of microorganisms. Even when the flooding is due to a fairly clean source, such as rain water, the growth of these microorganisms can cause allergic reactions in sensitive individuals.
- The greatest health risk for the general public in this emergency may come from water-borne microorganisms and toxins. However, even after the water recedes, the contaminants, bacteria, viruses and mold left behind pose a risk to those with preexisting lung disease. Exposure to these microorganisms and toxins may increase the risk of developing lung disease. In addition, the time spent in large group housing may increase the risk of spread of infectious diseases, such as influenza, pneumonia, and tuberculosis.
- Damp buildings and furnishings promote the growth of microorganisms, dust mites, cockroaches and mold, which can aggravate asthma and allergies and may cause the development of asthma, wheeze, cough and hypersensitivity pneumonitis in susceptible persons.
- After this emergency, contaminants and microorganisms may be inhaled during clean up efforts, which also add to lung disease complications. Clean up efforts will need to protect the workers and occupants from exposure to airborne particles and gases.
- The physical stress of dealing with the flood may also put a strain on people who are already ill or the elderly, providing an opportunity for respiratory infections and other sicknesses to arise.
- Much of the damaged materials and furnishings in homes and buildings will have to be discarded because of the spread of contaminated water. Simply drying out the water will not remove the contaminants or the microorganisms.
- After the flood or water damage, cleaning up is imperative. Materials which can be cleaned must be cleaned thoroughly. Materials which cannot be cleaned or are damaged beyond use must be discarded. Excess moisture indoors poses an indoor air quality concern for the following reasons:
- Areas with this high level humidity and moist materials provide an ideal environment for the growth of microorganisms, which could result in continued or additional health hazards such as allergic reactions.
- Coming into contact with air or water that contains these microorganisms can make a person sick.
- Long-term high levels of humidity can foster growth of dust mites, which can cause asthma and trigger allergic reactions and asthma attacks.
- Although the clean up process can take a long time, it is necessary to protect health. These are tasks that must be done:
  1. Stop the water intrusions first.
  2. Identify and protect vulnerable populations, which include children, the elderly and anyone with chronic diseases or a suppressed immune system.
  3. Identify the extent of the contamination. Be sure to trace the pathways of the water to find where damage has spread.
  4. Plan and carry out the clean up. The clean up plan should include these steps:
    - Contain the damaged materials and furnishings and protect workers and occupants

from exposure to them.

- Clean and dry out materials that can be completely dried.
- Remove damaged materials that cannot be completely dried, including any materials that cannot be thoroughly cleaned and dried in 24 to 48 hours.
- Evaluate whether the space has been successfully cleaned.
- Repair and reconstruct the spaces to prevent or limit the possibility of recurrence.
- There are no accepted standards for airborne biological contaminants, including mold. There are no accepted standards for interpreting sampling of the air to determine extent of a problem or clean up.
- Air cleaning devices can help remove some indoor air pollution, but won't solve the problems alone. Cleaning up the water, the contaminants, and the damaged furnishings and material are essential steps and nothing can substitute for them. Avoid using air cleaning devices that emit ozone. Ozone has not been found to clean indoor air, including mold problems. Ozone can harm lung health, especially for children, the elderly, and people with asthma and chronic lung diseases.
- For more help on cleaning up after a flood or water damage, contact the American Lung Association Help Line at 1-800-LUNGUSA.

Source: Institute of Medicine. *Damp Indoor Spaces and Health*, 2004. U.S. EPA. Fact Sheet Flood Cleanup-Avoiding Indoor Air Quality Problems. October 2003

### ***Emergency power risks***

Without electricity, people may turn to portable gasoline- or diesel-powered generators, gas stoves, charcoal stoves, grills, portable camping stoves and other devices to cook indoors. Carbon monoxide is produced whenever any fuel such as gas, oil, kerosene, wood, or charcoal is burned. Exposure to carbon monoxide reduces the blood's ability to carry oxygen and can lead to death.

- Do not use ovens and gas ranges to heat your home.
- Do not burn charcoal or propane inside a home, cabin, recreational vehicle or camper.
- Do not operate gasoline-powered or diesel-powered engines indoors.