



**MONTEREY COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH**

A CITIZEN'S GUIDE TO DISEASE PREVENTION IN FLOOD EMERGENCIES

Some residential and business areas of Monterey County are located in flood plains. This means that storms can produce sufficient amounts of precipitation to overflow the banks of rivers and streams, and flood residences and businesses located in these flood plains. This guide is intended to instruct the citizen in the most practical ways to avoid contracting communicable diseases from flood waters and objects contaminated with flood waters. Some of the information herein has been gathered from the Federal Emergency Management Agency (FEMA), the American Red Cross and the Environmental Protection Agency.

WARNING

Chlorine bleach (Clorox, Purex etc.) is often mentioned in this handout. **NEVER** mix chlorine bleach with any compound containing household ammonia (ammonium hydroxide) or any other ammonia containing compound. This causes the release of chlorine gas which is extremely toxic, and may injure or kill you.

About Flood Waters

First, always assume that flood waters contain pathogenic (disease causing) organisms. These organisms can consist of bacteria, viruses, protozoa and other microorganisms, which may cause a large number and variety of illnesses. It is impractical and very expensive to "test" flood waters or contaminated items for specific organisms. Rivers and streams receive drainage from residential areas, farms, dairies, and possibly from failing septic systems and sewage effluent from sewage treatment plants which may become overloaded in flood conditions. Soil, even under normal conditions, can also be assumed to contain pathogenic organisms, and when floods occur, a much higher content of soil is found in the resulting runoff.

Another hazard of flood waters is the possibility of poisons or irritants which may spill from their normal storage. If you live in an area where businesses are located which use or handle chemicals or petroleum, you should be aware of this possibility.

Drinking Water Supply

A supply of bottled drinking water should always be kept for emergencies such as floods. Your drinking water supply, whether you are served by a public or private water company or receive your water from a private well, could possibly become contaminated by flood water. If you are served by a company such as California American Water Company or California Water Service, you should contact those services before using or drinking tap water. The large water companies have their own certified laboratories for testing water, and test their water frequently. If you have a private well or are served by a small private company, your water should be tested in a certified testing laboratory to make sure it is safe. If you are not sure about your water, and are unable to contact the proper authority for information or testing, you should boil your tap water at a full boil for several minutes before using for drinking or cooking. If you cannot boil your water, you should add eight drops of chlorine bleach per gallon if the water is clear, or sixteen drops of chlorine bleach per gallon if the water is cloudy or turbid. Before drinking or cooking with the water, let it first stand for at least one half hour with the added bleach.

Contact with Flood Waters

Unnecessary contact with flood waters should be avoided. If you must work in contact with flood waters, use protective clothing when available, avoid getting the water into cuts, sores, the eyes, nose or mouth. Wash your hands as often as possible, and remove flood contaminated clothing when entering non-contaminated areas such as unaffected living areas of residences. If you should accidentally ingest flood water or food contaminated with flood water, or become otherwise exposed, contact your personal physician or the nearest emergency medical treatment facility for advice.

Food Contaminated with Flood Waters

All food which comes into contact with flood water should be discarded, except for canned food which may be disinfected by immersion into a solution of two ounces of fresh chlorine bleach (clorox) mixed into one gallon of water for several minutes, followed by rinsing the can in fresh water. Another consequence of floods sometimes overlooked is the loss of electricity for refrigeration of perishable foods. If your refrigerator or freezer loses power and the perishable items within reach a temperature of 45 degrees Fahrenheit or higher for over two hours, the food should be discarded. Food stored at 45 degrees Fahrenheit or above can be subject to bacterial growth if any are present on the food, and these bacteria may cause moderate to severe food borne illnesses.

Furniture, Carpets and non-washable Absorbent Items Contaminated by Flood Waters

Upholstered furniture, mattresses and bedding which cannot be disinfected and carpets contaminated by flood waters as well as other items which are not washable absorbent items should be discarded. There are some upholstery cleaners commercially available which can disinfect external surfaces of upholstered furniture, but cannot reach internal areas.

Smooth, or Washable Items Contaminated by Flood Waters

Items such as dishes, pots and pans and other washable items should first be washed in hot water with detergent, and then may be sanitized by immersion into a solution of two ounces of chlorine bleach to one gallon of water. This would apply to any non-porous item which would not be damaged by contact with detergents or chlorine bleach. Prior to using your washing machine, you should run a complete wash and rinse cycle with detergent and hot water, and add chlorine bleach during the rinse cycle. Washable clothes should be washed in the hottest water practical, and then rinsed in a chlorine bleach. Bear in mind that chlorine bleach may damage colored clothing or items.

In summary, victims of floods need not become ill or contract diseases if precautions are taken to minimize exposure. Old persons, infants and those with diminished immunity are always at a higher risk in such emergencies, and should be protected from exposure to flood waters and contaminated items. If you have any questions regarding this publication, please contact one of the offices listed on the letterhead for more information.

By Environmental Health, Consumer
Protection Branch

