

# Biological Threats

Biological agents are organisms or toxins that can kill or incapacitate people, livestock, and crops. The three basic groups of biological agents that would likely be used as weapons are bacteria, viruses, and toxins. Most biological agents are difficult to grow and maintain. Many break down quickly when exposed to sunlight and other environmental factors, while others, such as anthrax spores, are very long lived. Biological agents can be dispersed by spraying them into the air, by infecting animals that carry the disease to humans, and by contaminating food and water. Delivery methods include:

- Aerosols - biological agents are dispersed into the air, forming a fine mist that may drift for miles. Inhaling the agent may cause disease in people or animals.
- Animals - some diseases are spread by insects and animals, such as fleas, mice, flies, mosquitoes, and livestock.
- Food and water contamination - some pathogenic organisms and toxins may persist in food and water supplies. Most microbes can be killed, and toxins deactivated, by cooking food and boiling water. Most microbes are killed by boiling water for one minute, but some require longer. Follow official instructions.
- Person-to-person - spread of a few infectious agents is also possible. Humans have been the source of infection for smallpox, plague, and the Lassa viruses.

Specific information on biological agents is available at the [Centers for Disease Control and Prevention's Web site](http://www.bt.cdc.gov) located at [www.bt.cdc.gov](http://www.bt.cdc.gov) .

## Before a Biological Attack

### What you should do to prepare:

Check with your doctor to ensure all required or suggested immunizations are up to date. Children and older adults are particularly vulnerable to biological agents.

Consider installing a High Efficiency Particulate Air (HEPA) filter in your furnace return duct. These filters remove particles in the 0.3 to 10 micron range and will filter out most biological agents that may enter your house. If you do not have a central heating or cooling system, a stand-alone portable HEPA filter can be used.

### Filtration in buildings

Building owners and managers should determine the type and level of filtration in their structures and the level of protection it provides against biological agents. The National Institute of Occupational Safety and Health (NIOSH) provides technical guidance on this

(FEMA, 2009)

topic in their publication *Guidance for Filtration and Air-Cleaning Systems to Protect Building Environments from Airborne Chemical, Biological, or Radiological Attacks*. To obtain a copy, call 1 (800) 35NIOOSH or visit the [National Institute for Occupational Safety and Health Web site](#) and request or download NIOSH Publication 2003-136.

## During a Biological Attack

In the event of a biological attack, public health officials may not immediately be able to provide information on what you should do. It will take time to determine what the illness is, how it should be treated, and who is in danger. Watch television, listen to radio, or check the Internet for official news and information including signs and symptoms of the disease, areas in danger, if medications or vaccinations are being distributed, and where you should seek medical attention if you become ill.

The first evidence of an attack may be when you notice symptoms of the disease caused by exposure to an agent. Be suspicious of any symptoms you notice, but do not assume that any illness is a result of the attack. Use common sense and practice good hygiene.

### **If you become aware of an unusual and suspicious substance nearby:**

- Move away quickly.
- Wash with soap and water.
- Contact authorities.
- Listen to the media for official instructions.
- Seek medical attention if you become sick.

### **If you are exposed to a biological agent:**

- Remove and bag your clothes and personal items. Follow official instructions for disposal of contaminated items.
- Wash yourself with soap and water and put on clean clothes.
- Seek medical assistance. You may be advised to stay away from others or even quarantined.

### **Using HEPA Filters**

HEPA filters are useful in biological attacks. If you have a central heating and cooling system in your home with a HEPA filter, leave it on if it is running or turn the fan on if it is not running. Moving the air in the house through the filter will help remove the agents

from the air. If you have a portable HEPA filter, take it with you to the internal room where you are seeking shelter and turn it on.

If you are in an apartment or office building that has a modern, central heating and cooling system, the system's filtration should provide a relatively safe level of protection from outside biological contaminants.

HEPA filters will not filter chemical agents.

## **After a Biological Attack**

In some situations, such as the case of the anthrax letters sent in 2001, people may be alerted to potential exposure. If this is the case, pay close attention to all official warnings and instructions on how to proceed. The delivery of medical services for a biological event may be handled differently to respond to increased demand. The basic public health procedures and medical protocols for handling exposure to biological agents are the same as for any infectious disease. It is important for you to pay attention to official instructions via radio, television, and emergency alert systems.