Threats Involving
Biological Agents/Chemical Agents or
Hazardous Materials

Biological agents

Biological agents are infectious substances which have the ability to kill or incapacitate large numbers of people. Examples of biological agents include anthrax, Ebola and smallpox. Some agents, such as anthrax and smallpox, are highly contagious and may be transmitted from person to person through coughing and sneezing. Others, such as tularemia and Ebola, are rarely transmitted.

Biological agents may be dispersed in a number of ways: they may be pumped through ventilation systems, dumped into food and water supplies, delivered as aerosols, or packaged and mailed as particles. Symptoms are often flu-like and may not appear for hours or even days.

When a biological agent is suspected, any potentially contaminated materials must not be touched! All exposed persons should be considered contagious and be quarantined until competent medical authority can evaluate the situation and provide specific information and guidance.

Anthrax

In October 2001, letters containing anthrax were sent through the U.S. mail to Senator Tom Daschle NBC, and other media outlets. In the aftermath, there were nineteen confirmed cases of anthrax and five persons died. Many more were exposed and underwent treatment.

Anthrax is an acute, infectious disease caused by the spore-forming bacterium Bacillus anthracis. In the hands of a terrorist, this biological agent is considered a weapon of mass destruction. Its spores can be aerosolized or spread in the air by missiles, rockets, aerial bombs and sprayers. Anthrax is particularly dangerous since it is a sturdy organism that can withstand heat and cold and lie dormant for years. Disseminated in the air, anthrax would have no color, smell or taste and an attack could go unnoticed for 24 to 48 hours, when symptoms typically begin to appear. If victims are untreated, the disease often proves fatal.

There are three types of anthrax. Cutaneous anthrax occurs when the bacterium enters a cut or abrasion on the skin. Gastrointestinal anthrax is caused by the consumption of contaminated meat.

The most common type of anthrax, and the most lethal, is inhalation anthrax, caused by the inhalation of anthrax spores. The incubation period for inhalation anthrax infection is from 1-60 days, although symptoms usually present within the first 7 days. If not treated before disease symptoms appear, lethality is 95-100%. Initial symptoms of may resemble a common cold, with viral-like aches and pain, followed by fever, fatigue, a non-productive cough and chest discomfort. A vaccine is available and certain antibiotics can be effective immediately after exposure. However, there is usually no effective treatment after symptoms begin.

Anthrax hoaxes - false anthrax threats made by letter or package - have become common. Response to such threats is treated much like bomb threats.
**Chemical agents**

Chemical agents are compounds that, through their chemical properties, produce lethal or damaging effects on people, animals, plants or materials. Chemical agents can be delivered in many forms, including gas, aerosol, liquid or solids. One example of a chemical agent is Sarin, a chemical nerve gas that was dispersed by terrorists in the Tokyo subway system killing 12 people and injuring 5,000 others. Tear gas is another example.

Persons exposed to a chemical agent are not infectious. However, they should only be treated by response personnel in appropriate protective clothing, as residue from the chemical agent may still be hazardous. Decontamination of affected people should be provided as quickly as possible.

**Hazardous materials**

If hazardous materials are stored or used at the facility, they should be closely guarded at all times to prevent unauthorized access. Bombs placed near hazardous materials will compound the danger to search teams and emergency responders, as well as to everyone else at the site.

Facilities that have hazardous materials on the premises may be required to have a plan in place to deal with emergencies. Typically the response outlined in such a plan will involve an in-house response team, or the local hazardous materials team, which may be part of the local fire department. Most of the elements of that plan will apply to a threat situation as well.

If no such hazardous materials plan exists, find out from your local fire department about hazmat teams in the area and make arrangements with them to visit your facility. Even more effective would be to hold exercises at your facility involving the hazmat team and other local emergency response organizations.

**Control zones**

It is critical to take steps to limit the spread of disease by setting up zones to control the flow of exposed and unexposed persons and materials. Control zones must be used for hazardous materials involvement as well as for chemical and biological agents.
In a typical control zone configuration, the hot zone is the area of immediate danger (or the area immediately surrounding the hazardous material); the warm zone is the area surrounding the hot zone; and the cold zone surrounds the warm zone. The outer boundaries of the control zones are identified by banner tape, traffic cones or in some other recognizable manner.

The hot zone is restricted to emergency response entry teams dressed in protective clothing suitable for the hazard. These response personnel will be responsible for identifying and/or collecting the contaminated materials in question. The warm zone is where entry support and decontamination of exposed persons, equipment, and entry teams takes place. The warm zone has limited access and emergency responders carrying out operations generally must wear appropriate protective clothing. The cold zone is the support area and is reserved for emergency services functions, such as staging and medical operations. Sometimes the Control Center is located in the cold zone. Protective clothing is generally not necessary in the cold zone.