



## Biological Agents

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A biological agent is an infectious disease. They can be naturally occurring or be used in biological warfare. There are more than 1200 different kinds of biological agents, some of which can be used as biological weapons. The United States Center for Disease Control (CDC) has divided the agents which can be used as biological weapons into three categories, Category A, B, and C.

### CATEGORY A

Though these agents are rarely seen in the United States, we must prepare for them because they pose the greatest risk to our national security. Specifically they:

- can be easily transmitted from person to person;
- result in high mortality rates and have the potential for major public health impact;
- might cause public panic and social disruption; and
- require special action for public health preparedness.

The CDC has classified 6 biological agents as Category A. They are listed below.

### **Anthrax**

Anthrax, is an acute infectious disease caused by the bacteria *Bacillus anthracis*. It can be highly lethal in its most virulent form. Anthrax most commonly occurs in wild and domestic herbivores, but it can also occur in humans when they are exposed to infected animals, tissue from infected animals, or high concentrations of anthrax spores. If used as a The Anthrax Vaccine is highly effective at preventing spread of Anthrax. Antibiotics can effectively treat Anthrax, if administered in time. US Army personnel are now routinely vaccinated prior to active service in places where biological attacks are considered a threat

### **Smallpox**

Smallpox is a serious, contagious, and sometimes fatal infectious disease. There is no specific treatment for smallpox disease, and the only prevention is vaccination. The name *smallpox* is derived from the Latin word for "spotted" and refers to the raised bumps that appear on the face and body of an infected person.

### **Botulism**

Botulism is a rare but serious paralytic illness caused by a nerve toxin called botulin. Botulin is produced by the bacterium *Clostridium botulinum*, and blocks nerve function and leads to respiratory and musculoskeletal paralysis. The most frequent source is home-canned foods, prepared in an unsafe manner. Wound botulism occurs when *C. botulinum* spores germinate within wounds. Infant botulism occurs when *C. botulinum* spores germinate and produce toxin in the gastrointestinal tract of infants.

### **Plague**

Plague, also referred to as Bubonic plague, is the mortal disease caused by the bacteria *Yersinia pestis*, which is spread by fleas and rodents to human beings. Historically, Plague has reached epidemic and even pandemic proportions in Asia and Europe. It is primarily a disease of rodents such as rats, prairie dogs, chipmunks, squirrels and other similar rodents. Human infection most often occurs when a person is bitten by infected animals.

### **Tularemia**

Tularemia (also known as "rabbit fever") is a infectious disease caused by the bacterium *Francisella tularensis*. Humans are most often infected by tick bite or through handling an infected animal. Ingesting infected water, soil, or food can also cause infection. Tularemia can be acquired by inhalation; hunters are at a higher risk for this disease because of the potential of inhaling the bacteria during the skinning process. Tularemia is not spread directly from person to person.

## **Viral Hemorrhagic Fevers**

Viral hemorrhagic fevers (VHFs) are a group of illnesses that are caused by several distinct families of viruses: Arenavirus, Filoviridae, Bunyaviridae and Flavivirus. Some of these cause relatively mild illnesses, while others can cause severe, life-threatening disease. Examples include Lassa fever, Marburg virus, Ebola virus, Bolivian haemorrhagic fever, Korean hemorrhagic fever, and Dengue hemorrhagic fever.

For more information, visit the CDC's [Comprehensive Category A Information](http://www.bt.cdc.gov/agent/agentlist-category.asp#a) website.  
[<http://www.bt.cdc.gov/agent/agentlist-category.asp#a>]

## **CATEGORY B**

The CDC states these agents are the second highest priority. These are agents that:

- are moderately easy to disseminate;
- result in moderate morbidity rates and low mortality rates; and
- require specific enhancements of CDC's diagnostic capacity and enhanced disease surveillance.

Examples of these are Salmonella, Typhus, and Ricin.

For more information, visit the CDC's [Comprehensive Category B Information](http://www.bt.cdc.gov/agent/agentlist-category.asp#b) website.  
[<http://www.bt.cdc.gov/agent/agentlist-category.asp#b>]

## **CATEGORY C**

Third highest priority agents include emerging pathogens that could be engineered for mass dissemination in the future because of

- availability;
- ease of production and dissemination; and
- potential for high morbidity and mortality rates and major health impact.

Included in this category are emerging infectious diseases such as Nipah virus and hantavirus.

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