

# Frequently Asked Questions on Anthrax

Prepared by the Canadian Cattlemen's Association  
October 9, 2001.

## What is anthrax?

Anthrax is an acute infectious disease caused by the spore-forming bacterium *Bacillus anthracis*. Anthrax is a zoonotic disease, meaning it may spread from animals to humans. All mammals appear to be susceptible to anthrax to some degree, but ruminants such as cattle, sheep and goats are the most susceptible and commonly affected, followed by horses, and then swine.

Anthrax has received attention recently because of its potential as an agent in biological weapons.

## How common is anthrax in livestock?

Anthrax is a List B Reportable Disease. Outbreaks occur sporadically in North America. According to the Canadian Food Inspection Agency's annual reports to the Office International des Épizooties (OIE), Canada had four outbreaks in livestock in 1996, none in 1997, two cases in zoo animals in 1998, seven outbreaks in livestock in 1999, and 14 outbreaks in livestock in 2000. Outbreaks are known to occur sporadically in bison in the Wood Buffalo National Park.

Anthrax is very common in southern and eastern Europe, the Middle East, South and Central America, several republics of the former Soviet Union, several countries of Africa and Asia, and provinces of China.

## What causes sporadic outbreaks in livestock?

When cells of *B. anthracis* are exposed to oxygen, they form spores. These spores are highly resistant to heat, cold, chemical disinfectants, and long dry periods. These spores are reported to survive for many years in the environment. Animals are usually infected by ingesting soilborne spores. Spores can be picked up directly from the soil through grazing or from feed grown on infected soil. When periods of drought cause livestock to forage much closer to the ground, animals may ingest spores in soil they consume. After flooding, the concentration of spores caught in standing water increases when ponds begin to evaporate.

## How much of a risk to humans is anthrax in livestock?

Anthrax is not a health hazard to consumers because animals are inspected for disease before and after slaughter.

Individuals working with livestock infected with anthrax are at risk. Potential routes of infection in those handling infected livestock are cutaneous (skin infection caused by spores coming into contact with broken skin such as scrapes) or respiratory (caused by inhaling large numbers of spores). Veterinarians and other persons handling potentially infected livestock should take precautions, such as wearing impermeable gloves, boots, and clothing. The risk of respiratory infection is small, however those conducting postmortems, soil clean-up or disposal of carcasses should wear respirators with HEPA filters.

Person-to-person spread of anthrax is not known to occur. Anthrax infections in humans are treatable with antibiotics.

### **Why is anthrax considered a potential weapon of bioterrorism?**

Research into anthrax as a biological weapon has been ongoing for more than 80 years. The theory is that anthrax's spore-forming nature would allow it to be more readily spread in an aerosolized manner than other diseases. In 1970 a World Health Organization (WHO) expert committee estimated that following the theoretical aircraft release of 50 kg of anthrax spores over a developed urban population of 5 million, 250,000 humans would be expected to become infected. If not treated with antibiotics, some 100,000 of those would likely perish.

### **What are the symptoms of anthrax in livestock?**

Sudden death in animals that appeared normal a few hours earlier is common. In cattle and sheep, the course of illness from onset of symptoms to death may last about 1 to 2 hours. Clinical signs such as fever up to 107 degrees F, muscle tremors, respiratory distress and convulsions may go unnoticed. After death, there may be bloody discharges from body openings, rapid bloating, a lack of rigor mortis, and the presence of unclotted blood.

### **What are the symptoms of anthrax in humans?**

**Cutaneous** – Most anthrax infections in humans occur when the bacterium enters a cut or abrasion on the skin. Skin infection begins as a raised itchy bump that resembles an insect bite but within 1 - 2 days develops into a blister and then a painless ulcer with a black (dying) area in the center. Lymph glands in the adjacent area may swell. Without treatment, 20% of cutaneous anthrax infections may be fatal.

**Respiratory** – Initial symptoms may resemble a common cold. After several days the symptoms may progress to severe breathing problems and shock. Without treatment, respiratory anthrax infections are frequently fatal.

**Intestinal** – Intestinal anthrax infections in humans are unknown in North America. It can be caused by ingestion of contaminated food or drink. It is

characterized by an acute inflammation of the intestinal tract. Initial signs are nausea, loss of appetite, vomiting, fever, abdominal pain and diarrhea. Without treatment intestinal anthrax is fatal in 25% to 60% of cases.

Anthrax infections in humans are treatable with antibiotics.

### **How are anthrax outbreaks in livestock prevented?**

Annual vaccination of livestock in endemic anthrax areas is recommended. Anthrax is a reportable disease and all outbreaks must be reported to the Canadian Food Inspection Agency. Premises where an outbreak occurs are quarantined. Measures to control the disease include destroying infected animals. The federal government provides financial compensation to owners whose animals are ordered destroyed under the Health of Animals Act as part of an official program to control or eradicate diseases considered a threat to Canada's livestock population.