

# ANTHRAX



*South Dakota*  
Animal Industry Board

## **ANTHRAX:**

Anthrax is a zoonotic disease of mammals and humans that is caused by a spore-forming bacterium called *Bacillus anthracis*. Anthrax has a worldwide distribution. Ruminants such as **cattle, buffalo**, sheep, and goats **are the most susceptible**. Other farm animals such as horses and swine are more resistant, but can be affected.

## **TRANSMISSION:**

During their vegetative stage, cells of the anthrax agent multiply in the lymph nodes of susceptible animals. When cells of *B. anthracis* escape from the animal's body and are exposed to oxygen, they form spores. These spores are highly resistant to heat, cold, chemical disinfectants, and long dry periods. *B. anthracis* spores are reported to survive for years in the environment. Environmental persistence may involve a number of factors, including high levels of soil nitrogen and organic content, alkaline soil (a pH level higher than 6.0), and ambient temperatures higher than 60 degrees.

Animals are usually infected by ingesting soil-borne spores, such as in contaminated feed or water. Spores can be ingested directly from the soil through grazing or from forage contaminated with infected soil. When periods of drought cause livestock to graze much closer to the ground, animals may ingest spores in soil they accidentally eat along with forage. Biting flies and other insects may harbor vegetative Anthrax and have also been reported to be vehicles for mechanical transmission.

Anthrax is endemic to parts of the United States, including South Dakota, and outbreaks occur sporadically as environmental conditions allow.

## **SYMPTOMS OF ANTHRAX:**

The incubation period for Anthrax in animals is typically 3 to 7 days with a range of 1 to 14 days, or more.

In cattle and sheep, the **course of illness** may last about **1 to 2 hours**. Clinical signs such as fever up to 107 degrees, muscle tremors, respiratory distress, and convulsions often go unnoticed. After death, there may be **bloody discharges** from the natural openings of the body, rapid bloating, a lack of rigor mortis, and the presence of unclotted blood. This **failure of blood to clot** is due to a toxin released by *B. anthracis*.



Although Anthrax in horses and related animals is **uncommon**, clinical manifestations depend upon how the infection occurred. If due to ingestion of spores, septicemia, fever, colic, and enteritis are prominent. Anthrax due to insect bite introduction (mechanical transmission) is characterized by localized hot, painful, edematous, and subcutaneous swellings at the bite location that spread to the throat, lower neck, floor of the thorax, abdomen, prepuce, and mammary glands. These horses may have a high fever and dyspnea due to swelling of the throat, or colic due to intestinal involvement.

Swine, dogs, and cats usually show a characteristic swelling of the neck secondary to regional lymph node involvement, which causes difficult eating and drinking. An intestinal form of anthrax with severe enteritis sometimes occurs in these species. Many carnivores apparently have a natural resistance, and recovery is common.

#### **VACCINATION:**

**Annual vaccination** of livestock in endemic areas is **recommended** 2-4 weeks prior to the expected season onset. The vaccine is a non-encapsulated attenuated variant strain of *B. anthracis*. Immunity develops 7-10 days after vaccination. The Sterne anthrax vaccine produced in the United States is licensed for use in livestock (cattle, sheep, horses, goats, and swine) only.

#### **TREATMENT:**

*B. anthracis* is highly susceptible to a number of antibiotics. Penicillin and oxytetracycline have been reported to be good therapeutic agents. Because the vaccine must germinate and grow in the vaccinated animal's body to provide protection, antibiotics should not be administered to healthy animals either at the time of, or shortly after, the administration of the anthrax vaccine. Follow label directions on the vaccine insert.

**When anthrax** is suspected or **confirmed**, use of antibiotics **simultaneous** to administering vaccine may be prescribed. Consult your veterinarian **IMMEDIATELY** when acute deaths occur.

#### **IF YOU SUSPECT ANTHRAX IN YOUR HERD:**

Sudden death of one or several animals during mid to late summer can be an indication of Anthrax. **DO NOT move** suspicious carcasses; doing so could spread the disease further and may also put you at risk of exposure to the disease as well.

**Contact your private herd veterinarian** who will collect the appropriate diagnostic samples and either confirm or rule-out Anthrax as the cause of death. If a presumptive diagnosis of Anthrax is made, a vaccination and treatment regimen may be initiated.

#### **IF ANTHRAX IS CONFIRMED:**

Your veterinarian will report the confirmed Anthrax case to the State Veterinarian, who will issue a quarantine. **No movement** of animals onto or off of the affected premises is permitted during the quarantine period. The quarantine will be released by the Animal Industry Board 30 days after the last affected carcass is properly disposed of.

All affected **carcasses must be burned and buried**. All **equipment, vehicles, and working facilities must be cleaned thoroughly** in preparation for disinfectant. A **10% bleach solution** is a recommended sanitizing agent for equipment and materials.

#### **CAN HUMANS GET ANTHRAX?**

Anthrax is communicable to humans. It is important to recognize that recent terrorist events involving Anthrax are the result of a manufactured and micronized culture of spores. Respiratory Anthrax is unusual in man. The large spores involved in livestock anthrax cases do present some risk to people handling animals and carcasses in infected herds. The “skin form” of Anthrax may be acquired by people handling these animals if proper precautions are not observed. Wear **PROTECTIVE CLOTHING**: gloves, boots, long sleeves. Discard or thoroughly wash clothing. **Contact your primary health care provider** for medical advice concerning Anthrax. You may also contact the South Dakota Department of Health at 605-773-3361 or 1-800-738-2301(in state) or visit their website at: <http://www.state.sd.us/doh/>

#### **CONTACT INFORMATION**

##### **South Dakota Animal Industry Board**

**411 South Fort Street  
Pierre, SD 57501**

**Phone: 605-773-3321**

**Fax: 605-773-5459**

**Email: [AIBmail@state.sd.us](mailto:AIBmail@state.sd.us)**

**Website: [www.aib.sd.gov](http://www.aib.sd.gov)**

Revised December 2009