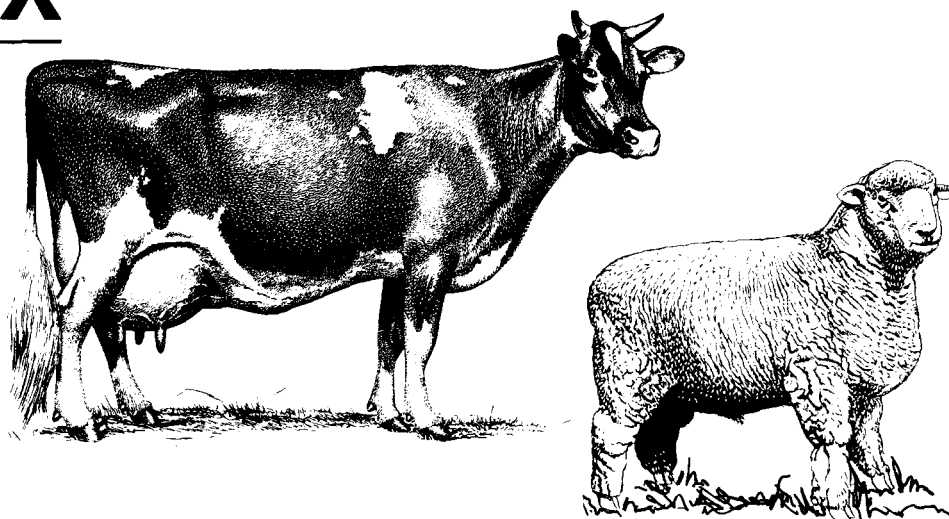


# ANTHRAX

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Anthrax occurs worldwide and is associated with sudden death of cattle and sheep.

The anthrax organism (*Bacillus anthracis*) has the ability to form spores and become resistant to adverse conditions. Anthrax organisms in the animal or their secretions may be destroyed by pasteurization or ordinary disinfectants. However, if the animal carcass is opened and the organisms are exposed to air they will form spores. Sporulated anthrax organisms are highly resistant to heat, cold, chemical disinfectants and drying. The anthrax spore may live for more than 10 years in the soil of a contaminated pasture or yard.

Herbivores - particularly cattle and sheep - are susceptible to anthrax. Horses, swine, deer and humans are less susceptible than cattle or sheep. Wild ruminants such as deer may also become infected. Dogs, cats and birds have been infected experimentally.

## Sources of Infection

4.3  
19  
8  
561  
187  
Outbreaks usually occur when livestock are grazing on neutral or slightly alkaline soil. Infection in cattle, sheep or horses usually is the result of grazing on infected pasture land. The organisms usually enter through the mouth, and less often via nose or skin injury. Following penetration, the organisms spread rapidly throughout the entire body.

Dead animals that are opened and not burned or buried provide an ideal source of the organism. It is imperative that a diseased carcass be cremated or buried deep and covered with quicklime before covering with soil.

Anthrax spores may also spread by flooding pastures with contaminated water or dumping infected carcasses in streams or ponds. Low lying ground or marshy areas are readily contaminated by flooding, and resultant stagnant water holes may serve as a source of infection. Hay that is infested with spores may account for out-breaks of acute anthrax during the winter months. However, anthrax is predominantly a warm weather disease and is seldom diagnosed in North Dakota during the winter months.

Once the soil has become infected with the anthrax organism, it is best to use such areas to raise cultivated crops. The anthrax spores are known to survive in the soil 10 years or longer.

Anthrax may also be spread through wounds caused by blood sucking insects, dehorning, or castration. Outbreaks have occurred because of contaminated feed, particularly through bone meal, meat scraps, and other animal protein products. Present regulations pertaining to manufacture and importation of such animal products practically eliminate these as a source of infection.



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Humans may become infected by handling contaminated hides or wool, or by examining infected carcasses.

## Symptoms

Symptoms associated with anthrax depend to a certain degree on the species involved and the route of infection. When the anthrax organism enters the animal's body by mouth or nostrils, the symptoms occur soon after infection, in the acute form, followed rapidly by death. When infection takes place through the skin because of injury or insect bites, it appears localized at the site of injury in the first stage.

The affected area is initially hot and swollen and becomes cold and insensitive. Later, the infection tends to be generalized.

Anthrax usually is a fatal disease with no symptoms observed. Upon or near death, blood oozes from the body openings. This blood is heavily laden with anthrax organisms. There is a marked bloating and rapid decomposition of the carcass.

If the infection is less acute there may be a sudden staggering, difficult breathing, trembling, collapse, and death. Edema and swelling may be seen over the body, particularly at the brisket. Illness is observed for one or two days but it may last five days; symptoms are preceded by fever, with a period of excitement in which the animal may charge anyone nearby. This is followed by depression in cattle or sheep.

Sometimes the anthrax organism localizes itself in the throat area. The tongue, throat and neck are extremely swollen and a frothy blood-tinged discharge comes from the mouth. Though this is the typical form of anthrax observed in swine, it may occur in cattle and sheep.

## Diagnosis of Anthrax

Not all cases of "sudden death" are anthrax, but if anthrax is suspected, confirmatory laboratory examination is needed.

Usually all it takes is examination of blood, collected as carefully and aseptically as possible. Any tissues taken from an anthrax suspect are best collected by a veterinarian and shipped to the diagnostic laboratory in a sealed, sturdy, iced container, and conspicuously labeled: SUSPECTED ANTHRAX.

## Treatment and Control

Anthrax is highly fatal and it is difficult to treat affected animals. Antibiotics (e.g.: penicillin, oxytetracycline, erythromycin, etc.) and/or sulfonamides may be administered to affected animals. Response to treatment may vary; best results are obtained when drugs are administered early during an outbreak.

An effective vaccine is available (nonencapsulated, Sterne strain). It is relatively safe and provides effective protection on all species of livestock.

## Regulation #19

The following is part of LAWS AND REGULATIONS pertaining to Livestock Sanitary Control (1977), State of North Dakota:

### REGULATION PERTAINING TO THE CONTROL OF ANTHRAX

**Section 1.** Anthrax being a serious infectious disease of livestock, and which is disseminated by the improper disposition of excrement and blood from the animals affected with anthrax or from carcasses of animals dead from this disease, the following regulation is enacted by the North Dakota Livestock Sanitary Board to control the spread of this disease.

**Section 2.** Whenever an animal or animals have been adjudged infected with or have died from anthrax, as determined by an agent of the North Dakota Livestock Sanitary Board either by clinical, post mortem or laboratory examination, it is necessary that this regulation be strictly adhered to.

**Section 3.** All sick animals must be segregated from the healthy animals and all excrement and blood therefrom must be destroyed by burning.

**Section 4.** All livestock on the infected farm shall be vaccinated with a vaccine approved by the Livestock Sanitary Board. All vaccinated animals must be maintained in quarantine for thirty days after the death of the last animal or for thirty days after vaccination.

**Section 5.** Livestock owners should be warned not to skin animals that have died from anthrax, as this disease is transmissible to human beings as well as domestic animals. Further, it is unlawful to sell hides removed from animals that have died from anthrax.

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