

# Anthrax: Conditions, Symptoms, and Advice for Landowners

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For many people, the word “anthrax” brings to mind a biological weapon. However, the disease occurs naturally in many parts of the world where soil types and weather are favorable to it. Anthrax is caused the bacterium *Bacillus anthracis*. For individuals living in areas that harbor anthrax, basic knowledge of the conditions, symptoms, and management of this disease is essential. Livestock producers, hunters, and rural residents in other areas can benefit from this knowledge as well.

Many common species are susceptible to anthrax—these include sheep, goats, horses, cattle, swine, domestic or exotic deer, and humans. Cats and dogs are also susceptible, but these cases are rare. Wild deer are usually the hardest hit, because their movement is unconfined and allows the infection to spread rapidly.

## Conditions for anthrax outbreaks

*Bacillus anthracis*, like other bacteria, produces spores as a way to survive unfavorable conditions. These spores, which can lie dormant in the soil for many years, are largely responsible for the disease. Anthrax spores are particularly common in alkaline soils—they concentrate in low-lying areas or are brought to the surface by rainfall. Unlike weaponized anthrax, spores are not typically airborne in sufficient concentrations to cause infection.

Anthrax outbreaks are spurred by mild, wet winters and springs followed by dry spells and intense

summertime drought. Under these conditions, spores become concentrated on the soil surface and on vegetation, where foraging animals can become exposed to the disease.

## Anthrax in Texas

Anthrax typically occurs in an area of southwest Texas known as the “Anthrax Triangle.” This area, bordered by Uvalde, Ozona and Eagle Pass, has weather and soil conditions that make it anthrax-prone for susceptible species. The triangle includes portions of Crockett, Edwards, Kinney, Maverick, Sutton, Uvalde, and Val Verde Counties. Although anthrax can occur anywhere, and has been noted across the state, these are the usual points of natural infection (see map, pg. 2).

Most anthrax-caused deaths occur during warm weather, particularly in July and August. The spores



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become dormant again once the weather cools, although cases have been diagnosed in the winter months in the triangle area. Anthrax outbreaks in Texas are especially common in “drought-breaking” years.

## Signs and symptoms of anthrax

Symptoms typically appear 3 to 7 days after exposure to anthrax spores. Once symptoms appear, most livestock will die within 48 hours and multiple deaths in a very short time span are common. Animals may appear to have dropped dead in their tracks.

Common symptoms include:

- Fever
- Staggering walk
- Depression
- Labored breathing
- Seizures
- Blood oozing from mouth, nose, anus

Carcasses are usually found with dark-colored blood oozing from the mouth, nose, and anus. These are key signs for pasture diagnosis. Sudden death without any symptoms, during warm months, may also indicate anthrax infections. If you encounter a carcass that matches this description, call for veterinary assistance.

For animals in the captive cervid or other exotic hoof-stock industries, behavioral symptoms may be

noticeable before death occurs. Contact your veterinary professional help in diagnosing on-the-hoof cases. In certain situations, it may be possible to quarantine if not save infected animals.

## Carcass disposal

The best way to dispose of infected carcasses is incineration. This keeps other animals from being exposed to them. Wood, diesel, and gasoline are approved by the Texas Commission on Environmental Quality (TCEQ) for incineration. These approved accelerants will supply more than enough heat to destroy the bacteria. Do not use heavy oils, tires, etc., due to pollution concerns.

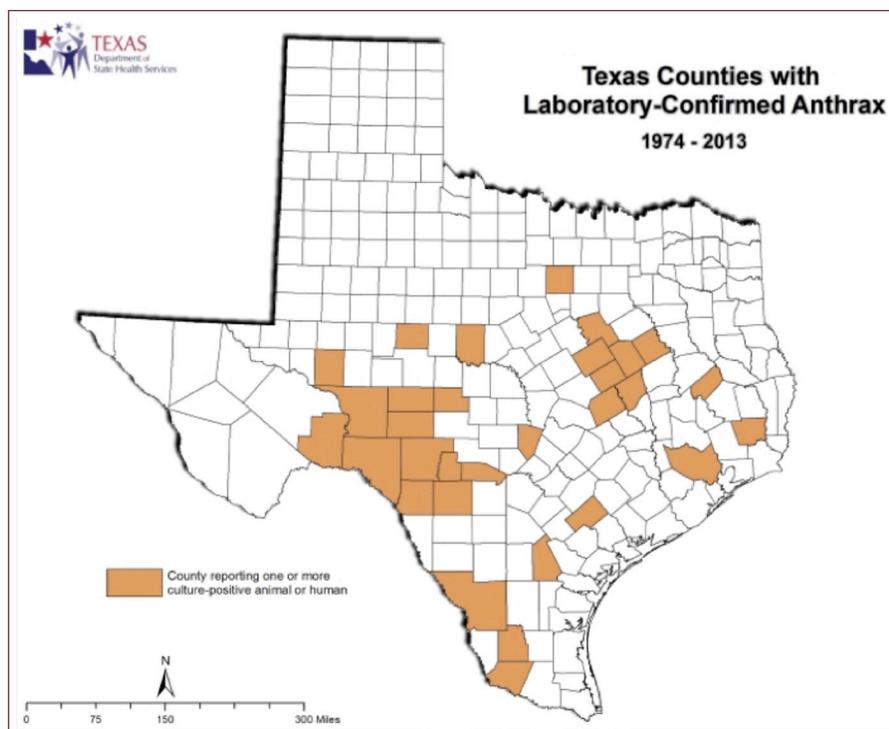
If burning is precluded by weather conditions or carcass location, bury the dead animal(s) deep in the pasture where they died. Regardless of method, use protective equipment and take safety precautions when disposing of infected animals. It is possible to be infected through aerosolized spores and infected blood. These infections are typically rapid and very difficult to treat.

## What to do if you suspect an anthrax outbreak

Get help—call a licensed veterinarian or local Texas Animal Health Commission (TAHC) personnel. For wild animals, Texas Parks and Wildlife Department and TAHC staff will work together to determine

if the case is actually anthrax and help manage it appropriately. Diagnosis will be difficult if the carcass is deteriorated or has been scavenged, so it is important to collect samples for diagnosis promptly. The Texas Veterinary Medical Association can put you in touch with local veterinarians. Contact information for this and other agencies is included at the end of this document.

Anthrax is a USDA-reportable disease—it must be reported to TAHC. A positive case will trigger quarantine and require livestock vaccination. Regardless of how the case is handled on your property, failure to report a suspected anthrax case to TAHC is a crime. Veterinarians will send tissue



samples from suspected cases to the Texas Veterinary Medical Diagnostic Laboratory (TVMDL) for confirmation. Future cases may be diagnosed in the pasture from observable symptoms.

## Best management practices for livestock and captive cervids

If you live in the Texas region where anthrax is common, you probably already vaccinate your livestock. If not, consider making anthrax vaccination a part of your normal schedule. There is no approved vaccine for deer.

If you see wild or exotic deer dying more than 10 animals at a time, and carcasses show bleeding that is characteristic of anthrax, move livestock away from carcasses immediately. If you have livestock death that appears to be from anthrax, move remaining animals to a safe pasture as well.

If infection occurs in a confinement scenario (e.g., barn, pen, paddock), remove all bedding, manure, and other materials and burn them. Ask your local veterinarian or TAHC personnel how best to sanitize working facilities. For trailers, panels, man-made floors, or other equipment, use peroxides, ammonia-based disinfectants, or chlorine dioxide.

If you bring animals into your facility from elsewhere (e.g., horses for trail rides or seasonal workers), make sure the incoming animals are vaccinated.

## Safety and personal protection

Use extreme caution when decontaminating infected premises or when handling live animals or carcasses suspected of infection. Wear long sleeves, pants, rubber gloves, and a facemask if possible. Airborne infections are rare in the pasture. However, you can rupture a bloated animal when moving it, which can release high concentrations of anthrax spores. Avoid unprotected breathing around carcasses. Inhalation anthrax is difficult to treat and often fatal.

Most human cases of anthrax are caused by handling carcasses. However, ranchers, workers in the sheep- and goat-shearing industry, and other agricultural workers have a higher risk of the disease in their day-to-day work. Individuals in the captive cervid industry should take precautions handling and transporting animals if anthrax is suspected.



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## Are hunters at risk?

Most hunting occurs during the cooler months, so hunters are generally not at risk. As discussed above, most anthrax deaths occur during warm months. Normal personal protection, such as rubber gloves and covering open wounds while processing carcasses, will prevent contact with anthrax. However, if you suspect an animal had any disease when harvested, do not consume any part of it.

If you hunt exotic species during warm months, particularly in an anthrax-prone region, be very selective about taking sick-looking deer. Remember that wild pigs are also susceptible to the disease but do not exhibit symptoms as strongly as deer and other livestock. Reporting animals that are acting abnormally can be the key to early detection of outbreaks.

If you find animals that may have died from anthrax, do not attempt to salvage antlers, horns, heads, or any other body parts. Wash your hands thoroughly to remove any lingering spores. Contact a physician if you feel ill or notice any strange blisters or sores where you may have come into contact with infected carcasses.

## Resources

Texas Animal Health Commission

[www.tahc.state.tx.us](http://www.tahc.state.tx.us)

Texas Parks and Wildlife Department

[www.tpwd.texas.gov](http://www.tpwd.texas.gov)

Texas A&M AgriLife Extension Service

[agrilifeextension.tamu.edu](http://agrilifeextension.tamu.edu)

Texas Veterinary Medical Association

<https://tvma.azurewebsites.net>

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