

Anthrax

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Cattle Health Coordinator, Animal Biosecurity and Welfare, NSW DPI

What is anthrax?

Anthrax is a serious, usually fatal disease caused by the bacterium *Bacillus anthracis*. It occurs world-wide and can infect a wide range of domestic and wild animal species as well as humans.

In grazing livestock anthrax usually presents as the sudden death of one, or a group of animals in a mob. Affected stock often show few or no signs of ill health before they die. In some situations the disease may begin with the sporadic deaths of single animals over a few days, building to dramatic losses in a very short time.

Anthrax can kill stock of any age or class with no warning. All cases of sudden unexplained death in livestock should be reported to a Local Land Services (LLS) veterinarian so that anthrax can be ruled out.

Anthrax is treated very seriously in Australia because of its risk to human and animal health, export markets and farm productivity. It is a notifiable disease in NSW.

Occurrence of anthrax in NSW

Anthrax was first recognised in Australia in 1847 in the County of Cumberland ('Cumberland disease') and caused significant losses in parts of New South Wales in the 1800s.

Cases of anthrax tend to occur in an area which runs through the centre of New South Wales and into Victoria. In NSW the area lies approximately between Bourke and Moree in the north to Albury and Deniliquin in the south. The incidence of anthrax in NSW is very low, with an average of five properties affected each year over the past decade.

Anthrax survives for long periods in the environment by forming tough spores which lie dormant in the soil.

Its re-appearance is unpredictable. It can recur more than 50 years after the last known case in a district. An example of this is the serious incident which occurred in 2007 in the NSW Hunter Valley where anthrax had not been seen for over 60 years. It is essential that all stock owners in New South Wales remain aware of the disease, and report all suspicious livestock deaths.

Properties which have had anthrax cases in the past are strongly encouraged to vaccinate all stock annually to prevent anthrax reoccurring.

Figure 1 - Anthrax in NSW – for the last 50 years almost all cases of anthrax in NSW have occurred within the highlighted region.



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Species affected

Most cases of anthrax diagnosed in NSW involve sheep or cattle, but there have been occasional historical reports of pigs affected. Goats and horses have rarely been affected. Carnivores such as dogs and cats are highly resistant to anthrax.

Humans can be infected, with very serious consequences including death. The most likely way that people can become infected with anthrax is by handling the carcasses of livestock which have died of anthrax.

There have been three cases of human anthrax infections in NSW since 1982. For more information see the [NSW Health Anthrax Factsheet](#).

Anthrax is a notifiable disease

Anthrax is a prohibited matter and a notifiable disease under the *Biosecurity Act 2015* (the Act).

If you think that anthrax may be affecting your stock you have a legal responsibility to immediately notify an authorised officer under the Act. Contact your [Local Land Services](#) (LLS) office or call the Emergency Animal Disease Hotline on 1800 675 888.

For more information on notifiable diseases of livestock in NSW see [Primefact 1335](#).

General biosecurity duty

A key objective of the Act is to promote biosecurity as a shared responsibility between government, industry and communities. Under the Act, any person (e.g. stock owner or manager, agent, veterinarian, etc) who deals with potential anthrax carriers such as grazing livestock, or other associated carriers (e.g. soil, equipment) and who knows or ought to know of the biosecurity risks associated with anthrax has a **general biosecurity duty** to take measures to prevent, eliminate or minimise the risk as far as is reasonably practicable.

Potential ways to discharge your general biosecurity duty will include:

- actions to minimise stock becoming infected e.g. vaccination of livestock for at least three years after anthrax is diagnosed on a property
- regularly monitoring of animals for signs of disease, particularly during periods of heightened risk
- immediate notification of suspected disease
- isolation of a potentially infected animal, carrier or property
- disinfection of potentially infected items
- making and maintaining records to assist in disease tracing
- appropriate disposal of potentially infected things e.g. of infected carcasses.

Development of the disease

Grazing animals become infected by eating the spores of anthrax while feeding. The spores germinate into the active form of the bacterium and begin to multiply rapidly inside the animal.

Within a few days the animal's immune system is overwhelmed and masses of bacteria and their toxins are released into the bloodstream causing sudden death.

Carcasses of animals that have died from anthrax are full of infectious bacteria. A feature of anthrax infection is failure of the blood to clot, so after death blood and body fluids ooze from body orifices and sites of predation on an infected carcass. These fluids contain many anthrax bacteria which form resistant spores as soon as they are exposed to the environment outside the carcass.

Spores are the 'resting' form of the anthrax bacterium. They have a tough shell which makes them highly resistant to environmental factors such as heat and sunlight, dryness and other factors which would kill the bacterium in its 'active' form. Spores can survive in the soil for many years, waiting for conditions to be suitable for them to gain entry to an animal and cause disease.

When to suspect anthrax

Be suspicious of anthrax if animals die suddenly and one or more of the following occur:

- Blood oozes from one or more body orifices and sites of predation (e.g. eyes, anus, udder)
- Blood from the carcass does not clot
- There is a history of anthrax at any time on the property
- The property is located within the central part of NSW where most cases of anthrax occur.

Signs of anthrax in animals

Grazing animals are usually found dead, often with blood seeping from the carcass. Closely observed animals like dairy cows may be noted to be depressed and show signs of fever followed by a drop in milk production prior to death.

Horses usually die suddenly and show swelling of the body and legs, but may linger for a few days with colic and body swelling before dying.

Pigs may develop localised infection in the throat which leads to obvious illness and fever lasting two to seven days before they die.

Dogs and cats are highly resistant but should be monitored carefully if they have had access to infected carcasses.

Figure 2 – A sheep that has died from anthrax.



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Figure 3 – A cow that has died from anthrax. Note blood dripping from eyes, nostrils and mouth



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Signs of anthrax in humans

The greatest risk of contracting anthrax in Australia for people is from handling the carcasses of animals which have died from anthrax. Anthrax infection is very serious in people and anyone who thinks they may have been exposed to anthrax infected livestock or materials should seek medical advice immediately. See the [NSW Health factsheet](#).

When anthrax is diagnosed in animals in NSW, the appropriate public health units are notified and they provide advice to any people who have been in contact with livestock on the affected property.

Anthrax vaccine is used to protect livestock from infection in NSW. Although the strain of anthrax used in the vaccine is not known to cause infection in people, extreme care should be taken when using the vaccine. Accidental self injection with anthrax vaccine can cause an inflammatory reaction and medical advice should be sought immediately.

Figure 4 – Anthrax infection in humans – skin lesion



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Diagnosis of anthrax

The carcass of an animal which has died of anthrax is an extreme infection risk to people and other animals. If you suspect an animal has died of anthrax report it immediately and **do not handle, open or skin the carcass**. Do not move the carcass. Keep all other animals away from it.

A veterinarian or an authorised officer under the Act will investigate suspect cases of anthrax. If suitable samples can be collected they can be tested on-farm using the Anthrax ICT test kit. This test gives a result in about fifteen minutes. If samples for the ICT test are not available, smears of blood and a piece of the animal's ear will be collected for examination at the laboratory.

Do not perform a post mortem examination.

Figure 5 – Positive Anthrax ICT test on-farm



North West Local Land Services

What happens if anthrax is confirmed?

Anthrax is listed as prohibited matter under the Act because of the potential danger to people, other livestock and the possible impact on Australia's export markets. Actions taken include movement restriction on the affected property, vaccination of livestock remaining on the property and directions on carcass disposal. For more information see [Primefact Anthrax response to infection](#).

Risk factors for anthrax

There are no firm guidelines for what constitutes an anthrax risk period but the following general principles apply:

1. Infection of ruminants is usually via the oral route (by mouth), so anything that increases the chance of soil containing anthrax spores being ingested is a factor. For example:
 - deep cultivation of paddocks
 - earthworks in paddocks
 - grazing of stubbles or very short pastures
 - low ground cover
 - heavy rain causing movement of soil or exposure of old anthrax grave sites
 - contact with infected carcasses.
2. Moderate rainfall following prolonged dry periods.
3. Alkaline soils which favour spore survival.
4. History of anthrax on the property.

Prevention of anthrax

Annual vaccination of cattle and sheep on properties with a history of anthrax is strongly recommended. Research has shown that anthrax spores survive in the top layers of soil for about three years, so this is the highest risk period. On properties where anthrax is diagnosed, vaccination of livestock for the next three years is a way of owners/managers discharging their general biosecurity duty.

However, because the appearance of anthrax is unpredictable, vaccination should be considered on all properties where anthrax has occurred, even if it was a long time ago. Vaccination provides effective protection against anthrax when the manufacturer's directions are followed.

Anthrax most frequently occurs during hot and dry conditions.

These conditions often occur at particularly busy times of the year such as harvest. These are also times where it is difficult to incinerate carcasses due to fire risk. If carcasses can't be incinerated, owners are directed to prevent predation of the carcass/s. This imposes additional material and time costs. As vaccination can be planned, it is an effective way of managing workloads.

Anthrax vaccine is available in NSW through Virbac Australia. Stock owners must be authorised to order and use the vaccine, but this is a simple process. An [application form](#) (look within Animal Biosecurity forms) to order and administer anthrax vaccine must be completed and authorised by your LLS veterinarian. An order can then be placed through your local rural supplier or private veterinarian. See the Primefact Anthrax Vaccination in NSW.

More information

For more information on anthrax:

- contact your [Local Land Services](#) veterinarian
- see: <http://www.dpi.nsw.gov.au/biosecurity/animal/humans/anthrax>, or
- see the [Ausvetplan Anthrax manual](#) for detailed technical information on anthrax and Australia's national policies for anthrax management.

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For updates go to www.dpi.nsw.gov.au/factsheets

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