

Anthrax – Response to infection of livestock

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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 an outbreak situation 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 unexpected 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.

For more information see the [Anthrax Primefact](#)

Anthrax is a notifiable disease

Anthrax is prohibited matter a notifiable 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 402](#).

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, minimise or eliminate 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
- regular monitoring of animals for signs of disease, particularly during periods of heightened risk
- immediate notification of suspected disease
- isolation of a potentially infected animals, carriers or premises
- 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.

What happens if anthrax is confirmed?

Immediate steps are taken when anthrax is confirmed because of the potential danger to people, other livestock and the possible impact on Australia's export markets.

Biosecurity directions

Infected properties are managed by the authorised officer giving a biosecurity direction. Requirements of the biosecurity direction may include movement restrictions and requirements to vaccinate at risk stock, appropriate disposal of carcasses and disinfection of contaminated items.

Movement restrictions

Susceptible animals cannot move off the property until either 20 days after the last death or 42 days after vaccination, whichever is the later.

An authorised officer may issue a permit to move vaccinated animals (except to slaughter) if it is more than 20 days since the last death.

Tracing

Tracing is immediately conducted to confirm all animal movements off the property in the 20 days preceding the first livestock death. This allows all potentially exposed animals to be found and assessed. Stock product such as wool are also traced.

NSW Health are informed and they make contact with the owners of the infected property to advise on human health matters.

Preventing further cases of anthrax

If more livestock die from anthrax, further contamination of the land will occur and it may extend the duration of movement restrictions. An authorised officer will discuss options for treatment and vaccination with the owner/manager to work out the best approach to prevent further deaths.

Vaccination

Immediate vaccination of remaining livestock is generally the best option. Deaths due to anthrax normally stop within five to seven days of vaccination.

Monitoring new deaths

As it is critical to know when the last death from anthrax occurs, owners will be directed to monitor and report deaths in stock

Antibiotic treatment followed by vaccination

To prevent further deaths from anthrax all at risk animals must be treated with antibiotics while exposure to bacterial spores continues.

Unfortunately it is impossible to keep treating with antibiotics for a prolonged period and antibiotics interfere with vaccination.

At some stage, antibiotic treatment has to stop and allow the antibiotic to be removed from the body before vaccination will be effective. For this reason vaccination of livestock is generally the preferred approach.

Personal protective equipment (PPE)

People handling carcasses, tissues or body fluids of animals known or suspected of being, infected with anthrax should:

- avoid creating aerosols or dust
- cover cuts or abrasions with a dressing
- not eat, drink or smoke while working
- use PPE (gloves and clothing)
- burn items contaminated with body fluids after use
- shower in warm soapy water when work is completed.

Additional PPE could include safety glasses (protects from splashes) and respiratory protection (protects where possibility of inhalation exists). Note despite extensive exposure to anthrax

carcasses, cases amongst wildlife workers are exceedingly rare (WHO 2008).

Carcase disposal

Ruminant (cattle and sheep) carcasses are the primary source of contamination of the environment as they produce massive amounts of bacteria. This is a source of new infections.

Figure 1 – Discharges from anthrax carcasses are the primary source of environmental contamination



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Figure 2 – Incomplete burn of carcase, anthrax contamination still present.



A very small number of anthrax spores can infect a cow or sheep. Once infected, the

anthrax bacteria multiply many thousand-fold until the animal dies. Once it dies there are two possible outcomes for the anthrax bacteria in the body.

1. If the carcass is unopened and undisturbed the anthrax bacteria do not form spores and are destroyed by the natural decay processes or by burning of the carcass. This minimises further environmental contamination with anthrax spores.
2. If the carcass is opened or disturbed by people or predators etc., exposure to air stimulates the anthrax bacteria to produce resistant spores. Spores survive in the top fifteen centimetres of soil for around three years. Spores in the deeper layers survive for many decades.

Deep burial of anthrax carcasses is not allowed as it creates a potential reservoir of future infections.

The required method for disposal of anthrax infected carcasses is by burning to ash.

Figure 3 – Complete burn, no carcass material remaining.



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Burning carcasses in situ is ideal as further environmental contamination is minimised.

If burning is delayed, steps must be taken to prevent access to carcasses. This may include use of tarpaulins or temporary fencing.

Moving carcasses

Carcasses may have to be moved, for example where stock die in a dam or other unsuitable location. Use earthmoving equipment that also removes the surrounding contaminated soil with the carcass and build a burial pyre. This may also make the most efficient use of the available fuel for burning.

Figure 9 – Preparing a pyre to destroy anthrax carcasses



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Decontamination

The area around an anthrax carcass will be contaminated with spores formed from the bloody discharges. Minimise or avoid people and vehicles walking or driving through the area around the carcass as the spores can be spread around on shoes and tyres.

Clothing, machinery and equipment that have been used on the site may also be contaminated. Clothing contaminated with body fluids should be burnt. Equipment and machinery should be cleaned prior to

disinfection as dirt may prevent the disinfectant working.

An authorised officer will advise you on what items need to be decontaminated and how this should be done. Options include:

- 3% peracetic acid for 30 minutes, or
- 10% caustic soda (sodium hydroxide) solution or
- 15% basic calcium hypochlorite applied at 10 L/m².

The [Ausvetplan Anthrax manual](#) contains detailed instructions for decontamination of people, places and equipment.

The chemicals used to destroy anthrax spores are potentially dangerous and should be used only in accordance with appropriate instructions and while wearing appropriate personnel protective equipment. Material safety data sheets must be available and consulted, prior to use.

Neighbour notifications

The risk to neighbouring properties is also assessed. Neighbours must be promptly notified and are encouraged to vaccinate their livestock if they are not already done.

Medical advice

Contact the Public Health Unit for advice on the risks to humans.

Seek immediate medical advice if any of the following occur:

- feel unwell following handling infected carcasses, or
- any exposure to body fluids of an infected animal without appropriate PPE, or
- exposure to vaccine or

- self-inoculation while animals are being vaccinated.

Steps to prevent new incidents

When anthrax occurs, the property owner/manager is required to vaccinate stock for three years to prevent stock from being infected with anthrax.

As a general recommendation, following detection of anthrax on a property, annual vaccination of cattle and sheep is strongly recommended for an additional 7 years after the initial 3 years where vaccination is mandatory.

Vaccinate all new animals born on or introduced to the property. Don't forget to vaccinate all introduced stock (including bulls and rams) as soon as they arrive.

Whenever vaccination ceases after an anthrax incident, owners of cattle and sheep should carefully monitor for anthrax and if suspected, notify Local Land Services.

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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