TERRESTRIAL ANIMAL HEALTH STANDARDS COMMISSION

SEPTEMBER 2010 REPORT

CHAPTER 8.1

# ANTHRAX

Article 8.1.1.

**General provisions**

This chapter is intended to manage the human and animal health risks associated with the presence of *Bacillus anthracis* in *commodities* and the environment.

There is no evidence that anthrax is transmitted by *animals* before the onset of clinical and pathological signs. Early detection of *outbreaks*, quarantine of affected premises, destruction of diseased *animals* and fomites, and implementation of appropriate sanitary procedures at *abattoirs* and dairy factories will ensure the safety of products of animal origin intended for human consumption.

For the purposes of the *Terrestrial Code*, the *incubation period* for anthrax shall be 20 days.

Anthrax should be notifiable in the whole country.

Standards for diagnostic tests and vaccines are described in the *Terrestrial Manual*.

When authorising import or transit of *commodities* covered in the chapter, with the exception of those listed in Article 8.1.2.,*Veterinary Authorities* should require the conditions prescribed in this chapter.

Article 8.1.2.

**Safe commodities**

When authorising import or transit of the following *commodities*, *Veterinary Authorities* should not require any anthrax related conditions: semen and *in vivo* derived cattle embryos collected and handled in accordance with Chapters 4.5., 4.6. and 4.7., as relevant.

Article 8.1.3.

**Recommendations for the importation of ruminants, equines and pigs**

*Veterinary Authorities* of *importing countries* should require the presentation of an *international veterinary certificate* attesting that the *animals*:

1. showed no clinical sign of anthrax on the day of shipment;

AND

2. were kept for the 20 days prior to shipment in an *establishment* where no *case* of anthrax was officially declared during that period; or

3. were vaccinated, not less than 20 days and not more than 6 months prior to shipment in accordance with the *Terrestrial Manual*.

Article 8.1.4.

**Recommendations for the importation of fresh meat and meat products destined for human consumption**

*Veterinary Authorities* of *importing countries* should require the presentation of an *international veterinary certificate* attesting that the products originate from *animals* which:

1. have shown no sign of anthrax during ante-mortem and post-mortem inspections; and

2. were not vaccinated against anthrax using live vaccine during the 21 days prior to *slaughter* or a longer period depending on the manufacturer's recommendations; and

3. come from *establishments* which are not placed under movement restriction on account of anthrax and in which there has been no *case* of anthrax during the 20 days prior to *slaughter*.

Article 8.1.5.

**Recommendations for the importation of hides, skins and hair (from ruminants, equines and pigs)**

*Veterinary Authorities* of *importing countries* should require the presentation of an *international veterinary certificate* attesting that the products ~~originate from *animals* which~~:

1. originate from *animals* which :

   a. have shown no sign of anthrax during ante-mortem and post-mortem inspections; and

   ~~2~~b. come from *establishments* which are not placed under movement restriction on account of anthrax;

OR

2. for hair, have been treated in accordance with the recommendations in Article 8.1.11.

Article 8.1.6.

**Recommendations for the importation of wool**

*Veterinary Authorities* of *importing countries* should require the presentation of an *international veterinary certificate* attesting that the product~~s~~:

1. originates from live animal; and

2. originates from ~~*establishments* where no *case* of anthrax has been reported since the previous shearing of all~~ *animals* which, at the time of shearing, were part of a *flock* that was not subject to restrictions imposed for the control of anthrax;

OR

~~2~~3. have been treated in accordance with the recommendations in Article 8.1.11.

Article 8.1.7.

**Recommendations for the importation of milk and milk products intended for human consumption**

*Veterinary Authorities* of *importing countries* should require the presentation of an *international veterinary certificate* attesting that:

1. the *milk* originates from *animals* showing no clinical signs of anthrax at the time of milking;

2. if the *milk* originates from *herds* or *flocks* that have had a *case* of anthrax within the previous 20 days, it has been chilled promptly and processed using a heat treatment at least equivalent to pasteurisation.

Article 8.1.8.

**Recommendations for the importation of bristles (from pigs)**

*Veterinary Authorities* of *importing countries* should require the presentation of an *international veterinary certificate* attesting that the products originate from *animals* which:

1. have shown no sign of anthrax during ante-mortem and post-mortem inspections; and

2. come from establishments which are not placed under movement restriction on account of anthrax control;

OR

3. have been processed to ensure the destruction of *B. anthracis* by:

   a) boiling for 60 minutes; and

   b) drying in hot air.

Article 8.1.9.

**Procedures for the inactivation of *B. anthracis* spores in skins and trophies from wild animals**

In situations in which skins and trophies from wild *animals* may be contaminated with *B. anthracis* spores, the following *disinfection* procedure is recommended:

1. fumigation with ethylene oxide 500 mg/L, at relative humidity 20 – 40%, at 55°C for 30 minutes; or

2. fumigation with formaldehyde 400 mg/m³ at relative humidity 30%, at >15°C for 4 hours; or

3. gamma irradiation with a dose of 40 kGy.

Article 8.1.10.

**Procedures for the inactivation of *B. anthracis* spores in bone-meal and meat-and-bone meal**

In situations where raw materials used to produce bone meal or *meat-and-bone meal* may be contaminated with *B. anthracis* spores, ~~T~~the following inactivation procedure should be used ~~to inactivate any *B. anthracis* spores~~

~~which may be present during the production of bone-meal or meat-and-bone meal from ruminants, equines and pigs~~:

1. the raw material should be reduced to a maximum particle size of 50 mm before heating; and

2. the raw material should be ~~heated under saturated steam conditions to a temperature of not less than 133°C for a minimum of 20 minutes at an absolute pressure of 3 bar. Other industrial process demonstrating equivalent efficacy is also acceptable.~~ subjected to moist heat at one of the following temperature and time regimes:

   a) 105 ºC for at least 8 minutes ; or

   b) 100ºC for at least 10 minutes ; or

   c) 95 ºC for at least 25 minutes or;

   d) 90ºC for at least 45 minutes or;

   e) an industrial process demonstrated to be of equivalent efficacy.

Article 8.1.11.

**Procedures for the inactivation of *B. anthracis* spores in wool and hair**

In situations in which wool or hair may be contaminated with *B. anthracis* spores, the following ~~five-step *disinfection*~~ procedures ~~is~~ are recommended:

1. gamma irradiation with a dose of 50 kGy; or

2. a five step washing procedure:

   a) immersion in 0.25 – 0.3% soda liquor for 10 minutes at 40.5°C;

   ~~2~~b) immersion in soap liquor for 10 minutes at 40.5°C;

   ~~3~~c) immersion in 2% formaldehyde solution for 10 minutes at 40.5°C;

   ~~4~~d) a second immersion in 2% formaldehyde solution for 10 minutes at 40.5°C;

   ~~5~~e) rinsing on cold water followed by drying in hot air.

Article 8.1.12.

**Procedures for the inactivation of *B. anthracis* spores in manure, dung and bedding**

In situations in which manure, dung or bedding may be contaminated with *B. anthraci*s spores, the following are recommended:

1. small volumes by incineration; or

2. chemothermal treatment by composting as follows:

   a) mix with one of the following at a rate of 1 – 1.5L/m³;

      i) 10% formaldehyde (approximately 30% formalin), or

ii) 4% gluteraldehyde (pH 8.0 – 8.5);

b) turn the material after 5 weeks;

c) leave for a further 5 weeks.

*[Note: spontaneous combustion of the composting pile is possible.]*

Article 8.1.13.

**Procedures for the inactivation of *B. anthracis* spores in liquid manure (slurry)**

In situations in which liquid manure (slurry) may be contaminated with *B. anthracis* spores, *disinfection* with formalin (35% aqueous solution of formaldehyde) with stirring for one hour daily is recommended:

1. for slurry up to 5% dry matter, 50 kg formalin per $m^3$ for 4 days;

2. for slurry >5% and <10% dry matter, 100 kg formalin per $m^3$ for 4 days.

Article 8.1.14.

**Procedures for the disinfection of surfaces in animal houses, buildings contaminated with *B. anthracis***

In situations in which surfaces in animal houses, stables, *vehicles*, etc. may be contaminated with *B. anthracis* spores, the following three-step approach is recommended:

1. a preliminary *disinfection* should be carried out using one of the following disinfectants at a rate of 1 – 1.5 L/$m^3$ for 2 hours;

   a) 10% formaldehyde (approximately 30% formalin); or

   b) 4% glutaraldehyde (pH 8.0 – 8.5);

2. all surfaces should be washed and scrubbed using ample hot water and, when cleaned and waste water is free from dirt particles, dried;

3. a final *disinfection* step should be carried out using one of the following disinfectants applied at a rate of 0.4 L/$m^3$ for 2 hours;

   a) 10% formaldehyde (approximately 30% formalin), repeated after one hour; or

   b) 4% glutaraldehyde (pH 8.0 – 8.5), repeated after one hour; or

   c) 3% hydrogen peroxide; or

   d) 1% peracetic acid, repeated after one hour.

*[Note: Formaldehyde and glutaraldehyde should not be used at temperatures below 10°C. Hydrogen peroxide and peracetic acid are not suitable in the presence of blood.]*

Article 8.1.15.

**Procedures for the fumigation of rooms contaminated with *B. anthracis***

Contaminated rooms which cannot be cleared before cleaning and *disinfection* can be fumigated to eliminate *B. anthracis* spores. The following procedure is recommended:

1. all windows, doors and vents to the outside should be sealed with heavy adhesive tape; and

2. for rooms up to 30 $m^3$, 4 L of water containing 400 ml of concentrated formalin (37% w/v formaldehyde) in an electric kettle (with a timing switch to turn it off) should be boiled away and the room left overnight. Room temperature should be >15°C.

*[Note: Formaldehyde fumigation is hazardous and proper respirators should be on hand for operator safety. The effectiveness of the fumigation process should be verified by exposing dried discs of filter paper which have been dipped in a suspension of spores of B. subtilis var globigii or B. cereus or Sterne vaccine strain of B. anthracis and placed in the room before fumigation is started. At the end of fumigation, the discs should be placed on nutrient agar plates containing 0.1% histidine and incubated overnight at 37°C. If fumigation has been effective, there will be no bacterial growth.]*