

TERRESTRIAL ANIMAL HEALTH STANDARDS
COMMISSION SEPTEMBER 2011 REPORT

USA Comments

General Request: Due to the extent and depth of our comments, we respectfully request that the OIE reconvene the ad hoc group on *Trichinella*, and include a subject matter expert from the United States, a Member country which has extensive expertise in swine production and with *Trichinella* control programs.

CHAPTER 8.13.

INFECTION WITH *TRICHINELLA* SPP.

Article 8.13.1.

General provisions

Trichinellosis is a widely distributed zoonosis caused by eating raw or undercooked meat from *Trichinella*-infected food animals or game. The adult parasite and the larval forms live in the small intestine and muscles (respectively) of many mammalian, avian and reptile host species. Within the genus *Trichinella*, twelve genotypes have been identified, eight of which have been designated as species. These genotypes may vary considerably between localities, districts, regions and countries.

Trichinellosis can be fatal in humans but is clinically inapparent in animals.

Preventing transmission to humans **currently** relies on the provision of *Trichinella*-free meat for human consumption. Prevention of *infection* in susceptible domestic animals used for human consumption **currently** relies on the prevention of exposure of those animals to the meat of *Trichinella*-infected animals, including via food waste, rodents and wildlife. This can be achieved by adopting appropriate biosecurity measures.

Rationale: Preventing transmission to humans will always rely on the provision of *Trichinella*-free meat to consumers and prevention of infection in susceptible domestic animals will always rely on prevention of their exposure. Including “currently” in the sentences implies that this is the case now but may not have been historically or may not be in the future.

Meat and meat products derived from wildlife should always be considered a potential source of *infection* for humans. *Trichinella* larvae found in meat and meat products of wildlife may be resistant to freezing (depending on the *Trichinella* genotype). Therefore untested, frozen game meat may pose a public health risk.

For the purposes of the *Terrestrial Code*, *Trichinella infection* is defined as an *infection* of suids or equids by parasites of the genus *Trichinella*.

This chapter deals with methods for on-farm prevention of *Trichinella infection* in domestic pigs (*Sus scrofa*) and for safe trade of suids and equids, and their products. This chapter complements the Codex Alimentarius Code of Hygienic Practice for Meat (CAC/RCP 58-2005).

Methods for the detection of *Trichinella infection* in pigs and other animal species include direct demonstration of the parasite's larvae in muscle samples and indirectly demonstrating their presence by detecting *Trichinella*-specific circulating antibodies.

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

Article 8.13.2.

Safe commodities

When authorising the import or transit of the following *commodities*, *Veterinary Authorities* should not require any *Trichinella* related conditions regardless of the status of the animal population of the *exporting country* or *zone*:

1. hides, skins, hair and bristles;
2. semen, embryos and oocytes;
3. milk and milk products of equids;
4. pig meat and meat products processed to ensure the inactivation of *Trichinella* larvae in accordance with recommendations in the [Codex working document CX/FH/11/43/6].

Article 8.13.3.

Measures to prevent infection in domestic pig herds

1. Pigs kept under controlled housing

Controlled housing systems should be managed in a manner to prevent exposure of pigs to *Trichinella*.

- a) Construction of buildings and environmental barriers
 - i) Buildings used to house pigs should be constructed to prevent entry of rodents and wildlife, e.g. openings, such as those for air ventilation or water pipes should be covered with wire or specific devices;
 - ii) areas surrounding buildings used to house pigs should be free from debris that could provide rodent harbourage;
 - iii) a vegetation-free perimeter consisting of concrete, gravel, or a similar material, or a perimeter of well-maintained residential vegetation (less than 10 cm) should be maintained around all buildings used to house pigs to facilitate monitoring rodent and wild or feral animal incursions.

Rationale: A well maintained perimeter such a low cut grass is also effective in managing the environment around a building housing pigs.

- b) Feed and feed storage
 - i) Feed whether purchased or produced on-farm should comply with the requirements in Chapter 6.3.;

- ii) feed should be stored and contained in closed silos or bins, which are constructed to prevent entry of rodents and wildlife.
- c) Rodent control
 - i) A programme for the control of rodents should be implemented, documented and audited, and corrective actions applied as required.
- d) Disposal of dead animals
 - i) Dead animals should be removed from buildings used to house pigs immediately after detection and disposed of as soon as possible, in accordance with the provisions of Chapter 4.12.
- e) Introduction of pigs
 - i) Introduced pigs should originate from *Trichinella*-free herds; OR
 - ii) if obtained from herds of unknown *Trichinella* status, they should be ~~held in isolation until~~ serologically tested to demonstrate the absence of antibodies to *Trichinella*. Adult pigs should be tested serologically ~~on arrival and weaner pigs should be tested~~ five weeks after arrival.

Rationale: The basis for these recommendations is unclear. Since *Trichinella* are not horizontally transmitted in live pigs, there is no need to keep pigs in isolation as long as there is proper identification to enable removal from the herd if the pig is found to be serologically positive. In addition, the timing of the serological testing for sows is not clear. If adult pigs become infected within a week before arrival, they would not have time to seroconvert and providing a 5 week waiting period to testing will ensure seroconversion. In addition, there is no need to test weaners that are less than 5 weeks of age and coming directly from nursing their dam. These pigs are not at risk for *Trichinella* since they have been on a liquid, milk diet and would not be eating meat that would put them at risk.

If any of these pigs test positive, the entire introduced cohort should remain ~~in isolation~~ should remain separate from any certified pigs until slaughtered. The meat should be subjected to testing by digestion to collect information on the genotype of the *Trichinella* present and to support a decision on the disposition of the meat. Test results should be communicated to the farm of origin.

Rationale: Since swine do not horizontally transmit *Trichinella*, keeping the pigs separate from any certified pigs until slaughter is a reasonable and sufficient precautionary measure.

~~2. Pigs exposed to outdoor environments~~

~~Pigs exposed to outdoor environments, or under conditions that facilitate contact with wildlife may be at higher risk of *Trichinella* infection than pigs kept in controlled housing.~~

~~To minimise the risk of *Trichinella* infection, the recommendations in point 1. should be applied to the maximum extent possible.~~

Rationale: The title of this article is “Measures to prevent infection in domestic pig herds”. The only recommendation for pigs exposed to outdoor environments should be to raise them indoors. There are no other recommendations for minimizing risk of infection for pigs raised in outdoor environments. For countries where the production system is primarily outdoors, it would be helpful to offer a completely separate Article with recommendations that minimize risk of infection for pigs raised under such conditions.

Article 8.13.4.

Determination of the status of *Trichinella* infection in domestic pigs for a country, zone compartment or herd

Rationale: *Trichinella* negative pigs managed under conditions of effective biosecurity and appropriate surveillance will remain *trichinella* free during their lifetime whether they stay on one site in one herd or are transported to multiple sites according to their age and phase of production. The sites need not be restricted geographically to a particular zone nor do the pigs need to be restricted to a particular herd. This is the concept of compartmentalization. Managing and moving pigs within a compartment that is defined, has effective biosecurity to prevent infection and employs surveillance to verify its negative status will prevent *trichinella* infected meat without regard to zone or herd. As with other chapters, the option to segregate parts of a production group into a compartment should be made available. Where appropriate, the term compartment has been inserted in other Articles of this chapter.

The status of *Trichinella infection* in domestic pigs in a country, ~~zone~~, compartment or *herd* should be based on the following criteria:

1. *Trichinella infection* in all animals (domestic animals and wildlife) should be notifiable in the whole territory;
2. An *animal identification* and *traceability* system for domestic pigs should be implemented in accordance with the provisions of Chapters 4.1. and 4.2.;
3. appropriate provisions should be in place for tracing of meat from wild animals harvested for human consumption under commercial conditions;
4. the *Veterinary Authority* should have current knowledge of, and authority over, all domestic pigs in the country ~~or zone~~, or compartment;

General Comment: for *Trichinella*, the status of pigs outside of the compartment is of no relevance. Pigs in the biosecure compartment will have no contact with feral or wild pigs. Clarification needs to be made to provide for appropriate surveillance within the compartment to verify that the biosecurity procedures in place are effectively preventing any infection.

5. the *Veterinary Authority* should have current knowledge of the population and habitat of wild and feral pigs in the country or zone;
6. appropriate *surveillance*, capable of detecting the presence and genotype of *Trichinella infection* in domestic pigs, and the risk posed by wild and feral pigs, and other susceptible wildlife, should be in place.

Communication procedures on the occurrence of *Trichinella infection*, including information about genotypes of the cases should be established between the *Veterinary Authority* and the Public Health Authority.

Article 8.13.5.

Country ~~or zone~~, or compartment with a negligible risk of *Trichinella infection* in domestic pigs

A country ~~or zone~~, or compartment may be considered to be of negligible risk if the following conditions are met:

1. Article 8.13.4. has been complied with for at least 24 months;
2. the surveillance provisions in Article 8.13.11. have been complied with for a period of at least 24 months and the results demonstrate the absence of autochthonous *Trichinella* infection in domestic pigs;

Observation/comment regarding Point 2 of Article 8.13.5: Article 8.13.11 requires all sows and boars to be tested, all pigs raised outdoors to be tested, and all feral pigs and wildlife slaughtered for human consumption to be tested. This is not practical for countries producing large numbers of pigs. If a country would want to declare itself negligible risk for infection in a compartment of market pigs all managed in biosecure facilities, it should have the option to do so. Of no relevance is the status of pigs raised outside of the compartment, feral pigs or other wildlife since pigs in these biosecure facilities will have no contact with them. Point 2, therefore, needs to be clarified to provide for appropriate surveillance provisions within a compartment that verify the biosecurity procedures are effectively preventing infection separate from the all-encompassing surveillance provisions in Article 8.13.11 that include feral pigs and wildlife.

3. the risk for transmission of *Trichinella infection* from wildlife reservoir hosts to domestic pigs has been assessed and appropriate biosecurity measures have been instituted to protect the domestic pig population; for pigs raised under non-biosecure conditions, this should include the systematic monitoring of wildlife for *Trichinella infection* in accordance with Article 8.13.11.;

Rationale: The only pigs at risk of infection from wildlife are those raised outdoors or in non-biosecure conditions. Monitoring wildlife around pigs in biosecure facilities that do not have contact with wildlife is not needed and would be wasteful of resources. The United States recommends modifying Point 3, as indicated.

4. introduced live pigs should come from a country ~~or zone~~, or compartment with a negligible risk of *Trichinella infection* or from a *Trichinella*-free herd.

Article 8.13.6.

***Trichinella*-free pig herd**

The *Veterinary Authority* may officially recognise pig herds ~~complying with Article 8.13.5.~~ as *Trichinella*-free if the following additional requirements are met:

Rationale: the recognition of individual pig herds should not be linked to Article 8.13.5, which addresses the requirements for negligible risk for a country, zone or compartment. Pig herds may be able to meet the requirements to be recognized as *Trichinella*-free regardless of the status of the country or zone in which they are located

1. at least two visits, a minimum of 6 months apart, have been made in the 12 months preceding recognition of the pig farms in the *herd* as *Trichinella* free, to verify compliance with good management practices described in Article 8.13.3.;
2. ~~muscle samples from all pigs sent for slaughter during the 12 months preceding recognition of the pig herds as *Trichinella* free have been tested by a digestion method as described in the *Terrestrial Manual* and found to be negative for *Trichinella* infection;~~

Rationale: Historical testing is not relevant if the requirements for absence of risk have been met. As long as *Trichinella* negative pigs are placed in biosecure facilities, there is no risk of infection. Since it is not a vertically transmitted pathogen, what occurred previous to that on the farm or in the herd has no effect on the ability of those pigs to remain *Trichinella* free.

3. an audit is carried out ~~annually~~ every 15 months to verify compliance with good management practices described in Article 8.13.3.;

Rationale: By having audits every 15 months, the audits are “staggered” from year to year, which allows for inspections during different seasons of the year, and thereby permits a better assessment of such programs as rodent control.

4. a survey of the pig *herd* is conducted annually ~~including, if present, breeding pigs~~ through the collection of sera or muscle samples on-farm or at the *slaughterhouse/abattoir*;

Rationale: Since *Trichinella* are not transmitted vertically or horizontally in live pigs, the status of the breeding herd is not relevant to the status of market pigs raised in biosecure facilities. The requirement of surveying the breeding pigs from which the market pigs come is superfluous and should be removed. It is also not a cost effective manner of allocating resources.

5. all management practices undertaken on farm are documented;
6. introduced live pigs come from a country or *zone* with a negligible risk of *Trichinella* infection or from a *Trichinella*-free *herd*.

If a pig tests positive for *Trichinella* infection by the digestion method or serology, the *herd* loses its *Trichinella* infection-free status. Confirmation of a positive test using serology should be done by the digestion method using no less than 100 grams of meat, as described in the *Terrestrial Manual*. An investigation should be carried

out by the *Veterinary Services* to identify the origin of the *infection* and appropriate remedial actions to be implemented.

If the outcome of an audit is unfavourable, the *Trichinella infection*-free status should be withdrawn until appropriate remedial action has been taken. To regain *Trichinella infection*-free status, the *herd* should comply with Points ~~1 and 2~~.

If the *herd* is located in a country or *zone* of negligible risk, points 2. and 4. do not apply.

Observation: This highlighted statement is not clear. If a country, zone or compartment is of negligible risk and continues to be so documented according to the parameters laid out here, then reasons for auditing individual herds or *Trichinella*-free status makes little sense. The hierarchy should be herd – compartment – zone – country.

Article 8.13.7.

Recommendations for the importation of meat or meat products of domestic pigs

Veterinary Authorities of *importing countries* should require the presentation of an *international veterinary certificate* attesting that the entire consignment of *meat* or *meat products*:

1. comes from domestic pigs slaughtered in an approved *abattoir*;

AND

2. which:

a) comes from domestic pigs from a negligible risk country ~~or zone~~, or compartment in accordance with Article 8.13.5.;

OR

b) comes from domestic pigs originating from a *Trichinella*-free *herd* in accordance Article 8.13.6.;

Observation: According to 8.13.6, to meet those requirements the requirements of 8.13.5 also have to be met. Since 8.13.6 is dependent on 8.13.5, there would be no scenario to meet 8.13.5 OR 8.13.6. Therefore, our rationale for recommending deleting the reference to Article 8.13.5 in Article 8.13.6.

OR

c) comes from domestic pigs that tested negative by the digestion method for *Trichinella*, as described in the *Terrestrial Manual*;

OR

- d) was processed to ensure the inactivation of *Trichinella* larvae in accordance with the recommendations in the [Codex working document CX/FH/11/43/6].

Article 8.13.8.

Recommendations for the importation of meat or meat products of wild or feral pigs

Veterinary Authorities of importing countries should require the presentation of an *international veterinary certificate* attesting that the entire consignment of *meat or meat products*:

1. comes from wild or feral pigs inspected in accordance with the provisions in Chapter 6.2.;

AND

2. either:

- a) comes from wild or feral pigs that tested negative by the digestion method for *Trichinella*, as described in the *Terrestrial Manual*;

OR

- b) was processed to ensure the inactivation of *Trichinella* larvae in accordance with the recommendations in the [Codex working document CX/FH/11/43/6].

Article 8.13.9.

Recommendations for the importation of meat or meat products of domestic equids

Veterinary Authorities of importing countries should require the presentation of an *international veterinary certificate* attesting that the entire consignment of *meat or meat products* comes from domestic equids:

1. that were slaughtered in an approved *abattoir*;

AND

2. that tested negative by the digestion method for *Trichinella* as described in the *Terrestrial Manual*.

Article 8.13.10.

Recommendations for the importation of meat or meat products of wild and feral equids

Veterinary Authorities of importing countries should require the presentation of an *international veterinary certificate* attesting that the entire consignment of *meat or meat products*: comes from wild or feral equids:

1. that were inspected in accordance with the provisions in Chapter 6.2.;

AND

2. that tested negative by the digestion method for *Trichinella* as described in the *Terrestrial Manual*.

Article 8.13.11.

Surveillance for *Trichinella infection*

The objective of *surveillance* is to demonstrate the absence of autochthonous *Trichinella infection* in domestic pigs.

The *Veterinary Authority* should:

1. justify the choice of design, prevalence and confidence levels based on the objectives of *surveillance* and the epidemiological situation, in accordance with Chapter 1.4. The design should consider the prevailing, or historical, epidemiological situation, as appropriate;
2. ensure that, in addition to sampling of slaughter pigs, all breeder sows and boars and all domestic pigs exposed to outdoor environments are tested as described in the *Terrestrial Manual*;
3. ensure that all wild and feral pigs slaughtered for human consumption are tested as described in the *Terrestrial Manual*;

Observation: Flexibility is sought here. As mentioned elsewhere in our comments, this requirement is too broad and should not apply to all situations. Surveillance might be used for the purposes of defining a free herd or negligible risk compartment that does not require assessment of breeder stock or wildlife, for example in the case of *Trichinella*-free market pigs being managed in biosecure facilities.

4. subject findings of *Trichinella infection* in wildlife, including wild and feral pigs, to an epidemiological investigation;
5. obtain data on *Trichinella infection* in wildlife through targeted surveillance or using samples collected for other purposes, such as hunted wild game, wild animal control programmes, studies of road kill, and independent research.

Comment: The United States disagrees with the last condition. The stated objective of surveillance at the beginning of this section is “to demonstrate the absence of autochthonous *Trichinella infection* in **domestic** pigs”. Point 5 is requiring surveillance in wildlife. Surveillance of wildlife has no relevance to the status of domestic pigs managed in biosecure facilities where there is no opportunity for exposure to wildlife – to require this surveillance data in those instances would not be an effective use of resources.