

# Report of the Meeting of WOAH *ad hoc* Group on Surra and Dourine

Original: English (EN)

10 to 12 July 2023  
Paris



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for Animal Health**  
Founded as OIE

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The WOAH *ad hoc* Group on surra and dourine (hereafter the Group) met in-person from 10 to 12 July 2023 at the WOAH headquarters in Paris to continue the work on updating current *Terrestrial Code* Chapter 12.3. Dourine and to recommend amendments to the draft Chapter 8.Z. Infection with *Trypanosoma evansi* (surra) to address technical concerns raised by Members. This is the second meeting of the Group.

## 1. Opening

Dr Montserrat Arroyo, WOAH Deputy Director General for International Standards and Science thanked the experts and representatives from the Specialist Commissions and their supporting institutions for their commitment and support to the work of the Group. She also thanked the Group for their previous work in drafting Chapter 8.Z. Infection with *Trypanosoma evansi* (surra), which has been circulated in the February 2023 report of the Terrestrial Animal Health Standards Commission (Code Commission).

Dr Arroyo noted the complex epidemiology of trypanosomes, and highlighted the longstanding work of experts, the Commissions and Members in refining the scope and approach of the trypanosomoses-related Chapters in the *Terrestrial Code*, which are covered across three chapters:

- Chapter 8.19. Infection with *Trypanosoma brucei*, *T. congolense* and *T. simiae* and *T. Vivax* (adopted in 2021)
- Chapter 8.Z. Infection with *Trypanosoma evansi* (surra)
- Chapter 12.3. Dourine

Dr Arroyo explained that the objective of the meeting was to provide advice to the Specialist Commissions on Member comments received on the draft Chapter 8.Z. Infection with *Trypanosoma evansi* (surra) and continue the work on updating Chapter 12.13. Dourine. She thanked the experts for their ongoing contribution to the work of WOAH and emphasised the importance of providing a sound rationale supported by scientific justification for the provisions proposed in the chapters.

Dr Charmaine Chng, Deputy Head of the Science Department, provided a brief overview of the Terms of Reference (ToR) of the Group and introduced the Secretariat supporting the Group's work.

## 2. Appointment of the Chair and Rapporteur

Prof. Marisa Gonzatti was appointed as chair and the WOAH Secretariat acted as rapporteurs. The ToR, and list of participants are provided as [Annexes I](#) and [II](#) respectively.

## 3. Comments on the articles of Chapter 8.Z. Infection with *Trypanosoma evansi* (surra)

### 3.1. Article 8.Z.1. General provisions

The Group noted the suggestion of the Code Commission to modify the text in points 2) – 4) to comply with standard language as used in case definitions of the *Terrestrial Code* and remove reference to 'relevant epidemiological context'. However, the Group highlighted that due to the close relationships and similarities among *T. brucei*, *T. evansi* and *T. equiperdum*, it is important to consider the epidemiological context in diagnosing a case of surra vis-a-vis other trypanosomes. This should include an assessment of the clinical signs exhibited by the animal, endemicity of surra in the area, origin of the host and the presence or absence of other *Trypanosoma spp.* and tsetse transmission. The Group proposed to capture this information in the articles on surveillance.

### 3.2. Article 8.Z.2. Safe commodities

A Member had proposed to delete 'meat' and 'meat products' from the list of safe commodities, with the rationale that the protozoa is able to survive in fresh meat for up to 48 hours.

The Group agreed that *T. evansi* may still be found on fresh meat for 48 hours at 4°C and its survival declines rapidly after 48 hours<sup>1</sup> although it also considered whether standard slaughter practices would by default satisfy the waiting period required, which would imply that fresh meat could be considered a safe commodity. Nonetheless, as the Group agreed with the requirement for a waiting period of 48 hours, it proposed to reinstate provisions for fresh meat as in Article 8.Z.11bis. (see point 3.10.).

However, the Group did not agree with the Member that 'meat products' should be deleted from the list of safe commodities. The Group considered that by virtue of the processing of fresh meat to meat products, the parasite will no longer be viable and thus non-infective.

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The Group did not agree with a separate Member comment to delete 'embryos or oocytes'. Although the Group concurred that *T. evansi* could be found contaminating the exterior of harvested embryos, this risk would be mitigated through the standard process of preparing the embryo which includes washing (i.e. when done according to Chapters 4.8. to 4.10.).

### **3.3. Article 8.Z.6. Recommendations for importation of susceptible animals (except dogs and cats) from countries, zones or compartments free from surra**

The Group noted a Member request to provide guidance on the importation of dogs and cats. Agreeing with the risk of transmission of *T. evansi* posed by dogs and cats, the Group modified the title of the article to cover dogs and cats and proposed to reinstate the article on recommendations for the importation of dogs and cats from infected countries or zones (see point 3.5.).

### **3.4. Article 8.Z.7. Recommendations for importation of susceptible animals (except dogs and cats) from countries or zones infected with *T. evansi***

In point 2, the Group did not agree with a Member comment to add that the animals should be 'protected against vectors, iatrogenic and venereal transmission' as it noted that this should be implicit in the use of the term 'quarantine station'. However, the Group agreed with the Member that 45 days would be sufficient for the diagnostic tests to detect infection with *T. evansi* if present<sup>2</sup>, and therefore agreed to shorten the quarantine period from 90 days to 45 days.

Instead of prescribing that two tests should be conducted immediately upon entering quarantine and within 15 days prior to release, the Group considered that the intention is to provide sufficient time required to detect antibodies to *T. evansi* if present, for which an interval of 30 days<sup>3-5</sup> would be appropriate. The Group also considered the lack of sensitivity and impracticalities of employing an agent identification test (i.e. molecular and microscopic techniques) for this purpose, and therefore recommended that this should be conducted using an antibody detection test, such as the CATT or ELISA which are described in the *Terrestrial Manual*. [after-note: AHG members raised the potential of camels to carry the parasite in the absence of an antibody response but did not have sufficient time to discuss suitable recommendations.]

In response to a Member comment, the Group also proposed to replace 'flock or herd' with 'group' to avoid confusion that this should refer to the herd or flock that the animal originated from, but rather refer to the animals that are kept together in the same group in the quarantine station.

### **3.5. Article 8.Z.7bis. Recommendations for importation of dogs and cats from countries or zones infected with *T. evansi***

The Group proposed to include the article on recommendations for the importation of dogs and cats from infected countries or zones, taking into consideration the amendments made to Article 8.Z.7.

In reference to the Member comment in point 3.3. above, the Group acknowledged the risk of the spread of surra through infected dogs, and discussed the scenarios under which this could occur:

- Stomoxys in some parts of the world is known as the 'dog fly' and can potentially serve as a mechanical vector for the spread of *T. evansi*
- Dog infected with *T. evansi* dies and is somehow accessed by another susceptible animal that feeds on its meat.

The Group considered that the probability of either of these scenarios is rare but a risk still exists nonetheless. Notwithstanding, the Group also noted that majority of Members have been importing dogs and cats from infected countries without requiring surra-related risk management measures without incident (i.e. no associated outbreaks of surra arising from the importation of these dogs and cats) and this proposed article could potentially lead to excessive trade restrictions.

### **3.6. Article 8.Z.8. Recommendations for importation of susceptible animals from countries or zones infected with *T. evansi* for direct slaughter**

The Group considered a Member comment that the recommendations in Article 8.Z.8. for animals for direct slaughter appear to be much more stringent than for Article 8.Z.9. concerning the temporary importation of horses, and agreed that for consistency and proportionality, an antibody detection test would be sufficient and there was no need to run both an agent identification and antibody detection test. The Group considered that the exposure of the local population to these animals is low, given that they are headed directly to slaughter and are transported under strict vector-proof conditions. The Group further noted that the requirement for

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these animals to reside for six months in an establishment where surveillance has demonstrated no case of surra is an added risk mitigation measure.

### **3.7. Article 8.Z.9. Recommendations for the temporary importation of horses**

The Group did not agree with the Member comment that an agent detection test or combination of antibody and agent detection test is required, noting that these provisions apply to temporarily imported horses that are being imported for a designated period of time (less than 90 days), under supervision of the Veterinary Authority, and subject to strict conditions during the time spent in the importing country. This is unlike the general population of horses imported for breeding purposes, for which Article 8.Z.7. should apply.

However, the Group considered the need for proportionality between the provisions for temporarily imported horses and those for animals direct to slaughter (Article 8.Z.8) and modified Article 8.Z.8. accordingly (see point 3.6.).

### **3.8. Article 8.Z.10. Recommendations for importation of semen of susceptible animals from countries or zones free from surra**

In response to a Member comment that there is no evidence of venereal transmission for *T. evansi* in any species and therefore surra was not a risk in semen, the Group was of the view that although the specific mechanism for venereal transmission for *T. evansi* is unknown, it does occur and cannot be ruled out.

The Group noted that Trypanozoon isolated from several cases of equine trypanosomosis clinically diagnosed as 'dourine' (*T. equiperdum*, found in the mucosa of genital organs), turned out upon comparative full genome analysis to be more closely related to *T. evansi*. The Group discussed a paper that documented sexual transmission in equidae<sup>6</sup> where the parasite was originally classified as *T. equiperdum* but which sequencing subsequently revealed to be closer to *T. evansi*<sup>7</sup>. Such a phenomenon<sup>8</sup>, where genomic level similarities exist across the Trypanozoon species and where different clinical presentations and host specificity may occur, implies that it is difficult to exclude venereal transmission and carriage in semen as a modality for spread.

The Group discussed that in these cases it is difficult to ascertain whether transmission is from semen or from mechanical transmission via tissue contact (e.g. cuts). It considered that the exact modality for venereal transmission could differ between different host species and it would be challenging to have supporting literature demonstrating this risk for each host species.

The Group considered that the risk of carriage of *T. evansi* in semen may be sufficiently mitigated if collected from a semen collection centre<sup>9</sup>, even if this were located in an infected country or zone, and therefore proposed changes to reflect this in points 1b) and 2).

### **3.9. Article 8.Z.11. Recommendations for importation of semen of susceptible animals from countries or zones infected with *T. evansi***

The Group reviewed the provisions in Article 8.Z.11. as it considered the risk mitigation measures to be overly strict in comparison to Article 8.Z.7. which refers to the importation of live animals from infected countries or zones. Therefore, changes were made to point 1c) for consistency with Article 8.Z.7. The Group also deleted point 2 as it considered the requirement for 'molecular examination of semen for *T. evansi*' to be excessive; furthermore, the Group noted that the molecular examination of semen is not described in the corresponding *Terrestrial Manual* chapter and there is no available method for detecting *T. evansi*.

In point 1b), the Group discussed that it was important to have no clinical sign of *T. evansi* not just on the day of semen collection, but should be extended to the six months prior to take into account the incubation period.

### **3.10. Article 8.Z.11.bis. Recommendations for importation of fresh meat from susceptible animals from countries or zones infected with *T. evansi***

In reference to the Member comment that was received in Article 8.Z.2 (see point 3.2.), the Group agreed that there should be a holding period after slaughter given the ability of *T. evansi* to survive in fresh meat. The Group therefore introduced this article and used the language that was in Chapter 8.15. Infection with Rift Valley fever virus for reference.

The Group deferred to the Code Commission for its advice on whether these conditions could be satisfied as part of the standard slaughter process and therefore whether fresh meat could be included in Article 8.Z.2.

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### 3.11. Article 8.Z.12. Introduction to surveillance

In paragraph 5, the Group agreed with a Member comment that it is unclear what would be considered in climate change and thus proposed to delete this. However, the Group proposed to retain the reference to host susceptibility and co-infections as these are important considerations in the surveillance for *T. evansi*.

## 4. Comments on the *Terrestrial Code* Chapter 12.3. Infection with *T. equiperdum* (dourine)

The Group modelled the provisions in Chapter 12.3. after the equivalent provisions in draft Chapter 8.Z.

### 4.1. Article 12.3.1. General provisions

The Group discussed the scope of animal hosts to be covered in the case definition and agreed to limit this to domestic and captive wild equids, which it noted would include equids in zoological collections. The Group considered the modality of transmission (i.e. venereal) and considered this to be a negligible risk pathway for the transmission of *T. equiperdum* from the wild equid population to the domestic (or captive wild) population. Therefore, it agreed that wild equids should not be included in the case definition and Members are not obliged to report the occurrence of dourine in wild equids, which will also not affect the status of the Member.

In the first part of the case definition on the observation of trypanosomes with *Trypanozoon* morphology, the Group discussed that having an epidemiological link to a confirmed case of dourine would unequivocally render the equid a case. However, if the same equid had only a 'suspected previous association or contact', it would not be sufficient, regardless of the molecular techniques used, to definitively classify the equid as infected with *T. equiperdum*. Therefore, in order to be classified as a case, the Group proposed that the equid also shows clinical signs consistent with dourine. Notwithstanding, if neither an epidemiological link to a confirmed case or suspected case may be established, to avoid misclassification with surra, the Group proposed to add that the case should be from an area where surra is not known to occur. The Group also discussed that if the samples for testing were obtained from the genital tract, then it would further satisfy the case being a case of dourine (as opposed to surra). The Group noted that for the other methods of diagnosis (nucleic acid and antibodies), it would be essential to have an epidemiological link to a confirmed case as currently available nucleic acid-based tests are not species-specific and do not distinguish between *T. evansi* and *T. equiperdum* and serological methods are non-specific to dourine.

The Group agreed to include in this article, a paragraph on a temporary importation of horses that is same as the one for other *Terrestrial Code* chapters on horse diseases, i.e. Chapter 8.Z., Chapters 12.2. Infection with *Taylorella equigenitalis* (Contagious equine metritis), 12.6. Infection with equine influenza virus and 12.7. Infection with *Theileria equi* and *Babesia caballi* (Equine piroplasmosis), and to develop an article on recommendations for the temporary importation of horses. (see point 4.7.)

The Group agreed that the incubation period of dourine for the purposes of the *Terrestrial Code* should be six months<sup>10</sup>. The Group also agreed that the infective period might be lifelong given that there is a possibility of a treated animal being a carrier of *T. equiperdum*.

### 4.2. Article 12.3.2. Safe commodities

The Group noted that unlike *T. evansi*, the predominant mode of spread of *T. equiperdum* is via sexual transmission, vertical transmission and the iatrogenic route. There is lack of scientific evidence to prove or suggest the transmission of *T. equiperdum* through the consumption of meat. Therefore the Group recommended adding meat to the list of safe commodities.

Similar to *T. evansi*, *T. equiperdum* is normally found in the blood and animal tissue, and the Group therefore modelled the other safe commodities (e.g. hooves, hair, wool and fibre, gelatine and collagen, pasteurised milk and pasteurised milk products<sup>11</sup>) in accordance with Article 8.Z.2.

The Group discussed whether 'geldings' should be added to the list of safe commodities and did not recommend this as due to the risk of iatrogenic transmission, geldings could potentially serve as a source of infection to other equids.

### 4.3. Article 12.3.3. Country or zone free from dourine

The Group adapted this article from Article 8.Z.3. but excluded the recommendation to include an area of surveillance along the border adjacent to an infected country or zone, given that the predominant mode of transmission of dourine is sexual transmission unlike surra which has a strong vector component.

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#### 4.4. Article 12.3.5. Recovery of free status

The Group deliberated the treatment of infected animal and noted that despite treatment there is a possibility of a treated animal being a carrier of *T. equiperdum*. Therefore, it was recommended that all infected animals should be slaughtered in order to recover free status.

#### 4.5. Article 12.3.6. Recommendations for importation of equids from countries, zones or compartments free from dourine

For consistency with the chapter on surra, the Group recommended adding the option of a residency of six months (if not since birth) in a free country, zone or compartment.

#### 4.6. Article 12.3.7. Recommendations for importation of equids from countries, zones or compartments not free from dourine

The Group proposed to align this article with Article 8.Z.7., noting that equids are not necessarily held in quarantine stations and thus replaced this with 'isolation'.

The Group considered that a test 'interval of 30 days' that is a condition for surra is relevant for dourine as well.

#### 4.7. Article 12.3.8. Recommendations for the temporary importation of horses

The Group proposed an article on the temporary importation of horses, similar to the article in Article 8.Z.9. The provisions were adapted from the Article 8.Z.9. (see point 3.7.) and the recently updated Chapter 12.2. Infection with *Taylorella equigenitalis* (Contagious Equine Metritis). The Group excluded the recommendation of including, keeping and transporting of the animals individually in stalls and vehicles/ vessels which are cleaned and disinfected as the Group did not consider this measure to be relevant for dourine.

#### 4.8. Articles 12.3.9. Recommendations for importation of semen from countries, zones or compartments free from dourine and Article 12.3.10. Recommendations for importation of semen from countries, zones or compartments not free from dourine

The Group used the same provisions as proposed for Articles 8.Z.10. and 8.Z.11.

#### 4.9. Articles 12.3.11. to 12.3.14. on surveillance for dourine

The Group was informed of the Code Commission's revised approach to the surveillance articles, as exemplified in recently adopted Chapter 10.4. Infection with high pathogenicity avian influenza viruses. The Group agreed that the surveillance articles should not duplicate but complement existing information in Chapter 1.4. Animal health surveillance and agreed on the following structure:

- Article 12.3.11. Introduction to surveillance
- Article 12.3.12. Principles of surveillance for dourine
- Article 12.3.13. Surveillance for early warning of dourine
- Article 12.3.14. Surveillance for demonstrating freedom from dourine

The Group acknowledged the difficulties in prescribing specific recommendations that could address the specific epidemiological situation in each Member territory. The epidemiology of *Trypanosoma* spp. is highly complex, and diagnosis would require a thorough understanding and knowledge of the *Trypanosoma* spp. that are known or suspected to occur in the area, the presence of vectors, susceptible animal populations and associated at-risk subpopulations, movement patterns, animal husbandry practices and specifically for dourine, the clinical and breeding history of the equids. The Group noted that in most situations, a diagnosis of dourine is reached with a compatible exposure history, namely sexual contact with an equid that is confirmed or suspected to have *T. equiperdum*. Definitive diagnosis can be particularly challenging in instances where *T. evansi* or *T. brucei* is also known to occur, and where an equid could be co-infected with multiple *Trypanosoma* spp.

The Group underscored the importance of awareness programmes with not just the veterinarians but equid associations and establishments so that any clinical suspicion of dourine is promptly followed-up with diagnosis and appropriately notified. The Group encouraged Members to refer to the *Terrestrial Manual* for details concerning clinical signs and appropriate diagnostic methods to be used. It also noted the importance of having a nationally-approved or accredited laboratory that is able to diagnose *Trypanosoma* spp., and which participates in quality assurance and interlaboratory proficiency testing to ensure the robustness of its techniques and accuracy of results.

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In terms of early warning, the Group understood that the objective is for the timely detection, reporting and communication of the occurrence of dourine, which is critical for rapid response and control by Veterinary Services, typically in settings where dourine is absent. The Group discussed that efforts may be targeted to at-risk equids, such as those that are imported or those potentially exposed to imported equids.

In addition, the Group proposed to make reference to animals such as donkeys and mules, which albeit are of a lower susceptibility, can potentially act as carriers and reservoirs of *T. equiperdum*.

## **5. Next steps**

The Group agreed to circulate the draft report electronically for finalisation, and noted that its recommendation would be considered by the Scientific Commission for Animal Diseases at its September 2023 meeting.

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## Annex 1. Terms of Reference

### MEETING OF THE WOAAH AD HOC GROUP ON ON SURRA (Infection with *Trypanosoma evansi*) AND DOURINE (Infection with *Trypanosoma equiperdum*)

Paris, 10–12 July 2023

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#### 1. Purpose

The purpose of the *ad hoc* Group on surra and dourine is to continue the work progressed at the first meeting of the *ad hoc* Group that took place virtually between April – June 2021 to update the current *Terrestrial Code* Chapter 12.3. 'Dourine' and to recommend amendments to the draft chapter on surra to address technical concerns. This *ad hoc* Group is convened under the authority of, and reports to, the WOAAH Director General.

#### 2. Background

Taking into account previous work done to develop trypanosomes-related Chapters in the *Terrestrial Code*, Member comments received on the demarcation of the scope of these chapters, the Scientific Commission and Code Commission had agreed to cover animal trypanosomes in three separate *Terrestrial Code* chapters as follows:

1. Infection with *Trypanosoma brucei*, *T. congolense*, *T. simiae* and *T. vivax* [Chapter 8.18. – several host and pathogen species, adopted 2021]
2. Infection with *T. evansi* (surra) [Chapter 8.X. – several host species]
3. Infection with *T. equiperdum* (dourine) [Chapter 12.3. – equine]

Using the case definitions for surra and dourine drafted by expert groups, the first meeting of the *ad hoc* Group on surra and dourine proposed a draft chapter for surra, that was endorsed by the Scientific Commission at its September 2021 meeting, and forwarded to the Code Commission for its consideration. Progress on the development of the dourine chapter was paused until at least one round of Member comments have been received on the chapter, as these would provide useful guidance to the experts.

The proposed draft text on surra was circulated to Members for comments in the February 2023 [report](#) of the Code Commission.

#### 3. Actions/ specific issues to be addressed

To support Members in the control of animal trypanosomes, provide recommendations for surveillance, and promote safe international trade, the *ad hoc* Group should:

1. amend *Terrestrial Code* Chapter 12.3. 'Infection with *T. equiperdum* (dourine)'
2. address requests of the Code Commission for additional information on the amended Chapter 8.X. Infection with *T. evansi* (surra)
3. provide advice on selected Member comments on Chapter 8.X., including proposing draft amendments to the revised chapter to address them.

#### 4. Considerations

The *ad hoc* Group members should consider:

- case definitions on infections with *T. evansi* and *T. equiperdum*, as endorsed by SCAD at its February 2021 meeting to inform on the scope and coverage of Chapters 8.X. and 12.3.
- advice from the SCAD and TAHSC on the first draft of the draft *Terrestrial Code* Chapter 8.X as developed by the Group at its meeting in April – June 2021
- advice from the TAHSC on Member comments received on draft *Terrestrial Code* Chapter 8.X and Chapter 12.3 circulated in its September 2017 meeting report
- *Terrestrial Code* Chapter 8.18. 'Infection with *Trypanosoma brucei*, *T. congolense*, *T. simiae* and *T. vivax*'
- *Terrestrial Code* Chapter 12.3. 'Dourine'
- *Terrestrial Manual* Chapters
  - 3.1.21. 'Surra in all species (*Trypanosoma evansi* infection)'
  - 3.4.14. 'Nagana: infections with salivarian trypanosomoses (excluding *Trypanosoma evansi* and *T. equiperdum*)'
  - 3.6.3. 'Dourine in horses (*Trypanosoma equiperdum* infection)'.

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All proposed amendments should be consistent with the structure and scope of the *Terrestrial Code*.

## **5. Prerequisites**

*Ad hoc* Group members should:

- sign the Undertaking on Confidentiality of information (if not done already)
- complete the Declaration of Interest form
- be familiar with the structure of the *Terrestrial Code* and the *Terrestrial Manual*, and the use of Glossary definitions
- read the working documents provided by the WOH Secretariat prior to the meeting
- agree on the appointment of the chair and rapporteur of the meeting
- contribute to discussions
- contribute to drafting text or assessment
- understand that the membership of the group may be retained between *ad hoc* Group meetings to ensure continuity of the work.

## **6. Deliverables**

A meeting report including a draft for revised Chapter 12.3., proposed amendments to draft Chapter 8.X. in response to requests and comments from the Code Commission and Members, with accompanying rationale.

## **7. Reporting / timeline**

The *ad hoc* Group will deliver its report within 2 week(s) after the completion of the meeting.

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## Annex 2. List of Participants

### MEETING OF THE WOAHA AD HOC GROUP ON ON SURRA (Infection with *Trypanosoma evansi*) AND DOURINE (Infection with *Trypanosoma equiperdum*)

Paris, 10–12 July 2023

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### Annex 3. References

#### MEETING OF THE WOAAH AD HOC GROUP ON ON SURRA (Infection with *Trypanosoma evansi*) AND DOURINE (Infection with *Trypanosoma equiperdum*)

Paris, 10–12 July 2023

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