



IACUC Guidance:	TAMU-G-034	Title:	Guidelines for Working with Sheep Housed Outdoors	
	Location	Effective Date	Review By	
	College Station/Dallas/Galveston/Kingsville	01/01/2024	12/31/2026	
	Houston	N/A	N/A	

1. PURPOSE

- 1.1. To inform individuals who work with sheep about potential zoonoses, personal hygiene, and other potential hazards associated with animal exposure.

2. SCOPE

- 2.1. Applies to activities involving sheep used for research, teaching, or other purposes at Texas A&M University
- 2.2. Does not contain a complete list of zoonotic diseases
- 2.3. Applies to sheep housed out of doors
- 2.4. Does not apply to sheep indoors. For information regarding Q-fever serology and appropriate PPE for personnel working with sheep and/or their reproductive tissues, see TrainTraQ Course Number 2111497: *Researchers Who Work with Pregnant Sheep Inside Facilities - Biosafety*

3. RESPONSIBILITY

- 3.1. The **PI** is responsible for:
 - 3.1.1. Ensuring that AUP personnel have study-specific training after the individual has been approved by the IACUC as protocol personnel and before animal work begins
 - 3.1.2. Ensuring AUP personnel have demonstrated proficiency in activities, procedures and tasks before performing animal activities independently
 - 3.1.3. Ensuring individuals listed on the AUP have read the protocol and understand their responsibilities in relation to the activities they will perform.
- 3.2. **AUP Participants** are responsible for:
 - 3.2.1. Completing all training and enrollment activities in a timely manner. See TAMU-G-029.
 - 3.2.2. Seeking assistance from experienced individuals when learning a new procedure or activity with live animals

4. DEFINITIONS AND/OR ACRONYMS

- 4.1. **(Animal) Activities:** Conditions in which actions are taken in order to achieve aims, including but not limited to husbandry, euthanasia, record keeping, use of general lab and equipment safety.
- 4.2. **AUP:** Animal Use Protocol. Document submitted by the PI indicating the housing and procedures involving animals.
- 4.3. **BOHP:** Biosafety Occupational Health Program. Provides occupational health services to personnel at risk of exposure to animals or infectious biohazards in the course of their participation in IBC or IACUC permitted research, teaching or diagnostic activities.
- 4.4. **IACUC:** Institutional Animal Care and Use Committee. Institutional body responsible for ensuring adherence to federal regulation and institutional policy relating to the care and use of animals in teaching, testing and research. Appointed by the Institutional Official.
- 4.5. **Indoors:** In the context of this Guidance, structure or building with environmental controls (temperature) and a continuous connection between the roof, floor (in the form of a foundation) and walls.
- 4.6. **LAI:** Laboratory-Associated Infection
- 4.7. **(Office of) Biosafety:** Supports the Institutional Biosafety Committee (IBC) administratively.
- 4.8. **PI:** Principal Investigator. The individual who has ultimate administrative and programmatic responsibility for the design, execution, and management of a project utilizing vertebrate animals.
- 4.9. **PPE:** Personal protective equipment

4.10. **TAMU:** Texas A&M University

4.11. **Zoonotic Disease (Zoonoses):** Diseases that can be transmitted between animals and humans.

5. GUIDELINES OR PROCEDURE

5.1. Potential Injury

5.1.1. Although normally docile, sheep are large domestic animals that can jump and butt and cause injury to handlers.

5.1.2. Ergonomic injuries such as back strain can occur from handling and restraining sheep due to their size and strength; therefore individuals with pre-existing back or joint problems may need assistance when working with sheep.

5.2. **Zoonotic disease.** As with other farm animals, zoonotic disease can be a hazard when working with sheep. The following lists several diseases that are associated with the care and handling of sheep.

5.2.1. Tell your physician you work with sheep. Whenever you are ill, even if you're not certain that the illness is work-related, always mention to your physician that you work with sheep. Many zoonotic diseases have flu-like symptoms and would not normally be suspected. Your physician needs this information to make an accurate diagnosis.

5.2.2. Report occupational illness or injury related to work with sheep to BOHP.

5.2.3. Contact the BOHP for guidance on PPE or appropriate risk mitigations; e.g. rabies or tetanus vaccination.

5.2.4. Rabies

5.2.4.1. Virus that can infect almost any mammal, including humans.

5.2.4.2. The source of infection to people is an infected animal (that can shed virus without displaying clinical signs). Transmission is through direct contact with saliva, mucus membranes, or blood, e.g. bite, or saliva on an open wound. The incubation period is from 2 to 8 weeks or even longer.

5.2.4.3. Symptoms are pain at the site of the bite followed by numbness. The skin becomes quite sensitive to temperature changes and there are laryngeal spasms. Muscle spasms and extreme excitability are present and convulsions occur. Rabies in unvaccinated people is almost invariably fatal.

5.2.5. Q-Fever

5.2.5.1. Bacterial agent (*Coxiella burnetii*) most commonly associated with sheep, goats, and cattle, though infection has been reported in other mammals, as well as birds and reptiles.

5.2.5.2. Infected ruminants are usually asymptomatic. The bacteria are shed in the urine, feces, milk, and most importantly, birth products (placenta, amniotic fluid, blood and soiled bedding) of infected animals.

5.2.5.3. Q-fever is spread by aerosolization of infected body fluids. Disease transmission can be reduced by careful disposal of birth products and avoidance of blowing dust borne pathogens.

5.2.5.3.1. Waste management:

5.2.5.3.1.1. For outdoor areas, birthing livestock should be confined and observed. Human movement should be minimized to limit environmental contamination of other areas with *C. burnetii*.

5.2.5.3.1.2. Manure should be appropriately composted or transported to a permitted sanitary landfill and not spread on windy days.

5.2.5.3.1.3. Birth products including aborted fetuses should be removed and disposed of immediately via autoclaving, incineration, biodigestion, or burial in a permitted sanitary landfill.

5.2.5.3.2. Decontamination:

5.2.5.3.2.1. If possible, have birthing occur in an enclosed space that can be cleaned and disinfected, as appropriate to the study or teaching activity.

5.2.5.3.2.2. For routine cleaning of non-porous surfaces that have come into contact with reproductive tissues from pregnant ewes:

5.2.5.3.2.2.1. Appropriate disinfectant (70% Ethanol or 5% Microchem Plus) solution should be liberally applied and allowed contact time as indicated on the manufacturer's label or as described in published infection control guidance.

5.2.5.3.2.2.2. Additional applications may be required to maintain contact time due to evaporation.

5.2.5.4. In humans, most cases of Q-fever are manifested by flu-like symptoms that usually resolve within 2 weeks. However, infection can be chronic and severe in a small percentage of people who become infected, and may result in death if untreated.

5.2.5.5. Pregnant women or individuals that are immunocompromised should avoid contact with pregnant or aborting animals.

5.2.6. Contagious Ecthyma (Orf)

5.2.6.1. A poxviral disease also known as contagious ecthyma or soremouth in sheep and goats, and orf in people.

5.2.6.2. In ruminants, it is evidenced by exudative (oozing) lesions found on the muzzle, eyelids, oral cavity, feet or external genitalia. It is more common in younger animals.

5.2.6.3. The disease in ruminants is contagious to humans and other animals by direct contact with lesions or indirectly by contaminated fomites (hair, clothing).

5.2.6.4. This is a self-limiting infection, which in humans is usually found on the hands and consists of painful nodules (bumps) and cutaneous ulcerative lesions, and typically lasts 1-2 months.

5.2.7. There are other diseases that are associated with contact to sheep, such as brucellosis, campylobacteriosis, coccidiomycosis, cryptosporidiosis, giardiasis and anthrax. Good personal hygiene and the wearing of the appropriate personal protection are effective measures for preventing illness. Contact BOHP for additional guidance on appropriate PPE.

5.3. **Allergies and Injuries.** Animal related allergies are common. The sheep containment environment may have allergens present in hay and dust. Contact dermatitis can also occur when handling sheep wool.

5.3.1. How to Protect Yourself

5.3.1.1. Wash your hands. The single most effective preventative measure that can be taken is thorough, regular hand washing. Wash hands and arms after handling sheep. Never smoke, drink, or eat in the animal areas or before washing your hands.

5.3.1.2. Wear gloves. Wear the appropriate gloves for the task and wash your hands after removing gloves.

5.3.1.3. Wear other protective clothing. Personnel should wear dedicated outerwear (coveralls, scrubs etc.).

5.3.1.4. Wear respiratory protection. Fit-testing will be provided by the BOHP upon request.

5.3.1.5. Seek Medical Attention Promptly.

5.3.1.5.1. If you are injured on the job, promptly report the accident to your supervisor, even if it seems relatively minor.

5.3.1.5.2. Minor cuts and abrasions should be immediately cleansed with antibacterial soap.

5.3.1.5.3. For more serious injuries or if there are any questions about the injury, employees should report to BOHP.

5.4. **Auxiliary Hazards Pertaining to Agricultural Facilities.** See TAMU-G-029 for training requirements

5.4.1. Large Equipment and Tractor Safety: only trained and authorized personnel should operate equipment.

5.4.2. Manure Pit Hazards: not necessarily sheep-related but may be present in agricultural setting.

5.4.3. Tetanus: maintenance of immunizations is recommended.

5.4.4. Insect Bites: repellents are best defense against insects and the diseases they carry.

6. REFERENCES, MATERIALS, AND/OR ADDITIONAL INFORMATION

6.1. References:

- 6.1.1. [Canadian Centre for Occupational Health and Safety](#)
- 6.1.2. US Centers for Disease Control and Prevention – [Q Fever](#) and [Q Fever Fact Sheet](#); also see Infection Control - [Chemical Disinfectants](#)
- 6.1.3. CDC Diagnosis and Management of Q Fever — United States, 2013: Recommendations from CDC and the Q Fever Working Group: <https://www.cdc.gov/mmwr/preview/mmwrhtml/rr6203a1.htm>
- 6.1.4. Kersh GJ, Fitzpatrick KA, Self JS, et al. Presence and persistence of Coxiella burnetii in the environments of goat farms associated with a Q fever outbreak. Appl Environ Microbiol. 2013;79(5):1697-1703. doi:10.1128/AEM.03472-12
- 6.1.5. National Research Council 1997. Occupational Health and Safety in the Care and Use of Research Animals. Washington, DC: The National Academies Press. <https://doi.org/10.17226/4988>.
- 6.1.6. Texas A&M Agrilife Extension: [Biosecurity for Sheep and Goat Producers](#)
- 6.1.7. U.S. Department of Health and Human Services. Public Health Service. Centers for Disease Control and Prevention. National Institutes of Health. 2009. Biosafety in Microbiological and Biomedical Laboratories (BMBL) 5th Edition.

- 6.2. Resources:
 - 6.2.1. [BOHP](#): bohptamu@tamu.edu; 979-845-6649
 - 6.2.1.1. TrainTraq Course Number 2113938: Animal Allergens - BOHP
 - 6.2.2. [Office of Biosafety](#): biosafety@tamu.edu; 979-862-4549
 - 6.2.2.1. TrainTraq Course Number 2111497: Researchers Who Work with Pregnant Sheep Inside Facilities - Biosafety
 - 6.2.2.2. [Biosafety Manual](#)

- 6.3. CITI Program:
 - 6.3.1. Web page: <https://about.citiprogram.org/en/homepage/>
 - 6.3.2. Instructions: <https://rcb.tamu.edu/animals/training>
 - 6.3.3. Sheep & Goats: CITI Working with Sheep and Goats in Research Settings

- 6.4. [IACUC/AWO Referenced Documents](#): (requires TAMU NetID authentication)
 - 6.4.1. TAMU-G-018 Guidelines for Survival Surgical Procedures in Non-Rodent Mammals
 - 6.4.2. TAMU-G-022 Guidelines on the Performance of Non-Survival Surgery
 - 6.4.3. TAMU-G-029 Guidelines for Animal Protocol Participation and Handling
 - 6.4.4. AWO-O-024 Department of VMBS Q fever Flyer

- 6.5. Acknowledgement: This document was partially adapted using materials obtained from UC Davis.

7. HISTORY

Effective Date	Version #	Description
02/25/2021	000	College Station/Galveston: New Document
03/24/2022	001	College Station/Dallas/Galveston: Merging of Dallas animal care and use program with College Station/Galveston
10/20/2022	002	College Station/Dallas/Galveston/Kingsville: Merging of Kingsville animal care and use program with College Station/Dallas/Galveston.
01/01/2024	003	College Station/Dallas/Galveston/Kingsville: Renewal; minor update to definitions and references, clarification of cleaning guidance. Reviewed and approved via TEAMs.