



Duke University Animal Care & Use Program Policy



MANAGING Q FEVER RISK IN UNGULATES

PERFORMANCE STANDARD: The care and use of ungulates (general sheep & goats) will be consistent with this policy with the intention that the potential for human exposure to *Coxiella burnetii* is minimized.

BACKGROUND: Ungulates (generally sheep and goats) are a potential source of *Coxiella burnetii* infection in humans leading to a disease known as Q fever. Q fever can be a serious disease in humans leading to both acute and chronic illness as well as death. Although many species can serve as a reservoir, pregnant sheep and goats represent the highest risk to humans. Various measures can be taken to minimize the potential for human exposure to the *Coxiella burnetii* organism.

ROLES:

1. Research and DLAR staff will abide by this policy.
2. The Occupational and Environmental Safety Office (OESO) will provide guidance in assessment of risk and in the appropriateness of personal protective equipment, when necessary.
3. Employee Occupational Health & Wellness will provide health evaluations and risk assessments.

PROTECTIVE POSTURES REQUIRED: Personnel PPE will be worn and employed as described in this policy and as directed by OESO. Other safety measures are also described.

OUTLINE OF POLICY:

- 1) Principal investigators must designate the use of pregnant sheep or goats as a potential biohazard on their Institutional Animal Care and Use Committee applications.
- 2) Personnel who work with sheep or goats (pregnant or non-pregnant) will undergo a health and risk assessment to address employee health concerns. High risk employees may be excluded from working with sheep.
- 3) Employees who develop a febrile illness while working with ungulates (or their tissues or fluids) will be directed to seek immediate medical attention. Employee Occupational Health & Wellness (EOHW) can be contacted by dialing the Hotline at 684-8115.
- 4) Serological evaluation of employees in regard to *Coxiella burnetii* (Q fever) infection will be performed as deemed necessary by EOHW.
- 5) All animals will be purchased from approved vendors that take measures to achieve a flock that is negative for Q fever. The review of at least one year of the vendor's Q fever testing results will be a component of the vendor's approval (DLAR provided the approval for purchase from a specific flock or herd).
- 6) At least six months of vendor flock testing results will be reviewed approximately semi-annually by a DLAR veterinarian. If positive results are identified during this review, all sheep on campus will be retested and the purchasing relationship with the vendor will be re-evaluated.

- 7) Animals that arrive at DUMC will have tested negative for Q fever within one month prior to the shipment.
- 8) All newly arriving animals will be placed in quarantine. Quarantine will consist of separation of newly arrived animals from other animals and placement of the appropriate signage. Personnel access to these animals will be limited to essential personnel.
- 9) During the quarantine period, the animals will be tested for Q fever. Animals can not be used by the Principal Investigator until a DLAR veterinarian has reviewed the results and determined that the results are negative. Animals will be deemed positive or negative in accordance with the parameters set fourth by the diagnostic laboratory performing the test. Animals will be immediately retested if the results are equivocal. Animals that test negative for Q fever will continue to be considered a potential source of human infection.
- 10) Animals that test positive after arrival at Duke will be isolated from any other animals and be retested to verify the results.
- 11) Any confirmed positive animal will be reported to the State Veterinarian immediately.
- 12) Any positive animal will be euthanized and its carcass incinerated unless otherwise directed by the State Veterinarian. No samples, tissue or otherwise, will be collected from positive animal.
- 13) Appropriate containment for transport to and within DUMC research facilities is required. HEPA or other suitably filtered transport cages shall be used for all transport of animal outside of the housing area. Training in the use and maintenance of this equipment will be addressed with animal care personnel.
- 14) All rooms in the vivarium used to house animal shall be negative pressured in relation to the corridor.
- 15) Animal must be housed in a location that limits incidental personnel traffic by the animals. This can be in a dedicated animal room in the vivarium or a stall at the Duke University Research Farm. Biohazard signs will be placed where the animals reside.
- 16) Anyone working with the animals must wear either a N95 respirator or a powered air purifying respirator (PAPR) when performing procedures that generate aerosols (e.g. high risk surgical procedures, cleaning stalls/ runs and shearing) with animals. Medical surveillance and fit testing/training must be conducted before personnel wear respiratory protection.
- 17) A HEPA-filtered vacuum shall be utilized during all shearing activities to reduce the release of aerosols.
- 18) Operating rooms (OR) in which animal surgeries are performed shall be set up to provide adequate containment of the procedure. Several acceptable arrangements are listed below.
 - a. OR maintained under negative pressure in relation to the corridor. The exhaust from the room shall be dedicated.
 - b. An anteroom placed at the entrance of the OR shall be negative to the corridor and the OR. In other words, air would flow into the anteroom from both directions. This airflow set-up would maintain a traditional surgical environment in regards to infection control. Exhaust from the anteroom would be HEPA-filtered.
 - c. A "bio-bubble" or other "local" containment tent could be constructed around the surgical table. The containment device would be maintained under negative pressure, but because the supply air in the OR room is HEPA filtered, this set-up should not increase the infection control risk. Exhaust from the tent would be HEPA-filtered.
- 19) Training of applicable staff on the potential hazards and proper precautions when working with animals and the signs and symptoms of Q fever will be performed by DLAR in consultation with OESO and EOHW.