WFSM ENVIRONMENTAL HEALTH & SAFETY		
Q FEVER HEALTH AND SAFETY POLICY		
Approved by: David A. Brown, Director, EH&S Janice Wagner, DVM, Ph.D., Vice President & Senior Associate Dean	*Effective Date:*	November 1, 2010
	Revised Date:	October 29, 2012

POLICY

It is the policy of Wake Forest School of Medicine to minimize exposure to the Q fever agent (*Coxiella burnetii*) through the observance of safe practices and the use appropriate personal protective equipment.

PURPOSE

1. Provide basic background information regarding the nature of Q fever and the associated risks.

2. Specify measures for those who may be at increased risk for contracting Q fever or related complications.

3. Establish safe practices, personal protective equipment criteria, waste management precepts and training recommendations based upon certain activities and work locations.

SCOPE

This policy applies to all individuals working with potentially infected sheep. This constituency includes Animal Resources Program staff, and research faculty, staff, students, volunteers and visitors.

This policy does not apply to work with confirmed Q fever negative sheep.

Q FEVER BACKGROUND INFORMATION

Q Fever or coxiellosis is a zoonotic disease which means it can be transmitted between animals and humans. It is caused by a rickettsia called *Coxiella burnetii. Coxiella burnetii* is very resistant to environmental factors and can persist in the environment for up to six months.

Q Fever in Animals *S*heep, goats and cattle as well as wildlife and feral cats infected with *Coxiella burnetii* usually shed the agent with no outward signs of disease. The agent may persist in the animal and be shed intermittently. The agent is shed significantly in birthing products (placenta, amniotic fluid and fetus); therefore, non-pregnant animals are less of a risk. It is also shed in milk, feces, urine and blood. Q Fever is occasionally a cause of abortion in animals. The amount of agent can be reduced in the environment by regular cleaning and disinfection of animal facilities with particular care of lambing areas, and surgery and necropsy rooms.

Abortions in animals are investigated to determine if a disease is present that may affect the health of humans or other animals. Identification of shedding animals is not practical except in non pastured/indoor housing, i.e., Downtown Campus.

Q Fever in Humans Infection is most commonly a result of inhalation of the agent in aerosols originating from placenta and amniotic fluid. Also, infection may be a result of airborne transmission by inhalation of the agent on particles of dust. The agent can be carried by dust or on shoes and clothing. Q Fever has occurred in people with no animal contact because the agent may be transmitted in the air. Only a few organisms need to be inhaled to produce disease. In addition to inhalation, the agent may enter the body by ingestion or contamination of wounds, for example, contaminated needle sticks. Consuming unpasteurized milk or milk products can be another source of human infection with *Coxiella burnetii.*

The disease in humans may appear 2-4 weeks after infection. Many human infections are mild and are unapparent and thus go undetected. A prominent symptom of the disease is severe headache. Pain in back of the eyes is common. Fever, chills, profuse sweating, malaise, loss of appetite, muscle aches and sometimes nausea and vomiting are also symptoms. About 50% of humans with this disease develop pneumonia with a mild cough and 50% develop gastrointestinal tract disorders (nausea, vomiting, and diarrhea). Endocarditis (heart valve problems) and hepatitis (liver problems) can be complications associated with Q Fever. People with a valvular heart disease are at greater risk of developing complications associated with Q Fever.

RESPONSIBILITIES

1. **Animal Resource Program (ARP)** Animal Resources Program faculty and staff will comply with the procedures established in this policy. The ARP Standard Operating Procedures which apply are:
    a. Animal Resources Program Standard Operating Procedure, Husbandry of Small Ruminants Facilities, SOP#A-15FC
    b. Animal Resources Program Standard Operating Procedure, Uniforms and Personal Protective Equipment, SOP#A-1

2. **Employee Health Services**
    a. Provide medical consultation for individuals identified as being at increased risk for developing Q fever or complications from Q fever.
    b. Advise faculty and staff supervisory personnel if an individual requires increased protective practices or equipment when working with sheep or if an individual should not be allowed to work with sheep due to medical history considerations.

3. **Environmental Health and Safety (EH&S)**
    a. Review this policy annually and update as appropriate.
    b. Assist in the development of training products for use with ARP and research faculty and staff.
    c. Provide investigatory assistance in the event of employee exposure(s).
    d. Provide respirator fit testing for faculty and staff as necessary.

4. **Principal Investigator**

a. Research faculty and staff working with sheep will comply with the procedures established in this policy.

PROCEDURES

1. **High Risk Individuals**. It is recommended that those at increased risk for developing Q Fever schedule a medical consultation with WFUBMC Employee Health Services. In most situations these individuals will be advised not to work under conditions that may expose them to Q fever.

   The following conditions indicate an increased risk for developing Q fever or complications from Q fever:

   - **Valvular heart disease**
   - **Prosthetic heart valves**
   - **Altered immune system**
   - **Pregnancy**
   - **Liver disease**

2. **Standard Practices for all affected workers** (working with animal or tissues)**. Appendix A** provides detailed information.
   a. Observe posted signage. Indoor housing, research and procedure areas for sheep will be posted with a "biohazard" sign.
   b. Practice rigorous hand hygiene.
   c. Do not eat, drink, use tobacco products, take or apply medicine, store human food, handle contact lenses or apply cosmetics in animal facilities and laboratories.
   d. Provide an initial medical health history to the WFUBMC Employee Health Services.
   e. Update Employee Health as medical health history or work with animal species changes
   f. Report injuries, illnesses (zoonotic diseases) via the on line Occurrence Report .
   g. Conduct procedures so that aerosol production is minimized. Protect yourself from exposure to inhalation of aerosols or ingestion of splashes or sprays of body fluids.

3. **PPE General Guidelines APPENDIX A, Q Fever Biosafety Practices** provides detailed information.
   a. Do not wear soiled protective clothing outside of the laboratory or animal facility.
   b. Do not launder soiled protective clothing at home.
   c. All soiled non disposable clothing must be institutionally laundered.
   d. All contaminated disposable PPE shall be discarded as biowaste.
   e. All reusable PPE shall be appropriately disinfected.

4. **Waste Management** The following waste should be disposed of as biowaste:
   a. Contaminated bedding i.e., amniotic fluid, placenta, and other material.
   b. Animal carcasses and aborted fetuses.
   c. Animal products, i.e., placentas, cells, tissues.
   d. Other contaminated items, such as glassware, media culture.
   e. Sharps such as needles, pipettes, scalpels should be disposed of in sharps containers.

5. **Training** All individuals that will work with, and around, sheep must be initially and annually trained regarding Q fever:
    a. Methods to reduce exposure.
    b. Personal protective equipment (PPE).
    c. Procedures for cleaning and disinfecting of housing, surgical and other affected areas.
    d. Medical History Screening if medical history changes or working with different animal species.

APPENDIX A - Q Fever Biosafety Practices

The following Animal Biological Safety Level 2 Practices and Procedures, Personal Protective Equipment (PPE) and cleaning and disinfecting procedures apply to the activities and locations indicated.

ACTIVITY OR LOCATION	ABSL 2 PRACTICES AND PROCEDURES (Biosafety in Microbiological and Biomedical Laboratories, 5th edition)	PERSONAL PROTECTIVE EQUIPMENT (PPE) REQUIRED	CLEANING AGENTS AND DISINFECTANTS
Non contaminated housing – without birthing products	• Standard animal care and management practices, including appropriate medical surveillance program • Limited access • Biohazard warning signs • Safer Devices must be used. • Dispose of sharps immediately after use in appropriate container.	• Hair cover • Disposable impervious coveralls • Gloves (1) • Booties or dedicated footwear • At a minimum, a surgical mask must be worn (2) or EH&S Approved N95 respirator or PAPR, recommended (3)	• 10% bleach solution or • Pharmacal PV-15 or • Analage 128
Contaminated housing – with birthing products ***up to 7 days post-birth***	• Standard animal care and management practices, including appropriate medical surveillance program • Limited access • Biohazard warning signs • Safer Devices must be used. • Dispose of sharps immediately after use in appropriate container. • Wet down all infectious wastes prior to disposing through the biowaste program. • Consider all surfaces or equipment in the area as contaminated • Avoid direct contact with birthing products. • Isolate ewes that have aborted whenever possible. • Special care shall be taken to properly contain and decontaminate materials or tissue having contact with amniotic fluid.	• Hair cover • Disposable impervious coveralls • Gloves (1) • Safety glasses, goggles or faceshield • Booties or dedicated footwear • EH&S Approved N95 respirator or PAPR, **required** (3) • Wear obstetrical sleeves during birthing	• 10% bleach solution or • Pharmacal PV-15 or Analage 128
SURGICAL/NECROPSY PROCEDURE AREAS / WORKING WITH SHEEP TISSUE AND CELLS	• Standard animal care and management practices, including appropriate medical surveillance program • Limited access • Biohazard warning signs • Safer Devices must be used.	• Hair cover • Disposable impervious coveralls • Gloves (1) • Safety glasses or goggles	• 10% bleach solution or • Pharmacal PV-15 or • Analage 128

ACTIVITY OR LOCATION	ABSL 2 PRACTICES AND PROCEDURES (Biosafety in Microbiological and Biomedical Laboratories, 5th edition)	PERSONAL PROTECTIVE EQUIPMENT (PPE) REQUIRED	CLEANING AGENTS AND DISINFECTANTS
	• Dispose of sharps immediately after use in appropriate container. • Use of biosafety cabinet (BSC) or downdraft table.		
SHEARING	• Standard animal care and management practices, including appropriate medical surveillance program	• Hair cover • Disposable impervious coveralls • Gloves (1) • Safety glasses or goggles • Booties or dedicated footwear • EH&S Approved N95 respirator or PAPR, **required** (3)	• 10% bleach solution or • Pharmacal PV-15 or • Analage 128

(1) Nitrile gloves are recommended for durability, fit and reduced latex allergies.
(2) Fluid Resistant Face Mask.
(3) Powered Air Purifying Respirator. 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 procedures) with animals.

Wearing of EH&S approved N95 respirators requires initial and annual medical clearance, fit testing and training per WFUBMC Respiratory Protection Program. Please contact WFBMC EH&S at 716-9375 for assistance with fit testing and training.

RESPIRATOR TYPE	MANUFACTURER
Filtering Facepiece N-95	3M, Kimberly-Clark , Moldex, Wilson
PAPR (Powered Air Purifying Respirator)	3M