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SAFETY PROCEDURE/GUIDELINES
Sheep Containment Unit

Deleted: Health Sciences

NUMBER: Procedure Guideline SF-04
SUBJECT: Procedures for Mechanical Systems Failure
Occupational Health and Safety

PAGES: 4

EFFECTIVE DATE: January, 2007

SUPERSEDES: October, 2006

APPLIES TO: All Personnel

APPROVED: Draft

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1.0 Introduction

- 1.1 Sheep are a common reservoir of the zoonotic agent *Coxiella burnetti*, a rickettsial micro organism which, if transmitted can infect humans and may cause an illness called Q fever. About one half of people infected with *C. burnetti* show signs of clinical illness with a small percentage of clinical cases developing pneumonia and some cases developing liver disease or rarely, endocarditis.

Human infection usually occurs through inhalation of contaminated dusts and aerosols generated by infected animals, their waste products, placental tissues and fluids and contaminated straw or bedding.

The risk of exposure for personnel is significantly higher when work with pregnant sheep where large numbers of organisms may be present in placenta, birth tissues and amniotic fluids of infected animals. Persons at risk (i.e. those with valvular heart disease, persons who are immune suppressed or pregnant women) should be advised of the risk of serious illness that may result from Q fever and should seek medical advice before working with pregnant sheep.

For more information on Q-Fever, please see:

(Health Canada) <http://www.phac-aspc.gc.ca/msds-ftss/>
(CDC) <http://www.cdc.gov/ncidod/dvrd/qfever/>

2.0 Measures to Reduce the Risk of Exposure to Q Fever

- 2.1 Sheep will only be admitted to the facility where there is no record of Q fever infection in the originating flock as determined by the best available testing methodology (See SOP 169).
- 2.2 The sheep housing facilities and operating rooms at UWO will be designed and operated at the standard required by Health Canada as stated in the "Guidelines for Biomedical Facilities using Sheep as Research Animals" December 2000". This standard is available at: www.phac-aspc.gc.ca/ols-bsl/aminres_e.html
- 2.3 Entrance to the sheep facilities will be limited to approved persons only.
- 2.4 **These procedures and SOPs are intended to reduce the risk of exposure to Q Fever for all personnel who work in the Sheep Containment Facility at the University of Western Ontario. It is essential for the protection of all, that all procedures are followed at all times by all personnel.**

3.0 ALARM CONDITION

An alarm condition will occur when the when the sheep rooms or surgical suite are not maintained at negative pressure with respect to adjoining areas.

4.0 FAILURE OF THE VENTILATION SYSTEMS

- 4.1 Failure of the exhaust air system automatically will activate an alarm which sounds in the building. The alarm indicates that the unit has lost negative pressure and is approaching neutrality. This alarm is connected to WES (Western Environmental Services) and Campus Police Service is notified.
- 4.2 If there is a failure in the air supply systems, there is no immediate hazard. Exhaust fans will continue to run, maintaining negative pressure.

5.0 PROCEDURE FOR EXHAUST FAN FAILURE

- 5.1 When the audible alarm sounds and you are in the sheep unit, shelter in place. Stay in the facility and await instructions announced on the PA system. Do not open doors to the change rooms or hallways. Only leave the facility if instructed to do so by the incident commander or HAZMAT Team member.
- 5.2 If you are not in the sheep unit, evacuate the building immediately.

Deleted: 3.0 Description of Alarm System¶

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Deleted: 4.1 A room static pressure alarm announced by a continuous tone-alert signal even though all doors are shut. This will continue to exist for as long as the pressure at any point inside the facility is in fault.. A red light with audible sound will show on the indicator panel outside each suite. Alarm will cease when pressure is maintained at the original design net value.¶

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VENTILATION FANS 5.1

Exhaust fans : ¶

-- When one exhaust fan failed, the standby exhaust fan started.¶

-- When two exhaust fans failed, one supply fan shut down after about 2 minutes¶

delay. So, two supply fans and two exhaust fans were still running.¶

-- When three exhaust fans failed, two supply fans shut down after about 2 minutes¶

delay. So, one supply fan and one exhaust fan were still running.¶

-- When all exhaust ... [1]

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6.0 POWER FAILURE DURING REGULAR OPERATIONS

The facility ventilation system is on back up power. However, in the event of a power failure, stay in the facility and await instructions announced on the PA system. Do not open doors to the changerooms or hallways. Only leave the facility if instructed to do so by the incident commander or HAZMAT Team member.

7.0 MEASURES TO BE TAKEN IN CASE OF VENTILATION FAILURE

7.1 The airlock will activate and prevent entry to the building by visitors. Incident command will deny access to all persons, except for essential personnel, such as veterinarians, emergency personnel, biosafety officers, and minimum animal care staff.

7.2 There is no entry of non-essential personnel, such as a technician performing routine maintenance.

7.3 Anyone entering the building must gown as per diagrams (posted by ACVS), including a fit-tested mask, gloves, Tyvek, and safety glasses. Personal protective equipment and gowning will occur in the guard trailer.

7.4 De-gowning on exit must occur as per posted diagram. All personal protective equipment is to be left at the assigned exit point.

7.5 Upon exiting the building, you may be instructed to degown in a temporary location, such as the emergency response team trailer. Persons must remove outer wear (including scrubs) and put on a Tyvek provided. Wash your hands and face. Ensure that you give your name to the emergency responders so that medical follow-up can be done.

Deleted: <#> Notify the Non-Vet Emergency number the Principal Investigator and the Biosafety Officer as soon as possible.¶

¶<#>If failure of system has occurred, then doors must be sealed closed with duct tape to prevent the exchange of air between the sheep facility and the outer environment. Duct tape upon leaving the facility. Duct tape can be found hanging outside the facility doors.¶

¶<#>CCPS must immediately notify HazMat Team leader, Tony Hammoud.¶

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¶7.2 If failure of exhaust system as indicated above, the ... [6]

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VENTILATION FANS**5.1 Exhaust fans :**

- When one exhaust fan failed, the standby exhaust fan started.
- When two exhaust fans failed, one supply fan shut down after about 2 minutes delay. So, two supply fans and two exhaust fans were still running.
- When three exhaust fans failed, two supply fans shut down after about 2 minutes delay. So, one supply fan and one exhaust fan were still running.
- When all exhaust fans failed, all three supply fans shut down after about 2 minutes delay. So no fan was running.

5.2 Supply fans :

- When one supply fan failed, the standby supply fan started.
- When two supply fans failed, the bypass damper was controlled to open at 40% after about 2 minutes delay. So, two supply fans and three exhaust fans were still running.
- When three supply fans failed, one exhaust fan shut down and the bypass damper was controlled to open at 100% after about 2 minutes delay. So, one supply fan and two exhaust fans were still running.
- When all supply fans failed, another exhaust fan shut down after about 2 minutes delay. So, only one fan was running.
- When there were three supply fans running, which is normal operation, the bypass damper was controlled to maintain exhaust pressure at negative 4 inch H₂O.

- 6.3 If the exhaust fan fails, the air pressure inside the facility will gradually equilibrate with the air in the adjacent rooms and hallway will become static. An audible alarm will sound and WES will receive the alarm at the control desk electronically. The Campus Community Police Services (CCPS) will be called by WES control technicians.

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Leave the facility quickly, discarding contaminated clothing in the standard manner according to SOP. 626. From a remote area call WES (88738) and CCPS emergency number (83300 or 911) to inquire about the status of the facility. Emergency numbers are posted in the suites.

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7.1 Emergency lighting (back-up generator) will immediately activate in the unit.

7.2 If failure of exhaust system as indicated above, then doors must be sealed closed with duct tape to prevent the exchange of air between the sheep facility and the outer environment. Duct tape upon leaving the facility.

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8.0 POWER FAILURE DURING SHEEP SURGERY

8.1 Emergency lighting (back-up generators) will immediately activate in the unit.

8.2 For surgical procedures underway at the time of the power failure follow SOP. 701.

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9.1 Anyone in the facility must exit their work area. Normal de-gowning procedures must be used to exit any animal facilities.

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be deactivated by ACUS,

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