McMaster University
Medical Monitoring Program Information Sheet

The purpose of this document is to provide information on an agent/virus in order for all McMaster University staff and students to make an informed decision about entering our medical monitoring program.

Please review this document, print your name, sign and date the Memorandum of Understanding and Agreement and then provide it to your supervisor.

Coxiella burnetii

The following summary is provided by the McMaster Biosafety Office.

For a complete copy of the excerpted text below please refer to: http://www.phac-aspc.gc.ca/lab-bio/res/psds-ftss/msds43e-eng.php

Q fever or the handling of animals which could be a zoonotic source for Q fever
Found in medical labs using sheep for research; common cases in researchers and visitors.

INFECTIOUS DOSE: 10 organisms by inhalation route, airborne organisms may be carried >1/2 mile downwind;

PHYSICAL INACTIVATION: Resists elevated temperatures, dessication, osmotic shock, UV; inactivated by ether, chloroform, gamma irradiation, 130°C for 60 min. Extremely resistant to drying and is stable under a variety of environmental conditions; survives for months and even years in the environment; dried sputum - 30 days; dust - up to 120 days; dried urine of guinea pig - 49 days; feces of tick 586 days; milk - 42 months at 4-6°C; wool 12-16 months at 4-6°C

LABORATORY-ACQUIRED INFECTIONS: Second most commonly reported laboratory infection with outbreaks involving 15 or more persons recorded in several institutions; 278 reported cases with 1 death. A wide range of domestic and wild mammals are natural hosts and may serve as potential source of infection to laboratory and animal care personnel; infected arthropods; blood, urine, feces, milk, and tissues of infected animal or human hosts; placenta of infected sheep may contain millions of organisms/gram tissue; milk may contain 100,000 organisms/gram

PRIMARY HAZARDS: Parenteral inoculation; exposure to infectious aerosols and droplets. Exposure to naturally infected and often asymptomatic sheep and to their birth products is a documented hazard to personnel
CONTAINMENT REQUIREMENTS: Biosafety level 2 practices and containment for nonpropagative laboratory procedures, including serological examinations and staining of impression smears; biosafety level 3 practices and facilities for activities involving the inoculation, incubation, and harvesting of embryonated eggs or tissue cultures, the necropsy of infected animals and the manipulation of infected tissues. Laboratory coat; gloves and gown (tight wrists and fastened in back) when working with the agent; masks may also be used. Since infected guinea pigs and other rodents may shed the organisms in urine or feces, experimentally infected rodents should be maintained under Animal Biosafety Level 3.

The following summary is provided by Employee Health Services.

For a complete copy of the excerpted text below please refer to:
http://www.ccohs.ca/oshanswers/diseases/qfever.html

Facts
Q fever is an infectious disease that spreads from animals to humans (zoonotic disease). Q fever is caused by a microbe called "Coxiella burnetii." Cattle, sheep, and goats are the primary reservoirs of C. burnetii. Organisms are excreted in milk, urine, and feces of infected animals. Most importantly, during birthing the organisms are shed in high numbers within the amniotic fluids and the placenta. The organisms are resistant to heat, drying, and many common disinfectants. These features enable the bacteria to survive for long periods in the environment. Infection of humans usually occurs by inhalation of these organisms from air that contains airborne barnyard dust contaminated by dried placental material, birth fluids, and excreta of infected herd animals.

Symptoms
The incubation period for Q fever varies depending on the number of organisms that initially infect the patient. Infection with greater numbers of organisms will result in shorter incubation periods. Most patients become ill within 2-3 weeks after exposure. Those who recover fully from infection may possess lifelong immunity against re-infection.

Only about one-half of all people infected with C. burnetii show signs of clinical illness. Most acute cases of Q fever begin with sudden onset of one or more of the following: high fevers (up to 104-105°F), severe headache, general malaise, myalgia, confusion, sore throat, chills, sweats, non-productive cough, nausea, vomiting, diarrhea, abdominal pain, and chest pain. Fever usually lasts for 1 to 2 weeks. Weight loss can occur and persist for some time. Thirty to fifty percent of patients with a symptomatic infection will develop pneumonia. Additionally, a majority of patients have abnormal results on liver function tests and some will develop hepatitis. In general, most patients will recover to good health within several months without any treatment. Only 1%-2% of people with acute Q fever die of the disease.
**Diagnosis**
Laboratory tests for Q fever measure antibodies that circulate in the blood. Antibodies are protective substances that the body produces in defense against infectious diseases. Q fever can be diagnosed in patients who develop these antibodies in their blood following a period of unexplained feverish illness.

**Treatment**
The antibiotic tetracycline (doxycycline) is often used to treat Q fever. Patients usually recover promptly when treatment is started without delay. For chronic Q fever, both doxycycline and hydroxychloroquine may be used for several months. A vaccine is available to protect individuals exposed to the Q fever microbe. The use of this vaccine should be limited to those at high risk of exposure whose blood tests for resistance to Q fever are negative. Before vaccination, individuals must also have a skin test to determine if they are allergic to the vaccine.

**Special Considerations**
Individuals with heart valve problems or suppressed immune systems are at higher risk for Q fever infection.

**Prevention**
For most effective prevention, the Q fever microbe should be eliminated from animals. Eradications programs, however, are not yet available because Q fever spreads so effectively among animals. So far, research on vaccination programs for animals has not had practical success.

Workers who have even remote contact with animals, animal products, and animal waste should be informed about the disease, its characteristics, and the nature of the risk. Workers who start jobs with increased risk of Q fever should be offered blood tests to determine if they have resistance to Q fever or whether they should consider vaccination. The possibility of Q fever should be investigated in high risk workers who develop an unexplained feverish illness, especially if lung infections develop. Q fever is a reportable disease in most Canadian jurisdictions.

The risk of infection from the workplace can be reduced by: vaccination of workers, personal precautions, and workplace hygiene.

**Memorandum of Understanding and Agreement (“MUA”) for BSL2 Medical Monitoring Program**

**Note:** This MUA is to be signed by the employee/student and supervisor, filed and kept by the supervisor. It will be reviewed during the annual biosafety audit by the McMaster Biosafety office.

The employee/student named below acknowledges and agrees as follows:
• I have read and understand all of the information in this Medical Monitoring Information Sheet provided jointly by the McMaster Biosafety Office and Employee Health Services and reviewed the biologically hazardous agent to which I have potential exposure.  
  Initial here____

• I will report a pregnancy or a compromised immune system (due to medication {steroid or other immunosuppressive therapy}, organ transplant, chemotherapy or radiation therapy, HIV infection etc.) to my supervisor and X (graduate students) or Employee Health Services Occupational Health Nurse at ext. 20310 (faculty and staff)  Initial here____

• I will report an exposure to a biological agent to my supervisor immediately and complete a McMaster incident/accident report.  Initial here____

• I will report any illness that resembles the symptoms listed in this Medical Monitoring Information Sheet to my supervisor.  Initial here____

• I recognize my responsibility to observe all safety practices and precautions while present in the BSL2 laboratory.  Initial here____

• I am aware of, and wish to participate in, the medical monitoring program (RMM #605) for this biological level 2 agent. Please circle: [yes] [no]  Initial here _____

Employee/Student print name:  
________________________________________

Supervisor print name:  
________________________________________

Signature:  __________________________________________

Signature:  __________________________________________

Date:  __________________________________________

Date:  __________________________________________