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Office of  
Laboratory  
Security

MSDS

## MATERIAL SAFETY DATA SHEET - INFECTIOUS SUBSTANCES

### SECTION I - INFECTIOUS AGENT

**NAME:** *Brucella* spp. (*B. abortus*, *B. canis*, *B. melitensis*, *B. suis*)

**SYNONYM OR CROSS REFERENCE:** Brucellosis, Undulant fever, Bang's disease, Malta fever, Mediterranean fever

**CHARACTERISTICS:** Gram negative cocci or small rods, aerobic, non-motile, urease +

### SECTION II - HEALTH HAZARD

**PATHOGENICITY:** All *Brucella* isolates are potentially pathogenic to humans; systemic bacterial disease with acute or insidious onset; intermittent fever, headache, weakness, profuse sweating, chills, arthralgia; localized suppurative infections; subclinical infections are frequent; <2% case fatality rate for untreated cases; may have long recovery period

**EPIDEMIOLOGY:** Worldwide, especially in Mediterranean countries of Europe and Africa; Middle East, India, central Asia, Mexico, Central and South America; common in those who eat raw caribou; occurrence often depends on extent of animal *Brucellosis*; predominantly an occupational disease of those who work with infected animals or their tissues

**HOST RANGE:** Humans, cattle, swine, goats, sheep, deer, caribou, elk, dogs, coyotes

**INFECTIOUS DOSE:** Unknown

**MODE OF TRANSMISSION:** Through ingestion, direct contact via skin abrasions and mucous membranes, and inhalation; risk factors include contact with infected tissues, blood, urine, vaginal discharge, aborted fetuses; ingestion of raw milk or cheese from infected animals; contact in abattoirs; laboratory-acquired (generally through aerosolization)

**INCUBATION PERIOD:** Highly variable; 5- 60 days; occasionally several months

**COMMUNICABILITY:** No evidence of person to person transmission

### SECTION III - DISSEMINATION

**RESERVOIR:** Cattle (*B. abortus* most common) and other animals (see host range)

**ZOONOSIS:** Yes, especially from cattle

**VECTORS:** None

## **SECTION IV - VIABILITY**

**DRUG SUSCEPTIBILITY:** Susceptible to tetracyclines and streptomycin or TMP-SMX; therapy usually consists of a combination of doxycycline and streptomycin

**DRUG RESISTANCE:** Resistant to penicillins and cephalosporins

**SUSCEPTIBILITY TO DISINFECTANTS:** Susceptible to many disinfectants - 1% sodium hypochlorite, 70% ethanol, iodine/alcohol solutions, glutaraldehyde, formaldehyde

**PHYSICAL INACTIVATION:** Susceptible to moist heat (121°C for at least 15 min) and dry heat (160-170°C for at least 1 hour)

**SURVIVAL OUTSIDE HOST:** Carcasses and organs - up to 135 days; paper - 32 days; soil - 125 days; blood 4°C - 180 days

## **SECTION V - MEDICAL**

**SURVEILLANCE:** Monitor for symptoms; isolation of organism from blood or tissue samples; confirm by serological testing

**FIRST AID/TREATMENT:** Antibiotic therapy

**IMMUNIZATION:** Vaccines not available for use in humans

**PROPHYLAXIS:** None

## **SECTION VI - LABORATORY HAZARDS**

**LABORATORY-ACQUIRED INFECTIONS:** Most commonly reported laboratory-acquired infection; 423 cases up to 1976 with 5 deaths

**SOURCES/SPECIMENS:** Cultures, blood, tissues, placentas, fetuses, urine, uterine discharges

**PRIMARY HAZARDS:** Exposure to aerosols; direct skin contact with cultures of infectious specimens from animals; ingestion (mouth pipetting); accidental inoculation; sprays into eyes, nose and mouth

**SPECIAL HAZARDS:** Most cases have involved exposure to *Brucella* organisms being grown in large quantities

## **SECTION VII - RECOMMENDED PRECAUTIONS**

**CONTAINMENT REQUIREMENTS:** Biosafety level 2 practices for activities involving clinical materials of human or animal origin; Biosafety level 3 containment, practices and facilities for all manipulations of cultures and for experimental animal studies

**PROTECTIVE CLOTHING:** Laboratory coat; gloves when direct contact with infectious materials is unavoidable: gloves and gown (tight wrists and tie in back) for work with infectious material in biosafety cabinet

**OTHER PRECAUTIONS:** All procedures likely to generate aerosols should be carried out in a biosafety cabinet

### **SECTION VIII - HANDLING INFORMATION**

**SPILLS:** Allow aerosols to settle; wearing protective clothing, gently cover spill with paper towels and apply 1% sodium hypochlorite, starting at perimeter and working towards the centre; allow sufficient contact time (30 min) before clean up

**DISPOSAL:** Decontaminate before disposal; steam sterilization, incineration, chemical disinfection

**STORAGE:** In sealed containers that are well labelled

### **SECTION IX - MISCELLANEOUS INFORMATION**

**Date prepared:** November 1999

**Prepared by:** Office of Laboratory Security, PHAC

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