



## BIOHAZARDOUS AGENT REFERENCE DOCUMENT

### Cryptosporidium parvum

The Biohazardous Agent Reference Document (BARD) is a general guidance resource that reviews and summarizes the nature of a pathogen or biotoxin, and offers safety requirements for work with the agent in the laboratory. The BARD may replace the formal SOPs used in conjunction with some IBC registrations.

The BARD is provided as an additional guidance tool, and is not a substitute for a risk assessment, biosafety training, lab-specific training, or a formal [IBC master protocol registration](#). This document should be readily available in the laboratory, and it is the responsibility of the Laboratory Supervisor or Principal Investigator to ensure that all personnel have read, understood, and signed the document. The BARD is for informational purposes only, and is not intended to be a substitute for professional medical advice, diagnosis, or treatment. Please consult a health care provider for any medical questions or concerns.

### **INSTRUCTIONS**

- 1. Review the information contained in this document.**
- 2. Add any necessary information that is specific to your work in the laboratory (such as strain-specific information). Please be sure that the track changes function is turned on to indicate any changes that you make.**
- 3. Instruct all personnel to review the BARD and sign the last page, indicating that they have read and understood the information.**
- 4. Submit the BARD along with your IBC master protocol registration, amendment, or continuing review.**

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### Cryptosporidium parvum

#### CHARACTERISTICS

<b>Morphology</b>	Intracellular protozoan parasite with thick-walled spherical oocysts 4 -6 micrometer in size
<b>Strain Specific Characteristics</b>	

#### HEALTH HAZARDS

<b>Host Range</b>	Humans, mammals, fish, amphibians, reptiles, birds. Common in cattle.
<b>Modes of Transmission</b>	Ingestion: fecal-oral route, oral contact with contaminated water, food, surfaces, & objects.
<b>Signs and Symptoms</b>	Acute gastroenteritis. Diarrhea, abdominal pain, cramps, fever, vomiting, muscle pain, nausea, anorexia, malaise, fatigue. Symptoms lasting up to 3 weeks in immunocompetent individuals. In immunocompromised individuals: severe weight loss, cholangitis, pancreatitis, liver cirrhosis.
<b>Infectious Dose</b>	As few as 1 – 10 oocysts
<b>Incubation Period</b>	7 – 10 days

#### MEDICAL PRECAUTIONS / TREATMENT

<b>Prophylaxis</b>	None available
<b>Vaccines</b>	None available
<b>Treatment</b>	Nitazoxanide, rehydration and electrolytes in severe cases
<b>Surveillance</b>	Monitor for symptoms and test stool specimen with serology or direct microscopic observation
<b>UVM IBC Requirements</b>	Report any exposures or signs and symptoms to your supervisor
<b>Additional Medical Precautions</b>	Highly contagious. Oocysts can be excreted up to 50 days after symptoms resolve. Immunocompromised individuals are at increased risk. May be life-threatening in AIDS patients and transplant recipients.

#### LABORATORY HAZARDS

<b>Laboratory Acquired Infections</b>	At least 16 cases of lab-acquired cryptosporidiosis have been reported
<b>Sources</b>	Feces from infected humans and animals, contaminated water, laboratory cultures

#### CONTAINMENT REQUIREMENTS

<b>BSL - 2</b>	Manipulation of known or potentially infected clinical samples and cultures of laboratory adapted strains (RG2)
<b>BSL - 3</b>	
<b>ABSL - 2</b>	Work with animals infected with risk group 2 strains
<b>ABSL - 3</b>	
<b>Aerosol generating activities</b>	Centrifugation, homogenizing, vortexing or stirring, changing of animal cages, animal surgeries, cell sorting, pipetting, pouring liquids, sonicating, loading syringes
<b>Primary containment device (BSC)</b>	Use for procedures that may produce aerosols, or involve high concentrations or large volumes

#### EXPOSURE PROCEDURES

<b>Mucous membranes</b>	Flush eyes, mouth or nose for 15 minutes at eyewash station.
<b>Other exposures</b>	Wash area with soap and water for 15 minutes
<b>Medical Follow-Up</b>	Contact UVMHC Infectious Disease Dept. directly at <b>(802) 847-2700</b> for immediate assistance. Bring this document with you if seeking medical care.
<b>Reporting</b>	Report all exposures or near misses to: <ol style="list-style-type: none"> <li>1. Your immediate Supervisor</li> <li>2. The UVM Biosafety Officer at <b>(802) 777-9471</b> and Risk Management at <b>6-3242</b></li> <li>3. Risk Management and Safety; <a href="https://www.uvm.edu/riskmanagement/incident-claim-reporting-procedures">https://www.uvm.edu/riskmanagement/incident-claim-reporting-procedures</a></li> </ol>

#### PERSONAL PROTECTIVE EQUIPMENT (PPE)

<b>Minimum PPE Requirements</b>	Nitrile gloves, waterproof shoe covers for animal work, lab coat or gown, appropriate eye/face protection. Wash hands after removing gloves.
<b>Additional Precautions (Risk assessment dependent)</b>	Risk Assessment Dependent

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VIABILITY	
<b>Disinfection</b>	Susceptible to >6% hydrogen peroxide and ethylene oxide, with a 20-minute contact time
<b>Inactivation</b>	Inactivated by autoclaving, or freezing at -80°C
<b>Survival Outside Host</b>	Oocysts can survive for 6 months at 20°C in the environment

SPILL CLEAN UP PROCEDURES	
<b>Small Spill</b>	Notify others working in the lab. Allow aerosols to settle. Don appropriate PPE. Cover area of the spill with paper towels and apply approved disinfectant, working from the perimeter towards the center. Allow 30 minutes of contact time before clean up and disposal. Dispose in double biowaste bags and biobox.
<b>Large Spill</b>	<p><b>Inside of a lab:</b> Call UVM Service Operations at 656-2560 and press option 1 to speak to a dispatcher. Ask them to page Risk Management and Safety.</p> <p><b>Outside of a lab:</b> Pull the nearest fire alarm and evacuate the building. Wait out front of the building for emergency responders to arrive.</p>

REFERENCES	
Canadian PSDS	<a href="https://www.canada.ca/en/public-health/services/laboratory-biosafety-biosecurity/pathogen-safety-data-sheets-risk-assessment/cryptosporidium-parvum-pathogen-safety-data-sheet.html">https://www.canada.ca/en/public-health/services/laboratory-biosafety-biosecurity/pathogen-safety-data-sheets-risk-assessment/cryptosporidium-parvum-pathogen-safety-data-sheet.html</a>
BMBL	<a href="https://www.cdc.gov/biosafety/publications/bmb15/">https://www.cdc.gov/biosafety/publications/bmb15/</a>
CDC Guidelines	<a href="https://www.cdc.gov/parasites/crypto/index.html">https://www.cdc.gov/parasites/crypto/index.html</a>

STUDENT / EMPLOYEE NAME	SIGNATURE	DATE

### Biosafety Review:

\_\_\_\_\_  
Jeff LaBossiere, Biological Safety Officer

\_\_\_\_\_  
Date

Principal Investigator: \_\_\_\_\_

IBC Registration #: \_\_\_\_\_