

**BIOHAZARDOUS AGENT REFERENCE DOCUMENT**

## Coxsackievirus

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.**

## BIOHAZARDOUS AGENT REFERENCE DOCUMENT

### Coxsackievirus

CHARACTERISTICS	
<b>Morphology</b>	Member of the Picornaviridae family, non-enveloped virus.
<b>Strain Specific Characteristics</b>	Group A (serotypes 1 -22 and 24) Group B (serotypes 1-6)

HEALTH HAZARDS	
<b>Host Range</b>	Humans, monkeys, mice
<b>Modes of Transmission</b>	Mucous membrane contact with infective secretions or excretions, ingestion, inhalation
<b>Signs and Symptoms</b>	The majority of infections are asymptomatic and self-limiting, but may lead to a variety of rare associated conditions: <u>Coxsackievirus group A associated conditions:</u> hand-foot-and-mouth disease, herpangina, acute lymphatic or nodular pharyngitis, aseptic meningitis, paralysis, rash, pneumonitis of infants, common cold, hepatitis, infantile diarrhea, acute hemorrhagic conjunctivitis. <u>Coxsackievirus group B associated conditions:</u> diabetes, pleurodynia, aseptic meningitis, paralysis, severe systemic infection in infants, meningoencephalitis, myocarditis, pericarditis, upper respiratory illness/pneumonia, rash, hepatitis, pancreatitis.
<b>Infectious Dose</b>	Unknown
<b>Incubation Period</b>	Varies greatly from days (hand-foot-and-mouth disease) to years (myocarditis)

MEDICAL PRECAUTIONS / TREATMENT	
<b>Prophylaxis</b>	None available
<b>Vaccines</b>	None available
<b>Treatment</b>	None available
<b>Surveillance</b>	Monitor for symptoms and test using PCR, serology, or viral isolation
<b>UVM IBC Requirements</b>	Report any exposures or signs and symptoms to your supervisor
<b>Additional Medical Precautions</b>	

LABORATORY HAZARDS	
<b>Laboratory Acquired Infections</b>	39 reported cases of lab-acquired infections up to 2006
<b>Sources</b>	Respiratory secretions or fluids, feces, and CSF from infected humans & animals, and laboratory cultures.

CONTAINMENT REQUIREMENTS	
<b>BSL - 2</b>	Manipulation of known or potentially infected clinical samples and cell 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, cell sorting, pipetting, pouring liquids, sonicating, loading syringes
<b>Primary containment device (BSC)</b>	Use for aerosol-generating activities, 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
<b>Reporting</b>	Report all exposures or near misses to: <ol style="list-style-type: none"> <li>Your immediate Supervisor</li> <li>The UVM Biosafety Officer at <b>(802) 777-9471</b> and Risk Management at <b>6-3242</b></li> <li>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, lab coat, appropriate eye/face protection. Wash hands after removing gloves.
<b>Additional Precautions (Risk assessment dependent)</b>	Sharps use strictly limited. Due to risk of inhalation, respirators may be required when working with Coxsackie. Medical clearance, fit testing and training is required annually per UVM's Respiratory Protection Program: <a href="https://www.uvm.edu/riskmanagement/personal-protective-equipment">https://www.uvm.edu/riskmanagement/personal-protective-equipment</a>

## BIOHAZARDOUS AGENT REFERENCE DOCUMENT

### Coxsackievirus

VIABILITY	
<b>Disinfection</b>	Sensitive to formaldehyde, glutaraldehyde, 10% bleach; with 15 minutes contact time. May be resistant to many common disinfectants (such as 70% ethanol, isopropanol, quaternary ammonium compounds).
<b>Inactivation</b>	Most are inactivated by heat above 42°C, sensitive to UV, drying reduces viral titers.
<b>Survival Outside Host</b>	Capable of surviving for months in neutral pH, moisture, and low temperature; survival enhanced by the presence of organic matter

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/coxsackievirus-pathogen-safety-data-sheet.html">https://www.canada.ca/en/public-health/services/laboratory-biosafety-biosecurity/pathogen-safety-data-sheets-risk-assessment/coxsackievirus-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 HFMD Guidelines	<a href="https://www.cdc.gov/hand-foot-mouth/about/index.html">https://www.cdc.gov/hand-foot-mouth/about/index.html</a>
Current Protocols in Microbiology	

STUDENT / EMPLOYEE NAME	SIGNATURE	DATE

**Biosafety Review:**

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

\_\_\_\_\_  
Date

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

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