

**BIOHAZARDOUS AGENT REFERENCE DOCUMENT**

Salmonella enterica typhimurium

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

### Salmonella enterica typhimurium

#### CHARACTERISTICS

<b>Morphology</b>	Gram-negative, non-spore forming, motile, rod-shaped bacterium. Member of the family Enterobacteriaceae.
<b>Strain Specific Characteristics</b>	Non-typhoid serovar

#### HEALTH HAZARDS

<b>Host Range</b>	Humans, wild & domestic animals, livestock
<b>Modes of Transmission</b>	Ingestion, contact with non-intact skin, mucous membrane contact. Aerosol transmission unknown.
<b>Signs and Symptoms</b>	Abdominal pain, cramping, diarrhea, nausea, vomiting, headache, chills, fever
<b>Infectious Dose</b>	100,000 organisms via ingestion
<b>Incubation Period</b>	6 – 72 hours for gastroenteritis, 5 – 21 days for enteric fever

#### MEDICAL PRECAUTIONS / TREATMENT

<b>Prophylaxis</b>	None available
<b>Vaccines</b>	None available
<b>Treatment</b>	Fluid and electrolyte replacement, antibiotics for patients with increased risk of complications
<b>Surveillance</b>	Monitor for symptoms and test using serology, PCR, or microbiological isolation
<b>UVM IBC Requirements</b>	Report any exposures or signs and symptoms to your supervisor
<b>Additional Medical Precautions</b>	Very young, very old, and immunocompromised individuals are at an increased risk

#### LABORATORY HAZARDS

<b>Laboratory Acquired Infections</b>	109 cases with one death reported in 2011, 41 cases in 2014, 24 cases in 2017.
<b>Sources</b>	Cerebrospinal fluid, blood, abscesses, lesion exudates, urine, & feces from infected humans and animals, laboratory cultures, contaminated food & water

#### 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 aerosol-generating activities, high concentrations, animal manipulations, 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 UVMCC 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>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, lab coat, appropriate eye/face protection. Wash hands after removing gloves.
<b>Additional Precautions</b>	Risk assessment dependent

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VIABILITY	
<b>Disinfection</b>	Susceptible to 1% sodium hypochlorite, 70% ethanol, 2-5% phenol, 4% formaldehyde, 2% glutaraldehyde, 3-6% hydrogen peroxide, quaternary ammonium compounds, iodophors. Contact time of 10 minutes.
<b>Inactivation</b>	Inactivated by autoclaving for 15+ minutes, dry heat above 170°C for 1+ hour
<b>Survival Outside Host</b>	May survive for several months, can survive in soil for up to 231 days, in water for up to 152 days

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/salmonella-enterica.html">https://www.canada.ca/en/public-health/services/laboratory-biosafety-biosecurity/pathogen-safety-data-sheets-risk-assessment/salmonella-enterica.html</a>
BMBL	<a href="https://www.cdc.gov/biosafety/publications/bmbl5/">https://www.cdc.gov/biosafety/publications/bmbl5/</a>
CDC Guidelines	<a href="https://www.cdc.gov/salmonella/typhimurium-07-17/index.html">https://www.cdc.gov/salmonella/typhimurium-07-17/index.html</a>

STUDENT / EMPLOYEE NAME	SIGNATURE	DATE

**Biosafety Review:**

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 Jeff LaBossiere, Biological Safety Officer

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 Date