**Biohazardous Agent Reference Document (BARD) and**

**Information for Healthcare Providers in the Event of an Exposure**

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| The BARD is an additional guidance tool. It is not a substitute for a risk assessment, biosafety training, lab-specific training, SOP as required by the IBC or a formal [IBC master protocol registration](https://www.uvm.edu/rpo/biosafety-oversight). This document must 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 and understood the information. The BARD is not intended to be a substitute for professional medical advice, diagnosis, or treatment. Please bring this IBC-approved BARD with you to the UVMMC Emergency Department if there has been an exposure and someone requires medical assistance.  INSTRUCTIONS for BARD Preparation   1. Complete the blue Information for Healthcare Providers section. 2. Review the standard information contained in the green section of this document. 3. Add/revise 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. 4. Submit the BARD along with your IBC master protocol registration or amendment. 5. Once approved by the IBC, all personnel must review this BARD. The PI will attest during the submission of the registration or amendment to add new personnel that each lab member has read and understands the material. | |
| **Information for Healthcare Providers**  Dear Healthcare Provider,  This individual works in a UVM research laboratory and has been exposed to a pathogen or toxin. Information about the materials this person may have been exposed to is listed below. You may also find useful additional information in subsequent pages of this reference document. | |
| **Pathogen Name:** | Alpha Toxin |
| **Pathogen/Toxin Classification:** |  |
| **List All Strains Used in the Laboratory:** |  |
| **List Resistant Genes Known to be Encoded:** |  |
| **Modes of Transmission *(mucous membranes, needle stick, inhalation)*:** | Inhalation, mucous membrane contact, sharps injury, ingestion, dermal contact. |
| **Known Medical Precautions and Treatment** | |

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| **Prophylaxis** | None available for toxin |
| **Vaccines** | Not recommended |
| **Treatment and/or Post-exposure Intervention** | Supportive treatment |
| **Surveillance** | Monitor for symptoms. Detection of toxin may be achieved by ELISA |
| **Additional Medical Precautions (immunosuppression, pregnancy, allergies)** | Immunocompromised individuals are at a higher risk for complications associated with exposure |

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| **Health Hazards** | |
| **Host Range** | Humans, vertebrate and invertebrate animals |
| **Signs and Symptoms** | Possible swelling, necrosis, edema, blisters, and restriction in blood supply at site of exposure. |
| **Toxic Dose** | LD50 = 10 μg/kg (mouse, i.p.) |
| **Incubation Period** | Unknown for toxin alone, 6 hours to 3 days for clostridial myonecrosis associated with bacterial infection |
| **Exposure Procedures** | |
| **Mucous membranes** | Flush eyes, mouth or nose for 15 minutes at eyewash station. |
| **Other exposures** | Wash area with soap and water for 15 minutes |
| **Medical Follow-Up** | Contact UVMMC Infectious Disease Dept. directly at **(802) 847-2700** for immediate assistance. Bring this document with you if seeking medical care. |
| **Reporting** | Report all exposures or near misses to:   1. Your immediate Supervisor 2. SOS at 802-656-2560 and ask to have the EH&S team paged 3. Risk Management: <https://www.uvm.edu/riskmanagement/incident-claim-reporting-procedures> |
| **Laboratory Hazards** | |
| **Laboratory Acquired Infections** | No data. At least six cases of laboratory-acquired infections with *Clostridium* spp. have been reported up to 1976 |
| **Sources** | *Clostridium septicum* |
| **Characteristics** | |
| **Morphology** | Pore-forming cytolysin, belong to the aerolysin-like family of toxins. |
| **Strain Specific Characteristics** | Major virulence factor of *Clostridium septicum*, the causative agent of atraumatic “gas gangrene.” Muscle cells exposed to the toxin undergo cellular oncosis, characterized by mitochondrial dysfunction and release of reactive oxygen species |
| **Containment Requirements** | |
| **BSL - 2** | Preparation or dilution of the agent, work with clinical specimens and cultures known or suspected to contain the agent |
| **BSL - 3** |  |
| **ABSL - 2** | Administration of the agent to an animal model. Animals may be housed at ABSL-1 post-exposure |
| **ABSL - 3** |  |
| **Aerosol generating activities** | Centrifugation, homogenizing, vortexing or stirring, pipetting, pouring liquids, filling or expelling syringes |
| **Primary containment device (BSC)** | Use a chemical fume hood, biosafety cabinet, or glove box for preparing stocks and dilutions |
| **Personal Protective Equipment (PPE)** | |
| ***Minimum PPE Requirements*** | Nitrile gloves, lab coat or gown, appropriate eye/face protection. Wash hands after removing gloves. |
| ***Additional Precautions***  ***(Risk assessment dependent)*** | Store in a secure location |
| **Viability** | |
| **Disinfection** | 10% bleach with a contact time of 30 minutes. |
| **Inactivation** | Autoclaving at 121°C for 15 - 30 min |
| **Survival Outside Host** | Stable at normal room temperature and pressure |
| **Spill Clean-Up Procedures** | |
| **Small Spill** | 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. |
| **Large Spill** | **Inside of a lab:** Call UVM Service Operations at 656-2560 and ask to speak to a dispatcher. Ask them to page Risk Management and Safety.  **Outside of the lab:** Pull the nearest fire alarm and evacuate the building. Wait out front of the building for emergency responders to arrive. |
| **References** | |
| **Canadian PSDS** | <https://www.canada.ca/en/public-health/services/laboratory-biosafety-biosecurity/pathogen-safety-data-sheets-risk-assessment/clostridium.html> |
| **BMBL** | <https://www.cdc.gov/labs/pdf/CDC-BiosafetyMicrobiologicalBiomedicalLaboratories-2020-P.pdf> |
| **Molecular Microbiology** | <https://onlinelibrary.wiley.com/doi/full/10.1111/j.1365-2958.2005.04774.x> |
| **American Society for Microbiology** | <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC257555/> |
| **Toxins** | <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4344638/> |
| **Cayman Chemical** | <https://www.caymanchem.com/cms/caymanchem/LiteratureCMS/Detection%20of%20Clostridium%20Septicum%20Alpha%20Toxin.pdf> |