**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:** | Tetrodotoxin (TTX) |
| **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, ingestion, injection, dermal exposure, mucous membrane contact |
| **Known Medical Precautions and Treatment** | |

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| **Prophylaxis** | None available |
| **Vaccines** | None available |
| **Treatment and/or Post-exposure Intervention** | None available, supportive treatment only |
| **Surveillance** | Monitor for symptoms |
| **Additional Medical Precautions (immunosuppression, pregnancy, allergies)** |  |

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| **Health Hazards** | |
| **Host Range** | Humans, other mammalian species |
| **Signs and Symptoms** | Numbness or tingling of the mouth, hands, and feet, dizziness, headache, nausea, excessive salivation or sweating, muscle paralysis or ataxia, dilated pupils, abdominal pain, vomiting, diarrhea, weakness, shortness of breath, irregular heartbeat, slow pulse rate, low blood pressure, pulmonary edema, respiratory failure, coma, seizures, death. |
| **Toxic Dose** | Median LD50 for mice is 334 micrograms/kg (oral) or 8 micrograms/kg (injected) |
| **Incubation Period** | 10 minutes to 6 hours, death may occur as early as 20 minutes after ingestion of naturally occurring toxin. |
| **Exposure Procedures** | |
| **Mucous membranes** | Flush eyes, mouth or nose for 15 minutes at eyewash station, seek medical attention. |
| **Other exposures** | Wash area with soap and water for 15 minutes, seek medical attention |
| **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. |
| **Sources** | Occurs naturally in the skin, intestine, sex organs, and liver of some species of fish (order Tetraodontidae), and some species of amphibians, octopus, and shellfish. May also be produced by some species of bacteria associated with these animals. |
| **Characteristics** | |
| **Morphology** | Potent neurotoxin with a chemical formula of C11H17N3O8, and molecular weight 319.27 g/mol. May be isolated from biological source or laboratory synthesized. |
| **Strain Specific Characteristics** | Interferes with conduction of nerve impulses by blocking sodium channels.  Synonyms: Maculotoxin, TTX, Fugu poison, Tarichatoxin |
| **Containment Requirements** | |
| **BSL - 2** | Preparation/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, 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, ducted BSC, or glove box for preparing stocks and dilutions |
| **Personal Protective Equipment (PPE)** | |
| ***Minimum PPE Requirements*** | Nitrile gloves, lab coat, appropriate eye/face protection. Wash hands after removing gloves. |
| ***Additional Precautions***  ***(Risk assessment dependent)*** | Sharps use strictly limited. Store in a secure location. Due to risk of inhalation, respirators may be required when working with TTX. Medical clearance, fit testing and training is required annually per UVM’s Respiratory Protection Program: <https://www.uvm.edu/riskmanagement/personal-protective-equipment> |
| **Viability** | |
| **Disinfection** | Susceptible to 1 – 2.5% sodium hypochlorite with a 30-minute contact time |
| **Inactivation** | Autoclaving NOT effective |
| **Survival Outside Host** | Stable at room temperature and normal pressures |
| **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** | |
| **NIH/NLM PubChem** | <https://pubchem.ncbi.nlm.nih.gov/compound/tetrodotoxin#section=Top> |
| **BMBL** | <https://www.cdc.gov/biosafety/publications/bmbl5/> |
| **CDC Guidelines** | <https://www.cdc.gov/niosh/ershdb/emergencyresponsecard_29750019.html> |
| **FDA** | <https://www.fda.gov/food/foodborneillnesscontaminants/causesofillnessbadbugbook/default.htm> |