

Biological Agent Reference Sheet (BARS)

This content of this document is for Emory University USE ONLY.

The information and contents of this Biological Agent Reference Sheet (including all text and graphics), whether available in print or electronic format (including any digital format, e-mail transmissions, or download from the website), shall be known hereinafter as "Reference Sheet Content". The Reference Sheet Content is provided as a courtesy and is not intended as a sole source of guidance in the evaluation of Biological Agents. The Reference Sheet Content is not intended to substitute for medical advice, medical care, diagnosis or treatment obtained from a physician or health care provider. Please seek the advice of a physician or other qualified health provider with any questions you may have regarding a medical condition. Do not rely on the Reference Sheet Content for diagnosis, treatment, or medical advice. This Reference Sheet Content is for informational purposes and does not provide individualized medical care or treatment. No endorsement of any specific tests, products, or procedures is made by Reference Sheet Content or affiliated party, member, agent or employee of the Emory University Environmental Health and Safety Office.

BIOLOGICAL AGENT REFERENCE SHEET

Diphtheria Toxin (DT)

CHARACTERISTICS	
<i>Natural Source</i>	Strains of <i>Corynebacterium diphtheria</i> that have been lysogenized by bacteriophage β
<i>Laboratory Source</i>	Solid lyophilized toxin
<i>Characteristics</i>	DT is an exotoxin that inhibits eukaryotic protein synthesis by ADP-ribosylating an elongation factor needed to translocate the ribosome along mRNA

HEALTH HAZARDS	
<i>Route of Entry</i>	Nasopharyngeal and cutaneous
<i>Signs and Symptoms</i>	DT can cause cranial, motor and sensory nerve palsies, myocarditis, and endocarditis.
<i>Toxicity Dose Data</i>	LD ₅₀ = 0.1 μ g/kg

MEDICAL PRECAUTIONS / TREATMENT	
<i>Diagnosis</i>	Clinical symptoms of toxin mediated disease.
<i>Prophylaxis</i>	Booster dose of diphtheria toxoid
<i>Vaccines</i>	Immunization with diphtheria toxoid is typically combined with tetanus toxoid and the pertussis vaccine as DTP and administered to young children.
<i>Treatment</i>	Administer antitoxin.
<i>Emory Requirements</i>	DT immunization and booster every 10 years

CONTAINMENT REQUIREMENTS	
<i>BSL-2</i>	Conduct all work with DT inside a biological safety cabinet.

SUPPLEMENTAL REFERENCES	
<i>Canadian MSDS</i>	http://www.phac-aspc.gc.ca/lab-bio/res/psds-ftss/corynebacterium-diphtheriae-eng.php
<i>BMBL: 5th Edition</i>	http://www.cdc.gov/OD/ohs/biosfty/bmbl5/BMBL_5th_Edition.pdf
<i>CDC</i>	http://www.cdc.gov/ncidod/dbmd/diseaseinfo/diphtheria_t.htm
<i>Applied Biosafety</i>	Johnson B, Mastnjak R, Resnick IG. 2001. Safety and Health Considerations for Working with Biological Toxins. <i>Applied Biosafety</i> . 6 (3): 117-135.
<i>Brock Biology of Microorganisms</i>	Madigan MT, Martinko JM. 2006. <i>Brock Biology of Microorganisms</i> . 11 th edition. Upper Saddle River (NJ): Prentice Hall.

SPILL PROCEDURES	
<i>Small</i>	Notify others working in the lab. Rinse gloves with decontamination solution and don new gloves. Cover area of the spill with paper towels and apply decontamination solution, working from the perimeter towards the center. Exit and keep others from entering the laboratory. Allow 1 hour of contact time before entering the laboratory without respiratory protection. Cleanup and dispose of spill materials.
<i>Large</i>	Contact Emory's Biosafety Officer (404-727-8863), the EHSO Office (404-727-5922), or The Spill Response Team (404-727-2888).

EXPOSURE PROCEDURES		
<i>Mucous membrane</i>	Flush eyes, mouth or nose for 15 minutes at eyewash station.	
<i>Other Exposures</i>	Wash area with soap and water for 15 minutes.	
<i>Reporting</i>	Immediately report incident to supervisor, complete an employee incident report in PeopleSoft.	
<i>Medical Follow-up</i>	<i>7am-4pm (OIM):</i> EUH (404-686-7941) EUHM (404-686-7106) WW (404-728-6431)	<i>After Hours:</i> OIM NP On Call 404-686-5500 PIC# 50464
	<i>Needle Stick (OIM):</i> EUH (404-686-8587) EUHM (404-686-2352)	<i>Yerkes:</i> Maureen Thompson Office (404-727-8012) Cell (404-275-0963)

DECONTAMINATION / INACTIVATION	
<i>Decontamination</i>	Decontaminate surfaces with solutions of 1% sodium hypochlorite
<i>Inactivation</i>	Autoclave at 121°C for 1 hour on liquid cycle with lid of primary container loosened

PERSONAL PROTECTIVE EQUIPMENT (PPE)	
<i>Minimum PPE Requirements</i>	At minimum, personnel are required to don gloves, closed toed shoes, lab coat, and appropriate face and eye protection prior to working with DT. Additional PPE may be required depending on lab specific SOPs.
<i>Additional Precautions</i>	When conducting procedures with a risk of toxin aerosol generation, respirators may be required. Fit testing and training is required annually per Emory's Respiratory Program: http://www.ehso.emory.edu/content-manuals/RespiratoryProtectionProgram.pdf