

Biological Agent Reference Sheet (BARS)

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BIOLOGICAL AGENT REFERENCE SHEET

Pseudomonas aeruginosa

CHARACTERISTICS	
<i>Morphology</i>	Member of the <i>Pseudomonadaceae</i> family, Gram negative bacillus, aerobic, non-spore forming
<i>Growth Conditions</i>	Brain Heart Infusion Broth

HEALTH HAZARDS	
<i>Host Range</i>	Humans, Animals, Plants
<i>Modes of Transmission</i>	Direct contact by inhalation of aerosols. Direct contact by aspiration of contaminated water (tap or distilled). Direct contact by exposure of wounds to contaminated materials. Indirectly by contact of mucous membranes with discharges from infected conjunctivae or infected respiratory secretions
<i>Signs and Symptoms</i>	Conjunctivitis, Upper Respiratory Infections, Pneumonia, Urinary Tract Infections, Wound Infection
<i>Infectious Dose</i>	Unknown
<i>Incubation Period</i>	Variable depending on infection. Eye infection is 24 to 72 hours.

MEDICAL PRECAUTIONS / TREATMENT	
<i>Prophylaxis</i>	Antibiotic Prophylaxis
<i>Vaccines</i>	None Available
<i>Treatment</i>	Aggressive antibiotic therapy for severe infections; Local application of antibiotic ointment or drops for skin or eye infections. <i>Pseudomonas aeruginosa</i> is intrinsically resistant to many common antibiotics.
<i>Surveillance</i>	Bacteriological identification of infection
<i>Emory Requirements</i>	Report all exposures

LABORATORY HAZARDS	
<i>Laboratory Acquired Infections (LAIs)</i>	None reported to date. However, this is an opportunistic pathogen and there is the possibility of severe to fatal infection in the immunocompromised.
<i>Sources</i>	Clinical Specimen: Respiratory secretions, wound exudates, blood, urine Environmental Reservoir: Water, infected solutions (IV, disinfectants, soap)

SUPPLEMENTAL REFERENCES	
<i>Canadian MSDS</i>	http://www.phac-aspc.gc.ca/lab-bio/res/psds-ftss/pseudomonas-spp-eng.php
<i>BMBL: 5th Edition</i>	http://www.cdc.gov/biosafety/publications/bmbl5/
<i>CDC Guidelines</i>	http://www.cdc.gov/hicpac/Disinfection_Sterilization/3_4surfaceDisinfection.html
<i>Journal of Bacteriology</i>	Kukavica-Ibrulj, Irena et Al. (2008). In Vivo Growth of <i>Pseudomonas aeruginosa</i> Strains PAO1 and PA14 and the Hypervirulent Strain LESB58 in a Rat Model of Chronic Lung Infection. J.Bact. 190:2804-2813. http://jb.asm.org/cgi/reprint/190/8/2804?maxtoshow=&hits=10&RESULTFORMAT=&fulltext=Growth+of+Pseudomonas+aeruginosa&searchid=1&FIRSTINDEX=0&resourcetype=HWCIT

CONTAINMENT REQUIREMENTS	
<i>BSL-2</i>	For all activities involving suspected or known infectious specimen or cultures
<i>ABSL-2</i>	For all procedures involving animals infected with <i>Pseudomonas</i>

SPILL PROCEDURES	
<i>Small</i>	Notify others working in the lab. Allow aerosols to settle. Don appropriate PPE. Cover area of the spill with paper towels and apply an EPA registered disinfectant, working from the perimeter towards the center. Allow 30 minutes of contact time before disposal and cleanup 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)

VIABILITY	
<i>Disinfection</i>	Susceptible to 1% sodium hypochlorite, 70% ethanol, 2% glutaraldehyde, 2% formaldehyde. <i>Alcohol containing disinfectants not recommended for resistant strains. Important Note: Organism has ability to form biofilms on moist environmental surfaces and approach resistance of bacterial spores to disinfectants.</i>
<i>Inactivation</i>	Inactivated by moist heat and dry heat. Moist heat (121°C for at least 15 minutes). Dry heat (160-170°C for at least an hour).
<i>Survival Outside Host</i>	Survives for several months in water with minimal nutrients.

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 <i>Pseudomonas aeruginosa</i> . Additional PPE may be required depending on lab specific SOPs.
<i>Additional Precautions</i>	Frequent hand washing, Avoid rubbing eyes as precautionary measure against eye infections. Respiratory protection may also be required.