



The University of Texas at Tyler
Environmental Health and Safety
BIOLOGICAL AGENT REFERENCE SHEET

Characteristics	
Risk Group	2 – associated with human which is rarely serious for which preventative or therapeutic interventions are often available
Agent Type	Biohazard
Description	<p>Bacteria belonging to the <i>Pseudomonas</i> group are common inhabitants of soil and water and can also be found on the surfaces of plants and animals. <i>Pseudomonas</i> bacteria are found in nature in a biofilm or in planktonic form. In the latter form the single cell can display an extremely high motility due to its polar flagella. <i>Pseudomonas</i> bacteria are renowned for their metabolic versatility as they can grow under a variety of growth conditions and do not need any organic growth factors. Typically they are plant pathogens, although several strains are pathogenic to humans. <i>P. aeruginosa</i>. This organism is an opportunistic human pathogen. While it rarely infects healthy individuals, immunocompromised patients, like burn victims, AIDS-, cancer- or cystic fibrosis-patients are at increased risk for infection with this environmentally versatile bacteria. It is an important soil bacterium with a complex metabolism capable of degrading polycyclic aromatic hydrocarbons, and producing interesting, biologically active secondary metabolites including quinolones, rhamnolipids, lectins, hydrogen cyanide, and phenazines. Production of these products is likely controlled by complex regulatory networks making <i>P. aeruginosa</i> adaptable both to free-living and pathogenic lifestyles. The bacterium is naturally resistant to many antibiotics and disinfectants, which makes it a difficult pathogen to treat.</p> <p>- ref: <i>Pseudomonas aeruginosa</i>. Genome. NCBI.</p>
Host Range	Humans, animals, and plants
Exposure route	Aerosol/inhalation, direct contact, ingestion, percutaneous
Incubation period	Varies based on route and infection

Laboratory Hazards	
High Energy	Centrifugation, sonication, vortexing
Sharps	Needles, broken glass

Aerosols	Shaking, liquid culturing, pipetting
Equipment	Easily adhere to and stay on unsanitary equipment
Exposed body	Skin, eyes, mucous membranes

Laboratory Handling Guidelines

Biosafety Level	2 - refer to Biosafety Manual; contact EH&S for a copy
Training	EH&S Biosafety Training; Lab specific training
Engineering controls	BSC if working with liquids; lids while working with high energy equipment
PPE	Eye protection, gloves and lab coat
Waste	Biohazard - put in red biohazard bins

Agent Viability

Disinfection	30% bleach solution
Survival outside host	Pseudomonas can survive for months on dry surfaces and in water for months; humidity can improve persistence
Engineering controls	BSC if working with liquids; lids while working with high energy equipment
PPE	Eye protection, gloves, long sleeve or lab coat
Waste	Biohazard - put in red biohazard bins

Exposure and Spill procedures

Mucous membranes	Flush eyes, nose, mouth/throat for 15 minutes
Skin contact	Wash with soap and water for a minimum of 30 second for bare skin contact; for broken skin wash with soap and water for 15 minutes
Minor (small) spills	Notify all persons present in the area; evacuate area for 30 minutes to allow aerosols to fall; don appropriate PPE; apply absorbant tissues to area to pick up excess liquid; use disinfect to wipe area from the perimeter of the spill inwards to the center. Put all clean up material and PPE into a red biohazard bin.
Major (large) spills	Contact EH&S immediately; after-hours contact University Police
Waste	Biohazard - put in red biohazard bins

References

Pseudomonas spp. Pathogen Safety Data Sheet. Public Health Agency of Canada. <http://www.phac-aspc.gc.ca/lab-bio/res/psdsftss/pseudomonas-spp-eng.php>

EH&S. Cornell University. https://sp.ehs.cornell.edu/lab-research-safety/bios/bars/Documents/BIO_BARS_Pseudomonas_aeruginosa.pdf