The University of Texas at Tyler
Environmental Health and Safety

BIOLOGICAL AGENT REFERENCE SHEET

Characteristics	
Risk Group	2 - Agents that are associated with human disease which is rarely serious and for which preventive or therapeutic interventions are often available.
Agent Type	Biohazard
Description	*Citrobacter* freundii is a Gram-negative, opportunistic, non-spore forming, facultative anaerobic rod belonging to the Enterobacteria family. They are a common component of intestinal flora but can also be found in soil, water and waste. This genus fermentes mannitol and utilizes citrate as its sole source of carbon. The pathogen is associated with gastroenteritis, neonatal meningitis and septicemia. Infections of the urinary tract, respiratory tract, blood and other normally sterile sites in the body also occur in hospital settings among immunicompromised invidividuals and neonates under 2 years old. They are emerging as a common nosocomial multidrug-resistant pathogen. ref: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3836000/; https://www.canada.ca/en/public-health/services/laboratory-biosafety-biosecurity/pathogen-safety-data-sheets-risk-assessment/citrobacter.html
Host Range	Humans; animals; aquatic organisms
Exposure route	Injestion; direct contact;
Incubation period	Known for infants: birth-42 months; unknown for adults

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

Aerosols	Shaking, liquid culturing, pipetting, coughing, sneezing
Equipment	Easily adhere to and stay on urinary cathet
Exposed body	Skin, eyes, mucous membranes; fecal-oral route
Notes	No laboratory aquired infections were noted.

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	Use in BSL II only
PPE	Eye protection, gloves and lab coat
Waste	Biohazard - put in red biohazard bins

Agent Viability	
Disinfection	1% bleach, 70% ethanol, formaldehyde, UV, microwave, gamma
Survival outside host	Soil and water
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. Allow aerosols to settle. While wearing protective clothing, gently cover the spill with absorbent paper towel and apply appropriate disinfectant, starting at perimeter and working towards the centre. Allow sufficient contact time before clean up.
Major (large) spills	Contact EH&S immediately; after-hours contact University Police
Waste	Decontaminate all wastes before disposal by incineration, chemical disinfection or steam sterilization

References
https://www.canada.ca/en/public-health/services/laboratory-biosafety-biosecurity/pathogen-safety-data-sheets-risk-assessment/citrobacter.html