



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	<p><i>Shigella</i> of the Enterobacteriaceae family are Gram-negative rod-shaped, non-motile, non-encapsulated, facultative anaerobes. They do not ferment lactose. The bacteria are pathogenic and infection can occur from ingestion of 10-200 organisms. Infection can be mild or asymptomatic but can cause acute intestinal infections upon ingestion; severe inflammatory bacillary dysentery or shigellosis, manifested by severe abdominal cramps, nausea and vomiting, fever, tenesmus, anorexia and feces containing blood/mucus. S. flexneri can cause Reiter's syndrome and is most common in developing countries with poor hygiene and limited clean drinking water. Children under 5 are the most susceptible.</p> <p>ref: <i>Shigella flexneri</i>. Genome. NCBI.</p>
Host Range	Humans and higher primates
Exposure route	Contact or ingestion with feces or food washed with fecal-contaminated water; links to flies has also occurred.
Incubation period	1-7 days. Symptoms of shigellosis can occur within 12-50 hours

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 unsanitary equipment
Exposed body	Skin, eyes, mucous membranes
Notes	Recently identified as the most frequently identified agent of laboratory-acquired infections

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; sterilize all equipment in autoclave

Agent Viability

Disinfection	1% bleach, 70% ethanol
Survival outside host	Can survive for months on dry surfaces; 10 days in citric juices; several days on vegetables; 3 hours on fingers; 2-28 days on metal utensils at 15°C or up to 13 days at 37°C; 12 days in feces; 3 days in 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; sterilize all equipment in autoclave

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

Shigella spp. <https://www.canada.ca/en/public-health/services/laboratory-biosafety-biosecurity/pathogen-safety-data-sheets-risk-assessment/shigella.html>