

PATHOGEN SAFETY DATA SHEET

Enterotoxigenic Escherichia coli

CHARACTERISTICS	
Morphology	Gram negative rod non-spore forming bacteria
Disease	Human diarrhea caused by ETEC is the most common disease caused by pathogenic E. coli strains. It is estimated that there are more than 650 million cases of ETEC infection each year. ETEC infections are most common in developing countries that lack appropriate sanitation and drinking-water treatment facilities but are now considered a re-emerging food- and water-borne disease in developed nations as well. In developing nations disease occurs at any time of the year, but incidence peaks in the warm, wet seasons that favor environmental bacterial replication. ETEC is a disease of young children in developing nations. The percentage of ETEC in children with diarrhea varies from 10-30%. In endemic areas, 20–40% of diarrhea cases are due to ETEC. Several studies suggest that 20–60% of travellers from developed countries experience diarrhea when visiting the areas where ETEC infection is endemic. Furthermore, several outbreaks have occurred on cruise ships, which appear to constitute a fairly frequent setting for disease caused by this organism. Outbreaks of ETEC caused by endemic strains, rather than association with travel, have occurred in the U.S. and Denmark. As with travel-associated diarrhea, disease caused by ETEC in developed nations tends to strike older children and adults.
Zoonosis	None reported

HEALTH HAZARDS	
Host Range	Humans and animals.
Modes of Transmission	Fecal-oral route and are most common in developing countries that lack appropriate sanitation and drinking water treatment facilities.
Signs and Symptoms	Low grade fever with nausea, diarrhea, and vomiting may be present. Abrupt onset of watery diarrhea that does not contain blood, pus, or mucus.
Infectious Dose	Estimated to be around 100 million organisms.
Incubation Period	14 to 30 hours.

MEDICAL PRECAUTIONS/TREATMENT	
Prophylaxis	None available.
Vaccines	None available.
Treatment	Electrolyte fluid therapy. Susceptible to carbapenem, fosfomycin trometamol, nitrofurantoin, and bovine apolactoferrin.
Surveillance	Monitor for symptoms.
MSU Requirements	Report any exposures

LABORATORY HAZARDS	
Laboratory Acquired Infections (LAIs)	12 reported cases.
Sources	Contaminated food and feces. Cultures, frozen stocks, other samples described in IBC protocol.

SUPPLEMENTAL REFERENCES	
Canadian MSDS:	http://www.phac-aspc.gc.ca/lab-bio/res/psds-ftss/index-eng.php
BMBL	https://www.cdc.gov/labs/BMBL.html
CDC	https://www.cdc.gov/ecoli/etec.html
NIH Guidelines	https://osp.od.nih.gov/wp-content/uploads/NIH_Guidelines.pdf

RISK GROUP & CONTAINMENT REQUIREMENTS	
Risk Group 2	Agents that are associated with human disease which is rarely serious and for which preventive or therapeutic interventions are often available.
BSL2	For all procedures involving suspected or known infectious specimen or cultures.
ABSL2	For all procedures utilizing infected animals.

SPILL PROCEDURES	
Small	Notify others working in the lab. Remove PPE and don new PPE. Cover area of the spill with absorbent material and add fresh 1:10 bleach:water. Allow 20 minutes (or as directed) of contact time. After 20 minutes, cleanup and dispose of materials.
Large	<ul style="list-style-type: none"> Immediately notify all personnel in the lab and clear all personnel from the area. Remove any contaminated PPE/clothing and leave the lab. Secure the area by locking doors, posting signage and guarding the area to keep people out of the space. For assistance, contact MSU's Biosafety Officer (406-994-6733) or Safety and Risk Management (406-994-2711).

EXPOSURE PROCEDURES	
Mucous membrane	Flush eyes, mouth, or nose for 5 minutes at eyewash station.
Other Exposures	Wash area with soap and water for 5 minutes.
Reporting	Immediately report incident to supervisor, complete a First Report of Injury form, and submit to Safety and Risk Management.
Medical Follow-up	During business hours: Bridger Occupational Health 3406 Laramie Drive Weekdays 8am -6pm. Weekends 9am-5pm After business hours: Bozeman Deaconess Hospital Emergency Room 915 Highland Blvd

VIABILITY	
Disinfection	Susceptible to 1:10 bleach:water, 70 % ethanol, and glutaraldehyde, accelerated hydrogen peroxide
Inactivation	Inactivated moist heat (121°C for 30 min) and dry heat (1 hour at 160-170 C).
Survival Outside Host	Can survive for 1.5 hours to 16 months on dry inanimate surfaces

PERSONAL PROTECTIVE EQUIPMENT (PPE)	
Minimum PPE Requirements	Lab coat, disposable gloves, safety glasses, closed toed shoes, long pants
Additional Precautions	Additional PPE may be required depending on lab specific SOPs and IBC Protocol.