

Exposure Response Plan for the Laboratory Handling of Enterohemorrhagic *E. coli* (EHEC)

Background Information:

Escherichia coli is a gram negative rod that typically colonizes the gastrointestinal tract of human infants within hours of birth. The key virulence factor is Shiga toxin (Stx) which is also known as verocytotoxin (VT). Synonyms for the organism include Shiga toxin producing *E. coli* (STEC) and verotoxin producing *E. coli* (VTEC). In the United States infections are frequently due to serotype O157:H7. Shiga toxin does not cause disease in humans unless exposed by intravenous injection or by exposure to STEC.

The infectious dose is unknown, but appears low with estimates of 10-100 organisms in various references. Bacteria have been transmitted by direct contact with farm and zoo animals, through contaminated food as well as person-to-person. Laboratory associated infections are likely due to hand contamination and subsequent ingestion. Although many infected will have self-limiting diarrhea, severe diarrhea can result in temporary or permanent renal failure and may be fatal.

Exposure Incident: In addition to laboratory acquired infections resulting from ingestion of bacteria from contaminated hands, accidental percutaneous exposure and inhalation of aerosols are other likely routes of exposure. Airborne transmission has been implicated in animal rearing environments.

Reporting Exposure Incidents: Report all exposures to the Principal Investigator/lab supervisor and seek immediate medical evaluation. Whenever there is an accident involving *E. coli*, the Biosafety Officer must be notified.

Pre-exposure Health Screening:

Prior to beginning work with or around EHEC, the PI or an Employee Health Professional will inform the worker of the risks and symptoms of exposure. Workers with additional concerns about pre-existing medical conditions should schedule an individual appointment with the Occupational Medicine physician by calling 541-737-7566. Report of antibiotic sensitivities, if available, will be retained. Note: Immunization is not available at this time.

After an Exposure Incident Occurs:

Immediate Action by Route of Exposure:

- **Needle Stick, Animal Bite or Laceration:** Wash the area with soap and running water.
- **Mucous Membranes (Eye, Nose, Mouth):** If contaminated material is splashed or sprayed contaminating the eyes, nose or mouth: Flush the eyes for 10-15 minutes. Rinse mouth out with clean water and do not swallow.
- **Inhalation:** If contaminated materials are aerosolized outside of primary containment and potentially inhaled, rinse mouth twice expelling the rinsate. Do not swallow.

Medical Evaluation and Follow-up:

Following immediate post exposure actions stated above, faculty and staff should contact the Corvallis Clinic during business hours at 541-753-1785 or 1-866-209-7711 after business hours. Arrange for medical evaluation, diagnosis and treatment if needed. During this appointment, the exposed individual will be informed of the signs and symptoms of disease related to EHEC, and will be instructed to watch for the development of these signs and symptoms. The incubation period is 2-8 days with a median of 3-4 days. Some people will remain asymptomatic.

Signs and Symptoms of Disease:

- Bloody or non-bloody diarrhea
- Cramps and abdominal pain
- Low grade fever
- Hemolytic anemia, thrombocytopenia, renal injury (HUS hemolytic uremic syndrome)

Post-exposure Prophylaxis:

The healthcare provider will determine the course of treatment as enteric disease can be self-limiting. When treatment is initiated, it generally starts with electrolyte fluid replacement. Antibiotic therapy is reserved for severe cases of enteric disease and extraintestinal infections.

Oregon Department of Public Health classifies infections caused by shiga-toxin producing *E. coli* as reportable diseases. Any clinical laboratory identifying an infection caused by shiga-toxin producing *E. coli* should be reported within one working day to the Oregon Department of Public Health in accordance with disease-reporting regulations. *E. coli* O157:H7 infection is also reported on the national level.

If an employee develops signs and symptoms associated with *E. coli* exposure in the absence of an exposure incident, the PI and Biosafety Officer shall be notified immediately. Infection will not be considered laboratory-acquired until proven otherwise.