Tufts University / Tufts Medical Center

Exposure Response Plan for Laboratory Handling of Staphylococcal Enterotoxin E

**Background information:** Staphylococcal Enterotoxin E (SEE) is a potent enterotoxin and a polyclonal activator of certain T cells. This makes it useful in studies of T cell activation, but poses a significant risk of eliciting a toxic-shock like syndrome if ingested, inhaled, inoculated, or absorbed through mucous membranes. Staphylococcal Enterotoxins are listed on the Select Agent and Toxins list. All research procedures using enterotoxins must be registered with the Tufts IBC.

NOTE: To minimize the risk of accidental inhalation, toxin is best obtained in solution. Handling the toxin in dry form creates an airborne hazard and controls must be in place to control airborne contamination and surface contamination, especially during weighing and dose preparation.

**Exposure incident:** Any eye, mouth or mucous membrane contact with SEE. Inhalation of powdered SEE. Also, any non-intact skin contact or injection via needle, broken glass or other sharp object contaminated with SEE.

**Reporting Exposure Incidents:** Report all exposures to the Principal Investigator/lab supervisor and seek immediate medical evaluation. If help is needed with injuries or clean up, members of the University will contact the Police at 6-6911 and members of the Medical Center will contact Security at 6-5151. Whenever there is an accident involving *Cyclospora*, the Biosafety Officer must be notified.

**Pre-exposure health screening:**

All employees will receive training on the risks of working with SEE and symptoms of exposure by the PI or Occupational Health Professional prior to beginning work with or around this agent.

**Before an exposure incident occurs:**

There is no available vaccine for SEE.

**After an exposure incident occurs: immediate action by route of exposure**

Inhalation: Rinse mouth twice expelling the rinsate; do not swallow.

Parenteral exposures including needlestick, laceration, bite, and contact with non-intact skin: Wash the area with soap and running water.
Mucous membranes (eye, nose, mouth): If contaminated material is ingested, rinse mouth out with clean water. If contaminated material is splashed or sprayed into the eyes, flush the eyes for 10-15 minutes.

Contact with intact skin and clothing: Remove contaminated clothing using gloves and process as medical waste. Wash skin with soap and water.

**After an exposure incident occurs: medical evaluation and follow-up:**

Following immediate actions, contact the TMC Employee Health Clinic (Boston), TCSVM Occupational Medical Clinic (Grafton) or the Mt. Auburn Occupational Health Services (Medford) and arrange for evaluation and treatment.

During this medical evaluation, the exposed individual may be asked to provide a blood sample, may be educated on the signs or symptoms of SEE exposure, and instructed to watch for the development of these signs and symptoms. Diagnosis is most often based on clinical signs and symptoms.

**Signs and Symptoms of SEE exposure include:**

- Sudden onset of fever, chills, headache, and muscle pain.

Additional symptoms are specific to the route of exposure:
- Ingested - nausea, vomiting, and diarrhea.
- Inhalation - dry cough, shortness of breath, and chest pain. In severe cases, there may be fluid in the lungs. Approximately 4 out of 5 people become ill. SEE is rarely life threatening, though a significant exposure could possibly lead to death.

**Post-exposure prophylaxis:**

There is no antidote for SEE toxicity. Treatment will depend on a risk assessment by the physician and is largely supportive medical care.

If any individual working with or around SEE develops signs or symptoms suggestive of exposure to SEE, they must inform their PI and Biosafety Officer immediately. Signs and symptoms usually develop 3-12 hours of exposure. A fever tends to last 2-5 days; coughing may last up to 4 weeks. The individual must be evaluated at TMC Employee Health (Boston), must notify the TCSVM Occupational Health Nurse who will refer the individual to an Infectious Disease specialist (Grafton), or a physician at Mt. Auburn Hospital Occupational Health Group (Medford).

Massachusetts Department of Public Health classifies both foodborne poisoning and toxic shock syndrome as reportable diseases and must be reported to the Local Board of Health immediately by the attending physician. In accordance with Massachusetts regulation, any clinical laboratory identifying an exposure caused by a SEE may be reported to the Massachusetts Department of Public Health in accordance with disease-reporting regulations.
If an employee develops signs and symptoms associated with SEE exposure in the absence of an exposure incident and appropriate travel history, the PI and Biosafety Officer shall be notified immediately. The infection will be considered laboratory-acquired until proven otherwise.