

Exposure Response Plan for the Laboratory Handling of *Toxoplasma gondii*

Background Information

Toxoplasma gondii is an obligate intracellular parasite that causes the disease toxoplasmosis. The infectious dose is not known. The host will remain latently infected for life, but immune to repeat infection. Bradyzoite cysts can be reactivated in severely immunocompromised individuals. Because this infection is easily acquired from the environment, and is commonly asymptomatic, and the only way to confirm laboratory infection is to demonstrate seroconversion.

Exposure Incident: Oocysts or tissue cysts: Any exposure of the agent to the eyes, nose or mouth, inhalation of aerosols. Tachyzoites or tissue cysts: Parenteral exposure.

Reporting Exposure Incidents: All exposure incidents must be reported immediately to the supervisor. *Toxoplasma* strains that are avirulent for mice are still infectious for humans.

Pre-exposure Health Screening:

All employees will be educated by the Occupational Health Nurse and Physician of the risks of working with *Toxoplasma* and symptoms of exposure prior to any individual beginning work with or around this agent. Workers with additional concerns about pre-existing medical conditions should schedule an individual appointment with the Occupational Medicine physician by calling 541-737-7566.

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. Do not apply bleach, alcohol or other disinfectant to the skin. For infection to occur due to this type of exposure, oocysts must be ingested or inhaled. However infection could occur by this route if the investigator is working with tachyzoites or tissue cysts.
- **Mucous membranes (eye, nose, mouth):** If contaminated material is splashed or sprayed into the face contaminating the eyes, nose or mouth: flush the eyes for 10-15 minutes, rinse mouth out with clean water. Be sure not to swallow. Wash down the face being sure that the nasal cavities have been rinsed as much as possible.
- **Inhalation:** If contaminated materials are aerosolized outside of primary containment and potentially inhaled, rinse mouth twice expelling the rinsate. Do not swallow.
- **Contact with intact skin and clothing:** Remove contaminated clothing using gloves and place objects in plastic bags and dispose of as biological or medical waste. Wash contaminated skin with soap and water. Again, for infection to occur due to this type of exposure, oocysts or tissue cysts must be ingested or inhaled, and tachyzoites would need to be injected. Use caution if clothing is removed over the head.

Medical Evaluation and Follow-up:

- Following the exposure and immediate 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.
- Student workers should be evaluated at Student Health Services as soon as possible by the Occupational Health Physician and contact OSU Occupational Medicine at 541-737-7566. Such cases will be handled as a possible laboratory-acquired toxoplasmosis.
- During this medical evaluation, the exposed individual will be educated further on the signs or symptoms of toxoplasmosis, and instructed to watch for the development of these signs and symptoms.
- Diagnosis of infection is typically made by serologic testing for anti-toxoplasma antibodies. In individuals with neurologic signs, a CAT scan can demonstrate brain lesions from the re-activated cysts.

Signs and Symptoms of Toxoplasmosis:

- In the immunocompetent individual: Most people have an asymptomatic infection. Some will have mild flu like symptoms with swollen lymph nodes or muscle aches. People with ocular infections can have reduced or blurred vision, pain, redness or tearing.
- In the immunocompromised individual: Neurological complications may occur due to reactivation of bradyzoite cysts in the brain, headache, fever, myocarditis (abnormal heart beat), chest pain and shortness of breath are possible.

Post-exposure prophylaxis:

There is currently no routine post exposure, pre-symptom prophylaxis for toxoplasmosis. In otherwise healthy people, treatment may not be needed. A health care provider may decide to initiate presumptive therapy.

If any individual working with or around *Toxoplasma* develops signs or symptoms suggestive of exposure to toxoplasmosis:

Inform the PI and Biosafety Officer immediately. Signs and symptoms usually develop within 5-25 days of exposure.

If an employee develops signs and symptoms associated with *Toxoplasma* exposure in the absence of an exposure incident:

The PI and Biosafety Officer (BSO) should be notified immediately. However, laboratory acquired infection can only be confirmed by documenting seroconversion.