Exposure Response Plan for the Laboratories Handling *Mycobacterium marinum*

**Background Information**

*M. marinum* is a slow growing member of the Mycobacterineae generally found in aquatic environments. Cream colored colonies are noted on solid culture media in 1-2 weeks. The colonies turn yellow when exposed to visible light (photochromogenic). Optimal growth is seen below body temperature. *M. marinum* naturally infects fish and amphibians. The disease has been called fish tank granuloma in humans and fish tuberculosis in fish. It is considered an opportunistic infection for humans, generally infecting skin and soft tissue extremities of healthy adults after trauma. Invasive cases have been documented and typically involve delayed diagnosis, misdiagnosis or immune suppression.

*M. marinum* is used as a model organism to study how *M. tuberculosis* causes disease. There is a close genetic relationship between the species.

Persons who are working with animal species that may transmit *M. marinum* as a zoonotic infection will receive information through the Occupational Health and Safety Program. An emphasis will be placed on protective gloves and handwashing when handling fish/amphibians and when in aquatic environments.

**Exposure Incidents:** A laboratory acquired infection in a young man was noted after he injected his thumb rather than a murine tail vein. Infection is not spread person-to-person and is rarely spread fish-to-fish. Infection acquired in an aquatic environment needs only minor skin breaks such as small cuts or scrapes. Precautions are necessary with all procedures that may compromise the skin barrier.

**Reporting Exposure Incidents:** Report all exposures to the Principal Investigator or 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 6-5100. Whenever there is an accident involving *M. marinum*, the Biosafety Officer must be notified.

**Pre-exposure Health Screening:**

Prior to beginning work with *M. marinum*, the PI or an Employee Health Professional will inform each person of the risks s/he takes and of the symptoms s/he may experience following exposure. Note that the Sanofi Pasteur package insert for Tubersol (tuberculin purified protein derivative used for PPD/Mantoux testing) indicates false positive reactions can occur in individuals who have been infected with mycobacteria other than *M. tuberculosis*.
**Before an Exposure Incident Occurs:**
A vaccine is not available. Data specific to pregnant women are not available. The majority of infections have been in men.

**After an Exposure Incident Occurs: Immediate Action by Route of Exposure**

*Needlestick, Laceration or Animal Bite:* Wash the area with soap and running water. Report all needlesticks.

*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.

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

Following immediate post exposure actions, contact the TMC Employee Health Clinic (Boston), TCSVM Occupational Medical Clinic (Grafton) or the Mt. Auburn Occupational Health Services (Medford) and arrange for medical evaluation, diagnosis and treatment if needed. A skin biopsy may be requested.

**Signs and Symptoms:**
- Small red bump/non-healing red sore usually 2-3 weeks post exposure although can be 2-4 months
- Bumps spread in a “line” pattern (lymphatic drainage)
- Not responsive to short course antibiotic therapy

**Post-exposure:**

The healthcare provider will determine the course of treatment. Milder infections in healthy people may not require treatment.

If an employee develops signs and symptoms associated with *M. marinum* in the absence of an exposure incident, the PI and Biosafety Officer shall be notified immediately. As a common aquatic mycobacterium, isolate information will be needed to confirm that the infection is laboratory-acquired.