Environmental Health & Safety
UNIVERSITY OF COLORADO **BOULDER**

Post Exposure Plan for *Mycobacterium marinum*

Background Information:

Mycobacterium marinum is found worldwide. Non-tuberculosis mycobacteria cause many different diseases in humans. *Mycobacterium marinum*, specifically, can cause skin and soft tissue infections resulting in papulonodular lesions on extremities that can sometimes ulcerate. Infection occurs when broken skin is exposed to the bacterium. Altered systemic immunity, such as during HIV infection, underlying liver disease or diabetes, is the greatest risk factor for acquiring an infection.

The primary reservoir hosts are humans, domestic and wild animals. Additionally, this bacterium is found in soil and water and can be a common component of biofilms.

Transmission occurs through direct contact with a contaminated environment. Breaks in the skin are the usual portal of entry for *M. marinum* (e.g. puncture wounds, abrasions, tattoos, piercings, etc.). There is currently no evidence of person-to-person transmission.

Laboratory-acquired infections are presumed to occur via exposure to splashes or aerosolized materials contaminated with bacteria particles. Also, via eating with bacteria-contaminated hands or via exposure to contaminated sharps. If laboratory work involves fish colonies, exposure is presumed to occur when contaminated water comes into contact with broken skin.

Primary hazards in the laboratory :

Creation of splashes or aerosols, exposure to mucous membranes, ingestion and exposure to contaminated sharps.

Acceptable disinfectants:

Mycobacterium marinum is susceptible to 2% alkaline glutaraldehyde, 5% phenol and 1% sodium hypochlorite.

Exposure controls and personal protection:

Mycobacterium marinum is a Risk Group 2 organism. BSL-2 practices, containment equipment, and facilities are required when working with materials known or suspected of containing this agent.

Personal protective equipment such as lab coats and gloves must be worn when handling infected or potentially infected materials. Eye protection must be used when there is a known or potential risk of generating splashed or aerosols.

If fish colonies are used in research, gloves should be worn when working with or touching fish, their water or equipment. Heavy gloves may be necessary if contact with fish with sharp spines is anticipated. If gloves cannot be worn, due to anticipated injury to fish spines, researchers should practice thorough handwashing immediately after handling fish.

Procedures that may generate aerosols or splashes should be conducted in a certified biosafety cabinet, if possible.

Mycobacteria can survive for weeks to months on surfaces in the absence of sunlight. Personnel should wash their hands frequently while working in and before leaving the laboratory. Personal items including waters bottles, cell phones, car keys, etc., should be stored in such a way as to avoid contamination and should be accessed only when the laboratory exercise is completed, lab coats and gloves are removed, and hands are washed.

If an infection is acquired, any lesions need to be completely covered to prevent risk of secondary infection with different organisms.

The Principal Investigator (PI), or their designee, must ensure that all personnel are adequately trained in safe laboratory practices, universal precautions, and proper surface and equipment disinfection before initiating any work with this agent. The PI must also ensure that all personnel are aware of the signs and symptoms of a potential infection with *M. marinum* with an emphasis on the effects on the immunocompromised.

At risk populations:

Immunocompromised individuals and those with broken skin are at greatest risk of infection.

Immediate Action by Route of Exposure:

Needlestick, Animal Bite, Laceration: Wash area thoroughly with soap and running water. Do not apply disinfectant to the skin.
Mucous membranes (Eyes, nose, mouth): Flush the eyes for 10-15 minutes if eyes have been exposed to splash or spray containing bacteria. Rinse out mouth, without swallowing, after any exposure.
Inhalation: If contaminated materials are aerosolized and potentially inhaled, rinse mouth twice and spit. Do not swallow.

After First Aid:

Suspected infections related to research exposures must be reported to the University of Colorado, Boulder's Biosafety Officer at 303-492-2817. Please see below for complete instructions related to suspected research exposure. Treating medical providers should be informed of the possibility of *M. marinum* infection. The incubation period for this disease ranges from 14-21 days. Symptomatic individuals are recommended to be tested for *M. marinum*.

Post-exposure Prophylaxis:

If symptoms occur, your health care provider may do a culture to identify *M.marinum*. If *M.marinum* is confirmed they can recommend appropriate treatment.

Symptoms of infection in adults:

- Lesion on single extremity, potentially ulcerative.
- Lesions typically occur near elbow, knee, foot finger or toe.

The immunocompromised may have disseminated disease or ulcerated skin and soft tissue lesions while immunocompetent individuals will likely only develop granulomas instead of abscesses.

After First Aid – Treatment and Reporting:

University of Colorado Boulder: Procedures for Work-Related Injuries or Illness, Including Animal Bites, Severe Allergic Symptoms, and Sharps Exposures.

It is the policy of the University of Colorado at Boulder (UCB) that all incidents that result in an injury or severe illness to faculty, staff or students be appropriately documented and reported. If a work-related incident, accident, injury or illness occurs:

a) Medical Treatment

a. **In case of life or limb-threatening emergency call 911** or go immediately to the nearest emergent or urgent care facility. Immediately administer appropriate first aid, including thoroughly washing any wounds or exposed areas with soap and water, if at all possible.
b. **If you are an employee of the University and you need non-emergency care** for a work-related illness or injury that has occurred during regular weekday working hours, you must be treated at one of the UCB Designated Medical Providers (DMPs: shown below). **Boulder Community Hospital Emergency Department has the ability to rapidly test for work-related infectious disease or potential biological exposures; all other DMPs may not have this rapid capability.** Testing can be done on the exposed personnel; it may be difficult to test any source patient or sample at the DMP.
c. **After hours or while traveling**, go to the nearest urgent or emergent care facility.
d. **Sharps injuries** that include exposure to human blood, body fluids, tissues, tissue culture cells are considered to be injuries with a potential for transmitting bloodborne pathogens. Prompt evaluation and treatment is necessary for these injuries. (go to Boulder Community Hospital Emergency Department)

b) Reporting

a. Report the work-related injury or illness to your supervisor immediately. You or your supervisor should notify the Biosafety Officer at 303-492-2817 or at

Cher.Masini@colorado.edu . (The BSO may confer with IACUC administrator, veterinarian, or Occupational Health RN.)

b. You must file a worker's compensation injury report form **within 4 days of the work-related injury** / exposure or illness onset. Report the incident on the URM website and use the on-line reporting form.
c. Sharps injuries must be reported on the URM's needle stick exposure report form.
d. All injury reporting forms can be found at the URM's website at https://www.cu.edu/risk/file-claim

c) Eligibility (who is eligible to be seen by UCB Designated Medical Providers?)

a. All UCB employees, paid UCB staff, graduate students receiving a traineeship or stipend administered by UCB, undergraduate work-study students and paid undergraduate student assistants are eligible to be seen by UCB DMPs. If you are an UCB employee and you visit your regular primary care provider for a work-related injury and your visit is coded as a work-related injury, your primary insurance may not cover the cost of your visit or treatment with your primary care provider.

Some individuals are not covered by UCB Worker's Compensation: All visiting or resident scholars who do not receive payment via UCB (e.g., Howard Hughes Medical Institute Fellows) must follow the work-related exposure / illness or injury protocol outlined by their parent institution or outside funding source. Contract or consulting employees are also not covered by UCB Worker's Compensation; they need to follow the work-related exposure / illness or injury protocols established by their parent institution or consult with their personal health care provider. Volunteers, contract employees and students not paid by UCB are **not** covered by UCB Worker's Compensation and should be seen by their personal health care provider. If you are a student with a Wardenburg Health care plan, post-exposure lab tests are available and covered.

d) Payment and questions:

a. All bills from medical providers must be sent to University Risk Management:

University Risk Management (https://www.cu.edu/risk/file-claim)
1800 Grant Street, Ste 700
Denver, CO 80203
Fax: 303-860-5680

b. For further questions, contact URM at: 303-860-5682 or 888-812-9601

UCB Designated Medical Providers

This list changes frequently. For a current listing of DMPs, please refer to the University of Colorado's Risk Management website at: https://www.cu.edu/risk/dmp