Biosafety Recommendations for Individuals Handling Carcasses from Animals Known or Suspected to Have Tuberculosis

Background

In the United States, the majority of tuberculosis (TB) cases in people are caused by *Mycobacterium tuberculosis (M. tuberculosis). Mycobacterium bovis (M. bovis)* is another bacterium that can cause TB disease ("bovine TB") in people. *M. bovis* is most commonly found in cattle and other animals such as bison, elk, and deer. In people, *M. bovis* causes TB disease that can affect the lungs, lymph nodes, and other parts of the body. Individuals with an *M.tuberculosis* or *M. bovis* infection can be treated with antibiotics.

People are most commonly infected with *M. bovis* by eating or drinking contaminated, unpasteurized dairy products. The pasteurization process, which destroys disease-causing organisms in milk by rapidly heating and then cooling the milk, eliminates *M. bovis* from milk products.

Infection can also occur from direct contact or inoculation into a person's open wound, such as what might occur during slaughter or hunting, or by inhaling the bacteria in air exhaled by animals infected with *M. bovis.* The bacteria may be in the tissues and fluids (e.g., milk, blood, urine, saliva) of infected animals. Because bovine TB can present an occupational risk to the health and safety of those who work with animal carcasses, all carcasses from animals known or suspected of having bovine TB should be handled with extra caution.

Recommended Infectious Disease Prevention Practices

- Do not eat, drink, or smoke while handling or dissecting a carcass.
- Establish a clean work zone and a contaminated work zone (clean/dirty line) with an area to disinfect supplies, equipment, and personnel between the two areas.
- Place non-disposable equipment or supplies (e.g., paperwork, electronic devices) in plastic bags or containers that can be disinfected or discarded.
- Always wash hands and exposed skin with soap and warm water or an alcohol-based cleanser after handling animals or carcasses.
- Work upwind of carcasses when handling them outdoors.

Baseline TB Testing for Employees

All personnel handling animals or carcasses that may be infected with bovine TB should have a TB test prior to any potential exposure and annually thereafter (or as recommended by an occupational health professional). Additional TB testing may be necessary following an exposure to an infected animal or human. Please contact your local health department or the Wisconsin TB Program for more information.

Safety and Personal Protective Equipment (PPE)

Wearing protective gear will minimize the possibility of contact with infectious agents in body fluids and aerosols and reduce the risk of human infection. The following PPE are recommended while handling or dissecting a carcass from an animal suspected of having bovine TB:

- Respirator (N95 mask at a minimum)
    - Optimal: A respirator which the user has been fit-tested and trained to use
    - Acceptable: A respirator which the user has been trained to use
- Heavy-duty disposable gloves (rubber or nitrile)
- Cut-resistant mesh glove on non-dominant hand Goggles, safety glasses, or face shield

- Goggles, safety glasses, or face shield
- Disposable apron or an apron that can be disinfected
- Forearm protectors
- Cloth or Tyvek® coveralls
- Rubber boots

Cleaning and Disinfection

- All contaminated paper or plastic materials should be considered hazardous waste and should be thoroughly disinfected, incinerated, or double-bagged and disposed of at the landfill (if permitted).
- All blood and tissue should be removed from instruments and tools with soap and water, rinsed, and subsequently disinfected with an approved disinfectant effective against *Mycobacteria.*
- External surfaces of containers with samples, waste, or non-disposables should be disinfected.
- If assisting with specimen collection from carcasses, gloves should also be changed between animals.
- Boots, aprons, and contaminated clothing should be cleaned and thoroughly disinfected upon completion of handling potentially infected carcasses.

Cleaning Products

The products listed in the table below are effective, environmentally friendly disinfectants for use against bovine TB. Additional approved TB disinfectants can be found in the U.S. Environmental Protection Agency Office of Pesticide Programs List B: EPA's "Registered Tuberculocidal Products Effective Against *Mycobacterium tuberculosis."* (https://www.epa.gov/sites/production/files/2016-12/documents/list_b_tuberculocide.pdf)

Disinfectant	Time to effectively disinfect	Environmental effects	Manufacturer
Oxivir® Tb	5 minutes	Active ingredients break down in water and oxygen	Johnson Diversey
Opti-Cide 3®	3 minutes	Contains no dangerous phenols, chlorine, artificial dyes or perfumes	Micro-Scientific Industries
Clorox Bleach (mix 1 part bleach in 9 parts water)	5 minutes	Product contains no free chlorine and breaks down into salt and water after use; does not contain dioxins or contaminate ground water.	Clorox Company

References

1. USDA (2011). *Guidelines for Surveillance of Bovine Tuberculosis in Wildlife*, Version 1.0. United States Department of Agriculture, Washington, DC; pp 11-13. https://www.aphis.usda.gov/animal_health/animal_diseases/tuberculosis/downloads/wildlife_tb_surv_manual.pdf (accessed 10/15/18).
2. CDC (2012). *Mycobacterium bovis (Bovine Tuberculosis) in Humans* fact sheet. Center for Disease Control and Prevention, Division of Tuberculosis Elimination. https://www.cdc.gov/tb/publications/factsheets/general/mbovis.htm (accessed 10/16/18)
3. Thoen CO, Steele JH, Kaneene, JB (2014). *Zoonotic Tuberculosis: Mycobacterium bovis and Other Pathogenic Mycobacteria,* Third Edition. Wiley Blackwell, Ames, IA.

Contacts

- Wisconsin Tuberculosis Program: 608-261-6319
- Local and tribal health departments: https://www.dhs.wisconsin.gov/lh-depts/counties.htm