

ANIMAL AND HUMAN HEALTH PREVENTION OPPORTUNITIES

Euthanasia and Submission of Bats for Rabies Testing

Rabies is a highly infectious and fatal zoonotic disease. All bats submitted for rabies testing should be considered infectious until testing indicates otherwise. Trained and preferably vaccinated individuals, such as veterinarians, should prepare specimens for testing. Montana Department of Livestock (MDOL) and Department of Public Health and Human Services (DPHHS) ask veterinarians provide bat euthanasia and/or laboratory submission to clients and non-clients when requested. By providing this service, veterinarians and staff are performing a critical one health function.

MDOL and DPHHS request veterinarians or staff [notify local public health personnel](#) when a bat/animal is submitted for rabies testing. This allows the local health officials to quickly follow up with any possible human exposure and address any human-health concerns. (Local health departments: <https://dphhs.mt.gov/publichealth/FCSS/countytribalhealthdepts>)

Collection of Bat (alive or dead)

All bats are assumed infected since they are one of the natural reservoirs of the rabies virus.

- Collection should occur in a way to avoid contact with the bat.
- Example: Wear leather gloves to prevent direct contact with the bat. Approach bat slowly, and quickly place a box or can over the bat. Slide a piece of cardboard or durable paper under the container to trap the bat inside. Securely tape the container closed and punch small holes in the container for the bat to breathe. Consult a local veterinarian if the bat is alive and requires euthanasia.
- If a bat is present in a home and you can't rule out possible exposure (i.e.: bat found in child's room, heavy sleeper in the home, etc.), do not kill or free the bat. If the bat is already dead, do not throw it away. Gently collect the bat and consult your local public health agency.

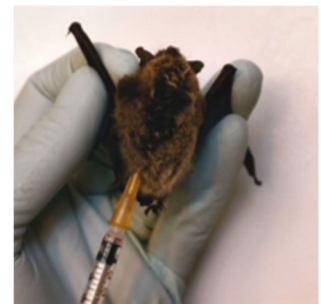
Humane Euthanasia of Bats

Unacceptable euthanasia methods:

- Cervical dislocation or decapitation
- Exhaust fumes
- Diethyl ether
- Blunt force
- Drowning
- Gunshot
- Thoracic compression
- Freezing

Acceptable euthanasia methods:

- Inhalant anesthetics
 - Liquid isoflurane or sevoflurane: 5ml per bat in small, closed container
 - Carbon dioxide (CO₂ at 70% or higher concentrations). This method should be paired with other methods to ensure death due to CO₂ resistance in insectivorous bats.
- Injectable Agents (IV or IP)
 - Barbiturates (euthanasia solution), dissociative agent combinations (ketamine/diazepam or ketamine/xylazine), or 70% Ethanol IP in bats smaller than a mouse



Intraperitoneal injection site; picture courtesy of Michigan Rabies Working Group

Example of an Acceptable Bat Euthanasia Procedure

Procedure:

1. Work in a well-ventilated area.
2. Wear leather gloves over exam gloves.
3. Bat should be presented in a small container with breathing holes. If bat is presented in an excessively large container, carefully move it to a suitable container.
4. Place the small container holding the bat into a larger container that can be sealed (i.e., Tupperware). Do not remove the bat from the smaller container before placing in the larger container.
5. Saturate a cotton ball with 5ml of isoflurane (place cotton ball in plastic prescription vial and pour isoflurane into vial).
6. Place the cotton ball (or open plastic vial) into the outer larger container and seal the lid.
7. Wait for 15 minutes before checking the bat. Carefully confirm that the bat has expired by looking for absence of breath, movement, or reaction to stimuli. If bat is sedated, but not deceased administer injectable euthanasia agent.
8. Dispose of the used cotton ball and exam gloves in a well-ventilated area. Wash hands with soap and water.

Precautions

- Minimize people present during euthanasia.
- Pregnant or immunocompromised people should not be present during bat collection and/or euthanasia.
 - Only vaccinated or properly trained people should euthanize bats.
- Wear leather gloves at all times and minimize direct contact, regardless of if the bat is alive or dead.
 - Avoid excessive inhalation of inhalant anesthetic when this method is performed.

Take-aways

- Bats should **never be handled with bare hands**.
- Ideally, all personnel handling bats for euthanasia should be **vaccinated**.
- Cervical dislocation/decapitation are **unacceptable** methods for euthanasia of bats due to concern for rabies exposure.
- Every attempt should be made to terminate a bat's life with an **acceptable** euthanasia method.
- The priority for public health agencies is to **preserve the animal's brain** for rabies testing.
- **DO NOT** place the specimen in formalin or another fixative and **DO NOT freeze**.
- Submit **WHOLE FRESH BAT** as soon as possible.

Packaging and Preparing the Bat for Shipment

1. Wear leather gloves over exam gloves.
2. Place bat in a hard-sided container (plastic container, jar, etc). Bats are fragile and are easily crushed by ice packs during transport.
3. Individually bag and identify all specimens; indicate individual specimens on submission form.
4. Complete submission form in its entirety, including victim/owner name and address, history, and exposure status. This submission form can be found and completed either physically or online on the MVDL website.
5. Pack the specimen in a small cooler or in a normal box if a cooler is unavailable.
6. Include 1-3 ice packs for shipping (depending on weather). Place ice pack(s) in a sealed plastic bag to avoid condensation/leakage.
7. Use packaging material, such as bubble wrap, to minimize shifting during transit.
8. Place paperwork inside its own bag to protect from contamination and to keep it dry.
9. Place form on top of the packing material inside the box so that whoever opens the box knows what's inside before removing the contents.
10. Properly seal the shipping container.

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Shipping

Samples should be shipped the same day of collection. If this is not possible, refrigerate the specimen (for up to 72 hours) until it can be sent out. Shipping on a Friday is not recommended.

Use an overnight courier. Submissions may be sent via Fed Ex, UPS, or hand delivered to the address below:

**Montana Veterinary Diagnostic Laboratory
1911 W. Lincoln Room 76
Bozeman, MT 59718**

Shipping costs, such as materials used to ship specimens, will not be covered by the laboratory; however, MVDL does offer a flat rate shipping label for \$7 which can be found on the website under "Laboratory Web Portal".

Please see MVDL website for current testing fees.
<https://liv.mt.gov/Diagnostic-Lab/index>

