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MEMORANDUM

TO: Local Health Departments
Veterinary Clinics
Animal Control Offices

FROM: Joshua J. Geltz, PhD 
Chief, Division of Laboratories

DATE: August 31, 2023

SUBJECT: Rabies Specimen Euthanasia Requirements and Specimen Rejection Protocols

Recently, the Illinois Department of Public Health (IDPH) Division of Laboratories has received several live bats for rabies testing. This poses a significant risk to laboratory staff who are not equipped or trained to euthanize animals safely and humanely. Please refer to the “Providing for Safe, Humane Bat Euthanasia” and “Specimen Submission” sections below for additional information.

The IDPH Division of Laboratories will **NOT** accept any live animal specimens for rabies testing. If a live animal is received at the lab through UPS, USPS, FedEx or Private Courier, the specimen will be immediately rejected from testing and the submitter will be required to pick up the animal and have it properly euthanized *before* resubmission for testing. There will be no exceptions to this policy.

Please remember that whole animals over 2 pounds will not be accepted for testing. The Division of Laboratories does not have proper equipment to perform head removal. All animals over 2 pounds must have the head removed before submission to the lab, including skunks.

Providing for Safe, Humane Bat Euthanasia

Because any bat may be infected with rabies, all personnel handling bats for euthanasia should be vaccinated against rabies. In addition to being vaccinated, IDPH recommends that personnel involved in euthanizing bats must be properly trained in the use of common euthanasia techniques. Personnel must be provided with appropriate personal protective equipment (PPE), depending on the method of euthanasia utilized, which may include protective clothing, gloves, mask, and eye protection. When using gaseous agents, care must be taken to protect personnel (proper equipment, ventilation and/or scavenging system).

The primary reference regarding humane euthanasia of animals is the "AVMA Guidelines on Euthanasia, 2020 edition" [1]. In addition, the American Association of Zoo Veterinarians has published "Guidelines for Euthanasia of Nondomestic Animals" [2]. While there is little objective information in the literature regarding humane techniques for euthanasia in bats, the basic principles of euthanasia apply. Death must be as painless and distress free as possible. Any technique chosen must induce loss of consciousness as

quickly as possible, followed by cardiac and respiratory arrest. The technique must also be reliable, irreversible, and most importantly, safe for humans.

The AVMA Guidelines on Euthanasia classify effective euthanasia methods as "acceptable", or "conditionally acceptable". Acceptable methods are those that consistently produce a humane death when used as the sole means of anesthesia. Conditionally acceptable methods are those that by their nature might not consistently produce humane death, or are methods not well documented in the scientific literature [1]. Several methods may be utilized to achieve humane euthanasia in bats. Optimal methods provide for as little contact as possible with the bat. Bats should NEVER be handled with bare hands. The following is a list of agents and methods that may be used accomplish euthanasia in bats.

Acceptable Euthanasia Methods for Bats

Chamber Anesthesia/Euthanasia: A collected bat may be placed inside an anesthesia induction chamber without the need to remove the bat from the container. Ensure that there are sufficient holes in the cardboard to allow for anesthetic gas to get in. Seal and fill the chamber with an inhalation agent such as ones listed below. Turn off gas and leave the bat inside the chamber to allow sufficient time for the anesthetic gas to cause euthanasia. Alternatively, the bat may be left in the chamber for sufficient time to achieve anesthesia, whereby it can be removed from the chamber and container and injected intraperitoneally with a barbiturate or potassium chloride euthanasia solution. If CO₂ is used to induce anesthesia in a bat, it should be followed by an injectable euthanasia agent to assure death.

1. Recommended Inhalation Agents

- a. Inhalant anesthetics (liquid): halothane, enflurane, isoflurane, sevoflurane, methoxyflurane, desflurane.
- b. Carbon Dioxide (CO₂): CO₂ at 70% or higher concentrations-compressed gas cylinders are the only acceptable source. (Insectivorous bats may be resistant, so this method should be paired with other methods that ensure death, such as an injectable barbiturate [2].)

2. Recommended Injectable Agents

- a. Barbiturates: intravenous or intraperitoneal (Limitation: DEA Controlled substances, must be licensed to administer)
- b. Potassium chloride: intravenous or intracardiac, in conjunction with an inhalation anesthetic

Unacceptable Euthanasia Methods for Bats

The following must never be used as euthanasia methods for bats.

1. Asphyxiation using exhaust fumes from an idling gasoline internal combustion engine (unacceptable due to production of additional gases leading to inadequate concentrations of CO gas and inadequate cooling of the gas)
2. Refrigeration (places bats into hibernation which revive upon exposure to warmer temperatures)
3. Blunt force trauma (may destroy the brain)
4. Drowning (inhumane)

Specimen Submission

Euthanized animals should be refrigerated prior to shipping. If possible, avoid freezing specimens as thawing of the specimens will cause a delay in necessary testing. A Rabies Test Requisition form must be completed and included with the specimen. Shipping information is indicated on the form. The rabies submission and requisition form can be found on the IDPH Clinical Testing website at:

https://dph.illinois.gov/content/dam/soi/en/web/idph/forms/topics-services/lab-testing-services/clinical-testing/Rabies-Submission-Form_06.13.2023.pdf

Thank you for your assistance in helping our laboratory operations operate efficiently and safely.

References:

1. AVMA Guidelines on Euthanasia, 2020, available online at <https://www.avma.org/sites/default/files/2020-02/Guidelines-on-Euthanasia-2020.pdf>
2. Guidelines for Euthanasia of Nondomestic Animals, American Association of Zoo Veterinarians, 2006