

NHGRI ANIMAL CARE AND USE COMMITTEE (ACUC) GUIDELINES FOR EUTHANASIA OF RODENTS

General Considerations

Euthanasia of animals is an important consideration in all Animal Study Proposals (ASP) approved by the NHGRI ACUC. The Principal Investigator and all investigators on the protocol will be trained in the proper procedures for euthanasia and will be held responsible for the correct implementation of these Guidelines. The NHGRI ACUC will periodically review and update these Guidelines as the recommended procedures are refined.

All methods of euthanasia of rodents must be in accordance with the 2000 Report of the AVMA Panel on Euthanasia^{*} and be approved by the NHGRI ACUC in the ASP. Euthanasia must be performed by trained personnel using appropriate technique, equipment, and agents. Euthanasia should not be performed in the animal room and chambers used for euthanasia must not be overcrowded. Equipment used for euthanasia should be sanitized before and after use. Equipment should also be sanitized between groups of animals to remove residual pheromones, which may cause anxiety in subsequent animals. Whenever possible, animals should be euthanized in their home cage in the animal facility procedure room. If rodents are removed from the animal facility for euthanasia, you must have the proper equipment available in your laboratory and your laboratory must be listed on the animal study proposal as an animal procedure area. Your laboratory will also be inspected, at a minimum of semiannually, by the NHGRI ACUC to ensure compliance with this Guideline.

To ensure humane and effective euthanasia individuals performing the techniques below must be trained by the NHGRI APD or her designee prior to performing the procedures. Upon completion of the euthanasia procedure death of the animal must be confirmed. This can be accomplished by cervical dislocation, decapitation, or by creating a bilateral pneumothorax. Once death is confirmed, the carcass is disposed of as defined in the ASP.

Inhalant Agents

1. Carbon dioxide is acceptable for euthanasia of rodents. Compressed CO₂ gas in cylinders is the *only* recommended source of CO₂. Carbon dioxide generated from dry ice is *unacceptable*. With an animal in the chamber, an optimal flow rate should displace at least 20% of the chamber volume per minute. This requires knowing the volume of your chamber and having a flow meter attached to the CO₂ source. Once the animal(s) is unconscious, the flow rate can be maximized until respiration ceases. Gas flow should be maintained for at least 1 minute after apparent clinical death.

2. Inhalant anesthetics (e.g., halothane, isoflurane) can be used for euthanasia of rodents. Halothane is the most effective inhalant anesthetic for euthanasia. Isoflurane is also acceptable but euthanasia may be delayed as animals may hold their breath due to its pungent odor. Inhalant anesthetics for euthanasia are best used in a closed receptacle containing cotton or gauze soaked with the anesthetic. Care must be taken to prevent

^{*} <http://www.avma.org/resources/euthanasia.pdf>

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direct contact of the animal with the liquid anesthetic. Anesthetic can also be introduced from a vaporizer but this results in a longer induction time. *Inhalant anesthetics must be used with a down-draft table, biosafety cabinet vented to the outside (BSCIIB2), or in a chemical fume hood*

Injectable Agents

1. Barbiturate anesthetics, injected intraperitoneally (IP) in rodents, produces rapid, smooth, and humane euthanasia. Barbiturates are controlled substances and must be procured through your Controlled Substances Officer.** The user of controlled substances is accountable for strict record-keeping procedures.

Physical Methods

1. Cervical dislocation without prior narcotization or anesthesia is to be used only when scientifically justified by the user and approved by the NHGRI ACUC.
2. Decapitation of post-natal rodents (>14 days of age) without prior narcotization or anesthesia is conditionally acceptable, if performed correctly. It is to be used only when scientifically justified by the user and approved by the NHGRI ACUC. The equipment used to perform decapitation should be maintained in good working order and serviced on a regular basis to ensure sharpness of blades.

Special Considerations

1. Euthanasia of neonates and fetuses must be in accordance with the NIH Animal Research Advisory Committee (ARAC) Guidelines for the Euthanasia of Mouse and Rat Fetuses.***

Approved by the NHGRI ACUC 5/15/01

Modified 1/16/03

Re-approved 3/9/04

** For more information see <http://www3.od.nih.gov/oma/manualchapters/management/1345/main.html>

*** <http://oacu.od.nih.gov/ARAC/euthmous.htm>