Title: Euthanasia for Large/Agricultural Animals

I. Purpose:

The purpose of this policy is to establish minimum standards for euthanasia for animals in a large/agricultural animal setting.

II. Policy:

All units providing care for large/agriculture animals must meet these minimum requirements for euthanasia based on the Guide for the Care and Use of Agricultural Animals in Research and Teaching and the AVMA Guidelines for the Euthanasia of Animals:2013 Edition. Personnel who perform euthanasia must have documented training, experience and competency with the techniques to be used.

III. Procedure:

The agents and methods of euthanasia appropriate for agricultural animals are available in the AVMA (2013) Guidelines for Euthanasia or subsequent revisions of that document. Euthanasia is the humane procedure of killing an animal rapidly, painlessly, and without distress.


Proper euthanasia involves skilled personnel to help ensure that the technique is performed humanely and effectively and to minimize risk of injury to people and stress or pain to the animal. The equipment and materials required to perform euthanasia should be readily available, and the clinical veterinarian or a qualified animal scientist should ensure that all personnel are trained in performing euthanasia.

Euthanasia techniques should result in rapid unconsciousness followed by cardiac or respiratory arrest and the ultimate loss of brain function. In addition, the technique used should minimize any stress and anxiety experienced by the animal before unconsciousness (AVMA, 2013). For this reason, anesthetic agents are generally acceptable, and animals of most species can be quickly and humanely euthanized with the appropriate injection of an overdose of a barbiturate. Certain other methods may be
used for euthanasia of anesthetized animals because the major criterion (insensibility) has been fulfilled.

Physical methods of euthanasia (e.g., penetrating captive-bolt devices for large animals) may be used. Every attempt should be made to minimize stress to the animal before euthanasia. Electroshock is an acceptable means of euthanasia if the electrodes are placed so that the current travels through the brain and through the heart. Methods in which the current is directed through the heart only are not acceptable. All stunning devices must be appropriately maintained.

Agents that result in tissue residues cannot be used for euthanasia of animals intended for human or animal food unless those agents are approved by the FDA. The carcasses of animals euthanized by barbiturates may contain potentially harmful residues and should be disposed of in a manner that prevents them from being consumed by human beings or animals and/or entering the food chain.

No matter what method of euthanasia is performed, personnel must ensure that death has occurred. Assurance of death may include ascertaining the absence of heartbeat and respiration, lack of corneal or other reflexes, and lack of physical movement. Personnel should be trained on how to assess that death has occurred in animals.

Euthanasia methods by species:

- **Ruminants and Horses**
  - Acceptable methods
    - Barbiturates (IV)
  - Acceptable with conditions methods
    - Penetrating captive bolt*
    - Gunshot to the head

- **Swine (Mature Sows, Boars, and Grower-Finisher Pigs)**
  - Acceptable methods
    - Barbiturates (IV)
  - Acceptable with conditions methods
    - CO2
    - CO
    - N2 with CO2
    - Ar, alone or with CO2
    - Penetrating captive bolt*
    - Gunshot to the head
    - Electroshock**

- **Swine (Nursery Pigs- 70 lb or Lighter)**
  - Acceptable methods
    - Barbiturates (IV)
  - Acceptable with conditions methods
    - CO2 (alone or in combination with N2 or Ar)
    - CO
    - Purpose-built nonpenetrating captive bolt
• Electrocution (> 10 lb.)**
• Anesthetic overdose

  o Swine (Suckling Pigs)
    ▪ Acceptable methods
      • Barbiturates (IV)
    ▪ Acceptable with conditions methods
      • CO2 (alone or in combination with N2 or Ar)
      • CO
      • Inhaled anesthetics
      • Purpose-built nonpenetrating captive bolt
      • Electrocution (> 10 lb.)**
      • Anesthetic overdose
      • Manually applied blunt force trauma

* an adjunctive method such as exsanguination, pithing, or the IV injection of a saturated solution of potassium chloride is recommended to ensure death when penetrating captive bolt is used in ruminants and swine.

**head only electrocution requires an adjunctive method such as exsanguination, pithing or head to heart electrocution and this adjunctive method must be performed within 15 seconds of onset of unconsciousness.

Harvest Facilities

Any place where livestock are kept temporarily before harvest should be constructed and managed to accommodate animals between the time of delivery and the time of slaughter. Harvest facilities should be designed and managed so that they prevent injuries, and animals can receive proper care and remain safe between delivery and slaughter.

Several factors should be considered, including stocking rates and space per animal; safe and effective fencing; shelter to protect animals during extreme weather conditions; well-drained lying areas that can be cleaned thoroughly between groups of animals; pen surface; air quality and quantity (i.e., ventilation); noise; lighting adequate for monitoring and inspecting animals; isolation pens for sick or injured animals, with easy access to the stunning area; ability to provide adequate feed and water if animals will be at the facility for prolonged periods; design that allows animals to be handled calmly and quietly to avoid unnecessary pre-slaughter stress; and alleyways that encourage animals to move in the desired direction, have as few right angles as possible, and no physical obstructions or artificial or natural lighting arrangements that cause animals to balk. All procedures used to slaughter research and teaching animals that will enter the food chain shall comply with US Code of Federal Regulations.