



**Title: Euthanasia for Large / Agricultural Animals**

<b>SOP #</b>	AV 40-104
<b>Version #</b>	1
<b>Implementation Date</b>	10/21/16
<b>Next Review Date</b>	10/21/19

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**Standard Operating Procedure**

**1. Purpose**

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To establish minimum standards for euthanasia of large/agricultural animals.

**2. Scope**

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All units providing care for large/agricultural animals must meet or exceed 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*.

Exemptions to these policies must be approved by the Institutional Animal Care and Use Committee (IACUC) and/or the Attending Veterinarian.

**3. Responsibilities**

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The Attending Veterinarian (AV) is responsible for the health and well-being of all laboratory animals used at an institution. The AV must assure that euthanasia is carried out by trained personnel using acceptable techniques in accordance with applicable regulations and policies.

Personnel who perform euthanasia must have documented training, experience and competency with the techniques to be used.

**4. Procedure**

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Agents and methods of euthanasia are available in the *AVMA Guidelines for the Euthanasia of Animals*: 2013 Edition (<https://www.avma.org/KB/Policies/Documents/euthanasia.pdf>) or subsequent revisions of that document. Euthanasia is the procedure of killing an animal rapidly, painlessly, and without distress.

Euthanasia must be carried out by trained personnel using acceptable techniques in accordance with applicable regulations, protocols, and policies. The method used should not interfere with postmortem evaluations. Proper euthanasia involves skilled personnel to help ensure that the technique is performed humanely and effectively and to minimize risk of injury to people. Personnel who perform euthanasia must have training and experience with the techniques to be used. The equipment and materials required to perform euthanasia should be readily



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available, and the Attending Veterinarian or a qualified animal scientist should ensure that all personnel performing euthanasia have demonstrated proficiency in the use of the techniques selected.

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. 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. Electrocutation 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.

2013 AVMA Guidelines for the Euthanasia of Animals:

**Ruminants and Horses:**

Acceptable Methods	Acceptable with Conditions
Intravenous barbiturates	Penetrating captive bolt, gunshot to the head



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**Swine (mature sows, boars, and grower-finisher pigs):**

Acceptable Methods	Acceptable with Conditions
Intravenous barbiturates	CO2, CO, N2 with CO2, Argon (Ar) alone or with CO2, penetrating captive bolt, gunshot to the head, electrocution

**Swine (nursery pigs – 70 lbs or lighter):**

Acceptable Methods	Acceptable with Conditions
Intravenous barbiturates	CO2 (alone or in combination with N2 or Ar), CO, purpose-built nonpenetrating captive bolt, electrocution (> 10 lb), anesthetic overdose

**Swine (suckling pigs):**


Acceptable Methods	Acceptable with Conditions
Intravenous barbiturates	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

**Verification of Death:**

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 must be trained on how to assure death in animals.

**5. References**

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1. Institute of Laboratory Animal Resources: Guide for the Care and use of Laboratory Animals, National Academy Press, Eighth Edition ([http://www.nap.edu/catalog.php?record\\_id=12910](http://www.nap.edu/catalog.php?record_id=12910)).

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2. Animal Welfare Act and Animal Welfare Regulations. United States Department of Agriculture, 2013  
[https://www.aphis.usda.gov/animal\\_welfare/downloads/Animal%20Care%20Blue%20Book%20-%202013%20-%20FINAL.pdf](https://www.aphis.usda.gov/animal_welfare/downloads/Animal%20Care%20Blue%20Book%20-%202013%20-%20FINAL.pdf)).
3. National Institutes of Health: Public Health Service Policy on Humane Care and Use of Laboratory Animals (<http://grants.nih.gov/grants/olaw/references/phspol.htm>).
4. The Federation of Animal Science Societies: Guide for the Care and Use of Agricultural Animals in Research and Teaching, 3<sup>rd</sup> Edition, 2010  
[http://www.fass.org/docs/agguide3rd/Ag\\_Guide\\_3rd\\_ed.pdf](http://www.fass.org/docs/agguide3rd/Ag_Guide_3rd_ed.pdf)).
5. AVMA Guidelines for the Euthanasia of Animals: 2013 Edition  
<https://www.avma.org/KB/Policies/Documents/euthanasia.pdf>).

## **6. Definitions**

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1. AV – Attending Veterinarian – responsible for the health and well-being of all laboratory animals used at the institution
2. AVMA – American Veterinary Medical Association – a not-for-profit organization for advancing the science and practice of veterinary medicine to improve animal and human health
3. SOP – Standard Operating Procedure – established or prescribed methods to be followed routinely for the performance of designated operations or in designated situations
4. IACUC – Institutional Animal Care and Use Committee – responsible for assessment and oversight of the institution’s animal care program components and facilities
5. Chair – Chairperson of the IACUC
6. PI – Principal Investigator – a Central Oregon Community College employee having the background and training in scientific and administrative oversight necessary to conduct and manage the proposed study
7. AUP – Animal Care and Use Protocol – protocol created by the principal investigator of the proposed research, testing, or educational study
8. Protocol – Animal Care and Use Protocol – protocol created by the principal investigator of the proposed research, testing, or educational study
9. COCC – Central Oregon Community College
10. Guide – the *Guide for the Care and use of Laboratory Animals*
11. AWA – Animal Welfare Act – requires that minimum standards of care and treatment be provided for certain animals bred for commercial sale, used in research, transported commercially, or exhibited to the public



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12. PHS – Public Health Service – establishes guidelines for the proper care of animals to be used in research

<b>Revision</b>	<b>Author</b>	<b>Revisions Made</b>	<b>Effective Date</b>	<b>Approval</b>
1	Cindy Elston	<ul style="list-style-type: none"><li>• New SOP</li></ul>	10/21/16	Cindy Elston (AV)
		<ul style="list-style-type: none"><li>•</li></ul>		