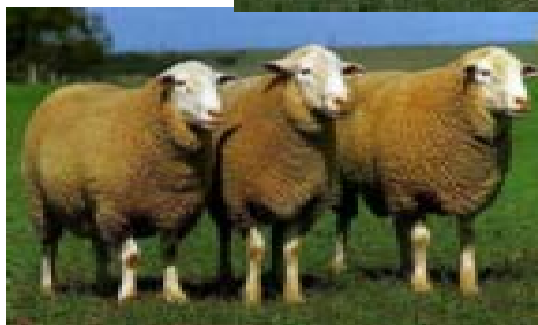


The Emergency Euthanasia of Sheep & Goats

*Consideration for Owners, Producers, Auction Market Operators,
Livestock Transporters and Law
Enforcement Officers*



*E*uthanasia is defined as
“the intentional causing of
a painless and easy death
to a patient suffering from
an incurable or painful
disease”

Webster's II University Dictionary, 1996

Introduction

Catastrophic accidents and illness affecting animals can happen at any time. This may necessitate that an animal's life be ended humanely. This guide is designed to aid owners, producers, auction market employees, livestock transporters, and law enforcement officers in making the appropriate decisions regarding the emergency euthanasia of sheep and goats. It is always best to seek assistance from a veterinarian when considering euthanasia. However, in some circumstances a veterinarian may not be readily available. It will be in the animal's best interest to provide a swift and humane death to prevent or minimize suffering. These guidelines are a summary of the current, best practices known for providing a humane death for sheep and goats in the absence of a veterinarian.

Situations that may require emergency euthanasia:

- Road accidents
- Injuries in transit
- Injuries in auction yards or sale barns
- Severe injury or disease on the farm
- Natural or man-made disasters (e.g., flood, fire, and earthquake)

There are three acceptable mechanisms for inducing emergency euthanasia in animals:

- Drugs that directly depress the central nervous system (e.g., barbiturates and anesthetics). Overdoses lead to depression of the respiratory centers (i.e. the animal stops breathing) and cardiac arrest (i.e. heart stops beating).
- Physical or functional destruction of brain tissue vital for life function (e.g., gunshot, penetrating captive bolt gun, and electrocution).
- Methods that induce unconsciousness (stunning with a non-penetrating captive bolt gun) followed by exsanguination (e.g., massive blood loss).



Considerations in the Selection of a Euthanasia Method

The following information should be considered when choosing the appropriate method of euthanasia:

- **Human Safety** - The method should not put anyone at unnecessary risk. Ricochet of a bullet and/or the unpredictability of a falling or thrashing animal should be considered.
- **Animal Welfare** - All methods of euthanasia should produce a quick and painless death. However, certain environments or animal behaviors may prevent the use of a specific method.
- **Restraint** - Each method requires a differing amount of restraint. For example, administration of barbiturate or use of a captive bolt gun require physical contact with the animal, whereas a firearm does not.
- **Practicality** - The euthanasia method selected must be practical in the emergency situation that currently exists. For example, the necessary equipment must be readily available, and one must realize that barbiturates are only available to licensed veterinarians.
- **Skill** - All methods require some degree of skill or training to administer correctly. Animal owners in remote locations, auction market employees, livestock transporters and law enforcement personnel should be aware and appropriately trained in at least one emergency euthanasia method.
- **Cost** - Some methods require a larger initial investment (e.g., firearms and penetrating captive bolt gun) but are relatively inexpensive to use thereafter.
- **Aesthetics** - Some methods of euthanasia “appear” less objectionable to the untrained eye. Most methods will result in some exaggerated muscular activity (e.g., leg movements and twitching) even when the animal is not experiencing any pain or distress.

The Euthanasia Decision

Emergency euthanasia should be performed when there will be an unacceptable delay in treating the condition, the source of the pain or disease is incurable, or where transportation of the animal would significantly aggravate the condition. There may be times where none of these situations is clearly present. If you are in doubt, contact a veterinarian; however, if you can not obtain veterinary assistance, the following are some examples of situations that indicate euthanasia may be necessary to end excessive suffering:

- Violent or self-destructive thrashing (Is the animal a hazard to itself or others?)
- Evidence of severe shock (animal is unconscious)
- Exposed abdominal organs
- Open fractures of a long bone (leg bones below the shoulder or the hip)

Location

When practical, choose a location where the carcass can be easily reached by removal equipment. Remember not to cause any further pain or unnecessary suffering in this handling process.



Summary of Sheep and Goat Euthanasia Methods

Method	Human Safety	Animal Welfare	Skill Required	Cost	Aesthetics	Considerations
Gunshot	Moderate; firearm laws apply	Good	Moderate; correct placement essential	Low after initial purchase	Fair; some blood and body movement	Distance from animal can be maintained
Penetrating Captive Bolt Gun	Good	Good	Moderate; correct placement essential	Low after initial purchase	Fair; some blood and body movement	Contact with animal required
Barbiturate Overdose	Good	Excellent	Moderate; intravenous injections required	High	Good	Drug availability limited to licensed veterinarians
Exsanguination	Fair	Good; animal must already be unconscious	Moderate	Low	Poor; very bloody	Not sole method of euthanasia
Electrocution	Moderate to poor	Good; only if specialized equipment is used	Moderate	Low after initial purchase	Fair; some body movement	Electricity required

All methods require proper operator training, appropriate equipment and good restraint. When all these factors are maximized the risk of injury to the operator is minimized.



Details of the Summary

Gunshot

A .22 caliber long rifle, 9mm or .38 caliber gun can be used. The muzzle of the gun should be held at least 4 to 10 inches (10-25 cm) away from the skull when fired. The use of hollow-point or soft-nose bullets will increase brain tissue destruction and reduce the chance of ricochet. When performed skillfully, euthanasia by gunshot induces immediate unconsciousness, is inexpensive, and does not require close contact with the animal. All humans and other animals should remain well out of the line of fire.

This method should only be attempted by individuals trained in the use of firearms and who understand the potential for ricochet. Care must be taken to minimize danger to the operator, observers, and other animals. Personnel must comply with all laws and regulations governing the possession and use of firearms. Be aware that firearm laws vary depending on state and local regulations.

Penetrating Captive Bolt Gun

When properly used the penetrating captive bolt gun produces immediate brain tissue destruction that kills the animal. Captive bolts are

powered by gunpowder, thus the selection of the cartridge strength should be appropriate for the size of the animal (i.e. adult vs. kids or lambs). Cartridge strength varies, so be sure to follow the manufacturer's recommendations. The penetrating captive bolt gun should be placed very firmly against the skull at the same location previously described for gunshot. Animals must be adequately restrained to ensure proper placement of the captive bolt.

Maintenance and cleaning of the penetrating captive bolt gun, as described by the manufacturer, must be followed to ensure proper operation.

Barbiturate Overdose

When properly administered by the intravenous route, barbiturate overdose (sodium pentobarbital) depresses the central nervous system, causing deep anesthesia that results in respiratory and cardiac arrest. This method of euthanasia results in minimal pain (needle puncture) sensation. Barbiturate overdose is less disturbing to observers (i.e. more aesthetically acceptable) but also more expensive than other options. It is also illegal for a non-veterinarian to possess injectable euthanasia products.

Polled (hornless) Sheep

The proper site is either:

- (A) on midline, at the highest point of the head, aiming straight down toward the angle of the jaw, or
- (B) on midline, in the middle of the forehead, just above the level of the eyes, aiming down along the angle of the neck.



Horned

The proper site is either:

- (B) on midline, in the middle of the forehead, just above the level of the eyes, aiming down along the angle of the neck.
- (C) on midline, just below the bony ridge between the eyes, aimed toward the back of the chin.

After barbiturate overdose, the carcass of the animal will be unfit for human or animal consumption. Keep in mind that house pets and wildlife that ingest portions of the carcass can be poisoned.

Exsanguination (massive blood loss)

This method can be used to ensure death immediately following stunning, induction of anesthesia, or unconsciousness. Because severe anxiety is associated with the hypoxia (lack of oxygen) caused by exsanguination, it must **not** be used as the sole method of euthanasia. The most common method is to lacerate the carotid arteries and jugular veins on both sides of the neck. A long, sharp knife is fully inserted in the upper one third of the neck behind the angle of the jaw and directed toward the spinal column through the trachea, until bone is contacted. Successful severance of the carotids can be recognized by freely flowing, pulsing blood. This procedure is very disturbing to observers due to the large volume of blood loss.

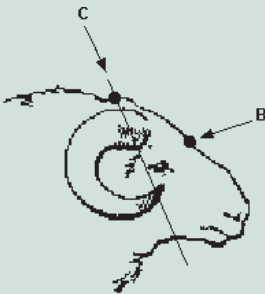
Electrocution

Properly conducted electrocution induces immediate unconsciousness and death by cardiac arrest. One electrode is placed on either the forehead or in the hollow behind the ear and the other electrode is placed on the back or side of the body. "Head-only" electric stunning devices result in a reversible unconsciousness and should not be used as the sole means of euthanasia. For humane and safety reasons, only a commercially designed device should be used. Proper restraint equipment is required to correctly position the electrodes. Because electricity and specialized equipment are necessary, this method is practical in a very limited number of emergency situations.



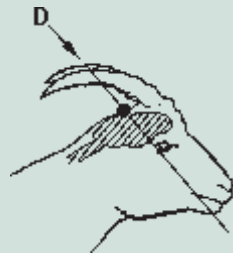
d Sheep

middle of
ve the
ng down
neck, or
hind the
e horns,
k of the



Goats

The proper site is (D) on midline, just behind the bony ridge where the horns protrude, aimed toward the back of the chin. Note: Kids (less than 4 months of age) may be shot from the front as for sheep (B).



Confirmation of Death

Confirmation of death is essential. Immediately following the euthanasia method a standing animal should collapse and may experience a period of muscle contraction (usually no longer than 20 seconds). This will be followed by a period of relaxation and some poorly coordinated kicking or paddling movements. The pupils of the eyes should be totally dilated. The animal must be monitored for 5 minutes to confirm death. Death may be confirmed by the absence of breathing, a heartbeat, and a corneal reflex. To check a corneal reflex (blinking response), touch the animal's cornea (surface of the eye); there should be no response to the touch if the animal is dead. The presence of any eye movement or blinking at this time is evidence of sustained or recovering brain activity and the individual should repeat the same or an alternative euthanasia procedure.

Unacceptable Methods of Sheep & Goat Euthanasia

Ethical and humane standards of euthanasia DO NOT permit the following methods of euthanasia for sheep and goats:

- Manually applied blunt trauma to the head.
- Injection of chemical agents into conscious animals (e.g., disinfectants, certain electrolytes such as KCl, non-anesthetic pharmaceutical agents).
- Air embolism (e.g., the injection of a large amount of air into the circulatory system).
- Electrocution with a 120-volt electrical cord.

Carcass Disposal

Animal carcasses should be disposed of promptly by a commercial rendering service or other appropriate means (on-farm burial, incineration, direct haul to a solid waste land fill). Disposal should be in accordance with all federal, state, and local regulations.

Euthanasia Plan

Owners and producers should work with their veterinarian to determine which methods of euthanasia might be suitable in their management system. It is advisable to post the written emergency euthanasia plan in a centralized area as a guideline for the humane destruction of animals on the premises. The plan should be reviewed with new employees.

Euthanasia Action Plan

Business Name: _____

Veterinarian (Name & Phone): _____

Rendering or Disposal Service: _____

Date: _____

Drafted By: _____

Phase of Production	Euthanasia Method of Choice	Alternative Method of Euthanasia
Kids (goats) or Lambs (less than 4 mos.)		
Sheep or Goats (Adult)		



“One of the most difficult decisions a person may make is when to end an animal’s life. Many of these decisions must be made in very stressful and less-than-ideal situations. We hope that this booklet can help make that decision the best one possible for both the animal and the owner. With a true appreciation of life comes the responsibility of ensuring an humane death.”

-Pam Hullinger, DVM and Carolyn Stull, Ph.D

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