
On Farm

Euthanasia



Alberta Lamb Producers

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Introduction

Stockpersons who are responsible for the care of livestock have a moral obligation to ensure the welfare of the animals in their care. Part of this obligation is to make certain animals do not experience unnecessary pain and suffering, even in death. Therefore, when disease or injury conditions arise that diminish the quality of life or create pain and suffering - that cannot be effectively or economically relieved - euthanasia is indicated.

Euthanasia is derived from the Greek for “good death” and is accomplished when death results in a minimum of pain, fear and distress to the animal. This is achieved by utilizing techniques that induce an immediate loss of consciousness followed by, or in conjunction with, cardiac and respiratory arrest that ultimately results in loss of brain function. For persons performing euthanasia, a certain degree of technical proficiency, knowledge and appropriate equipment are required.

Alberta Lamb Producers (ALP) has taken the initiative to ensure that all Alberta producers have the opportunity to acquire an elevated awareness of animal well being and best animal husbandry practices from birth through to the end of life. We encourage you to continuously improve all aspects of your on-farm practices and to consider animal care outcomes every day on your farm.

This manual provides information on:

- Why an animal should be euthanized
- Timeliness of euthanasia
- Who should euthanize an animal
- How to euthanize an animal
- What should be done with the carcass of an animal after euthanasia.
- Requirements for adherence to the Code of Practice for the Care and Handling of Sheep

Section 1

Factors Affecting Timeliness and Effectiveness of Euthanasia

One of the leading animal welfare issues pertaining to the euthanasia of sheep is the timeliness of application. There are many factors that affect the timeliness and effectiveness of euthanasia, including:

- Emotional attachment
- Socio-demographic considerations
- Environmental influences
- Psychological factors
- Management practices

Management has to have a clear understanding of each of these factors and how to effectively manage them to ensure the welfare of the animals and the staff in their care.

Management considerations

Whether a farm has a staff of 50 or is owner operated, it is the manager's responsibility to hire the right people for the job; provide education and training; choose acceptable euthanasia procedures; set the tone for the attitude of the facility and monitor performance.

Employee Selection

Employees hired for positions that include euthanasia of the animals, must be comfortable performing the task. It is detrimental to employee morale, safety and animal welfare to force handlers to perform euthanasia if they are not comfortable doing so. During the interview process the candidate must be asked if euthanasia is something they are going to be comfortable with.

There must be an alternate plan for those reluctant to perform euthanasia, as euthanasia must be available 24 hours a day as needed. Some handlers may be comfortable performing euthanasia but may not be comfortable with the modes of euthanasia used within an operation (e.g. blunt force trauma). This must be resolved before they are expected to euthanize animals.

Education and Training

Reaction to euthanasia procedures varies amongst individuals. Some experience no adverse effects, while others are deeply affected. The more educated and aware handlers are made of the procedures

and reasons for euthanasia, the more comfortable they may become with the task; as a result they are less likely to experience stress-related symptoms.

The amount and type of euthanasia training a livestock handler receives influences attitude. When handlers are provided with comprehensive training that covers all aspects of euthanasia, they often become more comfortable with the procedures and have a better attitude towards euthanasia. Training gives them the skill to perform the act and the confidence to make timely and appropriate decisions on when to euthanize an animal.

Ongoing training and assessment for new and existing staff is essential at the farm level. Surveys have shown that stockpersons prefer to be trained on-farm by managers. The training should include all aspects of euthanasia with both classroom-type and hands-on training. Individuals should not be allowed to euthanize animals on their own until they test proficient on skill, efficiency and effectiveness.

Attitude

The attitude of the individual is a key element in ensuring proper handling and euthanasia procedures in the barn. Research has revealed relationships among the attitudes of the individual towards the animals and the behaviour of the individual with the animals are linked.

Management sets the tone for the attitude of barn staff. Managers must have a proactive approach to all aspects of animal welfare and demand the same attitude from the staff. Company policy must be enforced and clearly posted.

Management of Employees

Management can alleviate some of the strain on employees by:

- Rotating the euthanasia amongst employees
- Keeping the lines of communication open with employees
- Noting any change in behaviour, attitude, frequency of sick days, etc.
- Provide support for employees who request it, or appear to need it.

It is the responsibility of management to regularly verify that all staff is performing euthanasia properly, in a timely manner and utilizing a standard audit program or third party verification process.

Section 2

Indications for Euthanasia



Individuals are morally, ethically and legally responsible for the welfare of the animals in their care. Although the financial implications are part of the decision process. An animal's welfare must never be compromised for financial reasons.

Indications for euthanasia of livestock include poor health, disease, injury, loss of productivity, economics and safety. There are three possible treatment options for stockpersons when faced with each of these situations:

1. ship the animal for meat processing, IF the animal is fit for transport and human consumption;
2. treat the animal;
3. euthanasia.

Just because there is a chance for recovery, it does not mean treatment is always the optimal choice for the producer or the animal. When deciding which option is best, there are several questions a handler has to ask in order to make a responsible decision.

- Is the animal experiencing a high level of pain?
- Will it require continual medication to alleviate the pain and suffering.
- Will the animal have to endure a painful and lengthy recovery?
- Will the animal be likely to return to normal function post recovery?
- Can the required care be provided during the convalescent period?
- Is the animal likely to suffer chronic pain or immobility following recovery?
- Will weather extremes create inhumane conditions for this animal during and/or after recovery?
- Will the animal be unable to or have difficulty accessing feed and water.
- Will the cost of therapy outweigh financial return?
- Is the animal contagious and can spread disease or illness to other animals, adversely affecting the welfare and the economics of the facility.

The answer to these questions is not always clear. Nonetheless, they should be part of the decision-making process whenever faced with the choice of treatment, slaughter or euthanasia.

One of the biggest challenges though is determining: *How long should an animal be given to recover?* Current industry literature and guidelines would suggest that animals should show evidence of significant improvement within 24 hours from the onset of treatment.

Simply leaving an animal that is suffering to die of natural causes or in other words, “letting nature take its course” is unacceptable. Furthermore, it is NOT acceptable to prolong an animal’s misery by delaying euthanasia for reasons of convenience. It is important that when euthanasia is indicated, it be conducted in timely manner.

The following is a list of the more common illnesses and diseases that producers encounter while raising animals. This reference list is not intended to be all inclusive. It provides common examples of poor health and disease that may require euthanasia.

- Too weak to ship due to emaciation and poor body condition.
- Unresponsive to treatment and lack of ongoing desire to eat.
- Disease for which no effective treatment is known or is cost prohibitive.
- Disease for which expected recovery is unusually prolonged.
- Drastic weight loss.
- Contagious or reportable disease.
- Unresolved prolapses.
- Unresponsive respiratory disease/illness.
- Advanced or infectious arthritis affecting more than two joints.
- Infected prolapse.
- Intractable diarrhea.
- Paralysis from traumatic injuries or disease that results in immobility.
- Transmittable diseases (Zoonotics).
- Fractures of the legs, hip or spine.
- Emergency medical conditions that result in excruciating pain that cannot be relieved by treatment (i.e. trauma associated with highway accidents).
- A wound significantly impacting a critical biological function (i.e. major organ, muscle and skeletal systems, brain injury).
- Profuse bleeding.



Recognition of Pain and Suffering

Pain and suffering in livestock are primary indications for euthanasia, but can be easily misinterpreted. Prey animals instinctively avoid expressions of pain in order to evade the notice of predators. Sheep, for example may simply become less responsive or depressed and lame animals will adjust their gait or posture to mask evidence of lameness. Experience and education of the animal handler are important prerequisites to the accurate assessment of animal behaviour, particularly when it is necessary to distinguish distress from normal behaviour.

There are several behavioural signs that can alert you that an animal may be in pain. Any of these indications may appear alone or in conjunction with other signs and may overlap with signs of distress. If unsure the animal may be experiencing pain or why the animal is in pain, consult an experienced handler or professional to assist in assessing the situation. ALP has produced a guidance document for pain indicators in sheep (Addendum D)

Indications of pain may include:

- inability or unwillingness to rise or walk.
- reluctance to put weight on a limb.
- attraction to or protection of the painful area.
- vocalization, especially when animal moves or painful area is touched.
- open mouth breathing.
- arched or hunched back, abdomen tucked up and/or drooping head and/or ears.
- orbital tightening (squinting eyes)
- cheek muscle tightening
- lip and jaw profile tightened
- upper lip curled and nostrils tightened
- lack of interest in food, water or surroundings.
- stays away from or does not respond to other animals.
- does not respond when touched or prodded.
- standing in a rigid position, shivering, trembling or profuse sweating.
- hiding in bedding.
- reduced suckling
- unsettled, inability to get comfortable.



Other Indicators:

Loss of Productivity

Most livestock are raised for production purposes. When the costs of treatment exceed productivity income of an individual animal, the producer may decide to remove the animal from the production cycle. Producers should cull the animal in a timely manner while the animal is still fit for transport and processing as this may allow for the owner to recover some of the animal's value.

In cases where animals are unfit for transport or not acceptable to be processed for meat, it is the responsibility of the producer to euthanize the animals on farm. Removing these animals from the production cycle in a timely manner may increase profitability of the farm and improve the overall welfare and health status of the herd or flock.

Economics

Animal welfare must never be compromised for financial reasons. Economics may be factored into the decision to euthanize; however, it is often very difficult for producers to decide when an animal becomes uneconomical.

Economic factors include:

- The cost of treating the animal
- The loss in productivity during the illness or injury
- Impact to the potential infection of other animals
- The cost to return the animal to profitable productivity.

Health Emergency

The Canadian Food Inspection Agency (CFIA) is responsible, under the Health of Animals Act, for eradication of foreign animal disease (FAD) in Canada. An outbreak of a foreign animal disease or a reportable disease as identified by the Office of the Chief Provincial Veterinarian and requires immediate action to contain, control and eradicate the disease. These actions may include: animal movement controls, euthanasia, disposal, cleaning and disinfecting of infected premises and transport. There may be instances where the producer is required to assist in health emergencies under the direction of governmental authorities.

Section 3

The Euthanasia Process

Preparing for Euthanasia

Proper preparation for euthanasia will help ensure that the process is as effective, safe and stress free as possible for both the handler and the animal. Being properly prepared includes:

- training
- the appropriate equipment
- means for restraint when necessary
- low stress handling of the animal
- implementing safety procedures for both people and animals in the immediate area.

Animals should be handled as little as possible and appropriately restrained. Unfit animals should not be moved for euthanasia except in cases of human safety or the safety of other animals. If an animal must be moved, a humane method of movement, such as a sled, must be used.

Restraint

If restraint of a animal is necessary, it must meet the following criteria:

- Appropriate for the animal.
- Minimize distress and pain prior to euthanasia. Appropriate for the method of euthanasia chosen. Occur for the shortest time possible.
- Be safe for handlers (animal cannot strike out).

Proper restraint depends on the size and condition of the animal. For sheep, possible restraints include hand (lambs), chutes or halters.

Selection of Method

There are 12 main considerations when selecting euthanasia tools: safety; animal welfare; robust and reliable; cost; skill level; aesthetics; operator comfort; legal restrictions; Biosecurity; age and animal type and disposal methods.

Safety

The method chosen must be safe for the individuals performing the task. Safety considerations that pose a hazard to the handler, include: proximity to the animal, restraint method required, accessibility of restraint and the animal's involuntary muscular spasms. Safety of personnel or other animals present (e.g., chance of missed gunshot hitting other animals or startling other animals) must be considered.

Animal Welfare

Handlers must do all they can to minimize anxiety, fear, pain and distress for the animal. Animals must be properly and effectively restrained and the welfare and safety of nearby animals considered. Animals cannot be dragged, prodded or forced to walk on broken limbs except in cases of obvious human safety concerns. They should not be carried or swung in a way that will cause pain or distress.

Robustness and Reliability

The method chosen must be robust and reliable. This means it must be able to consistently perform with variations in its operating environment (including variation in operators). It must be easily repeatable between stockpersons and consistently euthanize animals. As an example, the captive bolt gun has a high maintenance requirement in order to remain reliable - when not maintained the captive bolt gun will ultimately become ineffective.

Economics

Some methods of euthanasia are more costly than others. Some equipment may have a high initial cost but are relatively inexpensive to use. The number of animals euthanized within the operation is also a consideration. Euthanizing an occasional animal is not as costly overall as frequent euthanizing or mass destruction.

Skill Level

Each method of euthanasia requires a certain level of skill and training- some requiring more training and skill than others. This is based on equipment, animal type and method of application. Each method can be ranked with a skill level of low, moderate or high.

- **Low Skill:** Minimal skill with proper training and proficiency tested.
- **Moderate:** Moderate to high skill with proper training and proficiency tested.
- **High:** High skill with extensive training required that includes literature review, field training and proficiency tested.

The vast majority of failed euthanasia is the direct result of human error, for this reason those performing euthanasia must be proficient in the application of the method in order to ensure good animal welfare and optimum human safety. Handlers must be properly trained and routinely assessed.

Aesthetics

Aesthetics is how something “looks” to observers and each method of euthanasia has a different aesthetic appearance. Some means can have a more peaceful appearance (e.g., lethal injection) than other means (e.g., blunt force trauma). Consideration must be given to the aesthetic comfort level of the person performing the task and that of bystanders. Factors that affect aesthetics include blood loss, physical trauma to the animal and involuntary movement of the animal following application.

Stockperson Comfort

Individual preference for the method of administering euthanasia must be considered. People are often more comfortable with one means of euthanasia over another. The more comfortable a person is with the chosen acceptable method, the more proficiently he or she will perform the act. This can be influenced by education/training, previous experience, aesthetics, religion, background and gender.

Legal Restrictions

There are legal restrictions with some of the acceptable methods. For example, lethal injection can only be delivered by a registered veterinarian; and in the instance of firearms in Canada, the gun must be registered and the operator must hold a valid firearms license.

Biosecurity

Biosecurity is a set of measures designed to protect a herd from the entry of infectious agents. As an example, blood loss and expelling of brain matter is a possible risk with gunshot, captive bolt gun and blunt force trauma. Other body fluids may also be released during the euthanasia process and contaminate facilities.

Size, Age and Animal Type

Even though each of the methods in the next section are acceptable for euthanasia, they are not necessarily applicable to all species, sizes or ages. See method summaries for specific limitation of each method.

Disposal of Carcass

The method of disposal of the carcass must be considered. Different regions have different laws regulating the disposal of dead livestock.

Section 4

Application of Euthanasia Methods

The three different modes by which death will occur is: direct depression of the central nervous system (eg. lethal injection), hypoxia (eg. gas) or physical disruption of the brain (eg. gunshot).

Death is a process and does not occur immediately, but when euthanasia is properly applied, animals should not experience any pain. They will first experience rapid loss of consciousness, followed by cardiac or respiratory arrest and subsequent loss of brain function eventually resulting in death.

Gunshot

Gunshot euthanizes through mass destruction of the brain. The degree of brain damage inflicted by the bullet is dependent on the characteristics of the firearm, the nature of the bullet and the accuracy of the shot. For this reason, It is imperative to use a sufficiently powerful firearm. The correct selection of firearms and ammunition is vital to effectively euthanizing animals.

Gunshot must be performed only by trained, skilled and licensed handlers using a registered firearm.

- The shooter should wear both protective ear and eye gear.
- All firearms must be maintained and kept clean and ammunition kept dry.
- The shooter must always ensure a clear background when shooting and, if possible, have a backstop such as a manure pile that will stop the bullet if it passes through the animal.
- Firearms must never be held flush to the animal's head or body. This may cause the gun to explode.

Safety of handlers, public and other animals is critical. Other people and animals must be behind the shooter and out of the line of fire. Ricochet can occur off the skull, off pavement or other solid objects due to missed shots.

Accuracy of the shot is vital to the effectiveness of gunshot. The animal's head must be stationary. One shot should be enough; however, a second shot or a secondary action such as pithing or exsanguination may be necessary.

For euthanasia purposes in Canada:

- Handguns are restricted to use by law enforcement personnel for close range shooting of less than 5-25 cm (2-10 in.).
- Shotguns are very effective for euthanasia of livestock. Shotguns are appropriate for a distance of 1-2 m (1-2 yd.). The 20, 16 and 12 gauge can be used on all weight and species classes. Number 4, 5 or 6 birdshot is appropriate ammunition for close range, but slugs are best as they do not disperse as they leave the barrel.
- The most common rifles found on farms are .22 calibre long rifles; however, these do not meet the recommended minimum of 300 ft. lb. (407 J) of muzzle energy as on average they only supply 100 ft. lb. (136 J) of muzzle energy. Therefore .22's must only be used for young, lighter weight animals from a distance of 5-25 cm (2-10 in.). A long rifle, round nose, lead bullet should always be used with a .22.

There are three acceptable points of entry for firearms on sheep: the front of the head just above the eyes, the top of the head and the back of the poll. When shooting on the frontal part of the head, the bullet must enter right above the eyes. (Diagram 5). When an animal has horn mass, the most effective shot is behind the poll, pointing towards the mouth of the sheep. Diagrams can be found in Addendum A.

Gunshot to the heart or neck is not an acceptable means of euthanasia.

Captive Bolt Guns



The penetrating captive bolt consists of a steel bolt, with a flange and piston at one end, which is housed in a barrel. When fired, the expansion of gases propels the piston forwards and forces the bolt out of the muzzle of the barrel. The bolt is retained within the barrel by a series of cushions that absorb the excess energy of the bolt and keep it within the barrel. The bolt is then retracted back into the gun either automatically or manually depending upon the design of the gun. These guns are powered by either gunpowder in a cartridge or compressed air.

The two main factors affecting the effectiveness of the captive bolt gun is bolt velocity and accurate placement. To be effective, the bolt must have sufficient bolt velocity for the weight class and animal type it is being used on. Bolt velocity is dependent on grain strength (or PSI), maintenance, repair and storage. The gun must be accurately placed on the animals head - this includes location of shot and flushness of the gun to the skull.

There are a variety of penetrating captive bolt guns with the most common being 9 mm, .22 calibre and .25 calibre. Cartridge powered styles are available as in-line (cylindrical) and pistol grip

(resembles a handgun). There are pneumatic penetrating bolt guns, but these are normally found in slaughter plants, not on farm.

Non-penetrating captive bolt guns for on-farm euthanasia are available as cartridge powered or pneumatic. These are currently classified as controlled blunt force trauma. Cartridge powered non-penetrating guns are available in the same style as penetrating, in-line or pistol grip. The commercial non-penetrating guns currently on the market are only approved on lambs up to 15 kg (20 lbs) .

Currently available pneumatic captive bolt guns (air powered) marketed to farms, resemble air powered nail guns. Manufacturers recommendations for PSI, weight class restriction and number of times the gun is applied must be adhered to. Manufacturers will include the required PSI with the devices.

Manufacturers have recently developed captive bolt euthanasia systems that utilize the body of a single device with interchangeable muzzle assemblies. They include a variety of penetrating and non-penetrating bolt configurations that are paired with specific cartridges based on the species and size of the animal. This system significantly reduces the cost of the unit and maintenance requirement for multi- species farms and breeding facilities.

Cartridges vary in strength and are classified by the amount of propellant they contain. This is measured in grains. The higher the amount of grains, the larger the animal for which they are intended. Manufacturers should include a guide which matches cartridges to weight class and bolt heads when required.

Guidelines

It is highly recommended that captive bolt guns designed for on-farm euthanasia be used. These devices are designed to cause sufficient destruction of the brain through physical and concussive damage to be considered a one step method. Other devices may only stun the animal and therefore require a secondary kill step such as exsanguination or pithing.

- Only trained handlers should use this method and must be familiar with the gun's features and directions for use.
- The shooter should wear both protective ear and eye gear.
- The gun must not be cocked until the shooter is ready to fire.
- The safety must be set until the handler is ready to discharge it.
- The discharge end of the captive bolt must be pointed towards the ground at all times.
- In the case of a misfire, the stunner breech must be kept closed for 30 seconds in case the problem is a "hang fire". A "hang fire" is when there is delay between the gun being fired and the ammunition discharging. This is caused by slow ignition of the primer.

- Animals may need to be restrained as the animal's head must be stationary before shooting. Animals that are upright and mobile may be more difficult to safely captive bolt without restraint.
- For the application of the captive bolt gun, the ideal point of entry is the highest point/top of the head. The animal can be approached from head on or from behind and off to the side, out of the line of sight of the animal.
- The recoil will vary depending on calibre, buffer configuration, manufacturer, cartridge used and animal size. If necessary, the handler should use two hands when firing the gun.
- One shot should be enough; however, a second shot or a secondary action such as pithing or exsanguination may be necessary.
- If a second shot is required, it must not be administered in the same place as the first shot. If the first shot was correctly placed, the second shot should be applied slightly above and to the side of the first hole. If the first shot was incorrectly placed, the second shot should be placed in the correct spot.

Captive bolt guns must be cleaned and maintained in order to operate effectively - poor maintenance is the leading cause of failed kill. Guns should be cleaned and inspected following each day of use. Guns that are not used regularly still need to be cleaned and oiled at least once a month according to the manufacturer's instruction manual for cleaning.

Captive bolt guns and cartridges must be stored in a dry area. Exposure to humidity will affect both the gun and the effectiveness of the ammunition.

Tips for maintaining captive bolt guns

(source: Bildstein, 2009)

- ▶ It must be cleaned every day if it has been fired. Treat it the same way as a firearm.
- ▶ Use gun oil and gun cleaner. Do not use machinery grease, white oil or WD-40.
- ▶ Do not get the captive bolt gun wet.
- ▶ Use a wire brush to polish the piston end of the bolt every time the stunner is cleaned.
- ▶ Replace the bumpers if they are cracked or stiff. This will prevent the bolt from sticking in the head.
- ▶ Number the guns and do not mix the parts. Each gun wears differently.
- ▶ Have plenty of spare parts for replacement of worn or broken parts.
- ▶ Store cartridges in a dry place.

Manual Blunt Force Trauma

A blow to the head can be an effective means of euthanasia for lambs under 5 days or under 9 kg (20 lbs) or under. A single, sharp blow must be delivered to the central part of the skull with sufficient force to produce destruction of brain tissue, ideally without breaking open the skull. The object must be brought to the animal's head, not the animal to the object. Striking the animal to the object significantly decreases the animal welfare standard. Common, acceptable tools used for manual blunt force include ball peen hammers, steel rods, wooden clubs and pipes.

Secondary Methods:

Pithing

Pithing is a procedure that is used to ensure the death of an animal following gunshot or penetrating captive bolt gun. A pithing rod can be made from a variety of materials or purchased. The rod itself must be somewhat rigid, yet still flexible and must be long enough to reach through the brain to the spinal column.

Following gunshot or application of the penetrating captive bolt gun, the pithing rod is inserted into the hole created by the bullet, or the bolt, and pushed through the brain to the spinal cord. The rod is then moved back and forth and around inside the head. In order for pithing to effectively kill, the original bullet or rod must have been accurately delivered into the brain. If this is not the case, a second accurately placed shot must be applied.

Exsanguination

Exsanguination is the process of bleeding out an animal which is achieved by severing a major artery or vein. Exsanguination is not recognized as a sole method of euthanasia, the animal must be stunned prior to bleeding. Great care must be practiced while performing exsanguination. Although the animal is unconscious, it is still capable of making violent involuntary muscle contractions that can cause injury to the handler. This procedure can be very disturbing to observers due to the large volume of blood loss and can raise concerns with biosecurity.

Exsanguination should be performed using a pointed, very sharp knife with a rigid blade at least 15.2 cm in length. The knife should be fully inserted through the skin just behind the point of the jaw and below the neck bones. From this position the knife is drawn forward severing the jugular vein, carotid artery and windpipe. Properly performed, blood should flow freely with death occurring over a period of several minutes.

Section 5

Death

As stated earlier, death is not immediate but a process that can take in excess of 10 minutes to be completed. First the animal is rendered insensible, then the body begins to die as the brain stops, the lungs stop breathing, the heart quits beating, and the blood quits circulating.

Upon loss of consciousness, reflex motor activity or muscle spasms are likely to occur. This is a normal part of the death process and should not be perceived as the animal being in pain or distress. People sometimes mistake this involuntary movement as sensibility or mistake the lack of movement as loss of consciousness.

The muscle spasms will not be immediate and may take up to a minute to begin. Sheep tend to have more violent and longer involuntary muscle spasms than cattle. The violent kicking can last 15–20 seconds or longer with more random, mild convulsions lasting for several minutes. If the animal has an extended period of movement or ‘flopping’ it may only be stunned and should be reshot.

Determination of Death

Confirmation of death is a critical part of the euthanasia process and must occur before an animal is moved or the stockperson leaves the area. Confirmation of the onset of the death process (insensibility or unconscious) should occur within the first 30 seconds following euthanasia application.

The primary indicators for onset of death include:

- Lack of corneal reflex
- Lack of rhythmic breathing
- Loss of deliberate movement (righting themselves, trying to stand up, lifting head up off the ground).

If the animal is found not to be insensible or is showing any signs of returning to sensibility, the method must be applied again or a secondary method utilized.

If there is any uncertainty over whether an animal is dead or not, the procedure should be repeated or a second method applied. This should occur within 30 seconds of the first attempt.

Confirmation of death can be challenging, especially in a barn or farm environment.

At least three of the signs of death listed below must be confirmed to verify an animal is dead. It is false to assume an animal is dead because it is not moving.

- Absence of rhythmic breathing
- Lack of palpebral and corneal reflex
- Dilation of pupils
- Absence of rhythmic heartbeat (the heartbeat may continue for an extensive period of time even with the absence of all other signs of insensibility. As long as the animal does not exhibit any of the signs presented in the following list, the welfare of the animal is not in jeopardy.)



Signs an animal is still alive

- Attempts to right itself.
- Vocalizes after application.
- Controlled eye movement or natural blinking.
- Extended period of aggressive movement or “flopping”. There may continue to be the occasional involuntary spasm following this time period but not to the degree as the initial onset.
- Constricted pupils.
- Response to painful stimuli (e.g., pinching the nose).

Section 6

Disposal of Deadstock

Following euthanasia, it is the responsibility of the owner to dispose of the carcass in a timely and effective manner. There are several factors to consider when choosing the means of disposal:

1. Method of euthanasia
2. Biosecurity
3. Health condition of animal prior to death



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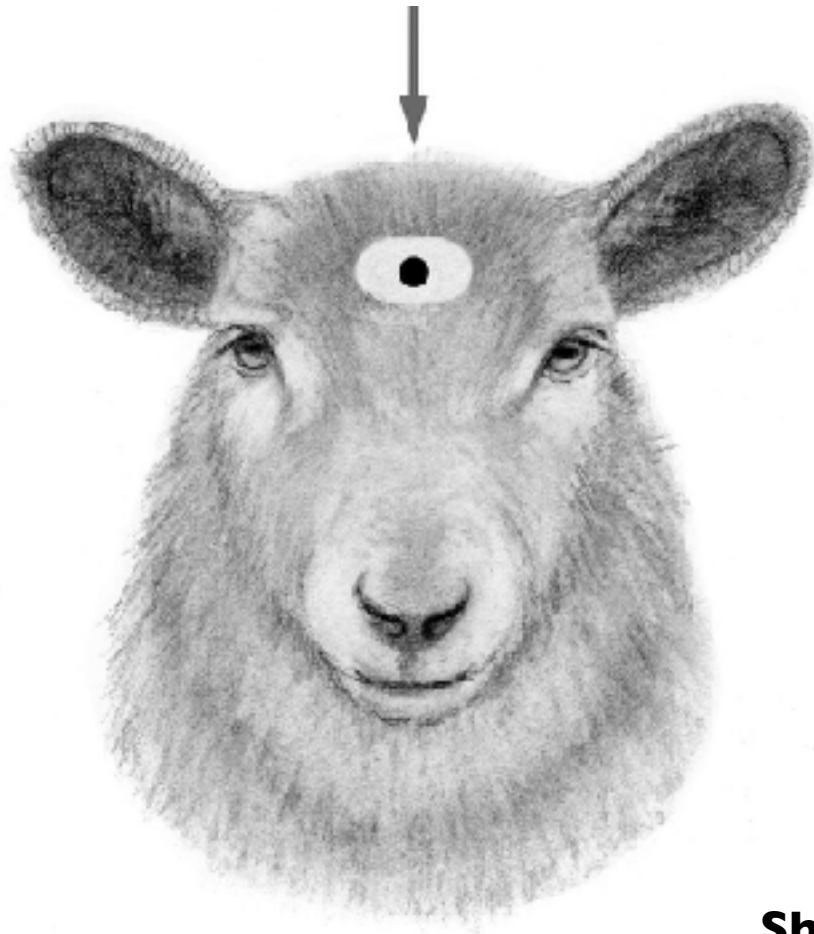
Disposal Options:

- Scavenging
- Burial
- On-Farm Composting
- Rendering
- Incineration
- Landfill

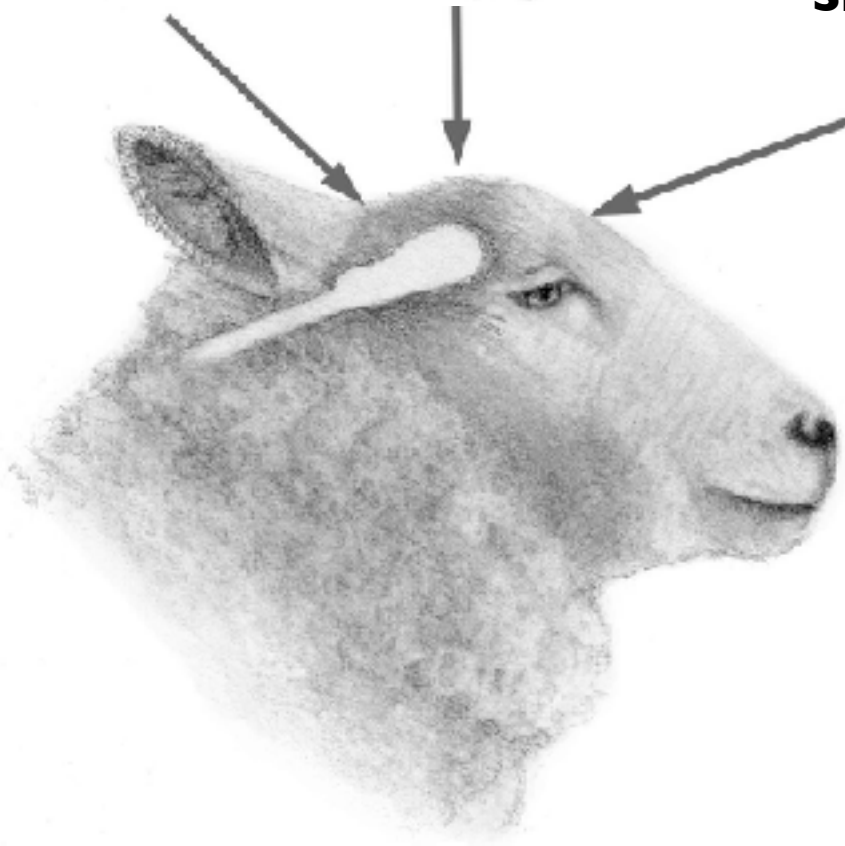
For more information on disposal of dead stock in Alberta go to:

[http://www1.agriculture.alberta.ca/\\$department/deptdocs.nsf/all/agdex6081](http://www1.agriculture.alberta.ca/$department/deptdocs.nsf/all/agdex6081)

ADDENDUM A



Sheep



ADDENDUM B

Code of Practice for the Care and Handling of Sheep (2013)

REQUIREMENTS

Sheep must be euthanized without delay if experiencing pain or distress and does not have a reasonable expectation of improvement and or appropriate veterinary diagnosis and treatment is not feasible. (Refer to Appendix K: Examples of Decision Tree for Euthanasia).

All farms with employees must have a written euthanasia action plan for each phase of production that indicates the criteria for deciding when to euthanize an animal and the appropriate method(s). (Refer to Appendix J: Signs of Pain in Sheep, Appendix Lb: Euthanasia Action Plan for Sheep and Goats).

Producers not familiar with euthanasia decision making and/or methods must consult with a veterinarian regarding euthanasia.

All stockpeople must recognize when an animal needs to be euthanized, what method should be used, appropriate tool and who has been designated to perform euthanasia.

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REQUIREMENTS

An acceptable method for euthanizing sheep must be used. (See Table 7.1 and Appendix L: Euthanasia).

The method of euthanasia must be quick, cause minimal stress, pain and result in rapid loss of consciousness followed by death without the animal regaining consciousness.

Every farm must have the ability to euthanize animals (i.e. readily available tools or ready access to someone who does).

All individuals performing euthanasia must have the required skills, knowledge, abilities, access to appropriate tools and be competent to perform the procedure.

All stockpeople must be trained on the Euthanasia Action Plan and associated euthanasia methods. (See Appendix L: Euthanasia).

All equipment used for euthanasia, such as firearms or captive bolt devices must be maintained according to manufacturer's instructions to ensure proper function.

Unnecessary handling and movement of sheep prior to euthanasia must be avoided.

Animals must not be dragged, prodded, forced to move on broken limbs, or made to move when pain and suffering will occur.

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REQUIREMENTS

If there are any indications of returning consciousness, the euthanasia procedure or an alternate one must be repeated immediately.

Monitor the animal until death is confirmed by lack of respiration, lack of heartbeat and dilated pupils.

Death must be confirmed before moving, leaving, or disposal of the animal.

All carcasses should be disposed of according to all federal/provincial/territorial and municipal regulations.

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ADDENDUM C

Euthanasia Action Plan

Farm: _____

Manager: _____ (p)

1. Employees Trained in Euthanasia

Name	Date of Training

2. Animals that will be promptly euthanasia include:

- Untreatable conditions
- Non-responsive to treatment, not likely to recover
- Unfit for slaughter
- Weak, unable to walk or stand
- Unable to eat or drink
- Unable to provide appropriate care
- Showing signs of reportable disease
- Any animal that is suffering, in pain or distress

3. Acceptable Methods:

Size of Sheep	Acceptable Method(s)
Lambs	
Ewes	
Rams	

4. Acceptable Methods of Restraint:

Size of Sheep	Acceptable Method(s)
Lambs	
Ewes	
Rams	

5. Death must be confirmed before the animals is moved or disposed of.

6. Acceptable Secondary methods:

Method	Secondary Method

7. If suspicious of reportable disease, contact:

_____ (p)

8. Contacts:

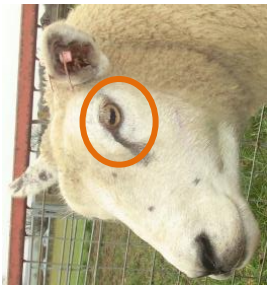
Veterinarian: _____ (p)

Deadstock Removal: _____ (p)

ADDENDUM D

Sheep Pain Facial Expression Scale *

Orbital Tightening: When tightening is not present, the eye is round in shape. As the muscles around the eye tighten, they become more prominent and the eye starts to narrow. If the eye closes more than half way it should be scored as present.



Not present = 0



Partially Present = 1



Present = 2

Cheek Muscle Tightening: When tightening is present, the muscle that runs from the corner of the mouth area along the jaw line and up to the cheek bone is more prominent. There may also be tightening from the cheek towards the ear along the edge of the eye.



Not present = 0



Partially Present = 1



Present = 2

Abnormal Lip & Jaw Profile: Normally, the corner of the mouth is turned upwards slightly. The lips become flattened as tension increases, reducing the 'smile' like feature. The chin and jaw line are rounded in shape when tension is not present. The line becomes straighter and curved inwards (concave) when tightening is present.



Not present = 0



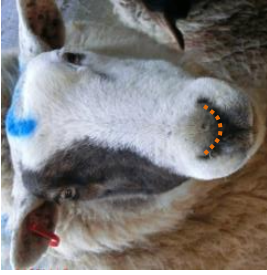
Partially Present = 1



Present = 2

* See reverse for reference

Abnormal Nostril & Muzzle Shape: Normally, a shallow 'U' shape is present between the nostril openings. The surrounding muzzle follows this 'U' shape. As the position becomes abnormal, the area between the nostrils (and the surrounding muzzle) appears increasingly 'V' shaped.



Not present = 0

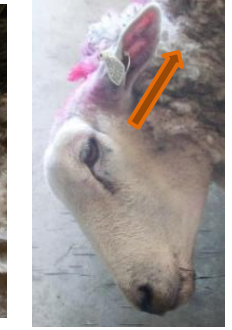


Partially Present = 1



Present = 2

Abnormal Ear Position: Normally, ears are held erect and the inner part of the ear is visible when viewed from the front. As the position becomes abnormal, the ears drop and turn towards the face, so the inner part of the ear is not visible. The ear may be held in a backwards position. Normal ear position will differ depending on breed type; however, the changes that occur are the same for all breeds.



Not present = 0

Partially Present = 1

Present = 2

Sheep Pain Facial Expression Scale (SPFES)

Animals experience pain as a result of disease, injury and some management procedures.

Why is it important to manage pain in livestock?

- Administering pain medication in combination with other treatments can speed healing time and lessen the drop in productivity due to disease or injury.
- It's the right thing to do. Handlers have a responsibility to ensure the well-being of animals in their care.
- Providing a high level of care to animals contributes to public acceptance of livestock farming.

The right thing to do, but...

It is often difficult to tell how much an animal is suffering. In some situations, outward signs of the injury or disease are obvious, but animals (particularly prey animals such as sheep) are stoic and frequently do not show overt signs of distress. Handlers may be unsure when the use of medications, such as non-steroidal anti-inflammatory (NSAIDs), is warranted. When medications are given, it may be difficult to assess how well they are working to relieve pain or resolve the problem.

A new tool for assessing pain:

Animals in pain do show reliable, if at times, very subtle signs of distress. A recently developed Sheep Pain Facial Expression Scale (SPFES) can help handlers accurately and objectively determine the degree of pain an animal is experiencing.* The SPFES was developed using animals with mastitis and foot rot, however, the expressions identified are common to other conditions that cause pain and distress in sheep.

* Development of a facial expression scale using footrot and mastitis as models of pain in sheep. Appl. Anim. Behav. Sci. 176 (2016); 19-26. Krista M. McLennan, Carlos J.B. Rebelo, Murray J. Corke, Mark A. Holmes, Matthew C. Leach, Fernando Constantino-Casas.
Available from: [http://www.appliedanimalbehaviour.com/article/S0168-1591\(16\)00010-1/abstract](http://www.appliedanimalbehaviour.com/article/S0168-1591(16)00010-1/abstract)

Contact Alberta Lamb Producers for more production resources (403-948-8533, info@ablamb.ca, www.ablamb.ca).

How to use the SPFES:

The scale is used to assess five facial areas for abnormal expression (see reverse for pictures and full descriptions);

- eyelids are closed or partially closed
- cheek muscles are tight and/or distended
- ears are rotated back and down
- lips and jaw profile is tightened
- upper lip is curled and nostrils are tightened

Abnormal expressions are assessed to be:

- 'not present' (scored as 0),
- 'partially present' (scored as 1),
- or 'present' (scored as 2).

Each area is scored separately with the total for the five areas combined for a 'total pain score'. The maximum possible score is 10 (i.e. the assessment of each facial area is scored as a '2'). The researchers who developed the SPFES considered a score of 5 or more to warrant the consideration of pain medication use.

Using the SPFES on-farm:

Observing facial expression is one tool that producers and handlers can use to determine the well-being of their animals. In a real life situation, facial expressions should be used in combination with other signs of disease or distress, such as body posture, lameness, increased vocalization, decreased appetite, or obvious injury. As changes in facial expression are likely common to all forms of distress, however, using the SPFES may be particularly useful in cases when more overt signs are absent.

The SPFES can also be used to determine when a treatment is effective in resolving disease or discomfort.

It is important to note that other factors, such as fear and stress, can affect facial expression and care should be taken to assess animals when they are calm.

Talk to your veterinarian if you have questions about the use of pain medication for sheep.

An interactive training tool is available at www.animalwelfarehub.com to help producers and handlers learn more about using the SPFES.