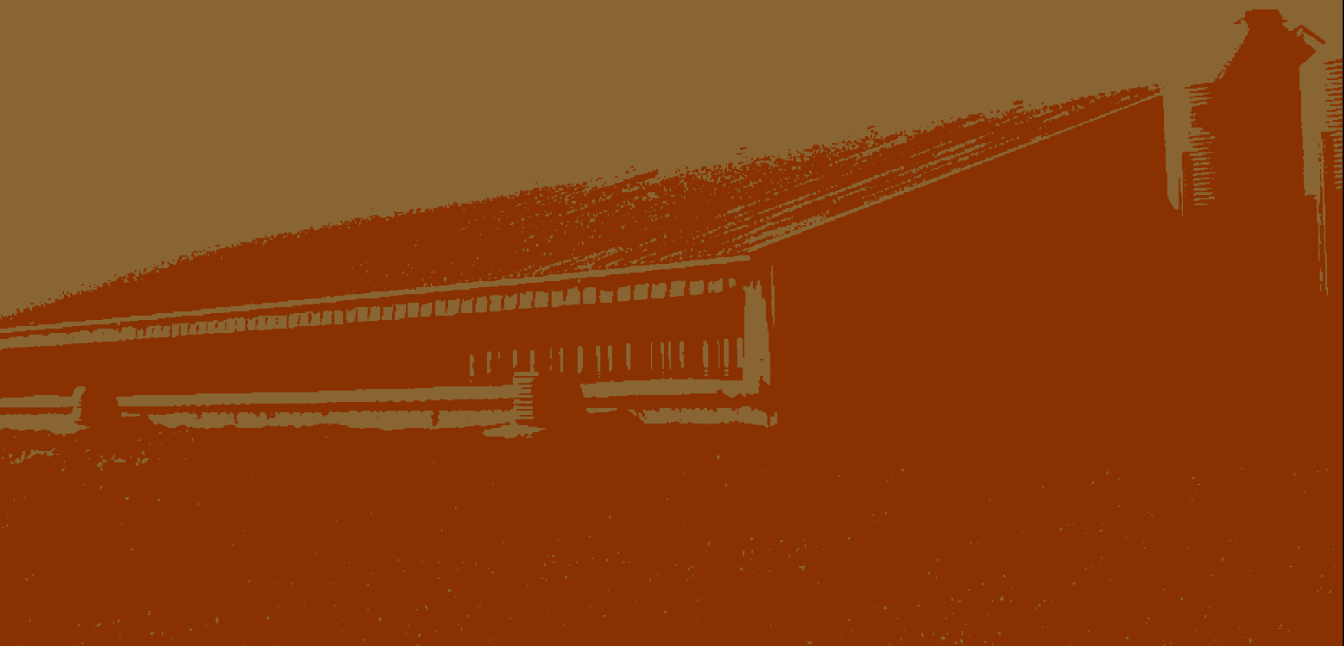


On-Farm Euthanasia of Swine

Recommendations
for the Producer



It is inevitable that on every swine farm, situations that require pigs to be euthanized will arise. These situations include, but are not limited to, illness and injuries. Since it is usually not possible or practical for the veterinarian to be available for timely euthanasia of pigs on-farm, producers and their employees often need to perform humane euthanasia of pigs.



The term “euthanasia” is derived from the Greek terms “eu” meaning good and “thanatos” meaning death. **Euthanasia is the humane process whereby the pig is rendered insensible, with minimal pain and distress, until death.** For the euthanasia process or method to be considered humane, it must be quick, effective and reliable. Key elements for determining if a method is humane include:

- minimal pain and distress to the pig during administration
- rapid loss of consciousness,
- death is achieved quickly and consistently.

This brochure provides practical recommendations for the on-farm euthanasia of swine. It also highlights euthanasia methods that have been shown to meet the definition for humane euthanasia based on the available scientific literature. However, this list may not be all inclusive and other options may be used as long as they meet the definition and key elements for euthanasia discussed above. All euthanasia techniques should be discussed with a veterinarian before being implemented.

When a pig becomes ill, injured, or otherwise disadvantaged, the initial decision for action may include treatment or euthanasia. In some cases, euthanasia may be the best option for the well-being of the pig. It is important that the decision to euthanize is made in a timely manner so as to minimize the pig’s pain or distress. For example, timely or immediate euthanasia is recommended for:

- Pigs that show inadequate improvement or that have minimal prospect for improvement after two days of intensive care,
- Severely injured or non-ambulatory pigs with the inability to recover,
- Any pig that is immobilized and with a body condition score of 1.

This brochure is designed to aid producers in making appropriate decisions regarding euthanasia of swine. The Pork Checkoff and the American Association of Swine Veterinarians recommend that pork producers and their employees read this brochure, discuss the options with their veterinarian and fill out the action plan at the end of this brochure. All swine caretakers should be aware of the action plan and be trained on the euthanasia methods selected for the pigs in their care. The action plan should be reviewed as part of new employee training and annually with a veterinarian and all employees.

Table 1: Methods of Euthanasia Appropriate for Pigs of Different Sizes (weights)

	Suckling pig (up to 12 lbs)	Nursery pig (up to 70 lbs)	Grower - Finisher pig (up to market weight)	Mature pig, sow or boar
Carbon dioxide (CO₂)	Yes	Yes	Yes, but not practical [†]	Yes, but not practical [†]
Gunshot	No	Yes	Yes	Yes
Penetrating captive bolt	No	Yes	Yes	Yes
Non-penetrating captive bolt	Yes	Yes with secondary step	No	No
Electrocution, head-to-heart	Only for pigs over 10 lbs	Yes	Yes	Yes
Electrocution, head-only	Only for pigs over 10 lbs	Yes, with secondary step	Yes, with secondary step	Yes, with secondary step
Veterinarian administered anesthetic overdose	Yes	Yes	Yes	Yes
Blunt trauma	Yes	No	No	No

[†]This method is an acceptable form of euthanasia for this size of pig but may not be practical for individual pig euthanasia on-farm due to lack of equipment suitable for this size.

The Process of Euthanasia

Euthanasia of swine may be a one- or two-step process. A one-step process renders the pig permanently insensible and results in death. A two-step process temporarily renders the pig insensible, but requires a secondary step to achieve its death. The second step is typically achieved by exsanguination or pithing (see page 14). It is important to understand the difference between the two processes.

It is important to remember that certain methods for euthanasia are more appropriate than others for pigs of certain sizes or weights. Table 1 lists various methods of euthanasia in pigs and the size of pigs they are most appropriate for.

Considerations for Euthanasia

When euthanasia is the most appropriate option for a pig, consider the following to select the suitable method:

- **Human safety:** The method must not put producers or their employees at unnecessary risk.
- **Pig welfare:** Any method should minimize pain or distress of the pig during administration.
- **Practicality/technical skill requirements:** The method should be easily learned and repeatable with the same expected outcome. The skill required noted in Table 2 assumes the caretaker has been adequately trained to use the method.
- **Caretaker compliance:** Producers and their employees must be comfortable with, and willing to perform, the chosen method when needed. Lack of compliance compromises the well-being of the pig.
- **Aesthetics (degree of unpleasantness for the observer and operator):** The method should not be objectionable to the person administering the procedure. Public perception of the method and its application also may be a consideration.
- **Limitations:** Some methods are only suitable for certain sizes of pigs or under certain circumstances. The availability of equipment in good working order and carcass disposal options also can be limiting factors for choosing a method.

Table 2 lists euthanasia methods and special considerations for each one.

Table 2: Considerations for Specific Euthanasia Methods for Swine

	Risk to Human Safety	Skill Required	Aesthetics	Limitations
Carbon dioxide (CO₂)	Moderate	Moderate to low, based on equipment design	Bloodless, some excitatory movement or vocalization possible in pigs	Currently only practical for small pigs
Gunshot	High	Moderate to high	Discharge of blood from wound	Security of firearms; legal restrictions
Penetrating captive bolt	Moderate	Moderate	Discharge of blood from wound	May be a two-step process depending on equipment design; maintenance of equipment
Non-penetrating captive bolt	Low	Low	Minimal to no blood discharge as a one-step process	May be a two-step process based on size of pig
Electrocution – head-to-heart and head-only	Low if proper lock out/tag out procedure followed	Moderate	Muscle contraction	Adequate amperage needed; commercial hog stunner recommended; head only is a two-step process
Veterinarian administered anesthetic overdose	Low	High, veterinary administration only	No blood discharge, limited pig movements	Applicable agents available only to licensed veterinarian; carcass disposal
Blunt trauma	Low	Moderate	Some blood discharge; objectionable for some	Only applicable to small pigs

1. Carbon dioxide (CO₂)

Carbon dioxide (CO₂) replaces oxygen in the body and causes rapid onset of anesthesia with subsequent death due to respiratory arrest. Although unconscious, pigs may experience involuntary vocalizations and movements when carbon dioxide is used correctly.

Euthanasia by carbon dioxide inhalation is relatively inexpensive but requires special equipment to work effectively. An enclosed, airtight container that is large enough for the size of pigs being euthanized is required. The container must be equipped with inlet and outlet valves. Because carbon dioxide is heavier than air, the container's outlet valve should be located at the top. This way, the container can be completely filled with carbon dioxide while the air displaced is allowed to escape.

Euthanasia by carbon dioxide inhalation can be completed by pre-charging or gradual filling of the container. Pre-charging is done by filling the container with carbon dioxide before the pigs are placed in it. Additional carbon dioxide must be added to maintain effective concentrations within the container after the pigs have been placed in it. The container should be positioned in a way that reduces disturbance of the gas when the container is open or the pigs are placed into the container.

Gradual filling of the container is done by placing the pigs into the container and filling the container with carbon dioxide at an effective flow rate. For effective euthanasia, pigs require a constant exposure of 80-90 percent carbon dioxide concentration, for at least 5 minutes. The time needed to achieve effective concentration is a function of the flow rate and container volume. Consult with your veterinarian or other trained professional to discuss these variables.

Compressed carbon dioxide gas in cylinders is the recommended source of carbon dioxide. Other sources of carbon dioxide, such as dry ice, fire extinguishers, or chemical reactions, are unacceptable. A regulator is required to control the release of gas from the cylinder. Unregulated release or excessive flow rates of carbon dioxide have the potential to freeze the pigs and result in excessive use of carbon dioxide. The use of a flow meter is recommended to monitor the gas exchange rate in the chamber. When unmonitored, an inadequate exchange rate can result in lack of death or can result in the pig suffocating before it becomes anesthetized or loses sensibility. When proper equipment is used and gas is used correctly, carbon dioxide results in loss of consciousness followed by respiratory arrest and death.

Euthanasia of swine by carbon dioxide inhalation is safe for farm personnel who have been trained, have access to the proper equipment, use the gas properly, and carry it out in a well-ventilated area. Carbon dioxide is non-flammable and non-explosive.

2. Gunshot

A gunshot to the head is an effective method of euthanasia of swine because if done correctly, the impact caused by the penetrating bullet causes concussion and damage to vital areas of the brain of the pig. When choosing the type of gun and ammunition, consider the following:

- **The age and size of pig to be euthanized**
- **Presence and safety of onlookers, person delivering the shot and other pigs**
- **Accessibility to the head of the pig (as shown in [Figure 1](#))**
- **Damage to surrounding equipment and facilities**
- **Risk of bullet pass through and ricochet**
- **Legal restrictions and/or farm policies on having a gun on site**

There are several options in guns and ammunition available that can be used to effectively euthanize a pig. Remember, the type of gun and load need to be large enough so the method is effective with the first shot. Ammunition choice also is important and it must have adequate energy to concuss and penetrate the skull with the first shot.

One option is a shotgun which is suitable for short range shooting. When used properly, this weapon can be safer than others due to its reduced potential for ricochet. A 12, 16, or 20 gauge shotgun can be used for grow/finish pigs and mature sows and boars. A 28 or 410 gauge shotgun is only recommended for nursery pigs. Shotgun ammunition is available in the form of shot and slugs. Slug ammunition is recommended because of its ability for consistent and effective penetration of the skull.

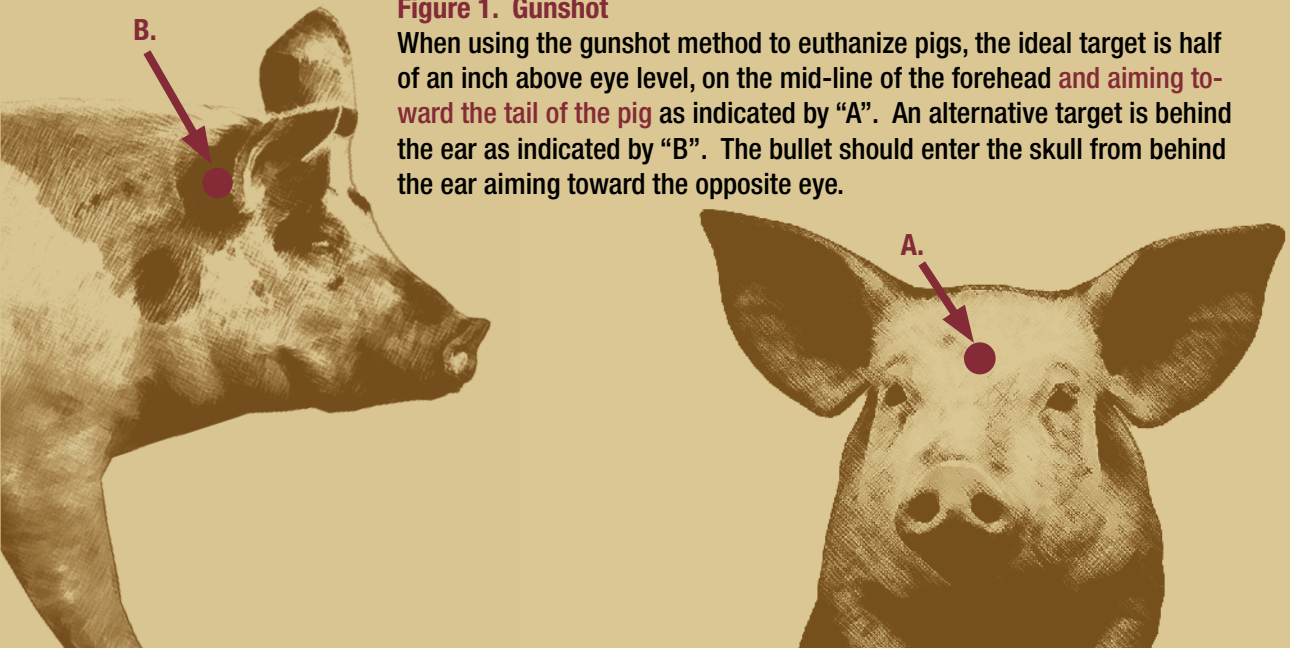


Figure 1. Gunshot

When using the gunshot method to euthanize pigs, the ideal target is half of an inch above eye level, on the mid-line of the forehead **and aiming toward the tail of the pig** as indicated by “A”. An alternative target is behind the ear as indicated by “B”. The bullet should enter the skull from behind the ear aiming toward the opposite eye.

Another option is a rim-fire rifle or handgun. These types of guns are suitable at a close range. The gun and ammunition combination must have the muzzle energy to enable the bullet to pass through the thickness of the skull, especially for large adult pigs. A minimum muzzle energy of 300 foot pounds (ft lbs) is recommended for grow/finish pigs and mature sows and boars because of the thickness of their skulls.

When using a 0.22 caliber gun with appropriate ammunition on mature sows and boars, a shot delivered behind the ear is recommended because the skull is less dense at this location. Bulleted ammunition should be round nosed and solid to ensure penetration of the skull. The common type of ammunition known as a “wadcutter” is designed for target shooting and is not suitable for euthanasia. Fragmenting bullets also are commercially available but are only recommended for use in nursery and grow/finish pigs.

The third option is a purpose-made, single-shot gun called a humane killer. This weapon is currently available as a .32 caliber. This gun has a chamfered muzzle and vented barrel so that the muzzle end of the barrel can be held in full contact with the head of the pig. To ensure effectiveness and human safety, only purpose-made cartridges should be utilized in a humane killer.

When using a rifle, handgun or shotgun, the muzzle should be held 2 to 10 inches from the pig’s skull. The ideal target for gunshot is half of an inch above eye level, on the mid-line of the forehead and aiming toward the tail of the pig. An alternative target for gunshot is behind the ear. When shooting this way, the bullet should enter the skull from behind the ear aiming toward the opposite eye. This method can present a risk to onlookers or other pigs as this shot has the potential to pass through the pig’s head. **Figure 1** shows both target locations. Shooting in the heart or the neck is not suitable for humane euthanasia.

When euthanizing a pig by gunshot, extra care must be taken to ensure human safety. The size of the gun and ammunition should be matched to the size of the pig to ensure the effectiveness of the technique with one shot and for human safety. The user of the weapon should be trained in firearm safety and understand the potential for ricochet. Ideally, the pig should be outdoors, on soil where the danger of a bullet ricocheting is reduced. Pigs that are non-ambulatory should be euthanized where they lie or be humanely transported to a safe location. Restraint may be necessary and onlookers or assistants should always stand behind the person delivering the shot.

3. Captive Bolt

There are two types of captive bolt guns available, those with a non-penetrating bolt and those with a penetrating bolt. For both types, the pig to be euthanized must be appropriately restrained to ensure the captive bolt can be properly and safely administered.

Non-penetrating bolt – The non-penetrating captive bolt gun typically has a mushroom shaped or flat-head and blunt bolt that, when applied to the forehead of the pig, causes concussion and severe trauma of the brain without breaking the skin. The advantage to this method is that there is little to no blood loss because the skin is left intact. Non-penetrating captive bolts can be used as a single-step method in suckling pigs, but requires a secondary-step such as exsanguination (see section on *Secondary Steps* on page 14), to ensure death in larger pigs. This is because as the pig ages, the thickness of its skull increases and the captive bolt will only stun and not euthanize the animal due to insufficient impact on the brain. The captive bolt gun should be placed firmly against the front of the head as shown in **Figure 2**. Regular cleaning and maintenance of the gun is important to ensure its good working order.

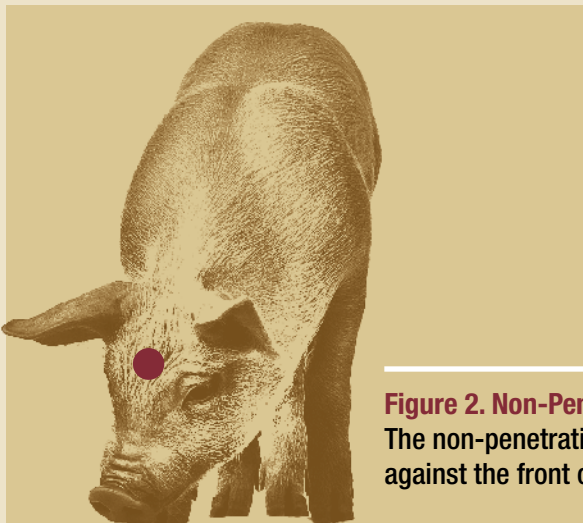


Figure 2. Non-Penetrating Captive Bolt

The non-penetrating captive bolt gun should be placed firmly against the front of the head in the area shown.

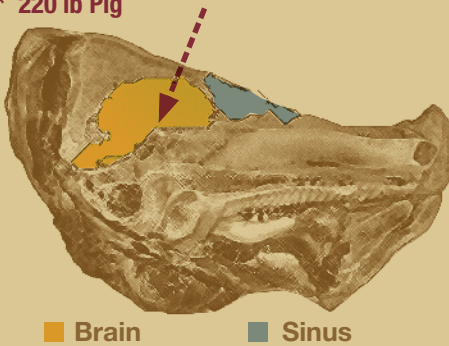
Penetrating bolt– The penetrating captive bolt gun has a sharp-rimmed, concave bolt that extends and penetrates the skull to cause concussive and physical damage to the skull and brain upon impact. Correct positioning of the captive bolt gun is critical for success. The placement should be directed at the midline of the forehead, a half of an inch above eye level (even with the eyebrows). The penetrating captive bolt should be placed very firmly against the skull, aimed at the brain and directed toward the tail as shown in **Figure 3**.

Immediately following an effective shot, the pig will exhibit tonic (muscle contraction) and clonic (muscle relaxation) movements. In tonic activity, the body becomes extremely tense followed by gradual relaxation. This stage is typically followed by clonic motion, or involuntary kicking or paddling movements, for a minute or two. Pigs that do not initially demonstrate tonic activity and immediately show paddling or kicking after collapse, have been ineffectively stunned and the procedure should be immediately administered again. As with all methods it is important to confirm that the pig has been euthanized effectively by checking its vital signs (see section on *Confirming Insensibility and Death* on page 14).

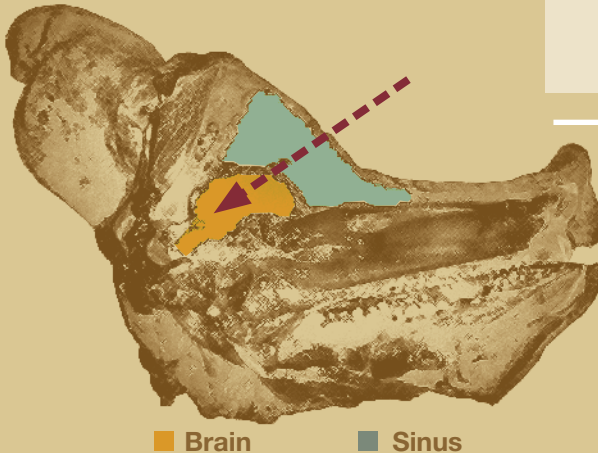
A.



B.* 220 lb Pig



C.* 440 lb Sow



Penetrating captive bolts can either stun or kill the pig depending on the design of the gun and the size of the pig. Only captive bolt guns designed for on-farm euthanasia should be used. Other products may only stun the pig and may require a secondary step, such as exsanguination or pithing, to achieve death, especially if administered to mature sows and boars with thick skulls. It is important to select the bolt length and cartridge combination appropriate to the age and size of pig that is being euthanized to ensure that the bolt is long enough to penetrate the pig's skull. If the pig demonstrates any degree of sensibility, the technique should be repeated immediately and a secondary step must be used. The variation in skull shape among breeds may make the determination of the target difficult.

It is extremely important for the bolt gun to be cleaned and maintained regularly. Over time, carbon build up can slow the velocity of the bolt or cause the gun to malfunction. Therefore, proper and routine maintenance is critical to the function and longevity of the equipment.

Figure 3. Penetrating Captive Bolt

The penetrating captive bolt gun should be placed at the midline of the forehead, a half of an inch above eye level as shown in "A". As the pig ages, the sinus cavity becomes larger and the skull becomes thicker as shown in "B" and "C". It is important to select the bolt length and cartridge combination appropriate to the age and size of pig that is being euthanized to ensure that the bolt is long enough to penetrate the pig's skull.

* Adapted from photos by C. Mason, SHP Swine Health Services

4. Electrocution

Electrocution induces death by insensibility of the brain followed by cardiac fibrillation and cerebral anoxia (no oxygen to the brain). The flow of electricity (the current) should be at least 0.5 amps for piglets over 10 pounds and nursery pigs up to 6 weeks of age and at least 1.3 amps for pigs 6 weeks of age and older.¹ The force behind the flow of the electric current is referred to as the voltage and is recommended to be at least 110 volts for piglets over 10 pounds and nursery pigs up to 6 weeks of age and 240 volts for pigs 6 weeks of age and older. Using electricity in small piglets less than 10 pounds is not recommended because the design of the electrodes may complicate the application across the piglet's small head and body. The resistance around the skin can be less than that across the body causing the current to flow on the skin surface rather than through the body.

The current's amperage can be increased by increasing the voltage or decreasing the resistance. Resistance can be affected by the length and gauge of wire delivering the current to the pig, electrode contact with the skin, cleanliness of the electrodes, wetness of the skin, presence of hair, thickness of skin and fat layers, and the thickness of the skull. The frequency of the current delivered should be approximately 60 hertz (U.S. standard) of alternating current (AC). Using an ammeter to measure amperage can be helpful to ensure adequate current flow is being delivered to the pig.

When properly applied, electrical stunning induces instantaneous unconsciousness. Pigs effectively stunned with electricity exhibit tonic and clonic movements. In tonic activity, the body becomes extremely tense followed by gradual relaxation. This stage is typically followed by clonic motion, or involuntary kicking or paddling movements, for a minute or two. The tonic activity should occur within a second of delivery of the electric current. If the method is effectively administered, electrocution will render the brain insensible and initiate cardiac fibrillation and death.

There are two methods that can be used for euthanasia by electrocution: head-only and head-to-heart. These are described in detail on the following page. Regardless of the method chosen, the current must first move through the brain to cause insensibility (if an invisible line were drawn between the electrodes it must cross the brain). Methods where the current is directed only to the heart are not acceptable.

The biggest disadvantage of this method of euthanasia is the hazard to human safety if proper lock out/tag out procedures are not in place. For both pig well-being and human safety reasons these apparatuses should contain an isolation transformer which improves electrical safety and provides sufficient amperage to instantly induce unconsciousness.

¹ Numbers taken from OIE guidelines

Head-only electrocution— Head-only application of electrical current only stuns the pig by passing current through the brain and does not cause cardiac fibrillation. This method must be followed by a secondary step, such as head-to-heart electrocution, across the chest electrocution, or exsanguination within 15 seconds of initial stunning of the animal.

The electrodes should be placed on the head of the pig in one of these three positions so that they span the brain:

- between the eyes and base of the ears on either side of the head,
- below the base of the ears on either side of the head, or
- diagonally, below one ear to above the opposite eye.

These positions allow the current to pass through the brain and effectively stun the pig. The electrodes must be kept in constant contact with the pig to prevent interruption of the current flow which can lead to an ineffective stun. The current should be applied to the head for a minimum of 3 seconds.

Head-to-heart electrocution— Head-to-heart electrocution stuns and kills the pig by passing current simultaneously through the brain and the heart. The front electrode must be placed on the head, level with or in front of the brain and the rear electrode must be placed on the body behind the heart on opposite sides so that the current travels diagonally through the body as shown in **Figure 4**. When applying the front electrode to the ear, the base of the ear is the recommended location. The current should be applied for a minimum of 15 seconds.

Figure 4. Head-to-Heart Electrocution

Proper electrode placement for head-to-heart electrocution as indicated by the dots allows for current to pass simultaneously through the brain and heart.



5. Veterinarian administered anesthetic overdose

Euthanasia solutions (i.e. barbiturates) are used to depress the central nervous system, causing deep anesthesia progressing to respiratory and cardiac arrest. This method of euthanasia does require intravenous injection into the pig. Federal drug regulations require these controlled substance drugs to be bought, stored, and used under supervision of an individual, such as a licensed veterinarian who is registered with the U.S. Drug Enforcement Administration (DEA). If this method of euthanasia is used, special considerations must be taken when disposing of the carcass in order to prevent incidental exposure of scavenging animals to chemical residues in the carcass.

6. Blunt force trauma

Euthanasia by blunt trauma is only effective for suckling piglets because their skull bones are thin enough for the force to cause depression of the central nervous system and brain damage. Blunt trauma is a quick, firm blow to the top of the head over the brain as shown in **Figure 5**. It is essential that the blow be administered accurately and with resolve to ensure euthanasia and not just stunning. Loss of consciousness is rapid when the method is performed properly. The pig will usually show tonic and clonic movements. In tonic activity, the body becomes extremely tense followed by gradual relaxation. This stage is typically followed by clonic motion, or involuntary kicking or paddling movements, for a minute or two.

This method may be aesthetically objectionable to people administering or observing the method. Recognizing the concerns with the appearance of blunt force trauma applied to piglets as a method of euthanasia, the National Pork Board and the American Association of Swine Veterinarians support additional research on methods of neonatal euthanasia.

Figure 5. Blunt Force Trauma

Blunt force trauma is a quick, firm blow to the top of the head over the brain. It is essential that that the blow be administered accurately and with resolve to ensure euthanasia and not just stunning.



Secondary step

In some cases, a secondary step is needed to ensure the pig is euthanized. Some methods described in this brochure (such as head-only electrocution, non-penetrating captive bolt for nursery and grow/finish pigs, penetrating captive bolt for mature sows and boars) will only stun the pig and a secondary step must be performed for euthanizing it. With any method of euthanasia, a secondary step or a backup method of euthanasia should be used immediately if the pig shows any of the vital signs used to confirm death (see section on *Confirming Insensibility and Death* on page 15). These secondary steps are only for use after the pig has been stunned and is unconscious and must not be used as a primary method of euthanasia.

Exsanguination – Exsanguination, also known as bleeding out, is the severance of the major blood vessels in the neck or chest that results in a rapid fall in blood pressure, leading to a lack of blood to the brain and death. Carotid arteries and the brachial plexus are acceptable locations for exsanguination. To ensure rapid death, the cut must completely sever the vessels (indicated by strong and rapid blood flow), and be large enough so blood flow is not impeded. The recommended length of the knife blade used is at least 5 inches for a grow/finish pig but may vary depending on the size of the pig. Exsanguination should begin within 15 seconds after stunning to ensure rapid euthanasia.

Pithing – Pithing is the physical destruction of the brain and upper regions of the spinal cord by a rod or cane as shown in **Figure 6**. A wire or polypropylene rod is inserted through the hole in the head made by gunshot or penetrating captive bolt. The rod is pushed into the brain and slid back and forth and rotated to cause maximum damage to the brain and upper spinal cord. Initially, the pig may show muscle contraction and twitching, but muscles will relax and movement will be inhibited shortly thereafter. Disposable and non-disposable pithing rods are commercially available. Rods can be hand-made by securing #9 wire around a handle. Pithing rods should not be left in the carcass.

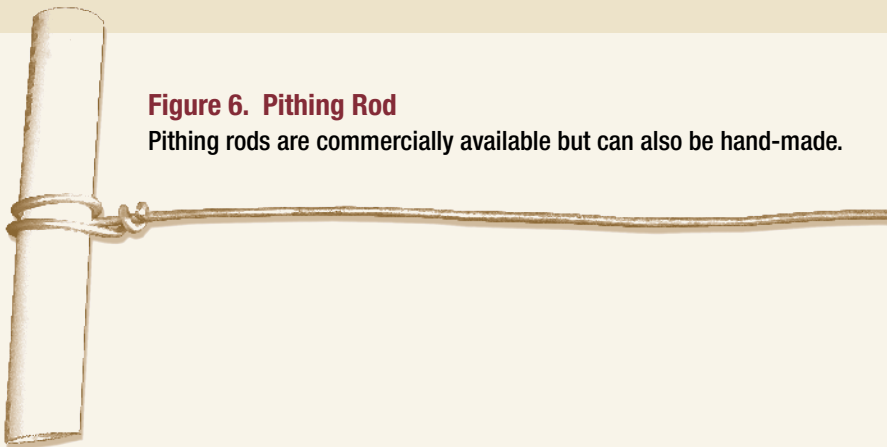


Figure 6. Pithing Rod

Pithing rods are commercially available but can also be hand-made.

Confirming insensibility and death

Regardless of the method used, it is important to be able to recognize ineffective stunning or euthanasia if it occurs. It also is important to confirm the death of the pig.

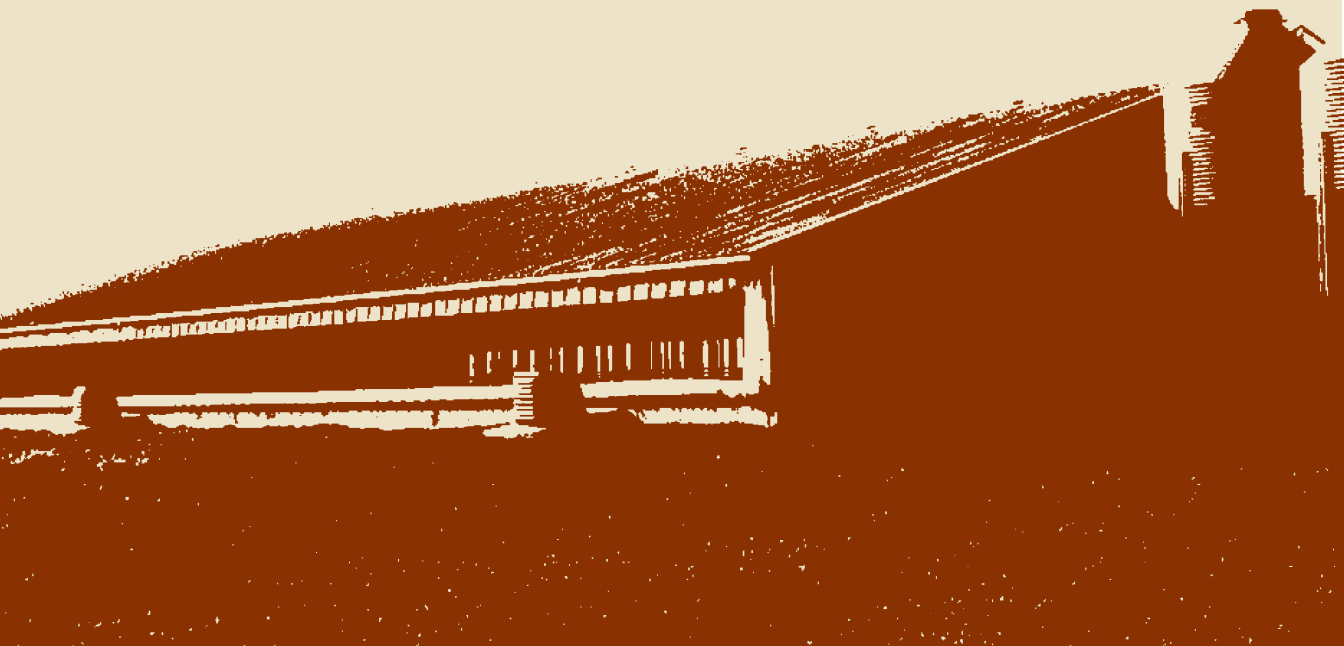
Confirming insensibility – Insensibility should be checked within 30 seconds after the method is administered and should be monitored and maintained until death. **Ineffective stunning and euthanasia can be recognized by the presence of one or more of the following signs:**

- Rhythmic breathing
- Constricted pupils
- Attempts to raise the head (righting reflex)
- Vocalization
- Palpebral reflex (run finger along the eyelash and if the pig blinks or moves its eye, the pig is sensible)
- Response to a painful stimulus (such as a nose prick with a needle)

Confirming death – The pig should be confirmed dead before it is moved for disposal. All the following vital signs should be checked 3 minutes after the euthanasia method has been applied:

- No breathing
- No heart beat
- No movement or muscle tone
- No response to painful stimulus (such as a nose prick with a needle)
- No vocalization
- No corneal reflex (the eye blinks when an object touches the cornea)

If the pig shows any of these signs, a backup euthanasia method should be used.



Conclusion

It is the responsibility of the caretaker to identify those pigs that need to be euthanized and make sure that euthanasia is completed in a timely manner. Euthanizing a pig can be unpleasant for the caretaker but in certain cases, it may be in the best interest of the pig's well-being to administer it.

It is imperative that proper euthanasia training is given to all swine caretakers.

Additionally, regardless of the method of euthanasia selected, producers and their employees should work with their veterinarian to be trained to check for signs of insensibility of the pig; to confirm the death of the pig; and, to effectively and humanely perform secondary (or backup) methods of euthanasia on pigs of different sizes.

Details of each technique are included to allow producers and their employees to design an appropriate plan for euthanasia of pigs in different stages of production. All of the methods discussed in this brochure are considered humane for the pig when properly performed as described. The methods selected and the disposal of euthanized pigs must be according to state law or local regulations.

Work with a veterinarian to outline a plan stating which method of euthanasia will be used during each phase of production. Use the blank form provided on page 18. Post the plan in a centralized area as a guideline for humane euthanasia of pigs on your farm. Remember to review the plan with new employees and annually with the herd veterinarian and all farm staff as a reminder.

Example Euthanasia Action Plan for a Swine Herd

Euthanasia Action Plan

Farm Name: XYZ Farm

Date: January 7, 2009

Drafted by: Joe Smith, producer

Dr. John Doe, veterinarian

Employees responsible for euthanasia: Sally Smith, Dave Jones, & John Doe

Phase of production / Size of pig	Euthanasia method of choice	Alternative method of euthanasia
Suckling pigs, up to 12 pounds	Carbon dioxide CO ₂	Non-Penetrating Captive Bolt
Nursery pigs, up to 70 pounds	Penetrating captive bolt	Gunshot
Grower - Finisher pigs, up to market weight	Penetrating captive bolt	Gunshot
Mature pigs, sows and boars	Penetrating captive bolt	Gunshot

Employees responsible for euthanasia who have been trained in methods of euthanasia, confirming insensibility and confirmation of death.

Employee name	Date of method training	Date of confirming insensibility training	Date of death confirmation training
Sally Smith	June 5, 2008	Jun 10, 2008	June 10, 2008
Dave Jones	September 9, 2008	September 9, 2008	September 9, 2008
John Doe	October 14, 2008	October 14, 2008	October 14, 2008



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