

Euthanasia in swine

Pig farmers and caretakers are usually the individuals responsible for euthanasia of pigs. It is not possible or practical for veterinarians to provide timely euthanasia in most situations. However, veterinarians play a key role in training caretakers, developing a euthanasia action plan, addressing questions, and monitoring euthanasia procedures utilized on the farm. The goal with swine euthanasia is to perform a humane process, whereby the pig is rendered insensible with minimal pain and distress prior to death. A brochure developed jointly by the National Pork Board and the American Association of Swine Veterinarians is available, with a new revision due soon. This brochure highlights the euthanasia methods that meet the humane definition based on available scientific literature, but may not be all inclusive.

It is important to know when timely euthanasia is required:

- Pigs that have no likelihood for improvement or that don't respond after 2 days of intensive care, unless otherwise recommended by the veterinarian. The caretaker can take into account past experiences with similar conditions relative to the chance of recovery
- Severely injured or non-ambulatory pigs (can't get up or if standing not able to bear weight on two of its legs)
- Non-ambulatory pigs with a body condition score of 1 (very thin)
- Pigs with perforated hernias, or hernias that touch the floor while standing and are ulcerated
- Any pig with untreated necrotic prolapse. Uterine prolapses are to be euthanized immediately

The timeliness of euthanasia is stressed during training in order to minimize the pig's pain and distress. If third party auditors deem that euthanasia is not timely, this can cause the farm to fail a welfare audit.

The euthanasia methods will be briefly discussed in this article; for more detailed information, refer to the previously cited brochure. Most of the processes utilized are a one-step procedure rendering the pig insensible with resulting death. A two-step process temporarily renders the pig insensible, but requires a secondary step (usually exsanguination or pithing) to accomplish death.

Euthanasia by carbon dioxide is effective for suckling and nursery stage pigs. The carbon dioxide replaces oxygen in the blood and causes rapid onset of anesthesia followed by respiratory arrest. Even when used correctly, pigs that are unconscious may exhibit involuntary vocalizations and movements. This method requires special equipment to work effectively, including an airtight container with an outlet valve, a regulator and a flow meter. This method is safe for properly trained personnel, and it should be performed in a well ventilated area.

Gunshot to the head can be used for nursery through adult stages. The muzzle should be 2-10" from the pig's skull, ½ inch above eye level, midline, aimed toward the tail. 12, 16, or 20 gauge shotgun can be used for finishers and mature animals. A 28 or 410 gauge shotgun is only recommended for nursery pigs. Slug ammunition is recommended for shotguns. Another option for close range use is a rim -fire rifle. The gun and ammunition must have the muzzle energy to pass through the thickness of the skull. When using a .22 caliber gun a shot delivered behind the ear (aimed towards the opposite eye) is recommended, and the ammunition should be round nosed and solid.

Captive bolt guns are available with non-penetrating and penetrating bolts. The non-penetrating bolts should be placed firmly against the front of the pig's head. The penetrating bolt placement is on the midline ½ inch above eye level. Immediately after application of captive bolts the pig will exhibit tonic and clonic movements, usually followed by involuntary kicking for 1-2 minutes. It is important to select

the proper size bolt gun and cartridge, based on size of the pig. It is also important to clean and maintain the bolt gun regularly.

Electrocution causes death by insensibility of the brain followed by cardiac fibrillation and cerebral anoxia. The flow of electricity should be at least .5 amps and 110 volts for pigs up to 6 weeks of age and at least 1.3 amps and 240 volts for pigs over 6 weeks. Electrocution should not be used in pigs less than 3 days of age. Head to heart electrocution is one-step and therefore the most practical. The front electrode should be placed at the level of or in front of the brain, with the rear electrode on the opposite side of the body behind the heart. The current should be applied for a minimum of 15 seconds. Electrocution obviously has human safety concerns so extreme care must be taken when using this method of euthanasia. Indiana code has some confusion in its language but the use of electrocution, is allowed as an acceptable farm management practice.

Euthanasia solutions (barbiturates) administered by veterinarians are effective at causing death when administered intravenously. Since these are controlled drugs they have limited use in many instances where a pig needs to be euthanized. Additionally disposal methods may need to be altered due to the chemical residues in the carcass.

Blunt trauma euthanasia is only effective for pigs up to 12 pounds body weight. It is essential that the firm blow to the top of the head is administered accurately and with resolve to ensure euthanasia. This method may be aesthetically unpleasant to some workers performing this method or to others observing it. Recognizing these concerns, the National Pork Board and the American Association of Swine Veterinarians continue to support exploration of alternative methods of euthanasia for this stage of pig.

Training by the veterinarian is essential so that workers understand how to assess insensibility so that they can assess effectiveness of euthanasia method, followed by confirmation of death.

Although the task of euthanasia in swine can be unpleasant, it is important that workers and others understand that euthanasia can be in the best interest of the pig's well-being.