COMPLIANCE WITH HUMANE HANDLING LAWS AND REGULATIONS

A Guidance Document for Talmadge-Aiken and State-Inspected Establishments In North Carolina

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The information contained in this document is consistent with FSIS and MPID regulatory interpretations at the time of publication.
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7 USC 1901 through 1906 Humane Methods of Livestock Slaughter

FR Notice, 09-2004
Purpose

The purpose of this document is to provide you guidance for having a successful systematic approach to humane handling of the live animals transported to and slaughtered at your establishment. This document discusses the humane handling regulations with which you are required to comply. Examples of compliance and noncompliance are provided. These examples come from actual observations in slaughter establishments but by no means do they include all the situations that may arise in the course of your attempt to provide a systematic approach to humane handling. You will probably have questions after you have read this document. Members of the Meat and Poultry Inspection Division (MPID) team are available to discuss all your humane handling concerns. Your discussion with the MPID inspection team should begin with the Inspector in Charge (IIC) at your establishment. As a prudent manager with a systematic approach to humane handling, you should bring humane handling concerns to the IIC rather than wait to see if he/she observes a condition or practice and finds it out of compliance.

Basic Philosophy of Humane Handling

Animals should live in comfort and, when they die, they will not know what hit them.

This simple statement expresses the basic philosophy of NCDA&CS MPID regarding humane handling of animals.

How To Comply with Humane Handling Regulations

On September 09, 2004, the US Department of Agriculture, Food Safety Inspection Service put the meat industry on notice of its responsibility to have a systematic approach to humane handling of live animals. Development of a systematic approach to humane handling is a first, essential step to comply with humane handling regulations. The full text of this Federal Register Notice is found at the end of this document.

The Federal Register Notice explains that all livestock establishments are required to meet requirements in the Humane Methods of Slaughter Act.
(HMSA), Federal Meat Inspection Act (FMIA) and implementing regulations. FSIS believes a systematic approach is beneficial in meeting these requirements. Through this notice, FSIS encourages livestock slaughter establishments to use a systematic approach to humane handling and slaughter to best ensure that they meet the requirements of the HMSA, FMIA, and implementing regulations. With a systematic approach, establishments focus on treating livestock in such a manner as to minimize excitement, discomfort, and accidental injury the entire time they hold livestock in connection with slaughter.

The Notice goes on to describe a four-step process to develop and maintain a systematic approach to humane handling:

1. Conduct an initial assessment of where and under what circumstances livestock may experience excitement, discomfort, or accidental injury while being handled in connection with slaughter and, except for establishments conducting ritual slaughter, where and under what circumstances stunning problems may occur;

2. Design facilities and implement practices that will minimize excitement, discomfort, and accidental injury to livestock;

3. Evaluate periodically their handling methods to ensure they minimize excitement, discomfort, or accidental injury and, except for establishments conducting ritual slaughter, evaluate periodically their stunning methods to ensure that all livestock are rendered insensible to pain by a single blow; and

4. Improve handling practices and modify facilities when necessary to minimize excitement, discomfort, and accidental injury to livestock.

NCDA&CS MPID recommends this process to all Talmadge-Aiken and state-inspected slaughter establishments. When MPID Inspectors perform tasks to verify humane handling, they look to see if the establishment has a systematic approach to humane handling and whether the system is working.
Humane Handling Regulations

In general, the US Congress enacts legislation which the President signs into law, such as the Humane Methods of Slaughter Act of 1978. The Agency responsible for enforcing the law then develops regulations which provide the details of how to comply with the law and how it will be enforced.


Why does your slaughter establishment in North Carolina have to obey federal law?

The Humane Methods of Slaughter Act of 1978 is a federal law (7 US Code 1901 et seq.). This law applies to all slaughter of livestock under inspection in the United States, including voluntary slaughter.

All animals on slaughter establishment property are also subject to North Carolina humane handling regulations and laws. North Carolina has adopted the federal regulations which explain in detail compliance with the Humane Methods of Slaughter Act of 1978. Talmadge-Aiken establishments, of course, are federal establishments in which the inspection personnel are state employees. Using the federal regulations in both Talmadge-Aiken and state-inspected establishments achieves standardization of inspection procedures and tasks.

Both Talmadge-Aiken and state-inspected establishments are under joint jurisdiction of other federal, state, and local agencies. Therefore, a prudent establishment will be aware of other federal and state laws and local ordinances concerning handling and welfare of live animals. County and municipal ordinances may be more strict about acceptable handling of food animals than the North Carolina General Statutes are. MPID personnel, who observe that local ordinances defining animal welfare are not being followed, will bring this to your attention. This can be by writing a letter of concern if there is not a regulatory noncompliance. If you do not correct the prohibited practices, MPID personnel are obligated to report this to the Raleigh Office.
When you are slaughtering under custom exempt circumstances, you are required to follow all federal and state laws and local ordinances that pertain to humane handling and animal welfare. Therefore, if an animal being slaughtered under custom exempt circumstances is treated inhumanely, the Inspector in Charge will document this in a letter of concern to you. The Inspector will also immediately notify the Raleigh Office. In cases in which state law or local ordinances have been violated, the Raleigh Office will notify state or local authorities. Repeated reports of inhumane handling of animals held at or near your establishment may lead to revocation of the grant to perform custom exempt slaughter.

All animals that are destined for slaughter are also subject to the laws and regulations that define humane handling. Some examples of this are

1. You get a good deal to buy 20 head of pigs. You only kill 10 head a week, so you put 10 head in the live area on your premises (where there is only room for 10) and you put the other 10 in a little lot to the side of your slaughterhouse but off the official premises. Your plan is to move pigs from the little lot into the live area on the official premises as space becomes available on the official premises. You think you are not required to provide access to water or feed to the pigs that are not on the official premises. You are WRONG about this. When the Inspector observes that the pigs in the little lot to the side of your slaughterhouse have no food and water, he/she will document this in a letter of concern to you. The Inspector will also immediately notify the Raleigh Office. The Raleigh Office will examine local ordinances for your county or municipality. If the Raleigh Office finds that local ordinances have been violated, the Raleigh Office will notify local authorities. No NR is written because the Inspector cannot tell if these pigs are actually intended for slaughter or not.

2. Mr. X brings six pigs to your establishment every second Thursday for slaughter under inspection. As Mr. X approaches your establishment on August fifteenth, someone else is unloading live pigs at your dock. Mr. X pulls off on the side of the road before he enters your driveway. He goes across the road for a late breakfast. It is August fifteenth and, at ten o’clock in the morning, it is already ninety degrees. The six pigs are on the open trailer in the sun without water. Since these pigs are destined for slaughter at your establishment and
are visible from the official premises, they are already “in queue” (in line) for slaughter. When the Inspector sees no water is being provided to the pigs and they are not being protected from adverse weather conditions, he/she will point this out to you and may also provide written notice in a letter of concern. If you do not address the situation, the Inspector will notify the Raleigh Office.

**Code of Federal Regulations, Title 9, Volume 2, Chapter III, Part 313**

will now be explained in detail. **The version in this document is the version revised as of January 1, 2006.** You will notice that some of the regulatory requirements have as standards “in the opinion of the Inspector.” As a prudent establishment owner, you can proactively engage the Inspector-in-Charge in conversations to ascertain what her/his opinions are pertaining to these requirements. Humane handling concerns can be placed on the Weekly Meeting Agenda.

**FACILITIES, ANIMAL WELFARE, AND ANIMAL HANDLING**

313.1 Livestock pens, driveways and ramps

313.1 (a) Livestock pens, driveways and ramps shall be maintained in good repair. They shall be free from sharp or protruding objects which may, in the opinion of the Inspector, cause injury or pain to the animals. Loose boards, splintered or broken planking, and unnecessary openings where the head, feet, or legs of an animal may be injured shall be repaired.

This means that, if, in the opinion of the Inspector, there are sharp or protruding objects or openings where an animal may injure itself, the Inspector will point these out to you and document the non-compliance on a non-compliance report (NR). If an animal has actually been injured, the Inspector will also apply a rejected tag to the area containing the hazardous structure(s). See also 313.50(a).

Continuing examination of all structures in areas occupied by live animals is your responsibility. If you are a prudent manager, you will make regular examination of live animal facilities a frequent part of your systematic approach to humane handling. Once you identify a hazardous area, animals
can be excluded from that area by the establishment until repairs are made. Continuing examination of the live animal facilities with prompt exclusion of animals followed by repair is an example of a system that works to prevent inhumane treatment.

If you slaughter different market classes or different ages of animals, you have more responsibilities in your live animal facilities. Live animal facilities may be in good repair and present no hazard to one kind of animal but cause a hazard or inhumane treatment to another kind of animal.

An example of this would be holding pens that are safe and work well for cattle but have room between the rails for a goat to stick its head through and become stuck.

If you have questions about your live animal facilities, the weekly meeting is a good time to discuss the facilities with the Inspector. If you have questions about a hazard, discuss it with the Inspector at your first opportunity.

313.1 (b) Floors of livestock pens, ramps, and driveways shall be constructed and maintained so as to provide good footing for livestock. Slip resistant or waffled floor surfaces, cleated ramps and the use of sand, as appropriate, during winter months are examples of acceptable construction and maintenance.

This means that when the Inspector observes that animals are slipping and falling as they move in the live animal area and forward for stunning, the Inspector will point this out to you and document the noncompliance on an NR. If an animal has actually been injured, the Inspector will also apply a rejected tag to the area(s) where the floors do not provide good footing. See also 313.50(a).

The Inspector will also be looking at how each animal is affected by the footing. For example, when you let manure accumulate on floors, an animal may slide or slip with the bottoms of its feet on the floor in the same position as when it walks without slipping. If the slipping of the feet causes the animal to show signs of excitement or discomfort, then your floors are out of compliance with 313.1(b) and the Inspector will notify you that you are out of compliance and document the noncompliance on a noncompliance report (NR).
Continuous observation of floor conditions in areas occupied by live animals is your responsibility. If you are a prudent manager, you will check floors to see if any material or condition (for example ice, water, or manure) could cause poor footing for animals. As part of your systematic approach to humane handling, you will take care of the poor footing before animals move across the slick area. You will exclude animals from the area where footing is poor until you can provide good footing. You will also watch animals closely to be sure that a clean floor provides good footing. Even a clean floor can become slippery after many years’ use. Continuous observation of live animal facilities and movement with prompt removal of conditions that cause poor footing is an example of a system that works to prevent inhumane treatment.

The behavior of individual animals can make the animal more likely to slip and fall. For example, an animal that is running and jumping is more likely to slip and fall than one which is walking calmly. This will be discussed further in Section 313.2 Handling of livestock.

If you have questions about the conditions of your floors or what is causing animals to slip, discuss it with the Inspector at your first opportunity.

Observing that a puddle of water has accumulated where animals step down from stock trailers and stopping unloading for five minutes while you sweep the water away and throw down sand in the area is an example of a system that works to prevent inhumane treatment.

313.1 (c) U.S. Suspects (as defined in Sec. 301.2(xxx)) and dying, diseased, and disabled livestock (as defined in Sec. 301.2(y)) shall be provided with a covered pen sufficient, in the opinion of the Inspector, to protect them from the adverse climatic conditions of the locale while awaiting disposition by the Inspector.

This means that you are required to have a special pen to protect the designated livestock from adverse climatic conditions. Unless you have a U.S. Suspect animal or an animal that is dying, diseased, or disabled, you may use this pen for other animals. Particularly in establishments that have a history of refusing diseased animals, the suspect pen may be part of a larger pen that can, immediately when needed, be gated off into a small pen for isolating suspects. Any suspect pen so provided will have to meet all regulatory requirements for the safety, comfort, and protection of any animal
placed in it. Additional requirements for U.S. Suspect pens are described in 9 CFR 301.2a.

313.1 (d) Livestock pens and driveways shall be so arranged that sharp corners and direction reversal of driven animals are minimized.

Your facilities may have been constructed before the relationship between the layout of the live animal facility and humane handling was well-described. Poor layout of pens, driveways, unloading ramps, and restrainers all can cause animals to balk (be difficult to move). When you observe animals that refuse to move in the direction you are trying to drive them, as part of a systematic approach to humane handling, you should analyze why the animal is balking. Many times animals balk because your facility design alerts the animals’ natural instinct to possible danger.

An example is pigs that stop moving forward when the single file alley makes a 90-degree turn to the left. Nature does not require 90-degree turns. When a pig reaches a solid wall, it does not always think of turning to the right or to the left as you would. Its instincts can cause it to stop because it has come to a barrier. A curving single file alley or a straight one would not activate a pig’s instinct to stop at a barrier.

Sec. 313.2 Handling of livestock.

As soon as livestock enters your premises, the vehicle becomes part of your premises. This means that you are responsible for how animals are handled on the vehicles and while being unloaded. You are responsible for compliance with all parts of 313.2, even when the person handling the animal is the animal’s owner and not your employee. One example of a way to address compliance with 313.2 on vehicles and during unloading is to have a policy that only establishment employees will unload animals.

313.2 (a) Driving of livestock from the unloading ramps to the holding pens and from the holding pens to the stunning area shall be done with a minimum of excitement and discomfort to the animals. Livestock shall not be forced to move faster than a normal walking speed.

This means that if the Inspector observes you or your employees urging animals to move faster than their normal walking speed, the Inspector will tell you that driving methods are out of compliance and document this on an
NR. Particularly when this is a repeat noncompliance, the Inspector will attach a rejected tag to the alleyways leading to the stunning area as described in Section 313.50 (b). Consequently, no animals may move to slaughter past this tag.

This also means that your animal handling practices will be observed to see how the animals respond to your driving methods. For example, if the animals respond by jumping away from you or jumping on top of each other, your driving practices are not minimizing excitement and discomfort. The Inspector will tell you that your driving methods are out of compliance and document this on an NR. Particularly when this is a repeat noncompliance, the Inspector will attach a rejected tag to the alleyways leading to the stunning area as described in Section 313.50 (b). Consequently, no animals may move to slaughter past this tag.

Dr. Temple Grandin, a world-renowned expert in humane handling, has developed numerous scientific proofs to show that, besides regulatory compliance, the quality of the product improves when animals are handled humanely. This information is available free of charge on Dr. Grandin’s website www.grandin.com Once you are on Dr. Grandin’s website, choose “Stress and Meat Quality”. If you do not have access to Worldwide Web and would like to see this material, let the Inspector know of your interest so that he/she can assist your access to this information.

The American Meat Institute’s AMI Foundation maintains a website with animal care and handling information at www.animalhandling.org. The information there is freely available. Once on this website, choose Guidelines/Auditing. The Recommended Animal Handling Guidelines and Audit Guide provide description of animal care and handling guidance information for the meat industry. BE AWARE: The auditing system and standards are those set by the meat industry and are NOT the same as regulatory requirements. If you do not have access to Worldwide Web and would like to see this material, let the Inspector know of your interest so that he/she can assist your access to this information.

When we discuss the regulations for stunning, you will see that your ability to correctly stun animals prior to slaughter depends on each animal being calm. Animals excited and made uncomfortable by poor driving techniques cause more problems for your stunning operator.
313.2 (b) Electric prods, canvas slappers, or other implements employed to drive animals shall be used as little as possible in order to minimize excitement and injury. Any use of such implements which, in the opinion of the Inspector, is excessive, is prohibited. Electrical prods attached to AC house current shall be reduced by a transformer to the lowest effective voltage not to exceed 50 volts AC.

This means that you and your employees should continuously improve your animal handling techniques so that animals can be driven without using electric prods, canvas slappers, or other implements. Dr. Temple Grandin’s website www.grandin.com and the AMI Foundation website www.animalhandling.org both have excellent examples of driving techniques that do not require electric prods, canvas slappers, or other implements. On Dr. Grandin’s website, choose “Behavior of cattle, pigs, bison, and antelope during handling and transport”; then choose “Recommended Basic Livestock Handling Principles”. On the AMI Foundation’s website choose Guidelines/Auditing. Then download the guidelines. If you do not have access to Worldwide Web and would like to see this material, let the Inspector know of your interest so that he/she can assist your access to this information.

A compact disk “Humane Handling of Livestock with Dr. Temple Grandin” is available through MPID. By using Dr. Grandin’s concepts, your slaughter process can operate more smoothly, quickly, and at less cost. Good animal handling techniques are easier for both people and animals.

**The best practice** for the use of electric prods, recommended by the 2007 edition of *Recommended Animal Handling Guidelines and Audit Guide*, is that you should not use an electric prod to drive animals. You should only pick up the electric prod when a stubborn animal refuses to move. Once that animal has been moved, you should put the electric prod down again.

Instead of using an electric prod all the time, you can use other implements to drive animals. You can use cut boards to move pigs. You can use plastic flags to move cattle. For pigs, you can use plastic flags or bat wing capes or plastic paddles. Plastic paddles are meant to be shaken or tapped on the floor behind pigs. You may occasionally tap pigs that have stopped on the rear with one of these paddles but you should not be bashing pigs with a paddle. Plastic paddles may be used in a similar manner to move sheep.
313.2 (c) Pipes, sharp or pointed objects, and other items which, in the opinion of the Inspector, would cause injury or unnecessary pain to the animal shall not be used to drive livestock.

This means that you need to choose carefully any tools that are used in driving animals. If you decide to try a new tool for driving animals, before you acquire and use the tool, discuss what you are considering with the Inspector. He/she can help you assure that your new driving tool is in regulatory compliance.

313.2(d) Disabled livestock and other animals unable to move.

313.2 (d) (1) Disabled animals and other animals unable to move shall be separated from normal ambulatory animals and placed in the covered pen provided for in Sec. 313.1(c).

This means, even if you refuse diseased and disabled animals, you must be able to separate and protect disabled animals and other animals unable to move. Animals that are normal when they arrive at your establishment may become disabled or unable to move for various reasons.

Since an animal which is disabled or unable to move will need a Veterinary Medical Officer to provide an antemortem disposition, such an animal may be moved humanely into the pen designated for US Suspects (NCDA Suspects). Alternatively, you may develop a plan to protect a disabled animal or an animal unable to move where it is located. This can be more humane than moving the animal. The weekly meeting is a good time to discuss your strategies of separating and protecting disabled animals and those unable to move with the Inspector-in-charge.

313.2 (d) (2) The dragging of disabled animals and other animals unable to move, while conscious, is prohibited. Stunned animals may, however, be dragged.

This means conscious animals which are disabled or unable to move cannot be dragged or moved in any other way that, for the animal, is roughly the same experience. In other words, for the animal, dragging, shoving, pushing, pulling, or any other word that can be applied to an activity that
causes the unprotected body to move across some surface is the same inhumane experience and a noncompliance with this regulation.

313.2 (d) (3) Disabled animals and other animals unable to move may be moved, while conscious, on equipment suitable for such purposes; e.g., stone boats.

This means you may move conscious but disabled animals provided you have a method to do this humanely. One method is to gently place a rubber mat under the disabled animal. Pull the mat so it absorbs the impact of the friction against the ground. The animal then rides along top the mat and is not injured by dragging along the floor.

**Note: Disabled or Injured animals:** 9 CFR 309.13 allows you to hold animals condemned on antemortem for treatment. If these animals are disabled, you must demonstrate to the Inspector that you will be able to provide access to water and food to the animal in accordance with 313.2(e) during the period you are holding the animal for treatment.

313.2 (e) Animals shall have access to water in all holding pens and, if held longer than 24 hours, access to feed. There shall be sufficient room in the holding pen for animals held overnight to lie down.

This means you must have water continuously available for animals in holding pens. You may provide water by a method of your choice but this method must meet the needs of the animals in the holding pens. You must provide enough water fast enough so that any animal you place in a pen can drink as much water as it wants. You may have to have different methods of providing water if you use your pens for different sizes and different ages of animals.

For example, pens that have nipple waterers for swine will be out of compliance if cattle are held in those pens without some other provision made to provide the cattle with water since cattle do not drink from nipple waterers.

Your method of providing water must be a real method of access rather than overhead sprayers or puddles of water on the floor.
You may choose to use buckets to provide water. Unless these are secured against overturning, your systematic approach to humane handling must provide frequent observation of the buckets to be sure they still contain water. If, in the opinion of the Inspector, your observation of the water provided is not frequent enough to make water continuously available, the Inspector will notify you that you are noncompliant and document this on an NR.

When your pens are crowded, you should also be sure that there is enough room for the animals to shift about so that each animal may reach a water source easily. When animals are so crowded in a pen that every one cannot easily move to and drink the water, you are out of compliance with this regulation.

Questions frequently arise about what parts of the facilities are considered holding pens. Holding pens are any part of your premises where animals are held. Therefore, anywhere that animals stop for more than a brief time is considered a holding pen for regulatory noncompliance. This may include, but is not limited to, the following examples:

- the alley leading to the restrainer, if the slaughter process is stopped for any reason;

- the alley leading to the restrainer, if you drive a group of animals into this area. When you take out one animal at a time for slaughter, the rest of the group is “held” to wait for slaughter. This alley is now a holding pen.

- stock trailers on which animals wait to be unloaded until there is room for them in the live pens;

- the gathering (sometimes circular) pen just prior to slaughter, if animals are held here more than briefly.

Another frequent question about holding pens is how long must animals stay in a pen before water must be provided. The answer to this depends on the conditions that prevail in the area in which the animals are held. For example, when the temperature is above 90 degrees and animals stop in an uncovered area, water may need to be provided immediately. Animals in the same area on a cool cloudy day may not need water so quickly.
Providing access to water at any point in your process where live animals may stop rather than waiting to figure out if the animals will need water on this or that occasion is an example of an excellent systematic approach to humane handling.

**Note on cold weather:** Freezing temperatures may affect your ability to provide water to animals. This is particularly true where automated watering systems have been installed and have to be turned off and drained to prevent damage because of freezing. You need to have and successfully carry out an alternative plan to provide water to the animals.

Questions also arise about feeding animals that are held for more than 24 hours:

How much feed should be provided? There are numerous excellent sources of information about how much feed is needed by different animals. The most readily available source of information is North Carolina State University Cooperative Extension Service. Many counties have a Cooperative Extension Office, although some smaller counties share an office. If you have questions about providing feed to animals held more than 24 hours, discuss this with the Inspector at your first opportunity. Some examples of noncompliance are feed thrown on floors of pens and trampled into accumulated manure and a single flake from a bale of hay tossed in a feed bunker to feed 50 goats.

Does feed have to be provided continuously to animals after they are held for 24 hours? After 24 hours, animals must be fed. Once the animals have eaten, feed may be removed to limit the digestive system load at the time of slaughter. If you choose to remove the food at some point prior to slaughter, you can consider documenting when the animals are fed and when any feed left is removed to demonstrate that your systematic approach to humane handling is compliant with the requirement to provide feed to animals held more than 24 hours.

Feeding animals by throwing feed on the floor is NOT an acceptable method of providing feed to animals. Feed thrown on the floor is quickly trampled into the manure and can no longer be considered feed. You must provide troughs, feed racks, or bunkers to contain the feed. Whether to use troughs, feed racks, or bunkers will depend on the kind and size of animals you are
feeding. If you have more than one kind of animal to feed, you may need to have multiple methods of providing feed.

The only exception to this would be in cases of unforeseen emergency feeding of animals. In this case, floor feeding should be only done until proper troughs, feed racks, or bunkers can be provided.

9 CFR 313.2(e) also presents the requirement for adequate space to be provided in holding pens for animals to lie down when they are kept overnight. Although this requirement does not specifically say “in the opinion of the Inspector”, no other standard is provided, either. As a prudent establishment owner, you can proactively engage the Inspector-in-Charge in conversations to ascertain whether your holding pens for animals kept overnight will meet the requirement for “sufficient room in the holding pen for animals held overnight to lie down”. This requirement should be discussed proactively, perhaps at the Weekly Meeting.

If your establishment slaughters various market classes, you will have more challenges in providing “sufficient room in the holding pen for animals held overnight to lie down”. A pen that provides sufficient room for fifty (50) baby goats held overnight to lie down may not provide sufficient room for ten (10) fat steers held overnight to lie down.

You may find pigs especially difficult to decide what space will provide sufficient room in the holding pen for animals held overnight to lie down.

Example 1: In a pen 16 feet long by 10 feet wide, ten (10) pigs are sleeping piled on top of one another in one corner. The rest of the pen is empty. Even though the pigs are stacked up, there would be sufficient room for them each to lie down separately. So this is an example of compliance.

Example 2: In a pen 6 feet long by 4 feet wide, ten pigs are sleeping piled on top of one another. The sleeping pigs fill the pen entirely as well as being 2 or 3 pigs deep. This is an example of noncompliance. None of these pigs can lie down separately because there is not sufficient room in the holding pen for animals to lie down.

See the discussion of 313.2 (e) to consider how provision of sufficient room affects compliance with the requirement to provide access to water.
313.2 (f) Stunning methods approved in Sec. 313.30 shall be effectively applied to animals prior to their being shackled, hoisted, thrown, cast, or cut.

This really means that, unless you are slaughtering under religious ritual that prohibits stunning prior to the cut, you must stun animals prior to proceeding with shackling, hoisting, throwing, casting, or cutting.

Animals intended for ritual slaughter that are condemned at antemortem inspection must be stunned prior to being humanely killed.

In the Federal Register Notice of September 2004, part of the first step recommended for developing a systematic approach to humane handling is “conduct an initial assessment of … where and under what circumstances stunning problems may occur”. Part of the initial assessment should include how effectively you can back up your primary stunning method. When your primary method of stunning becomes ineffective, by law you are still required to effectively stun the animal. You need to know how you will provide back up stunning and be able to provide it promptly for any animal that is not stunned effectively. Inability to immediately address an ineffectively stunned animal may cause an egregious noncompliance. This could result in an immediate regulatory control action followed by a recommendation that your establishment be suspended.

What is an egregious noncompliance?

An egregious noncompliance is defined in FSIS Notice 12-05
DOCUMENTATION OF HUMANE HANDLING ACTIVITIES.

An egregious situation is any act that is cruel to animals or a condition that is ignored and leads to the harm of animals such. Examples of egregious noncomplinaces include but are not limited to

1. making cuts on or skinning conscious animals,

2. excessive beating or prodding of ambulatory or nonambulatory disabled animals,

3. dragging conscious animals,
4. driving animals off semi-trailers over a drop off without providing adequate unloading facilities (animals are falling to the ground),

5. running equipment over animals,

6. stunning of animals and then allowing them to regain consciousness, or

7. disabled livestock left exposed to adverse climate conditions while awaiting disposition.

8. Any other condition or action that intentionally causes unnecessary pain and suffering to animals, including situations on trucks.

Noncompliances involving injury or inhumane treatment of an egregious nature warrant immediate enforcement in accordance with 9 CFR 500.2 and 500.3, including suspension of inspection. As stated in FSIS Directive 6900.2, Revision 1, if there is an egregious situation of inhumane handling or slaughter, the Inspector-in-Charge (IIC) is to immediately suspend inspection in accordance with 9 CFR 500.3(b) and orally notify plant management of the suspension. A rejected tag will be placed to suspend the slaughter process. The oral notification of the egregious noncompliance will be documented on an NR, which will be part of the evidence presented to support a suspension action. In such situations, the IIC must immediately notify the Raleigh Office (DO) for prompt documentation of the suspension action.

A special stunning situation arises when an animal that was meant to be killed under ritual slaughter (without stunning) is condemned on ante mortem inspection. The purpose of ritual slaughter is to make the products of the slaughtered animal acceptable to consumers under the dietary laws of a specific religion. If an animal is condemned on ante mortem inspection, no product from that animal is going to reach any consumer. Since the animal is not going to be consumed as food, it is ineligible for ritual slaughter. If the animal is killed after being condemned on ante mortem inspection, you must first stun it. The only exception would be when the animal has a disease in which the brain needs to be sampled. In that case, the veterinarian who collects the samples may direct some other form of humane killing such as an intravenous injection.
STUNNING

Federal law (The Humane Methods of Slaughter Act of 1978 - 7 US Code 1901 through 1906) defines two methods of humane slaughter:

1) with stunning
2) under religious ritual

Sections 313.5 Chemical Carbon dioxide; 313.15 Mechanical; captive bolt; 313.16 Mechanical; gunshot; and 313.30 Electrical stunning or slaughtering with electric current describe the four methods of stunning that are permitted.

The federal law applies to all slaughter performed in the United States. This law applies to slaughter performed under custom and voluntary circumstances as well as slaughter performed under inspection. When you are slaughtering under custom or voluntary circumstances, you may find excellent guidance about how to obey the federal law in the regulations in 9 CFR 313.

**Code of Federal Regulations, Title 9, Volume 2, Chapter III, Part 352.10** requires that humane handling of an exotic animal during ante mortem inspection shall be in accordance with the provision contained in **9 CFR 313.2**. **9 CFR 352.10 (a) (5)** cites the requirements of **9 CFR 313.15** or **313.16** for stunning exotic animals.

**Why does the law require stunning?**

Stunning makes an animal become “insensible” – unconscious and unable to feel pain.

**THREE PRINCIPLES OF EFFECTIVE STUNNING**

Principle 1 – Calm, comfortable animals

For every method of stunning, driving or conveying of the animals to the point of stunning shall be done with a minimum of excitement and discomfort to the animals. Your ability to correctly stun animals prior to slaughter depends on each animal being calm. Excited animals made uncomfortable by poor driving techniques cause more problems for your stunning operator.
PRINCIPLE 2 – Your stunning operator must be well trained to stun effectively. Correct positioning of the stunning implement is essential. The stunning operator must also be alert to the condition of each animal. Your stunning operator must be able to correctly identify signs of insensibility (“unconsciousness”) and the signs of returning sensibility (“consciousness”).

PRINCIPLE 3 – You must have good restraint. No matter how knowledgeable and experienced your stunning operator, he/she is reasonably likely to receive NRs for inadequate stunning when animals move about freely during the stunning process.

IS STUNNING EFFECTIVE?

You stun the animal so that the animal will be unconscious and does not feel pain. Before you stick the animal (“bleed out”), you must be sure that the animal is “insensible” (unconscious and unable to feel pain).

How can you tell? Signs of insensibility are different for different animals and for different methods of stunning. Dr. Grandin gives a detailed description on her website: www.grandin.com. Select “Humane Slaughter” then “Determining Insensibility and Effectiveness of Stunning.”

Briefly, there are multiple signs that the animal is unconscious and unable to feel pain (“insensible”). You should learn to use more than one sign to confirm that the animal is insensible.

1. An insensible animal’s head and neck are relaxed or “floppy”. Most animals kick or paddle with their legs after stunning. For confirming insensibility (but not for your safety), pay no attention to leg motions. Look at the animal’s head. When shackled and hoisted, the head and neck hang straight down.
2. An insensible animal’s jaw is slack and the tongue hangs limply from the mouth.
3. An insensible animal’s eyes are open with a blank stare. There is no normal eye blinking. If you are not sure about normal eye blinking, stand and look at animals blinking their eyes out in the live area. EXCEPTION: Many electrically stunned pigs, which are having grand mal seizures, will open and close their eyes in rhythm with the seizure activity. This is not normal blinking. CAUTION: Poking at
the eye can push the eye back into the socket. This causes the lids to fall shut so that the eye appears to close. Dr. Grandin advises, on her website, www.grandin.com that a better technique is to watch the eye rather than touch it. As an alternative to touching the eye or eyelids, the free edge of the eye lashes may be brushed with your fingers to test for blinking.

4. An insensible animal does not breathe rhythmically. If you are not sure about normal rhythmic breathing, stand and look at animals as they breathe out in the live area. Some animals, particularly pigs that have been electrically stunned, may gasp as they die.

5. An insensible animal will not respond when you pinch its nose.

6. An insensible animal does not vocalize (no squealing, mooing, or baaing).

When an animal is returning to consciousness and begins to be able to feel pain, the animal shows these signs (and probably in this order):

1. The animal starts to breathe rhythmically.
2. The animal starts blinking its eyes normally.
3. The animal responds when its nose is pinched.
4. The animal begins to raise its head into the correct position of the head if the animal were standing.
5. The animal rolls upright.

If your systematic approach to humane handling is working, should you observe these signs, you will immediately stop the slaughter procedure until the animal can be stunned effectively.
When do you check to be sure an animal is insensible or unconscious?

If the stun is not fully effective, the animal may become sensible or conscious at any time until enough blood is lost after sticking that the animal cannot recover. Because of this, checking for insensitivity or unconsciousness once is not enough. There are six points in the process after stunning when you should be checking the animal to be sure it is still insensible or unconscious.

1. As soon as the stunning method has been applied
2. After the animal is removed from the restrainer
3. Before the shackle is applied
4. Before the animal is hoisted
5. Before the animal is stuck
6. Before sanitary dressing procedures start

The Inspector will observe your stunning and sticking process for stunning effectiveness and for animals that return to consciousness after stunning. If your systematic approach to humane handling is working, you will know whether stunning is effective or not. You will also know when an animal returns to consciousness. You will immediately act to re-stun the animal.

If the problem with stunning was unavoidable and you immediately acted to correct the situation, this is an example of a systematic approach that works. An example of this is, in an establishment where restraint is adequate, an animal, which was standing quietly, suddenly lowers its head just as the stunning operator uses the captive bolt. Since the animal’s head was moving away from the striking bolt, the stunning is ineffective. The stunning operator immediately is aware the animal’s head movement caused the stunning to be ineffective. The stunning operator re-stuns the animal as soon as the animal’s head is still and the bolt can be properly placed.

If you could have avoided a stunning problem but did not, even though you observed that the animal was inadequately stunned and acted immediately to re-stun the animal, the Inspector will tell you that your stunning method is out of compliance, attach a rejected tag to the stunning area as described in Section 313.50(c), and document the noncompliance on an NR. You will not be able to start stunning procedures again until the Inspector is satisfied that you corrective actions will prevent avoidable ineffective stunning from occurring again.
An example of this is using a stationary restrainer designed for cattle to stun pigs with a captive bolt. A pig is able to turn and move away from the stunning operator because the cattle restrainer does not hold the pig still. The Inspector has pointed out in the weekly meeting that a cattle restrainer does not provide adequate restraint for pigs. Establishment management said they would look into a better method of restraint. Two weeks later, a pig jumps away from the stunning operator just as the operator struck with the bolt. The bolt enters the pig’s nasal cavity rather than the brain.

In the case of an egregious humane handling noncompliance, the Inspector will take an immediate regulatory control action in addition to telling you that your stunning methods are out of compliance, attaching a rejected tag to the stunning area as described in Section 313.50(c), and documenting the noncompliance on an NR. The Inspector must also immediately notify the Meat and Poultry Inspection Headquarter Office in Raleigh. Egregious humane handling noncompliances can result in a suspension of inspection privileges by the Raleigh Office per 9 CFR Part 500.

An example of this is a stunning operator using a rifle to stun a pig and does not take care to have the rifle square with the pig’s head. Even though the bullet passes through the correct point in the center of the front of the skull just above a line drawn from eye to eye, since the bullet entered at an angle, it does not penetrate the brain. The pig is unconscious long enough for the operator to shackle and hoist it but is breathing and blinking its eyes when the operator sticks it. The pig squeals loudly. The pig is quickly lowered and shot again. This time it remains unconscious until it has bled out. This is an egregious humane handling noncompliance because the animal showed signs that it was conscious but the stunning operator ignored these and stuck the pig anyway.

**METHODS OF STUNNING**

**Stunning Using Gas**

**Sec. 313.5 Chemical; carbon dioxide** describes stunning animals using a gas chamber. Should you want more information about this method, please notify the Raleigh Office of NCDA&CS MPID, which will assist you to find out more about this method.
Stunning by Mechanical Means

Sec. 313.15 Mechanical; captive bolt and Sec. 313.16 Mechanical; gunshot describe the regulatory requirements for using the two forms of mechanical stunning. We present correct positioning for these two stunning methods together since they are the same for both methods.

Correct positioning of the mechanical means of stunning, be it captive bolt or firearm, is essential to effective use of this stunning method. Good restraint is essential. No matter how knowledgeable and experienced your stunning operator, he/she is reasonably likely to receive NRs for inadequate stunning when animals move about freely during the stunning process.

Once the animal is properly restrained, the captive bolt or firearm must be placed in the correct position. This is because in order to render the animal unconscious, the bullet or captive bolt must penetrate the frontal lobe of the brain. This part of the brain controls consciousness. If the frontal lobe is not penetrated, the animal will not be immediately unconscious. The position of the captive bolt or fire arm must be correct in three directions:

First, the captive bolt or firearm must be straight with the middle of the animal’s nose and point straight down the animal’s neck toward the animal’s tail. When the animal is turning its head to the right and to the left, so that the nose, neck, back, and tail are not in a straight line, the stunning operator has to guess where the straight line with the middle of the animal’s nose would be. Guesses are more reasonably likely to result in ineffective stunning noncompliances that having the captive bolt or the firearm correctly positioned.
Straight Placement of Firearm or Captive Bolt

Correct

Incorrect

Figure a

Figure b

Figure a. shows the correct trajectory of a bullet when a firearm is aimed straight down the midline of the animal’s nose. A captive bolt would be lined up in the same way. Figure b. shows what happens when the firearm or captive bolt is NOT correctly lined up with the midline of the animal’s nose. Even though the bullet or bolt passes through the correct point in the animal’s forehead, because the firearm or bolt does not line up with the midline of the animal’s nose, the bullet or bolt misses the brain or only affects it slightly. This animal may initially lose consciousness but would quickly be conscious again. Figure a and figure b are pictures of pigs but the principle of having the firearm or bolt placed straight with the midline of the nose and the neck is the same for every animal.

The other directions in which the firearm or bolt must be correct are different for different animals.

The pig is the most difficult animal to consistently stun effectively using mechanical methods. Pigs vary in size and, even among pigs about the same size, the shape and the thickness of the skull may vary.
Figure c shows the second direction which must be correct in swine. In swine there are two options, the commonly used frontal site and the rarely used temporal site. When using the frontal site, the bullet or bolt must pass through the correct point in the pig’s forehead. The correct point is just above a line drawn from eye to eye. If you have questions about using the temporal site, please ask the Inspector, Regional Veterinary Medical Officer, or Area Supervisor. Note: Knocking boxes that are designed for restraining pigs to use the frontal site may be inadequate and unsafe for using the temporal site.

Figure d shows the third direction that also must be correct. The path of the bullet or bolt must be slightly downward. If you have questions about the third direction when using the temporal site, please ask the Inspector, Regional Veterinary Medical Officer, or Area Supervisor.
Figure e shows the second direction which must be correct in cattle. In cattle, the correct point for the bolt or bullet to enter the forehead is the crossing point of two lines. Each line begins at the base of the horn and runs to the inside corner of the opposite eye. When cattle do not have horns, the line starts from just above each ear.

Figure f shows the third direction that also must be correct. The path of the bullet or bolt must be slightly downward.

Cattle can also be stunned behind the poll using the same positioning illustrated for horned sheep in Figure h.
Figure g shows two options for the second direction which must be correct in hornless sheep. For hornless sheep and rams, the bullet or captive bolt should enter the top of the head or just behind the poll. When you use the position just behind the poll, the captive bolt or gunshot will travel forward (towards the nose) rather than backwards (towards the tail). This would reverse the direction of the first direction that must be correct (See figures a and b) but the correct trajectory of a bullet when a firearm is aimed is still straight down the midline of the sheep’s nose. A captive bolt would be lined up in reverse the same way.

Figure h shows the second direction which must be correct in horned sheep. Horned sheep and rams have thicker tops to their skulls than those that are hornless, so the bullet or captive bolt should enter just behind the poll. When you use the position just behind the poll, the captive bolt or gunshot will travel forward (towards the nose) rather than backwards (towards the tail). This would reverse the direction of the first direction that must be correct (See figures a and b) but the correct trajectory of a bullet when a firearm is aimed is still straight down the midline of the sheep’s nose. A captive bolt would be lined up the same way.

Cattle may also be stunned from just behind the poll. In cattle, to have the second direction correct, the bullet or captive bolt should enter the skull just behind the poll. From this position, the captive bolt or gunshot will travel forward (towards the nose) rather than backwards (towards the tail). Using this direction, reverses the first direction that must be correct (See Figures a and b) but the correct trajectory of a bullet when a firearm is aimed is still
straight down the midline of the bovine’s nose. A captive bolt would be lined up the same way if the behind the poll position is used.

Figure i

Figure i shows the second direction which must be correct in a goats. The bullet or a captive bolt should enter the head behind the poll. As in sheep, when you use the position just behind the poll, the captive bolt or gunshot will travel forward (towards the nose) rather then backwards (towards the tail). This reverses the direction of the first direction that must be correct (See figures a and b) but the correct trajectory of a bullet when a firearm is aimed is still straight down the midline of the goat’s nose. A captive bolt is lined up the same way.

Sec. 313.15 Mechanical; captive bolt.

313.15 (a) Application of stunners, required effect; handling.

315.15 (a)(1) The captive bolt stunners shall be applied to the livestock in accordance with this section so as to produce immediate
unconsciousness in the animals before they are shackled, hoisted, thrown, cast, or cut. The animals shall be stunned in such a manner that they will be rendered unconscious with a minimum of excitement and discomfort.

This means that activation of the captive bolt should be followed immediately by the animal collapsing into unconsciousness.

The Inspector will observe your stunning operator using the captive bolt to verify that the bolt is being used correctly and effectively. He/she will look for signs of any animal returning to consciousness after stunning. If your systematic approach to humane handling is working, your stunning operator also will know whether stunning is effective or not. Your stunning operator should immediately act to re-stun the animal.

If the animal involved was not injured and did not suffer discomfort or become excited and the problem with stunning was unavoidable and your stunning operator immediately acted to correct the situation, this is an example of a systematic approach that works. An example of this is, in an establishment where restraint is adequate, an animal, which was standing quietly, suddenly lowers its head just as the stunning operator uses the captive bolt. Since the animal’s head was moving away from the striking bolt, the stunning is ineffective. The stunning operator immediately is aware the animal’s head movement caused the stunning to be ineffective. The stunning operator re-stuns the animal as soon as the animal’s head is still and the bolt can be properly placed.

If you could have avoided a stunning problem but did not, even though you observed that the animal was inadequately stunned and acted immediately to re-stun the animal, the Inspector will tell you that your stunning method is out of compliance, attach a rejected tag to the stunning area as described in Section 313.50(c), and document the noncompliance on an NR. You will not be able to start stunning procedures again until the Inspector is satisfied that you corrective actions will prevent avoidable ineffective stunning from occurring again.

An example of this is using a stationary restrainer designed for cattle to stun pigs with a captive bolt. A pig is able to turn and move away from the stunning operator because the cattle restrainer does not hold the pig still. The Inspector has pointed out in the weekly meeting that a cattle restrainer
does not provide adequate restraint for pigs. Establishment management said they would look into a better method of restraint. Two weeks later, a pig jumps away from the stunning operator just as the operator struck with the bolt. The bolt enters the pig’s nasal cavity rather than the brain.

In the case of an egregious humane handling noncompliance, the Inspector will take an immediate regulatory control action in addition to telling you that your stunning methods are out of compliance, attaching a rejected tag to the stunning area as described in Section 313.50(c), and documenting the noncompliance on an NR. The Inspector must also immediately notify the Meat and Poultry Inspection Headquarter Office in Raleigh. Egregious humane handling noncompliances can result in a suspension of inspection privileges by the Raleigh Office per 9 CFR Part 500.

An example of this is a stunning operator trying to stun using a bolt that has misfired repeatedly to stun a cow. On the third attempt, there is a feeble explosion of the cap. The cow collapses but remains upright in sternal recumbancy, shaking its head and blinking its eyes. An establishment employee fastens the shackle to one of the cow’s hind legs and starts for operate the hoist until the Inspector tells the employee to stop and to remove the shackle from the cow’s foot. This is an egregious humane handling noncompliance because the broken captive bolt was used repeatedly. The animal showed signs that it was conscious was shackled and hoisting was attempted.

313.15 (a)(2) The driving of the animals to the stunning area shall be done with a minimum of excitement and discomfort to the animals. Delivery of calm animals to the stunning areas is essential since accurate placement of stunning equipment is difficult on nervous or injured animals. Among other things, this requires that, in driving animals to the stunning areas, electrical equipment be used as little as possible and with the lowest effective voltage.

This means that poor driving techniques and excessive use of electric prods or other driving implements while moving animals to the stunning area make ineffective stunning more likely. When you are successfully using the four steps recommended for a systematic approach to humane handling, your continuing evaluation (Step 3) of handling practices of your employees to identify any practices which cause excitement, discomfort, or accidental
injury and your correction of these (Step 4), should also improve stunning effectiveness compliance.

313.15 (a)(3) Immediately after the stunning blow is delivered the animals shall be in a state of complete unconsciousness and remain in this condition throughout shackling, sticking and bleeding.

This means that ineffective stunning can be a noncompliance. (See Is Stunning Effective?) In accordance with 313.50 (c), a rejected tag must be attached to the stunning area. No more animals can be stunned until the Inspector is satisfied that you have instituted an effective corrective action.

313.15(b) Facilities and procedures

313.15 (b)(1) General requirements for stunning facilities; operator.

313.15 (b)(1)(i) Acceptable captive bolt stunning instruments may be either skull penetrating or nonpenetrating. The latter type is also described as a concussion or mushroom type stunner. Penetrating instruments on detonation deliver bolts of varying diameters and lengths through the skull and into the brain. Unconsciousness is produced immediately by physical brain destruction and a combination of changes in intracranial pressure and acceleration concussion. Nonpenetrating or mushroom stunners on detonation deliver a bolt with a flattened circular head against the external surface of the animal's head over the brain. Diameter of the striking surface of the stunner may vary as conditions require. Unconsciousness is produced immediately by a combination of acceleration concussion and changes in intracranial pressures. A combination instrument utilizing both penetrating and nonpenetrating principles is acceptable. Energizing of instruments may be accomplished by detonation of measured charges of gunpowder or accurately controlled compressed air. Captive bolts shall be of such size and design that, when properly positioned and activated, immediate unconsciousness is produced.

This means that if you are using a captive bolt to stun different sizes and market classes of animals, you may have to have more than one size of bolt or have an alternative method to stun animals if the bolt you have cannot stun a class or size of animal effectively.
Captive bolts are powered by gunpowder in special cartridges. You may be able to use the same bolt for different sizes of animal but change cartridge strength as appropriate for the size of the animal being stunned. Cartridges are available in various strengths. You must follow the manufacturer's recommendations for which captive bolt or cartridge to use.

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

313.15 (b)(1)(ii) To assure uniform unconsciousness with every blow, compressed air devices must be equipped to deliver the necessary constant air pressure and must have accurate, constantly operating air pressure gauges. Gauges must be easily read and conveniently located for use by the stunning operator and the Inspector. For purposes of protecting employees, Inspectors, and others, it is desirable that any stunning device be equipped with safety features to prevent injuries from accidental discharge. Stunning instruments must be maintained in good repair.

Captive bolts require regular maintenance. If you wait until the bolt misfires to do maintenance work on it, you need to have another bolt or another means of stunning ready as a back up for stunning because you are reasonably likely to experience ineffective stunning.

Charges for charge-powered captive bolts must be maintained carefully or they are reasonably likely to misfire. The less expensive charges are more likely to misfire as they often lack a coating to protect them from the effects of moisture or they may have a less effective coating. Humidity is usually high on the slaughter floor. This is particularly true on slaughter floors where pigs are being scalded and dehaired. Care must be taken to either have the charges in an air-tight container or to set them in an area that is protected from humidity.

313.15 (b)(1)(iii) The stunning area shall be so designed and constructed as to limit the free movements of animals sufficiently to allow the operator to locate the stunning blow with a high degree of accuracy. All chutes, alleys, gates and restraining mechanisms between and including holding pens and stunning areas shall be free from pain-producing features such as exposed bolt ends, loose boards, splintered or broken planking, and protruding sharp metal of any kind. There shall be no
unnecessary holes or other openings where feet or legs of animals may be injured. Overhead drop gates shall be suitably covered on the bottom edge to prevent injury or contact with animals. Roughened or cleated cement shall be used as flooring in chutes leading to stunning areas to reduce falls of animals. Chutes, alleys, and stunning areas shall be so designed that they will comfortably accommodate the kinds of animals to be stunned.

One of the three principles of effective stunning is good restraint. Another one is assuring that animals to be stunned are calm and comfortable. When your restrainer is the appropriate size for the animal you are going to stun and is kept in good repair, you reduce the chances that stunning will be ineffective.

313.15 (b)(1)(iv) The stunning operation is an exacting procedure and requires a well-trained and experienced operator. He must be able to accurately place the stunning instrument to produce immediate unconsciousness. He must use the correct detonating charge with regard to kind, breed, size, age, and sex of the animal to produce the desired results.

You are fortunate when you have a skilled, experienced, patient stunning operator, who is happy to be your employee. When an experienced stunning operator leaves suddenly and an inexperienced operator is suddenly trying operate the stunner effectively, you not only are more likely to have noncompliant stunning incidents but also you will have no experienced back up person to do the stunning effectively. You should try to have more than one trained and experienced stunning operator. Having more than one trained stunning operator gives you the advantage of being able to rotate stunning operators. Rotating stunning operators reduces mistakes, injuries, and noncompliances that arise from operator fatigue. Rotating stunning operators helps maintain the skill level of all trained stunning operators.

313.15 (b)(2) Special requirements and prohibitions.

313.15 (b)(2)(i) Choice of instrument and force required to produce immediate unconsciousness varies, depending on kind, breed, size, age, and sex of the animal. Young swine, lambs, and calves usually require less stunning force than mature animals of the same kind. Bulls, rams, and boars usually require skull penetration to produce immediate
unconsciousness. Charges suitable for smaller kinds of livestock such as swine or for young animals are not acceptably interchanged for use on larger kinds or older livestock, respectively.

This means that, if you kill a variety of market classes of animals, you may need to have multiple bolts or use multiple stunning methods so that the stunning implement in use is the one most effective for the particular market class being stunned.

313.15 (b)(2)(ii) Captive bolt stunners that deliberately inject compressed air into the cranium at the end of the penetration cycle shall not be used to stun cattle.

This kind of bolt sprayed specified risk material from the central nervous system (CNS) into edible tissues in distant parts of the carcass. When the bolts that injected compressed air into the cranium were in use, alert Inspectors often found large identifiable pieces of brain and spinal cord in the heart, liver and kidneys and smaller pieces in the lung.

Sec. 313.16 Mechanical; gunshot.

The slaughtering of cattle, calves, sheep, swine, goats, horses, mules, and other equines by shooting with firearms and the handling in connection therewith, in compliance with the provisions contained in this section, are hereby designated and approved as humane methods of slaughtering and handling of such animals under the Act.

313.16 (a) Utilization of firearms, required effect; handling.

313.16 (a) (1) The firearms shall be employed in the delivery of a bullet or projectile into the animal in accordance with this section so as to produce immediate unconsciousness in the animal by a single shot before it is shackled, hoisted, thrown, cast, or cut. The animal shall be shot in such a manner that they will be rendered unconscious with a minimum of excitement and discomfort.

This means that the first shot should be followed immediately by the animal collapsing into unconsciousness. The Inspector will observe your stunning and sticking process for stunning effectiveness and for animals that return to consciousness after stunning. If your systematic approach to humane
handling is working, you will know whether stunning is effective or not. You will also know when an animal returns to consciousness. You will immediately act to re-stun the animal.

If the problem with stunning was unavoidable and you immediately acted to correct the situation, this is an example of a systematic approach that works. An example of this is, in an establishment where restraint is adequate, an animal, which was standing quietly, suddenly turns its head just as the stunning operator fires the rifle. Since the animal’s head moved out of the line of fire, the bullet missed. The stunning operator immediately is aware the shot missed. The stunning operator shoots the animal successfully as soon as the animal’s head is still.

If you could have avoided a stunning problem but did not, even though you observed that the animal was inadequately stunned and acted immediately to re-stun the animal, the Inspector will tell you that your stunning method is out of compliance, attach a rejected tag to the stunning area as described in Section 313.50(c), and document the noncompliance on an NR. You will not be able to start stunning procedures again until the Inspector is satisfied that you corrective actions will prevent avoidable ineffective stunning from occurring again.

An example of this is using a stationary restrainer designed for cattle to restrain a calf. The calf repeatedly turns around in the restrainer and moves as far as possible away from the stunning operator. Ever since you started killing calves six months ago, the Inspector has pointed out in the weekly meeting that a cattle restrainer does not provide adequate restraint for calves. You said you would see what you could do but, since the stunning operator had successfully stunned each calf, you hadn’t changed your inadequate method of restraining calves. This calf jumps away from the stunning operator just as the operator fires his rifle. The free bullet passes through the calf’s left ear and lodges in the flank just in front of the pelvis. The calf bawls and falls against the side of the restrainer. The stunning operator fires again, this time successfully stunning the calf with a properly placed bullet. This is a noncompliance to which the Inspector will react in accordance with 313.50. Since the calf was wounded and vocalized its pain, this could be considered an egregious humane handling noncompliance.

When, in the opinion of the Inspector, a humane handling noncompliance noncompliance is egregious, the Inspector will take an immediate regulatory
control action in addition to telling you that your stunning methods are out of compliance, attaching a rejected tag to the stunning area as described in Section 313.50(c), and documenting the noncompliance on an NR. The Inspector must also immediately notify the Meat and Poultry Inspection Headquarter Office in Raleigh. Egregious humane handling noncompliances can result in a suspension of inspection privileges by the Raleigh Office per 9 CFR Part 500.

An example of this is a stunning operator using a rifle to stun a pig without having the rifle square with the pig’s head. Even though the bullet passes through the correct point in the center of the front of the skull just above a line drawn from eye to eye, since the bullet entered at an angle, it does not penetrate the brain. The pig is unconscious long enough for the operator to shackle and hoist it but is breathing and blinking its eyes when the operator sticks it. The pig squeals loudly. The pig is quickly lowered and shot again. This time it remains unconscious until it has bled out. This is an egregious humane handling noncompliance because the animal showed signs that it was conscious but the stunning operator ignored these and stuck the pig anyway.

313.16 (a) (2) The driving of the animals to the shooting areas shall be done with a minimum of excitement and discomfort to the animals. Delivery of calm animals to the shooting area is essential since accurate placement of the bullet is difficult in case of nervous or injured animals. Among other things, this requires that, in driving animals to the shooting areas, electrical equipment be used as little as possible and with the lowest effective voltage.

This means that poor driving techniques and excessive use of electric prods or other driving implements while moving animals to the stunning area make ineffective stunning more likely. When you are successfully using the four steps recommended for a systematic approach to humane handling, your continuing evaluation (Step 3) of handling practices of your employees to identify any practices which cause excitement, discomfort, or accidental injury and your correction of these (Step 4) should also improve stunning effectiveness compliance.

313.16 (a) (3) Immediately after the firearm is discharged and the projectile is delivered, the animal shall be in a state of complete
unconsciousness and remain in this condition throughout shackling, sticking and bleeding.

This means that ineffective stunning can be a noncompliance. (See Is Stunning Effective?) In accordance with 313.50 (c), a rejected tag must be attached to the stunning area. No more animals can be stunned until the Inspector is satisfied that you have instituted an effective corrective action.

313.16 (b) Facilities and procedure

313.16 (b) (1) General requirements for shooting facilities; operator.

313.16 (b) (1) (i) On discharge, acceptable firearms dispatch free projectiles or bullets of varying sizes and diameters through the skull and into the brain. Unconsciousness is produced immediately by a combination of physical brain destruction and changes in intracranial pressure. Caliber of firearms shall be such that when properly aimed and discharged, the projectile produces immediate unconsciousness.

This means that if you are using a gunshot to stun different sizes and market classes of animals, you may have to have more than one firearm or have an alternative method to stun animals if the firearm you have cannot stun a class or size of animal effectively.

Gunshot stunning requires that the firearm used have sufficient velocity, energy and size to pass through the skull, enter the brain, and cause massive brain destruction. For most animals, a .22 caliber long rifle bullet fired from either a pistol or rifle produce effective stunning when properly positioned. Hollow or soft point .22 caliber bullets increase brain tissue destruction, but these bullets may not penetrate the skull in adult animals. Bulls, occasional cows, and occasional sows can have thicker skulls. These animals may require a larger caliber firearm such as a 9mm or .357. Proper placement of the bullet is essential and best achieved by holding the firearm within a few inches of the intended target. The firearm should not be held or placed against the head.
313.16 (b) (1) (ii) To assure uniform unconsciousness of the animal with every discharge where small-bore firearms are employed, it is necessary to use one of the following type projectiles:

- Hollow pointed bullets;
- frangible iron plastic composition bullets;
- or powdered iron missiles.

When powdered iron missiles are used, the firearms shall be in close proximity with the skull of the animal when fired. Firearms must be maintained in good repair. For purposes of protecting employees, Inspectors and others, it is desirable that all firearms be equipped with safety devices to prevent injuries from accidental discharge. Aiming and discharging of firearms should be directed away from operating areas.

Firearms require regular maintenance, which usually means cleaning them after each days use. Residues from exploding powder accumulate in the rifling of rifle barrels and reduce the power of the charge to drive the bullet with enough force to achieve adequate stunning. Rifling in the barrel will eventually wear out. This is particularly a concern when a rifle is purchased used. If you wait until your rifle loses power to clean it, you need to have another rifle or another means of stunning ready as a back up for stunning because you are reasonably likely to experience ineffective stunning.

Bullets must be maintained carefully or they are reasonably likely to misfire or lack power. Humidity is usually high on the slaughter floor. This is particularly true on slaughter floors where pigs are being scalded and dehaired. Care must be taken to either have the bullets in an air-tight container or to set them in an area that is protected from humidity.

Safe use of firearms requires control of their use. This includes, but is not limited to, training of other personnel to move to safety when a firearm is being discharged, facility design that prevents free bullets from entering areas that pose a danger to people or animals, and removing both firearms and bullets to a secure location except when they are in use.

313.16 (b) (1) (iii) The provisions contained in Sec. 313.15(b)(1)(iii) with respect to the stunning area also apply to the shooting area.

313.16 (b) (1) (iv) The shooting operation is an exacting procedure and requires a well-trained and experienced operator. He must be able to
accurately direct the projectile to produce immediate unconsciousness. He must use the correct caliber firearm, powder charge and type of ammunition to produce the desired results.

You are fortunate when you have a skilled, experienced, patient stunning operator, who is happy to be your employee. When an experienced stunning operator leaves suddenly and an inexperienced operator is suddenly trying to use a firearm to stun effectively, you not only are more likely to have noncompliant stunning incidents but also you will have no experienced back up person to do the stunning effectively. You should try to have more than one trained and experienced stunning operator. Having more than one trained stunning operator gives you the advantage of being able to rotate stunning operators. Rotating stunning operators reduces mistakes, injuries, and noncompliances that arise from operator fatigue. Rotating stunning operators helps maintain the skill level of all trained stunning operators.

313.16 (b) (2) Special requirements. Choice of firearms and ammunition with respect to caliber and choice of powder charge required to produce immediate unconsciousness of the animal may vary depending on age and sex of the animal. In the case of bulls, rams, and boars, small bore firearms may be used provided they are able to produce immediate unconsciousness of the animals. Small bore firearms are usually effective for stunning other cattle, sheep, swine, and goats, and calves, horses, and mules.

This means that, if you kill a variety of market classes of animals, you may need to have firearms of different calibers or use multiple stunning methods so that the firearm you are using is the one most effective for the particular market class being stunned.

Sec. 313.30 Electrical; stunning or slaughtering with electric current.

The slaughtering of swine, sheep, calves, cattle, and goats with the use of electric current and the handling in connection therewith, in compliance with the provisions contained in this section, are hereby designated and approved as humane methods of slaughtering and handling of such animals under the Act.

313.30 (a) Administration of electric current, required effect; handling.
313.30 (a) (1) The electric current shall be administered so as to produce, at a minimum, surgical anesthesia, i.e., a state where the animal feels no painful sensation. The animals shall be either stunned or killed before they are shackled, hoisted, thrown, cast, or cut. They shall be exposed to the electric current in a way that will accomplish the desired result quickly and effectively, with a minimum of excitement and discomfort.

Surgical anesthesia, i.e., a state where the animal feels no painful sensation, is another way to say that the animal is unconscious. This means that the application of the stunning wand should be followed immediately by the animal becoming rigid and unconsciousness. You must be aware that this stunning method is similar to electric shock therapy used to treat humans who suffer from certain forms of mental illness. This means that the period of unconsciousness will be brief and the electric current used is unlikely to kill the animal. Once the animal is unconscious and the electric current has been applied for the time period recommended by the manufacturer of the wand, your employees must move quickly through shackling and hoisting (if used) to sticking. Animals stunned with electric current may be unconscious for less than one minute. Having an animal return to consciousness before it dies from blood loss may be an egregious noncompliance. The Inspector will observe your stunning and sticking process for stunning effectiveness and for animals that return to consciousness after stunning. If your systematic approach to humane handling is working, you will know whether stunning is effective or not. You will also know when an animal returns to consciousness. You will immediately act to re-stun the animal.

Sometimes you could have avoided a stunning problem but did not, even though you observed that the animal was inadequately stunned and acted immediately to re-stun the animal, the Inspector will tell you that your stunning method is out of compliance, attach a rejected tag to the stunning area as described in Section 313.50(c), and document the noncompliance on an NR. You will not be able to start stunning procedures again until the Inspector is satisfied that you corrective actions will prevent avoidable ineffective stunning from occurring again.

An example of this is using a stationary restrainer designed for cattle to stun pigs. In some establishments, even though multiple pigs are driven into the restrainer there is still room for the pigs move around and avoid the application of the wand. The wand is placed on a pig, which squeals and
momentarily becomes rigid. It falls away from the stunning wand and gets up, squealing and shivering. At several weekly meetings, the Inspector has pointed out that a cattle restrainer does not provide adequate restraint for pigs. You said you would see what you could do but, since the stunning operator had successfully stunned each pig, you hadn’t changed your inadequate method of restraint. This is a noncompliance to which the Inspector will react in accordance with 313.50. Since the pig vocalized its pain and shivered in discomfort, this could be considered an egregious humane handling noncompliance.

When, in the opinion of the Inspector, a humane handling noncompliance noncompliance is egregious, the Inspector will take an immediate regulatory control action in addition to telling you that your stunning methods are out of compliance, attaching a rejected tag to the stunning area as described in Section 313.50(c), and documenting the noncompliance on an NR. The Inspector must also immediately notify the Meat and Poultry Inspection Headquarter Office in Raleigh. Egregious humane handling noncompliances can result in a suspension of inspection privileges by the Raleigh Office per 9 CFR Part 500.

An example of this is a stunning operator who stuns a pig with an electrical current and then cannot get the pig shackled promptly because the strength of the grand mal seizures caused by the electric shock causes the kicks of the hind legs to knock the shackling chain out of the operator’s hand several times. Finally the pig is shackled and hoisted but it has started breathing and blinking its eyes when the operator sticks it. The pig squeals loudly. The pig is quickly lowered and the stunning wand reapplied. This time it remains unconscious until it has bled out. This is an egregious humane handling noncompliance because the animal showed signs that it was conscious but the stunning operator ignored these and stuck the pig anyway.

313.30 (a) (2) The driving or conveying of the animals to the place of application of electric current shall be done with a minimum of excitement and discomfort to the animals. Delivery of calm animals to the place of application is essential to ensure rapid and effective insensibility. Among other things, this requires that, in driving animals to the place of application, electrical equipment be used as little as possible and with the lowest effective voltage.
This means that poor driving techniques and excessive use of electric prods or other driving implements while moving animals to the stunning area make ineffective stunning more likely. When you are successfully using the four steps recommended for a systematic approach to humane handling, your continuing evaluation (Step 3) of handling practices of your employees to identify any practices which cause excitement, discomfort, or accidental injury and your correction of these (Step 4), should also improve stunning effectiveness compliance.

313.30 (a) (3) The quality and location of the electrical shock shall be such as to produce immediate insensibility to pain in the exposed animal.

This means that you should carefully follow the manufacturer’s directions for settings and placement of the stunning wand.

313.30 (a) (4) The stunned animal shall remain in a state of surgical anesthesia through shackling, sticking, and bleeding.

313.30 (b) Facilities and procedures; operator

313.30 (b) (1) General requirements for operator.

It is necessary that the operator of electric current application equipment be skilled, attentive, and aware of his or her responsibility.

You are fortunate when you have a skilled, experienced, patient stunning operator, who is happy to be your employee. When an experienced stunning operator leaves suddenly and an inexperienced operator is suddenly trying to use a firearm to stun effectively, you not only are more likely to have noncompliant stunning incidents but also you will have no experienced backup person to do the stunning effectively. You should try to have more than one trained and experienced stunning operator. Having more than one trained stunning operator gives you the advantage of being able to rotate stunning operators. Rotating stunning operators reduces mistakes, injuries, and noncompliances that arise from operator fatigue. Rotating stunning operators helps maintain the skill level of all trained stunning operators.
313.30 (b) (2) Special requirements for electric current application equipment.

The ability of electric current equipment to perform with maximum efficiency is dependent on its proper design and efficient mechanical operation. Pathways, compartments, current applicators, and all other equipment used must be designed to properly accommodate the species of animals being anesthetized. Animals shall be free from pain-producing restraining devices. Injury of animals must be prevented by the elimination of sharp projections or exposed wheels or gears. There shall be no unnecessary holes, spaces or openings where feet or legs of animals may be injured. Impellers or other devices designed to mechanically move or drive animals or otherwise keep them in motion or compartmentalized shall be constructed of flexible or padded material.

Power activated gates designed for constant flow of animals shall be so fabricated that they will not cause injury. All equipment used to apply and control the electrical current shall be maintained in good repair, and all indicators, instruments, and measuring devices shall be available for inspection by Program Inspectors during the operation and at other times.

One of the three principles of effective stunning is good restraint. Another one is assuring that animals to be stunned are calm and comfortable. When your restrainer is the right size to comfortably hold still the animal you are going to stun, you reduce the chances that stunning will be ineffective. You must keep your restrainer in good repair to hold an animal comfortably and effectively.

313.30 (b) (3) Electric current.

Each animal shall be given a sufficient application of electric current to ensure surgical anesthesia throughout the bleeding operation. Suitable timing, voltage and current control devices shall be used to ensure that each animal receives the necessary electrical charge to produce immediate unconsciousness. The current shall be applied so as to avoid the production of hemorrhages or other tissue changes which could interfere with inspection procedures.
This means that you need to carefully study the manufacturer’s recommendations for timing, voltage, and current control so as to be sure that you use of electrical stunning will be effective. If you have a custom-made electrical stunning device, you must work closely with MPID to be sure your device meets regulatory standards for effective stunning.

REGULATORY ENFORCEMENT

Sec. 313.50  Tagging of equipment, alleyways, pens, or compartments to prevent inhumane slaughter or handling in connection with slaughter.

When an Inspector observes an incident of inhumane slaughter or handling in connection with slaughter, he/she shall inform the establishment operator of the incident and request that the operator take the necessary steps to prevent a recurrence. If the establishment operator fails to take such action or fails to promptly provide the Inspector with satisfactory assurances that such action will be taken, the Inspector shall follow the procedures specified in paragraph (a), (b), or (c) of this section, as appropriate.

Section 313.50 is provided to give you an understanding of the requirements for inspection program personnel when using a rejected tag as part of a regulatory control action when the Inspector observes a noncompliance with the humane handling regulations (Section 313). The use of a rejected tag as directed by Section 313.50 in many cases will stop the flow of animals to slaughter. Therefore, use of the rejected tag will often bring inhumane handling to a halt. This will give you the opportunity to address the humane handling noncompliance without the distraction of having your slaughter operation in process at the same time.

313.50 (a) If the cause of inhumane treatment is the result of facility deficiencies, disrepair, or equipment breakdown, the Inspector shall attach a "U.S. Rejected" tag thereto. No equipment, alleyway, pen or compartment so tagged shall be used until made acceptable to the Inspector. The tag shall not be removed by anyone other than an Inspector. All livestock slaughtered prior to such tagging may be dressed, processed, or prepared under inspection.
313.50 (b) If the cause of inhumane treatment is the result of establishment employee actions in the handling or moving of livestock, the Inspector shall attach a "U.S. Rejected" tag to the alleyways leading to the stunning area. After the tagging of the alleyway, no more livestock shall be moved to the stunning area until the Inspector receives satisfactory assurances from the establishment operator that there will not be a recurrence. The tag shall not be removed by anyone other than an Inspector. All livestock slaughtered prior to the tagging may be dressed, processed, or prepared under inspection.

313.50 (c) If the cause of inhumane treatment is the result of improper stunning, the Inspector shall attach a "U.S. Rejected" tag to the stunning area. Stunning procedures shall not be resumed until the Inspector receives satisfactory assurances from the establishment operator that there will not be a recurrence. The tag shall not be removed by anyone other than an Inspector. All livestock slaughtered prior to such tagging may be dressed, processed, or prepared under inspection.

Attached documents:

7 USC 1901 through 1906 Humane Methods of Livestock Slaughter

FR Notice, 09-2004

Other Recommended Resources:

Shearer, JK and Nicoletti, P. Procedures for Humane Euthanasia: Humane Euthanasia of Sick, Injured, and/or Debilitated Livestock. On the Worldwide Web – http://www.vetmed.ufl.edu/lacs/HumaneEuthanasia.htm (source of illustrations for Figures c, d, e, f, g, h, and i)


