CHAPTER 7

Transportation

Sample records:
See Chapter 11.

The movement of cattle to and from farms, ranches, feedlots, and marketing facilities is an important aspect of beef and dairy cattle production. When transporting cattle, avoid undue stress caused by overcrowding, excess time in transit, or improper handling during loading and unloading. In addition to promoting safety and animal welfare, proper handling while sorting, loading, and transporting also contributes to beef quality and producer profitability by reducing defects from bruising, injury, or stress.

Transportation Quality Assurance Guidelines

Cattle will perform better and yield higher quality beef when their exposure to stress is limited by careful handling and transportation.

Cattle transporters have many factors to think about before making a haul, including sanitation protocols. Preparation of the vehicle and the cattle being transported are important considerations. Pre-transit planning will help drivers provide quality service that benefits both consumers and the cattle being hauled. Planning on the behalf of producers will help them have healthier cattle delivered to the destination point.

Anyone transporting cattle should observe the following practices.

Driver Attitude and Professionalism

- Act responsibly, showing concern for animal welfare.
- Use proper tone of voice and controlled emotions.

Animal Handling Procedures

- Make safety a primary concern.
- Move animals in small groups and separate them by size or gender prior to shipping. If possible, load different groups into separate compartments of the truck or trailer.
- Use proper sorting tools to move animals, such as brooms or paddles. Use electric shockers only under extreme conditions.
- Eliminate aggressive handling. Move cattle as quietly and patiently as possible to prevent stress or injury during loading and unloading.
- Work with the natural instincts of cattle—understanding of flight zone and point of balance (See Chapter 6).

Transit Precautions and Animal Evaluation

- Take precautions for extreme weather conditions—provide appropriate ventilation and/or protection.
- Schedule loading and unloading times to minimize the amount of time animals spend in the trailer.
- During long-haul transit, stop occasionally to ensure cattle are well dispersed and still standing, and observe appropriate guidelines and regulations for long-haul transit.
- Evaluate animals for illness and severe lameness prior to loading and during long-haul transit.
- Do not load animals that should not be transported (i.e., borderline non-ambulatory/downer animals).
- Check for signs of stress and adjust stocking density to accommodate tired or stressed animals.
- Plan delivery schedules to minimize the number of stops made, and follow the schedule closely.
- To prevent livestock from falling, avoid sudden starts/stops and sharp turns.
- Have an emergency response plan of action for events (i.e., truck/trailer rollover, plant shutdowns).

Table 7-1. Trailer stocking density (NCBA).

Average Weight (lb)	Head per Running Foot of Truck (77-in width)
200	2.2
300	1.6
400	1.2
600	0.9
800	0.7
1,000	0.6
1,200	0.5
1,400	0.4

Equipment Condition

- Be sure equipment is in good running order.
- Use properly designed ramps/chutes.
- Consider stocking density and space requirements to avoid overcrowding
- Use trailer dividers to limit animals to each section. (Tables 7-1 and 7-2 show proper loading densities for cattle trailers.)
- Avoid slippery conditions by keeping floors clean and slip resistant.
- Ensure no sharp edges on loading chutes or trailer, and avoid shiny objects in the chute path/trailer, which may scare cattle from moving onto the trailer.
- Adhere to both federal and state weight limits and guidelines.
- Make sure drop gate is securely latched after trailer is loaded.

Table 7-2. Recommended maximum number of head for trailers of different lengths for polled and dehorned cattle.[1]

Trailer Size (ft) [3]	Average Cattle Weight (greater than or equal to)							Total Cattle Wt. (lb) [2]
	400	600	800	1000	1200	1400	1600	
14 x 6	16	11	8	6	5	5	4	<6500
16 x 6	18	12	9	7	6	5	5	<7400
18 x 6	21	14	10	8	7	6	5	<8400
20 x 6	23	15	12	9	8	7	6	<9300
22 x 6	25	17	13	10	8	7	6	<10200
24 x 6	28	18	14	11	9	8	7	<11100
26 x 6	30	20	15	12	10	9	8	<12000
28 x 6	32	22	16	13	11	9	8	<13000
30 x 6	35	23	17	14	12	10	9	<13900
32 x 6	37	25	18	15	12	11	9	<14800
34 x 6	39	26	20	16	13	11	10	<15700
20 x 7	27	18	13	11	9	8	7	<10800
22 x 7	30	20	15	12	10	8	7	<11900
24 x 7	32	22	16	13	11	9	8	<13000
26 x 7	35	23	18	14	12	10	9	<14000
28 x 7	38	25	19	15	13	11	9	<15100
30 x 7	40	27	20	16	13	12	10	<16200
32 x 7	43	29	22	17	14	12	11	<17300
34 x 7	46	31	23	18	15	13	11	<18400

[1] This chart represents the maximum number of polled/dehorned cattle for trailers of different lengths. When hauling horned cattle reduce the number of cattle by 5%. The number of head loaded during hot conditions should be reduced as well.
[2] The maximum weight of cattle for each trailer size with these calculations. Do not exceed the Gross Vehicle Rating for your truck and stock trailer.
Source: Jim Turner and Clyde Lane, University of Tennessee.

Biosecurity Practices

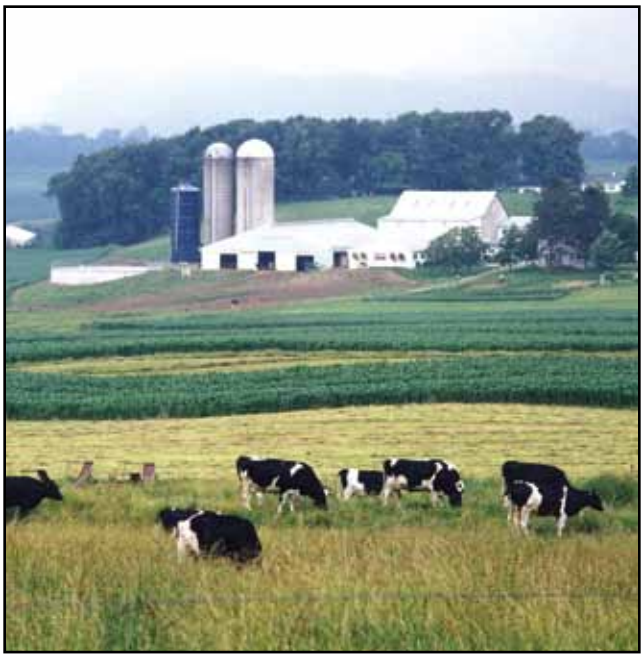
- Thoroughly clean and wash truck/trailer with hot water after unloading and prior to loading again. (Hot water will remove 90 percent of pathogens.)
- Disinfect regularly.
- Have a written protocol for trailer sanitation.
- Use clean bedding on trailer and chute area.
- Utilize disposable coveralls, boots, and gloves to prevent possible disease cross-contamination.
- Deny entrance of animals exhibiting symptoms of disease onto trailer.

Additional Resources

- National Cattlemen's Beef Association Master Trucker Transporter Guide <www.tbqa.org>
- Kansas Transport Initiative <http://www.beefstockerusa.org/transportationfact.htm>
- Beef Stocker USA <http://www.beefstockerusa.org>
- National Institute of Animal Agriculture <http://www.animalagriculture.com>
- Temple Grandin <http://www.grandin.com>
- U.S. Department of Agriculture, Agricultural Marketing Service <http://www.ams.usda.gov/tmd/livestock/products.htm>

CHAPTER 8

Biosecurity



Sample records:
See Chapter 11.

Biosecurity is a system of management procedures designed to prevent or greatly reduce the risk for introduction of new diseases to a cattle operation. Implementing a biosecurity program is like purchasing an insurance policy for the health and productivity of the herd. Producers should work with their veterinarians to develop a plan. Biosecurity affects beef quality directly in the case of diseases that pose a risk to public health and indirectly by reducing the potential of the meat quality being impacted by the disease or its treatment.

An effective biosecurity plan will involve your employees, veterinarian, and other specialists. It will provide reasonable protocols, which are more likely to be followed, to minimize introduction of new diseases. The plan will require education of farm visitors and may include physical barriers. The biosecurity plan and the actual adherence to the plan must be periodically reviewed and adjustments made as needed.

The goal is to prevent disease from ever entering the operation and to minimize the risk of infection if it does occur.

Sources of New Disease

New diseases can be introduced to your cattle operation in a number of ways, including:

- Cattle, including replacements from other herds, bulls, fence-line contact with neighboring herds, shows and fairs, and strays
- Manure on footwear and clothing, tractor and equipment tires, trailer, and equipment (foot trimming, etc.)
- Water, including ponds and pools of standing water, which animals may have access to
- Humans moving between herds or farms
- Nonlivestock, including pets, birds, deer, coyotes, rodents, ticks, and other insects
- Feed, especially feed which could be contaminated with feces, urine, molds, or ruminant by-products

Animals New to Your Herd

- Know the herd health status of herds supplying replacements or bulls.
- Obtain the health/vaccination history of new animals.
- Isolate new animals in a location away from your cattle for a period of time (2 to 4 weeks) before introducing them into your herd. This practice includes not sharing feed or water and no nose-to-nose contact.
- Observe the health status of new animals daily before introducing them into your herd.
- Have your veterinarian speak with their veterinarian regarding the health at the farm of origin.

Animals in Your Herd

- Be a diligent observer of your cattle for signs of disease.
- Know the signs of important foreign animal diseases, which include:
  - Blisters around animals' mouths, noses, teats, or hooves (FMD)
  - Central nervous system disorders, such as staggering and falling (BSE)
  - Abortions or abnormal discharges
- Report any sudden, unexplained death loss to your veterinarian.
- Have your veterinarian necropsy every dead animal, unless you are certain of the cause of death.
- Report to your veterinarian any severe illness affecting a high percentage of animals.
- Insist that outside individuals coming onto your farm adhere to clean, sanitary practices, such as clean clothing and footwear, clean equipment, and clean trucks.
- Maintain fences to prevent mixing your cattle and your neighbor's cattle.
- Dispose of dead animals properly:
  - If hauled off the farm, animals should be placed on the outer perimeter of the farm and away from the public view.

You cannot exclude all wildlife and may not wish to exclude visitors, but you can take steps to greatly reduce the risk of them introducing a new disease.

- If composting is utilized, a site should be selected to protect runoff from contaminating water sources and located away from cattle.
- Minimize nonlivestock traffic, including pets, wildlife, rodents, birds, and insects.
- Keep feed storage areas free of all animals.

Animals Returning from Shows or Fairs

- Do not share equipment with other exhibitors.
- Change or wash clothing and shoes worn at the fair before working with animals at home.
- Isolate from other animals for a minimum of 14 days.

Visitors

- Minimize the number of access routes to your operation. Consider locking or obstructing alternative entry sites.
- Require visitors to use plastic boots or disinfectant footbaths.
- Minimize unnecessary direct contact with cattle.
- Place signs describing visiting policies in clear view.
- Keep a record of visitors, including dates.
- Determine if visitors have been on other farms/ranches prior to visiting you. Special care is needed if visitors have recently been in another country.
- Observe for suspicious individuals or abnormal activities.

Vehicles and Equipment

- Designate parking places for visitors. Minimize their crossing tracks with feed suppliers/deliveries.
- Minimize all vehicle traffic in livestock and feed areas.
- Do not contaminate feed with manure.
- Have separate equipment for feed and for manure handling.
- Clean and disinfect equipment used for handling manure and dead animals before handling feed.

Non-Ambulatory Cattle

Sample records:
See Chapter 11.

Cattle can become non-ambulatory (commonly referred to as "downers") for several reasons, including injury, diseases, or nutrition-related disorders.

A prompt diagnosis should be made to determine whether the animal must be humanely euthanized or will respond to additional care. Signs of a more favorable prognosis include the ability to sit up unaided, eating, and drinking.

Care for non-ambulatory cattle is the responsibility of livestock owners and caretakers, who must make every effort to provide proper care. Non-ambulatory cattle should be provided with adequate shade or shelter and access to water and feed in a location that provides good footing.

Cattle that are non-ambulatory cannot be sent to a livestock market or to a processing facility. If the prognosis is unfavorable or the animal has not responded to veterinary care, it should be humanely euthanized.

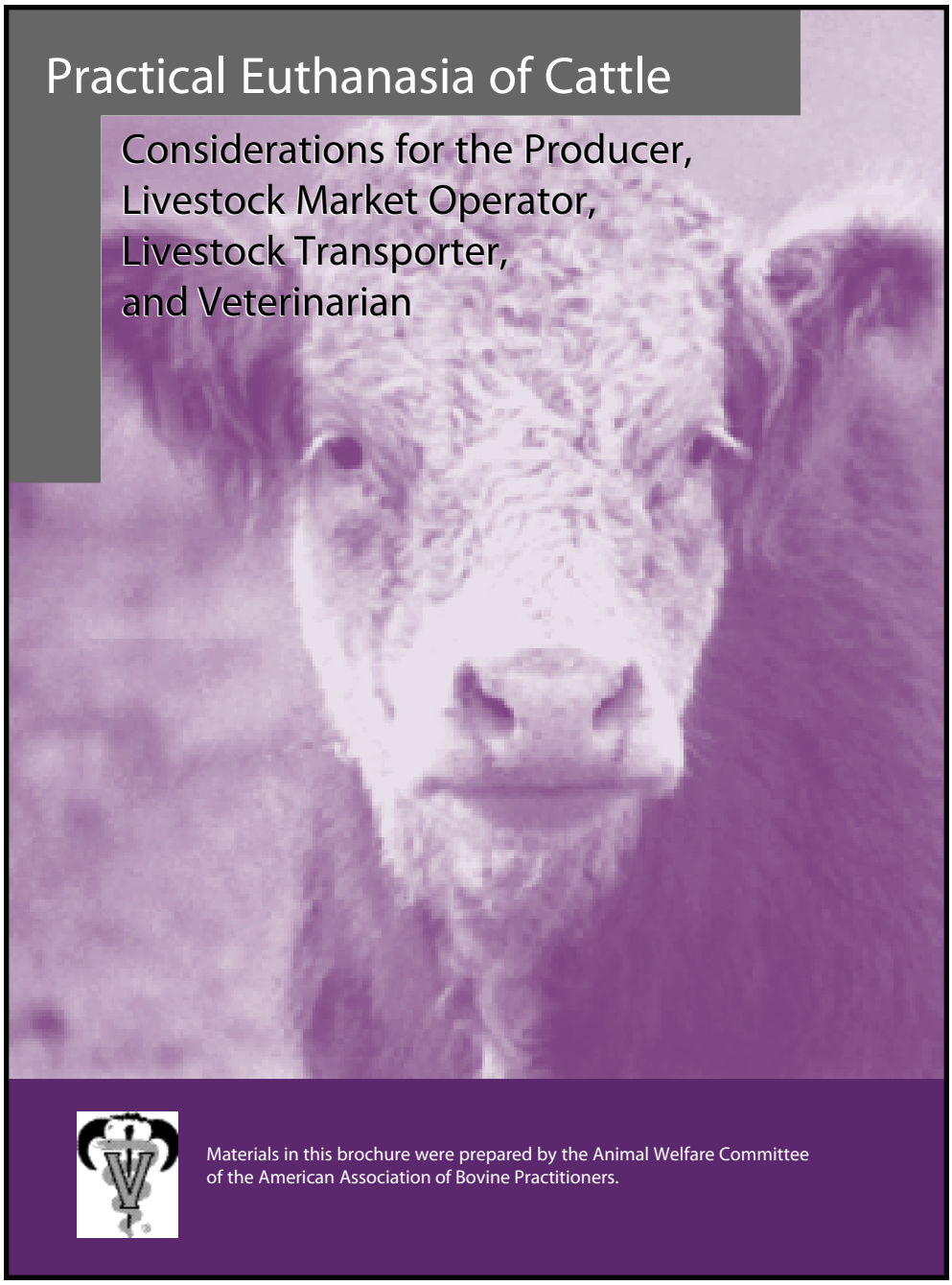
Euthanasia

Euthanasia is humane death without pain and suffering. The producer may need to perform on-farm euthanasia because a veterinarian may not be immediately available to perform the service. The person performing the procedure should be knowledgeable of the available methods and have the necessary skill to safely perform humane euthanasia; if not, a veterinarian must be contacted.

When euthanasia is necessary, an excellent reference is the *Practical Euthanasia of Cattle* guidelines, which is provided at the end of this chapter. These guidelines were developed and published by the Animal Welfare Committee of the American Association of Bovine Practitioners. Additional resources including desk cards and wall charts for posting are offered by the University of Florida Department of Veterinary Medicine at <http://www.vetmed.ufl.edu/lacs/humaneeuthanasia>.

Disposal

Producers should also use proper methods of carcass disposal in accordance with federal, state, and local regulations. If utilizing a rendering service, keep deceased livestock in a screened area away from public view but close to the farm entrance for biosecurity purposes.


Practical Euthanasia of Cattle
Considerations for the Producer,
Livestock Market Operator,
Livestock Transporter,
and Veterinarian
Materials in this brochure were prepared by the Animal Welfare Committee
of the American Association of Bovine Practitioners.

Euthanasia is defined as "the intentional causing of a painless and easy death to a patient suffering from an incurable or painful disease."

Webster's II University Dictionary, 1996

Most individuals who work with large domesticated livestock will encounter situations where an animal is unlikely to respond favorably to treatment. The likelihood of treatment failure, the potential for animal suffering and the presence of drug residues are considerations that can make euthanasia of an animal the best available option. This information is designed to aid producers, livestock market operators, animal transporters and veterinarians in making the appropriate decisions regarding euthanasia of cattle.

Individuals who work with livestock should read this information, discuss euthanasia options with a veterinarian and determine an action plan for livestock encountered in these situations. This action plan should be reviewed annually.

Euthanasia requires that the animal be rendered unconscious without distress or suffering prior to cessation of vital life functions. There are three physiological mechanisms for inducing euthanasia in cattle. Although several techniques exist for inducing euthanasia, all techniques will fall into one of the following categories:

- Physical disruption of brain activity caused by direct destruction of brain tissue (gunshot, penetrating captive bolt).
- Drugs that directly depress the central nervous system (anesthetics, barbiturates) and induce death by hypoxia (lack of oxygen).
- Agents that induce unconsciousness followed by mechanisms that induce hypoxia (narcotics followed by exsanguination).

Some Indications for Euthanasia

- Fractured leg (irreparable); severe trauma
- Loss of production and quality of life (severe mastitis, etc.)
- Inability to stand or walk (disabled livestock)
- Diagnostic (eg. potential for human disease, such as rabies)

- Advanced ocular neoplasia (cancer eye)
- Debilitating or toxic condition
- Cost of treatment prohibitive and poor prognosis
- Extended withdrawal time for sale of meat and poor prognosis

Advanced ocular neoplasia

Decision Making

Actions involving debilitated, disabled, or injured cattle may fall into the following categories: treatment, slaughter, and euthanasia. Criteria to be considered in decision making should include:

1) Pain and distress of the animal

2) Likelihood of recovery

3) Ability to get to feed and water

4) Medications used on the animal

5) Drug withdrawal time

6) Economics

7) Condemnation potential: risk of cattle being condemned (not allowed for human consumption) at the slaughter plant.

8) Diagnostic information

Considerations

When euthanasia is the most appropriate option, the following considerations must be made when choosing a method:

1) Human Safety: The first consideration in the choice of euthanasia method is human safety. Obviously, the use of a firearm carries some danger. Some methods, such as a barbiturate overdose, usually result in a calm animal being euthanized quietly and easily.

2) Animal Welfare: Any euthanasia method utilized should produce a quick and painless death. However, certain environments and animal behaviors may prevent the use of a more desired technique. Use the technique that is safest for humans and animals alike.

3) Restraint: Availability of cattle chutes or other forms of restraint may make certain forms of euthanasia more practical than others. For example, it may not be possible to euthanize an adult cow using barbiturates without proper head restraint. Several methods, such as use of the captive bolt or gunshot, necessitate appropriate restraint capabilities and training. In all cases, firm but gentle restraint should be exercised.

4) Practicality: An appropriate euthanasia technique must also be practical to use. Only licensed veterinarians have legal access to drugs such as barbiturates, which require a federal license to store and use.

5) Skill: Some techniques, such as use of the captive bolt, require some skill and training to accomplish correctly. Designated individuals should be appropriately trained in proper euthanasia techniques wherever cattle are kept.

6) Cost: Some euthanasia techniques are more costly than others. However, other techniques (such as gunshot or captive bolt) require a larger initial investment, but continued use is very inexpensive.

7) Aesthetics: Certain euthanasia techniques, such as use of a barbiturate overdose, may 'appear' more pleasing to the untrained eye than other techniques. Many techniques result in significant involuntary movements of the animal which may be misinterpreted as a voluntary painful response to those inexperienced in bovine euthanasia. Trained individuals should know how the animal responds to different euthanasia techniques.

8) Diagnostics: Do not shoot cattle when the brain needs to be examined for rabies or other neurologoical diseases.

Table of Bovine Methods

Method	Human Safety Risk	Skill Required	Cost	Aesthetic Concerns
Gunshot	High	Moderate*	Low	Moderate: some blood and motion
Captive Bolt	Moderate	Moderate*	Low	Moderate: some blood and motion
Barbiturate Overdose	Low	Moderate*	Moderate	Low
Exsanguination	Moderate	Moderate*	Low	High
Electrocution	High	Moderate*	High: Equipment	High

* Moderate-Operator training required.

Details of Table

1) Gunshot: The firearm should be held 2-10 inches from the intended point of impact, and the bullet should be directed perpendicular to the front of the skull to prevent ricochet. The point of entry should be at the intersection of two imaginary lines, each drawn from the inside corner of the eye to the base of the opposite horn (slightly above the ear in polled animals).

A .22 caliber long rifle bullet is sufficient for most animals, but a .22 magnum or 9mm round should be used on bulls. Use of a hollow-point or soft-nose bullet increases tissue destruction. If performed skillfully, gunshot induces instantaneous unconsciousness, is inexpensive and does not require close contact with the animal.

This method should only be attempted by individuals trained in the use of firearms and who understand the potential for ricochet. Care must be taken to minimize danger to the operator, to bystanders, and to other animals. In addition, since some cities have laws prohibiting the discharge of firearms in certain areas, the operator should be aware of local ordinances that may apply.

Captive Bolt Device and Charges

2) Captive Bolt: Captive bolt "guns" are either penetrating or non-penetrating. Penetrating captive bolt guns are meant to produce immediate brain tissue destruction. Both types (penetrating and non-penetrating) will consistently cause stunning of an animal. A stunned animal will "drop" but will still exhibit respiration and sudden quick limb movements. An additional procedure (exsanguination, chemical agents) **MUST** be used to insure death after the use of the non-penetrating captive bolt and is **RECOMMENDED** after use of the penetrating captive bolt.

The captive bolt gun must be placed firmly against the skull at the same entry point previously described for a gunshot. Since use of the captive bolt gun requires close proximity to the animal, good restraint and prior sedation or tranquilization may be required. Operator safety must be considered in the use of this technique.

Maintenance and cleaning of the captive bolt gun as described by the manufacturer must be followed exactly. In addition, selection of cartridge strength may vary among manufacturers and the appropriate strength for the size of the animal must be used.

3) Barbiturate: When properly administered by a licensed veterinarian the intravenous route, barbiturate overdose produces rapid unconsciousness and anesthesia followed by respiratory depression, hypoxia, and cardiac arrest. The barbiturate selected should be potent, long acting, and stable in solution. Tissue residues of the barbiturate can be high. Care should be excercised to limit access of scavengers to the carcass.

4) Exsanguination: (bleeding out an animal) This method can be used to ensure death subsequent to stunning, anesthesia, or unconsciousness. It must not be used as the sole method for euthanasia.

There are several methods for exsanguination. The most common method in the bovine is to lacerate one or both carotid arteries. A long 6 inch sharp knife is fully inserted behind the point of jaw, just below the neck bones, and directed downwards until blood is freely flowing. Brachial vasculature can be lacerated by lifting a fore limb, inserting the knife deeply at the point of the elbow and cutting skin and vasculature until the limb can be laid back against the thorax of the animal. The aorta can be transected via the rectum, by a trained individual, so that blood pools within the abdominal cavity.

5) Electrocution: This method should only be attempted using specialized slaughter plant equipment that applies a minimum of 2.5 amp across the brain. A 120 volt electrical cord does not apply sufficient amperage to induce unconsciousness.

Electrocution does involve current as well as violent involuntary reactions by the animals. Therefore, this method does involve some danger to the operator.

Confirmation of Death

Confirmation of death is absolutely critical regardless of what method of euthanasia is chosen. Keep personal safety in mind when confirming death because animals can make sudden involuntary limb movements.

The following can be used to evaluate consciousness:

Lack of a heartbeat.
Lack of respiration.
Lack of corneal reflex (when applying pressure with a finger to the eyeball, the animal does not blink).

The presence of a heartbeat can be best evaluated with a stethoscope placed under the left elbow. Movement of the chest indicates respiration. (Note: breathing can be very slow and erratic in unconscious animals.) The corneal reflex can be tested by touching the eyeball and noting whether the animal blinks. A lack of heartbeat *and* respiration for more than five minutes should be used to confirm death.

Euthanasia of Calves and Bulls

Calves and bulls require special consideration in selecting the proper method of euthanasia. Ethical considerations do not change for the calf because it is small or more easily handled. Calves can easily be euthanized with a penetrating captive bolt gun. Barbiturate overdosing also works well, but legal restrictions must be followed.

Bulls require special considerations because of their size, attitude and physical thickness of their skull. Operator safety is of primary concern in euthanasia of bulls, and for certain techniques, proper restraint is critical. Bulls may be euthanized with specialized heavy duty captive bolt guns, firearms using a 9mm shot, or by barbiturate overdose.

Unacceptable Methods of Bovine Euthanasia

Ethical and humane standards of euthanasia **DO NOT** permit the following methods of euthanasia in the bovine:

1) Manually applied blunt trauma to the head.

2) Injection of chemical agents into conscious animals (e.g. disinfectants, electrolytes such as KCl and MgSO4, non-anesthetic pharmaceutical agents).

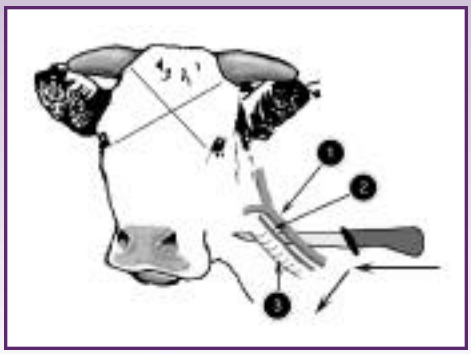
3) Air embolism (e.g. injection of large amount of air into the vasculature).

4) Electrocution with a 120 volt electrical cord.

Conclusions

Personnel at sites that routinely handle animals should at all times have the ability and facilities to carry out emergency euthanasia. Penetrating captive bolt and gunshot are the only two methods available to non-veterinarians for emergency euthanasia. Animal transporters should also be appropriately trained and should have phone numbers to contact appropriate personnel in case of an emergency.

Market and sale yards should have a written procedure to follow in case of emergency and should have personnel trained in emergency euthanasia during all shifts. When practical, choose a location where the carcass can be easily reached by removal equipment. An action plan for routine and emergency euthanasia should be developed and followed wherever animals are handled.



Location for exsanguination and correct site for captive bolt or gunshot euthanasia of cattle. The point of entry of the captive bolt or bullet should be at the intersection of two lines drawn from the inside border of the eye to the base of the opposite horn (slightly above the opposite ear in polled animals). Exsanguination should be done using a pointed, very sharp knife, with at least a 6-inch rigid blade. The knife is thrust into the neck just below the neck bones and drawn downward to sever the jugular vein, carotid artery and trachea: **(1)** external jugular vein; **(2)** common carotid artery; **(3)** trachea.

CHAPTER 10

Cattle Identification

Sample records:
See Chapter 11.

Animal identification is important in cattle herds for effective record keeping, performance testing, and artificial insemination, as well as routine observations. The three most common methods of identification are ear-tagging, tattooing, and branding.

A unique numbering system should be used so that your records are meaningful. Each animal should have a unique number. Herd size determines how many digits are necessary, but each digit should have some meaning.

Sample numbering system:
Ear tag 7214 could refer to:
7: 2007 birth year
2: sire No. 2
14: 14th calf born in 2007

Use of emerging cattle identification technology, such as electronic ear tags, is encouraged when practical. The cost is declining for electronic identification, also known as radio frequency identification. As speed, performance, and cost improve, more segments of the industry will use this technology for birth-to-slaughter animal identification. Full traceability back through all production segments is the ultimate goal.

Beyond the food safety and animal health goals of the National Animal Identification System, the driving force for electronic tracking comes down to economics. By "connecting the dots" through the entire beef chain, producers benefit from valuable data that allows them to make informed decisions, improve management, and take advantage of emerging profit opportunities. Tracking cattle is not just a matter of putting an ear tag in a calf. Electronic identification tags cannot do it all. Cooperation is needed among all segments of beef and dairy production, including those involved in the buying, marketing, and processing of cattle. More information on animal identification can be found at http://animalid.aphis.usda.gov/nais/index.shtml.

Hot or freeze branding is necessary under some management conditions. Hot branding in some states is the only legal proof of ownership. If cattle are branded, it should be accomplished correctly and with the proper equipment. When brands are used, place them high on the hip and use the smallest symbol possible to minimize or hide damage.

Premise Identification

Many issues and concerns surround voluntary and mandatory identification programs. While these issues are being resolved, states are issuing premise ID numbers and developing satellite mapping to prepare emergency response plans in the event of a disease outbreak or chemical exposure. As stated in the strategic plan by the USDA, "The goal of the NAIS is to be able to identify all animals and premises that have had contact with a foreign or domestic animal disease of concern (i.e., foot-and-mouth or BSE) within 48 hours after discovery."

In addition to safeguarding food safety and animal health, the goals of the NAIS plan protect beef and dairy producers by limiting the potential for devastating economic losses in the event of a disease outbreak. For more information about premise and animal ID, contact the Kentucky Department of Agriculture (http://www.kyagr.com/statevet/nais/index.htm).

CHAPTER 11

Records

To ensure consumer confidence and maintain market share, beef and dairy producers must be able to document the safety of their product. Through appropriate written documentation of products and processes used in managing beef and dairy cattle, producers can prevent residue problems. As a result, consumer confidence is strengthened. In addition, records showing and verifying the age and source of cattle are essential for value-added export markets.

Meat and milk products are routinely tested for violative residues by the U.S. Food and Drug Administration and the U.S. Department of Agriculture. If a problem is detected, good records can help demonstrate responsible management. Effective documentation shows compliance with BQA training, proper animal identification, and effective and responsible use of drugs, pesticides, and herbicides. All records must be maintained in a permanent or written format for a minimum of two years. Producers and commercial haulers of cattle are responsible for ensuring that cattle are free of potential residues.

The record keeping forms in this chapter can be used as is or as a reference for developing a good record keeping system. Computerized systems make extensive evaluation easy and efficient; however, hand-kept record systems are still very effective. Each system has its own merits. The important thing is to be consistent in keeping records that are legible, easily retrieved, and maintained for a period of at least 24 months.

Maintaining Proper Records

Cattle producers must be able to document all the steps of production. Good production records allow for documentation, analysis, and improved financial decisions. Maintaining a permanent record of all animal treatments is crucial for keeping drug residues out of meat and milk. Records should also provide a history so you and your veterinarian can better prescribe meaningful therapy and ensure that animals do not get sold for harvest or milk is marketed before the withdrawal time has expired. Records also serve as protection in case of regulatory follow-up.

It is important that all information recorded be maintained for at least two years.

Components of a Treatment Record

The treatment record should contain the following basic information:

- Treatment date
- Animal or group or lot identification
- Withdrawal time to slaughter for medication given
- Product used and manufacturer's lot/serial number
- Dosage given
- Route of administration (SQ, IM, etc.)
- Individual who administered the drug

Treatment record forms, found at the end of this chapter, can help record your cattle treatments.

It is important to have each animal permanently and uniquely identified to maintain an accurate treatment record.

Example Record Forms

The example record sheets are for use in developing a system to accumulate all the information relevant to beef and dairy quality and safety.

This system of records need not be complicated. A simple yet accurate system that allows the producer to document management practices on specific groups of cattle, individual animals, and the farming operation in general is all that is needed.

Cow-Calf Checklist

This checklist will assist in the identification of Best Management Practices where problems commonly occur.

Individual Treatments

- ☐ 1. Written records are kept, including individual identification, date of treatment, product used, amount given, route and location of administration, withdrawal time, serial number (for vaccines), tentative diagnosis, and outcome of treatment.
- ☐ 2. All cattle receiving treatment are individually identified.
- ☐ 3. All injections are given in the neck region (or as specified by the product label).
- ☐ 4. All injections are given subcutaneously (SQ) if possible.
- ☐ 5. All medications and drugs are used according to label directions.
- ☐ 6. Extra care is taken to select injection sites free of manure and dirt.
- ☐ 7. Extra care is taken to see that needles are sharp, changed after 10 to 15 animals, and to avoid broken and burred needles.
- ☐ 8. Needle size used is never larger than necessary to adequately perform the injection.
- ☐ 9. Label directions are followed for maximum volume per injection site (maximum 10 cc per site).
- ☐ 10. Methods of administration—IV (intravenous), IM (intra-muscular), SQ (subcutaneous), or IN (intranasal)—are followed according to label directions.
- ☐ 11. Needles and rectal sleeves can be changed between each animal to prevent the spread of blood-borne infectious diseases (i.e., Bovine Leukosis Virus (BLV) and anaplasmosis.)
- ☐ 12. Chemical disinfectants (i.e. rubbing alcohol) are avoided when using modified live viral products.
- ☐ 13. When extra-label animal health products are administered, their use and drug withdrawal time is based on a veterinarian's recommendation. This information should be provided on a label by the prescribing veterinarian. (Should there be any question about withdrawal period, veterinarians can evaluate the treatment history against information provided by the Food Animal Residue Avoidance Databank.)
- ☐ 14. All animal health procedures and products are periodically reviewed by a veterinarian.

Feed Supply

- ☐ 1. Only feedstuffs manufactured in compliance with the Ruminant Feed Ban are utilized.
- ☐ 2. Records are kept for purchased concentrate or grain mixes indicating source, date, and amount purchased, and are maintained for at least 24 months when animal by-products are used.
- ☐ 3. Feed additives are used at recommended usage levels and appropriate products (i.e., free-choice mineral) .
- ☐ 4. All pesticides used on crops fed to cattle are applied according to label directions and withdrawal times are followed.
- ☐ 5. Pesticides are stored in a room separate from feed supplies and feed additives.
- ☐ 6. All feeds are checked at regular intervals for changes in color, temperature, odor, moisture, and presence of foreign matter.

Livestock Insecticides

- ☐ 1. All insecticides are applied on the basis of label dosages and routes of administration.
- ☐ 2. All insecticides are stored in a designated area away from the feed supply and are not accessible to cattle.
- ☐ 3. All insecticides are appropriately labeled.

Facilities and Transportation of Cattle

- ☐ 1. All cattle are handled in a manner that minimizes bruises.
- ☐ 2. Loading facilities ensure quick and safe loading and unloading with no bruising.
- ☐ 3. Adequate shade and shelter provided and mud minimized around feeding areas.
- ☐ 4. Clean areas are provided at calving.
- ☐ 5. All farm personnel who handle cattle have been informed about proper processing techniques and provided with training to understand cattle behavior and recommended handling techniques.
- ☐ 6. Non-ambulatory (or downer) cows are euthanized humanely.

Herd Management

- ☐ 1. Bulls are removed from the cow herd and pregnancy exams are performed to maintain a 60-day calving interval.
- ☐ 2. Health management includes biosecurity evaluation and planning.
- ☐ 3. New additions and show animals are isolated (no nose-to-nose contact) from herd for minimum of two weeks.
- ☐ 4. Cows are culled on a regular basis to prevent the marketing of overfat cows, extremely thin cows, lame cows, and cows with advanced physical problems.
- ☐ 5. If branding is used, they are placed high on the hip and as small as possible.
- ☐ 6. Do not mix too much vaccine at one time. Modified live vaccines (MLV) begin to degrade after about an hour in the heat and sunlight. Therefore, place in a cooler with a cool pack and cover.

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Dairy Herd Checklist

This checklist will assist in the identification of Best Management Practices where problems commonly occur.

Individual Treatments

- ☐ 1. Written records are kept, including individual identification, date of treatment, product used, amount given, route and location of administration, withdrawal time, serial number (for vaccines), tentative diagnosis, and outcome of treatment. Dry eraser boards can be used in the milking parlor to identify cows treated, however these records must be transferred to a permanent written record.
- ☐ 2. All cattle receiving treatment are individually identified.
- ☐ 3. All injections are given in the neck region (or as specified by the product label).
- ☐ 4. All injections are given subcutaneously (SQ) if possible.
- ☐ 5. All medications and drugs are used according to label directions.
- ☐ 6. Extra care is taken to select injection sites free of manure and dirt.
- ☐ 7. Extra care is taken to see that needles are sharp, and use of broken and burred needles is avoided.
- ☐ 8. Needle size used is never larger than necessary to adequately perform the injection.
- ☐ 9. Label directions are followed for maximum volume per injection site (maximum 10 cc per site).
- ☐ 10. Methods of administration—intramammary, IV (intravenous), IM (intra-muscular), SQ (subcutaneous), or IN (intranasal)—are followed according to label directions.
- ☐ 11. A new needle and rectal sleeve is used for each animal to prevent the spread of blood-borne infectious diseases (i.e., Bovine Leukosis Virus [BLV] and anaplasmosis.)
- ☐ 12. Chemical disinfectants (i.e. rubbing alcohol) are avoided when using modified live viral products.
- ☐ 13. When extra-label animal health products are administered, their use and drug withdrawal time is based on a veterinarian's recommendation. This information should be provided on a label by the prescribing veterinarian. (Should there be any question about withdrawal period, veterinarians can evaluate the treatment history against information provided by the Food Animal Residue Avoidance Databank.)
- ☐ 14. All animal health procedures and products are periodically reviewed by a veterinarian.

Feed Supply

- ☐ 1. Only feedstuffs manufactured in compliance with the Ruminant Feed Ban are utilized.
- ☐ 2. Records are kept for purchased concentrate or grain mixes indicating source, date, and amount purchased, and are maintained for at least 24 months when animal by-products are used.
- ☐ 3. Feed additives are used at recommended usage levels and appropriate products.
- ☐ 4. All pesticides used on crops fed to cattle are applied according to label directions and withdrawal times are followed.
- ☐ 5. Pesticides are stored in a room separate from feed supplies and feed additives.
- ☐ 6. All feeds are checked at regular intervals for changes in color, temperature, odor, moisture, and presence of foreign matter.

Livestock Insecticides

- ☐ 1. All insecticides are applied on the basis of label dosages and routes of administration.
- ☐ 2. All insecticides are stored in a designated area away from the feed supply and are not accessible to cattle.
- ☐ 3. All insecticides are appropriately labeled.

Facilities and Transportation of Cattle

- ☐ 1. All cattle are handled in a manner that minimizes bruises.
- ☐ 2. Loading facilities ensure quick and safe loading and unloading with no bruising.
- ☐ 3. Adequate shade and shelter provided and mud minimized around feeding areas.
- ☐ 4. Clean areas are provided at calving.
- ☐ 5. All farm personnel who handle cattle have been informed about proper processing techniques and provided with training to understand cattle behavior and recommended handling techniques.
- ☐ 6. Non-ambulatory (or downer) cows are euthanized humanely.

Herd Management

- ☐ 1. Cows are observed regularly for body condition score, mastitis and early signs of lameness and are treated or culled in a timely manner to prevent the marketing of overfat cows, extremely thin cows, lame cows and cows with physical problems.
- ☐ 2. Cows that are to be culled are given dry-off time before marketing.
- ☐ 3. Do not mix too much vaccine at one time. Modified live vaccines (MLV) begin to degrade after about an hour in the heat and sunlight. Therefore, place in a cooler with a cool pack and cover.

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Stocker/Backgrounder/Feedlot Checklist

This checklist will assist in the identification of Best Management Practices where problems commonly occur.

Individual Treatments

- ☐ 1. Written records are kept, including individual identification, date of treatment, product used, amount given, route and location of administration, withdrawal time, serial number (for vaccines), tentative diagnosis, and outcome of treatment.
- ☐ 2. All cattle receiving treatment are individually identified.
- ☐ 3. All injections are given in the neck region (or as specified by the product label).
- ☐ 4. All injections are given subcutaneously (SQ) if possible.
- ☐ 5. All medications and drugs are used according to label directions.
- ☐ 6. Extra care is taken to select injection sites free of manure and dirt.
- ☐ 7. Extra care is taken to see that needles are sharp, changed after 10 to 15 animals, and to avoid broken and burred needles.
- ☐ 8. Needle size used is never larger than necessary to adequately perform the injection.
- ☐ 9. Label directions are followed for maximum volume per injection site (maximum 10 cc per site).
- ☐ 10. Methods of administration—IV (intravenous), IM (intra-muscular), SQ (subcutaneous), or IN (intranasal)—are followed according to label directions.
- ☐ 11. Needles and rectal sleeves can be changed between each animal to prevent the spread of blood-borne infectious diseases (i.e., Bovine Leukosis Virus (BLV) and anaplasmosis.)
- ☐ 12. Chemical disinfectants (i.e. rubbing alcohol) are avoided when using modified live viral products.
- ☐ 13. When extra-label animal health products are administered, their use and drug withdrawal time is based on a veterinarian's recommendation. This information should be provided on a label by the prescribing veterinarian. (Should there be any question about withdrawal period, veterinarians can evaluate the treatment history against information provided by the Food Animal Residue Avoidance Databank.)
- ☐ 14. All animal health procedures and products are periodically reviewed by a veterinarian.

Feed Supply

- ☐ 1. Only feedstuffs manufactured in compliance with the Ruminant Feed Ban are utilized.
- ☐ 2. Records are kept for purchased concentrate or grain mixes indicating source, date, and amount purchased, and are maintained for at least 24 months when animal by-products are used.
- ☐ 3. Feed additives are used at recommended usage levels and appropriate products (i.e., free-choice mineral) .
- ☐ 4. All pesticides used on crops fed to cattle are applied according to label directions and withdrawal times are followed.
- ☐ 5. Pesticides are stored in a room separate from feed supplies and feed additives.
- ☐ 6. All feeds are checked at regular intervals for changes in color, temperature, odor, moisture, and presence of foreign matter.

Livestock Insecticides

- ☐ 1. All insecticides are applied on the basis of label dosages and routes of administration.
- ☐ 2. All insecticides are stored in a designated area away from the feed supply and are not accessible to cattle.
- ☐ 3. All insecticides are appropriately labeled.

Facilities and Transportation of Cattle

- ☐ 1. All cattle are handled in a manner that minimizes bruises.
- ☐ 2. Loading facilities ensure quick and safe loading and unloading with no bruising.
- ☐ 3. Adequate shade and shelter provided and mud minimized around feeding areas.
- ☐ 4. All farm personnel who handle cattle have been informed about proper processing techniques and provided with training to understand cattle behavior and recommended handling techniques.
- ☐ 5. Non-ambulatory (or downer) cows are euthanized humanely.

Herd Management

- ☐ 1. Health management includes biosecurity evaluation and planning.
- ☐ 2. Isolate (no nose-to-nose contact) new additions from other cattle for minimum of 2 weeks.
- ☐ 3. If branding is used, they are placed high on the hip and as small as possible.
- ☐ 4. Do not mix too much vaccine at one time. Modified live vaccines (MLV) begin to degrade after about an hour in the heat and sunlight. Therefore, place in a cooler with a cool pack and cover.

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FORM 1

Veterinarian/Client/Patient Relationship Validation Form

This form needs to be filled out yearly.

Review Date: _____ Expiration Date: _____

Producer

Name: _____

Address: _____

City: _____

State: _____

Zip: _____

Farm name and location: _____

County: _____

Certified status: _____

Verified: _____

Type of operation certified:

- ☐ Cow-calf
- ☐ Dairy production (milk, cull cows, and replacement heifers)
- ☐ Beef stocker
- ☐ Other (specify): _____

Veterinarian

Name: _____, DVM

Address: _____

City: _____

State: _____

Zip: _____

State license number: _____

I hereby certify that a valid Veterinarian/Client/Patient Relationship (VCPR) is established for the above listed owner, and will remain in force until cancelled by either party, or the verification expiration date is reached.

Veterinarian's signature: _____

Date: _____

Copy this page, cut on the dotted line, and enlarge to 150%. Form will fit on a legal-size page (8.5 x 14").

FORM 2

Individual Animal Treatment Record

All records should be maintained for at least two years.

Year: _____ Farm name/Owner: _____

Date	Animal ID	Problem/Diagnosis	Product	Dosage	Route Given*	Site	Meat Withdrawal		Notes	Initials
							Time (days)	Date		

*Route of administration: SQ, IM, oral, topical, IV, or intramammary.

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FORM 3

Daily Dairy Treatment Record

All records should be maintained for at least two years.

Year: ____________________ Farm name/Owner: ____

	Time of Treatment							Withdrawal Time		Calculated Withdrawal Period Expires			Milk Residue Test		
Cow ID	Date	AM	PM	3X	Pen	Diagnosis	Treatment Used	Milk (hrs)	Meat (days)	Milk	Meat	Actual Date in Tank	Date	Results	Remarks
						LF RF LR RR									
						LF RF LR RR									
						LF RF LR RR									
						LF RF LR RR									
						LF RF LR RR									
						LF RF LR RR									
						LF RF LR RR									
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*Route of administration.
Developed by the American Association of Bovine Practitioners.

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FORM 4

Group Processing Record

All records should be maintained for at least two years.

Owner: _____

Address: _____

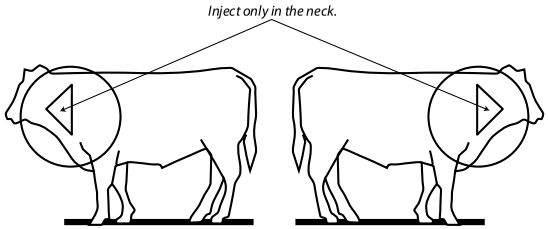
Group of Cattle: _____

Tag Numbers: *from:* _____ *to:* _____

Sale Date: _____

Sale Location: _____

Processor's Signature: _____



Completing the Processing Record:

1. Indicate (on the line to the left) the group of cattle being worked and the date.
2. Indicate on the diagram of the calf with a number "1" the location of the injection site of the first drug administered.
3. Repeat this step for each vaccine or procedure administered.

Site*	Product	Content	MLV, Killed, or Combo/ Agent (i.e., MLV/IBR-)	Route	Date	Serial Number	Expiration	Withdrawal	Booster Date
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									

*Show location administered on cattle drawings at the top of the page.

Other management (creep feeding, minerals, etc.):

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FORM 5
Use both Forms 5 and 6 to record information when working cattle.

Cow/Calf Group Herd Health Procedures Record

All records should be maintained for at least two years.

Owner: _____

Address: _____

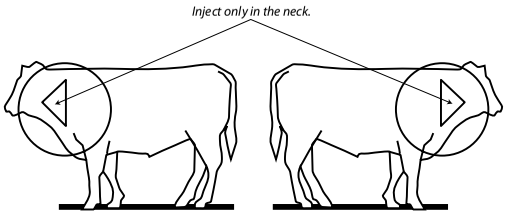
Group of Cattle: _____

Tag Numbers: *from:* _____ *to:* _____

Sale Date: _____

Sale Location: _____

Processor's Signature: _____



Completing the Processing Record:

1. Indicate (on the line to the left) the group of cattle being worked and the date.
2. Indicate on the diagram of the calf with a number "1" the location of the injection site of the first drug administered.
3. Repeat this step for each vaccine or procedure administered.

Products Used		Contents	Route*	Serial Number	Expiration	Withdrawal
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

*IM or SQ

Copy this page, cut on the dotted line, and enlarge to 150%. Form will fit on a legal-size page (8.5 x 14").

FORM 6
Use both Forms 5 and 6 to record information when working cattle.

Cow/Calf Individual Herd Health Procedures Record

All records should be maintained for at least two years.

ID Tag	Animal[1]	Procedures	**Product** *(from Products Used)*						Comments
			1	2	3	4	5	6	
			Location *(from drawing)*						

[1] Steer, heifer, bull, or cow

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FORM 7

KY-BQA Shipping/Transfer Release Record

All records should be maintained for at least two years.

I have checked the Health Maintenance, Feeding, and Treatment records for Group/Pen/Lot identification(s) or individual animal identification listed below. All the cattle have been managed to meet the recommendations and comply with all the requirements that apply to this operation in the Kentucky Beef Quality Assurance program.

Year: _____ Farm name/Owner: _____

Date	Number of Head Sold	Group/Pens/Lot ID	Individual Animal Numbers

Date	Number of Head Sold	Group/Pens/Lot ID	Individual Animal Numbers

Copy this page, cut on the dotted line, and enlarge to 150%. Form will fit on a legal-size page (8.5 x 14").

FORM 8

Crops Insecticide/Herbicide Record

All Records MUST be maintained for at least TWO years past application.

Date of Application	Applicator Name, Certificate Number	Field	Crop	Product Name	Product EPA Registration Number	Rate/Acre	Total Amt. of Product Used	Restricted Entry Interval (REI) for Livestock	Date Cattle Can Consume Crop	Notes

Copy this page, cut on the dotted line, and enlarge to 150%. Form will fit on a legal-size page (8.5 x 14").

National Cattlemen's Beef Association's
Beef Quality Assurance National Guidelines

Revised June, 2001

Feedstuffs

- Maintain records of any pesticide/herbicide use on pasture or crops that could potentially lead to violative residues.
- Adequate quality control program(s) are in place for incoming feedstuffs. Program(s) should be designed to eliminate contamination from molds, mycotoxins or chemicals of incoming feed ingredients. Supplier assurance of feed ingredient quality is recommended.
- Suspect feedstuffs should be analyzed prior to use.
- Ruminant-derived protein sources cannot be fed per FDA regulations.
- Feeding by-products ingredients should be supported with sound science.

Feed Additives and Medications

- Only FDA approved medicated feed additives will be used in rations.
- Medicated feed additives will be used in accordance with the FDA Good Manufacturing Practices (GMP) regulation.
- Follow Judicious Antibiotic Use Guidelines.
- Extra-label use of feed additives is illegal and strictly prohibited.
- To avoid violative residues—withdrawal times must be strictly adhered to.
- Where applicable, complete records must be kept when formulating or feeding medicated feed rations.
- Records are to be kept a minimum of two years.
- Operator will assure that all additives are withdrawn at the proper time to avoid violative residues.

Processing/Treatment and Records

- Following all FDA/USDA/EPA guidelines for product(s) utilized.
- All products are to be used per label directions.
- Extra-label drug use shall be kept to a minimum, and used only when prescribed by a veterinarian working under a Valid Veterinary Client Patient Relationship (VCPR).
- Strict adherence to extended withdrawal periods (as determined by the veterinarian within the context of a valid VCPR) shall be employed.
- Treatment records will be maintained with the following recorded:
  1. Individual animal or group identification
  2. Date treated
  3. Product administered and manufacturer's lot/serial number
  4. Dosage used
  5. Route and location of administration
  6. Earliest date animal will have cleared withdrawal period
- When cattle are processed as a group, all cattle within the group shall be identified as such, and the following information recorded:
  1. Group or lot identification
  2. Date treated
  3. Product administered and manufacturer's lot/serial number.
  4. Dosage used.
  5. Route and location of administration.
  6. Earliest date animal will have cleared withdrawal period.

- All cattle (fed and non-fed) shipped to slaughter will be checked by appropriate personnel to assure that animals that have been treated meet or exceed label or prescription withdrawal times for all animal health products administered.
- All processing and treatment records should be transferred with the cattle to next production level. Prospective buyers must be informed of any cattle that have not met withdrawal times.

Injectable Animal Health Products:

- Products labeled for subcutaneous (SQ) administration should preferably be administered SQ in the neck region.
- All products labeled for intra-muscular (IM) use shall be given in the neck region only (no exceptions, regardless of age).
- All products cause tissue damage when injected IM. Therefore all IM use should be avoided if possible.
- Products cleared for SQ, IV or oral administration are recommended.
- Products with low dosage rates are recommended and proper spacing should be followed.
- No more than 10 cc of product is administered per IM injection site.

Care and Husbandry Practices:

- Follow the 'Quality Assurance Herd Health Plan' that conforms to good veterinary and husbandry practices.
- All cattle will be handled / transported in such a fashion as to minimize stress, injury and/or bruising.
- Facilities (fences, corrals, load-outs, etc.) should be inspected regularly to ensure proper care and ease of handling.
- Strive to keep feed and water handling equipment clean.
- Provide appropriate nutritional and feedstuffs management.
- Strive to maintain an environment appropriate to the production setting.
- Bio-security should be evaluated.
- Records should be kept for a minimum of 2 years (3 for Restricted Use Pesticides).