

# Working Safely with Livestock

## *In this chapter*

- *What Do I Need to Know?*
- *Using Safety Precautions*

Many livestock producers have never stopped to consider why animals behave as they do and more importantly, what this behavior may mean to their personal safety. Animal handling practices are often inherited from watching others and from our own experiences growing up on the farm. Too often, this results in unsafe animal handling and restraint practices.

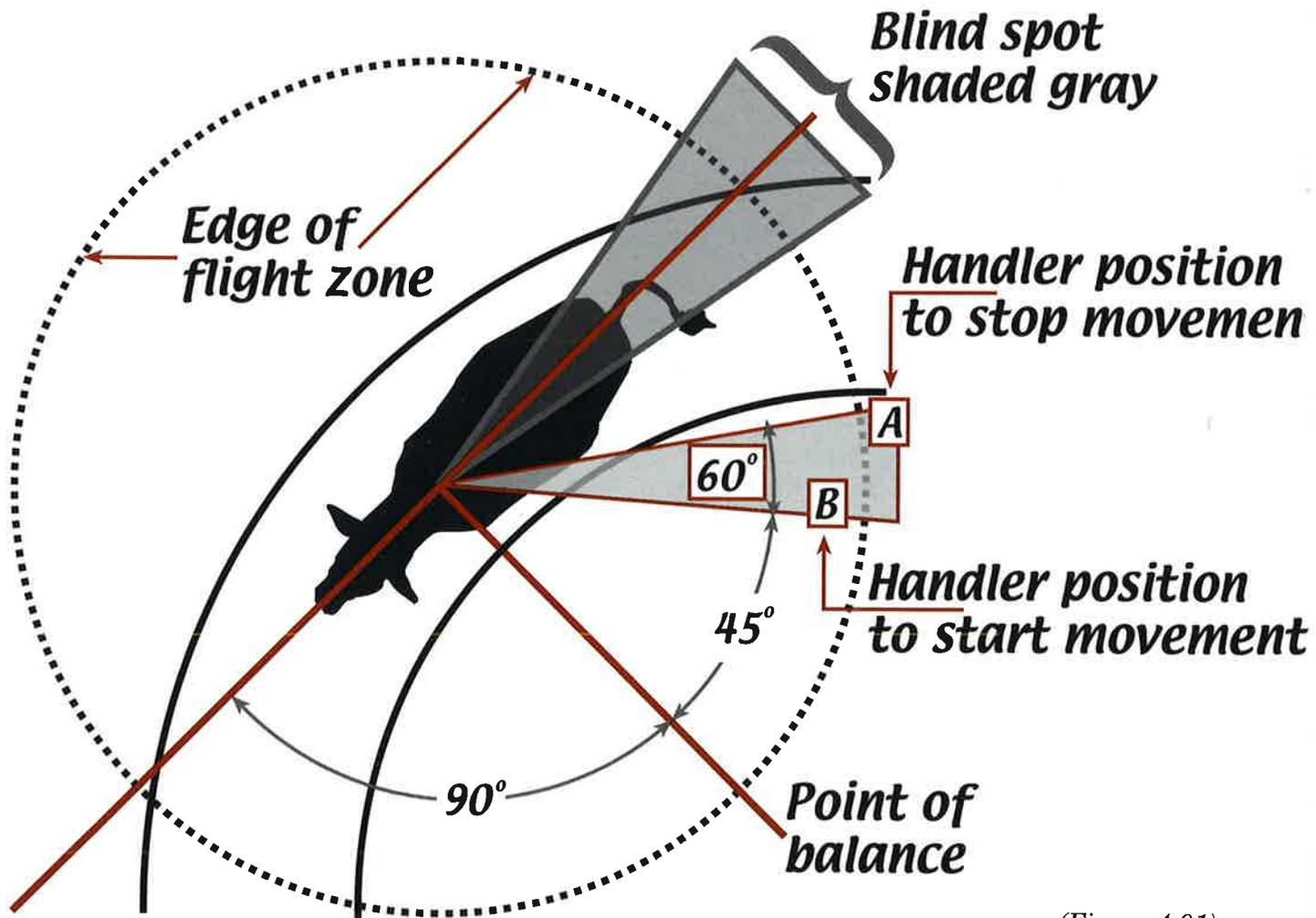
Although most animal accidents are not fatal, many men, women, and children are needlessly injured each year because of a lack of safety awareness. Broken bones, crushed and mashed limbs, missed days of work and school, and unnecessary medical expenses are some of the results of animal related accidents.

Individuals may work carefully around animals most of the time, but then are injured in an animal accident because of preoccupation, haste, impatience, or anger. It is during these moments that a livestock handler really needs to understand animal behavior.

Beef, swine, and dairy cattle are partially colorblind and have poor depth perception. This results in an extreme sensitivity to contrasts, which may cause an animal to balk at shadows or rapid changes from light to dark.

## What Do I Need To Know?

The key to safely handling animals is being aware of and respecting an animal's comfort or **flight zone** (Figure 4.01). Animals develop a distinctive, comfortable space around them. As a person enters this zone, the animal becomes tense. The deeper (the closer the person moves to the animal) the person enters the zone without allowing the animal time to adapt, the more severe the animal's reaction may become.

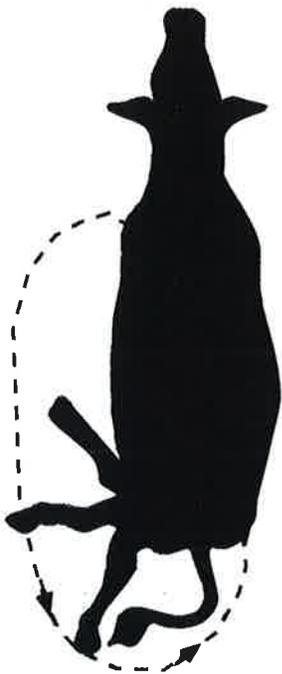


(Figure 4.01)

Adapted with permission from: Grandin, Temple editor,  
*Livestock Handling and Transport*, 1993. CAB International, Wallingford, UK,  
320 p.

Livestock animals have wide angle vision. They can see everything except what is in their “*blind spot*,” what is directly behind them. When someone enters this area, the animal cannot see the person and may be easily startled when it does see someone. This may cause the animal to kick (Figure 4.02) or run. To keep from startling your animal, approach it from the side or the front.

***Cattle commonly kick forward and out to the side***



(Figure 4.02)

Livestock with their young exhibit a maternal instinct. They are usually more defensive and difficult to handle. When possible, let the young stay as close to the adult as possible when handling.

Most animals have a strong territorial instinct and develop a sense of “homeland” in their pens, corrals, and pastures. They develop a very distinctive, comfortable attachment to these areas. An example of the homeland instinct is the well-worn paths created in most pastures and between pastures and buildings, water troughs and feed bunks. Forcible removal from a homeland area can cause animals to react unexpectedly. A calf, heifer, or steer may become agitated when it is initially separated from its herdmates. An agitated lone animal can be dangerous until it has learned that being alone is safe. Talk quietly to the animal, but stay behind a fence until it calms down. If other cattle are available, put them with the animal for company.

Considering these animal traits, it is easy to understand why animals often hesitate when going through unfamiliar gates, barn doors, and handling and loading chutes. In addition, shadows, yelling, and rapid changes in light can further excite animals and make their behavior unpredictable. Similar problems occur when animals are moved away from feed, separated from the herd, or approached by an unfamiliar person.

Animals are extremely sensitive to noise and are easily frightened or spooked. In their attempts to move away from the direction or source of the noise, they may crash into or through objects, including people. Be cautious around animals that are blind or deaf on one side. They favor that side and can suddenly swing around to investigate disturbances. If standing too close, a person could easily be knocked down and trampled.

Young farm animals can form relationships simultaneously with other animals and with human handlers. Animals respond to the way they are treated and draw upon past experiences when reacting to a situation. For example, a newborn raised on a bottle or bucket may develop a very strong affection for the person feeding it and feel comfortable around people. However, animals that are chased, slapped, kicked, hit, or frightened when young will naturally fear being approached.

Animals are often said to be “stubborn” because they balk or refuse to enter an area. Once this has happened, the animal is likely to refuse the next several times as well, and may become a little more excited and dangerous with each refusal. It is important to take the time to prepare for moving animals. Many livestock producers are tempted to move animals without the necessary planning and often end up in a battle with the animal that could lead to an injury.

In addition to unique vision characteristics, sensitivity to noise, and a strong territorial instinct, animals have physical and mental sensations similar to those of humans that can cause them to

react fiercely to handlers. Animals experience hunger, thirst, fear, sickness, injury, and strong maternal instincts. They also develop individual behavior patterns such as kicking or biting. The handler should be aware of these behaviors and take necessary precautions. Safety precautions include using personal protective equipment such as safety glasses, gloves, long trousers, steel-toed shoes or boots, shin guards, and a hard hat, depending on the activity and type of livestock being handled.

Handlers should also be concerned with zoonotic diseases, which are illnesses that can be transmitted between humans and animals. Leptospirosis, rabies, brucellosis, salmonellosis, and ringworm are especially important. A livestock producer can contract **zoonotic illnesses** by being bitten by the animal, handling an infected animal or disposing of infected tissues. To reduce exposure to disease, use basic hygiene and sanitation practices, which include prompt treatment or disposal of infected animals, adequate disposal of infected tissues, proper cleaning of contaminated sites, and proper use of personal protective equipment.

Facilities can play a major role in preventing accidents. Good facilities provide a means of controlling animals while allowing easy access for routine chores—all in a safe environment. To help prevent accidents, keep walk and work surfaces properly lighted and clear of debris and obstructions. To reduce the risk of falls, provide slip-resistant footing for workers and livestock with roughened concrete ramps and floor surfaces.

## Using Safety Precautions

Electric shocks are always a risk when working in wet or damp areas of barns or milking parlors. To avoid exposure to electric shock:

- Use a ground fault circuit interrupter with water heaters, power tools, and other equipment.
- Use moisture proof fuse boxes, switches, and electrical outlets in wet or damp areas.
- Never use homemade electric fence controllers. Use only those approved by a recognized testing agency such as Underwriter Laboratories.

Another risk to you is from contact with your animal. For example, use eye protection and gloves, because leptospira organisms can enter the body through eyes and open wounds.

All pens, chutes, gates, fences, and loading ramps should be strong and work properly. Man-passes should be provided to allow handlers to get away from animals in an emergency. If bulls are kept for breeding, serious accidents can be avoided by having sufficient confinement and restraint facilities. Properly designed treatment stalls and appropriate animal-restraint equipment and facilities can reduce accidents or injuries during animal examination, medication, hoof trimming, dehorning and artificial insemination. The risk of child or livestock drowning can be reduced by fencing lagoons and ponds.

Most animal-related accidents are the result of “people-problems”. Poor judgement and lack of understanding are major causes of accidents involving animals. Plan ahead to allow plenty of time to move animals, so there is no need to hurry. Do not try to handle animals when you are angry. Some handlers may exhibit a feeling of superiority over animals, which is foolish when one considers the size of some farm animals.

Other common problems should also be avoided, such as horseplay, improper lifting of young animals, prodding an animal that has no place to go, tying a person to an animal, attempting a task without enough help, not providing proper and safe facilities, and not wearing personal protective equipment.

What can livestock producers do to increase their levels of safety when handling animals? Although there is certainly no magical formula, common sense is a key ingredient.

To reduce exposure to a livestock accident or illness:

- Understand animal behavior.
- Provide proper and safe facilities.
- Protect against zoonotic diseases.
- Wear personal protective equipment.



The information in this *Working Safely with Livestock* chapter was;

- Developed by:** *Thomas Bean*, Interim Chair and Safety Leader,  
Food, Agricultural, and Biological Engineering,  
Ohio State University Extension- Food, Agricultural, and Biological Engineering  
*Temple Grandin*, Assistant Professor, Department of Animal Science,  
Colorado State University  
*Nancy Y. Snook*, Extension Agent, 4-H/Youth Development,  
Cooperative Extension Service, College of Agriculture - University of Kentucky
- Reviewed by:** *Jodi P. Black*, State Extension Associate, 4-H/Animal Sciences,  
Ohio State University Extension - 4-H Youth Development/Animal Sciences  
*R. Warren Flood*, Instructional Design Intern,  
Ohio State University Extension - 4-H Youth Development  
*John Grimes*, Extension Agent, Agriculture and Natural Resources,  
Ohio State University Extension - Highland County  
*Jeanne M. Osborne*, Associate to the Chair,  
Department of Animal Sciences - The Ohio State University

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# *Caring for Animals*



## *Goals and Objectives*

- Increase the awareness of the issues of animal well-being, quality assurance, and show animal ethics.
- Encourage you, the 4-H or FFA member, to reflect on your values concerning these issues.

## *Privileges, Responsibilities, and Rewards*

Everyone associated with livestock, either on the farm or in the show ring, is responsible for the well-being of their animals. As a 4-H and/or FFA member, you need to learn to care properly for your projects and develop acceptable livestock husbandry skills.

Your duty as a 4-H and/or FFA member is to properly care for your animals. As a 4-H or FFA animal owner, you need to understand the privileges, responsibilities, and rewards that you can expect from the 4-H or FFA program.

### *Privileges*

- to know as much about your project as possible
- to receive information to raise the project
- to be given a variety of experiences relating to project work
- to be given sound guidance and direction
- to ask questions and share concerns
- to be recognized



## **Responsibilities**

- to treat all livestock projects in your possession humanely
- to be sincere and believe in the value of a job well done
- to be loyal to the values and ideals of the 4-H or FFA program
- to accept the guidance and decisions of the program coordinators
- to be willing to learn and participate in training programs and meetings
- to continue learning throughout your years of 4-H or FFA membership
- to follow good practices insuring a safe, wholesome product of the highest quality

## **Rewards**

- to enjoy satisfaction from a job well done
- to receive both public and personal recognition
- to learn new skills, receive special training, and experience personal growth
- to make new friends and have fun
- to feel good about producing a wholesome, consumable product
- to know you are special and you can make a difference



## **Animal Well-being**

As a 4-H or FFA member, you need to be aware of the things you can do with your own animal to promote animal well-being. The image of the agricultural industry and the 4-H and FFA programs are affected by the decisions you make and actions you take in the care of your animal. You need to set goals and develop a plan that will positively impact your animal's well-being, either on the farm, in your backyard, or at the county fair.

You can complete some tasks before you even obtain your animal. First, think about the size your animal will be as it grows to maturity. Are your facilities large enough for the animal to exercise in? Are there hazards where you are going to keep your animal such as protruding nails, broken boards, or wire? Can the animal reach any potentially dangerous objects? (For example, an electrical box or a poisonous plant.) Think about the type of bedding you will be using and the quantity it will take to keep your animal dry and warm or cool. You should have an ample supply of clean water available to your animals at all times. A designated feeding area should be kept free of manure, urine, and bedding.

Once your animal arrives and is in your care, providing it with a balanced ration is an important first step. Many processed feeds, supplements, and pre-mixes are available. Be sure your animal is receiving the nutrition it needs in relation to its age, growth cycle, and purpose. Your animal also needs special consideration if it is in gestation, in lactation, or at stud.



## Animal Health

When questions or concerns arise, involve your veterinarian. Develop a veterinarian-client-patient relationship (VCPR). This relationship requires that the veterinarian has seen and has knowledge of the animal (patient) and has discussed a health plan or any treatments with the owner (client). Your veterinarian can be very helpful in developing a health care program for your animal. Your plan should include an appropriate schedule for vaccinating, castrating, dehorning, tail docking, internal/external parasite control, etc. You should check with your veterinarian before administering treatments, especially if there is any question about the diagnosis and the medication you are planning to use. If injections are necessary, give them in the proper location using good technique. Injection sites in the neck are recommended to avoid possible damage to high-priced meat cuts in the loin and rump. Use subcutaneous (SQ) injections (under the skin) whenever allowed by the label directions.

A withdrawal time may be indicated on the label of certain medications. This is the period of time that must pass between the last treatment and the time the animal may be slaughtered. For example, if a medication with a 14-day withdrawal period was last given on August 1st, the withdrawal would be completed on August 15th and that would be the earliest the animal could be processed for human consumption. It is important that you follow withdrawal time directions as given by the label or as prescribed by your veterinarian.

In addition to the withdrawal time, the label of a drug lists the animal species for which the drug is approved, the dosage to be administered, how it is to be given, and for what diseases/conditions it can be used as a treatment. Any use, other than that printed on the label, can only be directed or prescribed by your veterinarian. For example, a neighbor's animal is sick and a veterinarian has treated it using twice the dose listed on the label of an OTC (over-the-counter) product. Your animal becomes ill and is showing the same symptoms as your neighbor's. You may not use the neighbor's double dose for your animal without a veterinarian examining and prescribing the specific treatment. Any deviation from the label directions when using a drug is referred to as extra-label drug use. Unless directed by a veterinarian who has established a VCPR, **extra-label drug use is illegal.**

Each animal in your care should be permanently identified. Individual animal identification enables good record keeping from which you can measure your progress. If your animal becomes lost, stolen, or needs medical attention when you are not available, the only way to know the animal's identity and health history is by permanent identification. This is most commonly done by tattooing or ear tagging. Your Junior Fair program may identify all 4-H and FFA animals through county-wide tagging or tattooing. If not, you are responsible for identifying all of your animals.

Training animals and acquainting yourself with them needs to begin at an early age or as soon as you acquire your animal. If at all possible, you should spend time with your animal daily. As you walk, stand, and set-up your animal, you both develop trust and become accustomed to

each others' movements. You also become aware of what sounds or sights bother your animal and in which direction it tends to jump or shy away. Handling your animal daily also helps you to recognize abnormal behavior in your animal that could signal illness, stress, or pain. The longer you avoid working with your animal, the more difficult training and preparation for show becomes. The two P's—practice and patience—usually pay off.

From the day you acquire your animal until the day it leaves your care, you should maintain feed and treatment records. This is important for the day to day care of your animal and for whomever might later purchase your animal. This is also the best way to keep track of the kinds and amounts of expenses you have incurred with your project.

Finally, if you plan to exhibit your animal for show or sale, continue the same quality care program throughout the exhibition as you did at home. This starts by loading and hauling your animal safely and with concern for its well-being. The exhibition facilities should be prepared and checked ahead of time, just as you prepared your facilities at home when you first acquired your animal. Continually watch your animal for signs of stress, pain, or illness. Exercise your animal daily. Clean, feed, and water your animal regularly.

Above all, enjoy your animal project experience. You should feel good about the knowledge you gain and the quality care program you develop and implement with your animal project.



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## **Quality Assurance Factors**

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### **Topics Important to Livestock Quality Assurance and the Producer**

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#### **Nutrition**

*Essential nutrients, feed and forage analysis, ration balancing*

#### **Environmental Design**

*Space requirements, ventilation, freedom from hazards and injury, feeding systems, handling and loading, feeding facilities, manure handling, image*

#### **Genetics**

*Consumer preferences, producer needs, suitability to livestock production systems*

#### **Veterinary Health**

*Disease prevention, proper drug usage, drug residues and withdrawal times, injection technique, records*

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Table 11.01

## Quality Assurance and the Livestock Industry

With your livestock project comes new responsibilities. You are now a member of the livestock industry. The livestock industry, just like any industry, provides a product to the consumer. Even producers of breeding stock are providing seedstock for future food and fiber production.

Think back to some time when you bought a toy or other product and were disappointed in it. Would you buy it again? Consumers will choose to buy or not buy a product from their perception of the value of that product. What would happen to a business if no one purchased its products?

Many businesses have quality assurance departments to make sure that their products are of the highest quality. Businesses pay attention to quality assurance because that helps to build consumer satisfaction. When quality is high, consumers will buy again. Livestock products must be safe, wholesome, and produced in a manner that meets consumer approval.

Who is in charge of quality assurance in the livestock industry? When you feed a steer and sell it to the market, who is responsible for assuring that the beef eaten by the consumer is a high-quality product? The retailer? The packer? You? The breeder? **Everyone involved in the livestock industry is obligated to do their part to provide a safe, wholesome product to the consumer.**

Quality assurance in the livestock industry begins with providing the right genetics and continues with the proper husbandry of the live animal, a good packing house, and good retailing. Every action you take as a livestock producer will reflect on the quality of the livestock industry as a whole.

Quality assurance in raising livestock involves providing for the animal's needs to produce a healthy animal and a wholesome product. Basic animal needs include water, food, shelter, and care. Proper attention to animal husbandry helps assure a high-quality, marketable product.

Good animal husbandry requires an understanding of many different sciences, including nutrition, environmental design, genetics, veterinary health, production, and economics. These topics all contribute to a quality livestock product. To learn more, consult your project book, a 4-H advisor, an Extension agent, FFA instructor, a veterinarian, or a livestock production expert.

Evaluating quality assurance of your project is something like looking into a mirror. Reflect on your project for a moment. Do you like what you see? More important, will the consumer like it?



## Care That You Are Giving Your Animals

Check the ways in which you are already caring for your animal. If you want to improve how you care for your animal, check that column too. (Table 11.02)

### Improving Animal Care

Care	I am already doing	I want to improve
Prepare facilities before I get my animal.	<input type="checkbox"/>	<input type="checkbox"/>
Always provide access to fresh clean feed and water.	<input type="checkbox"/>	<input type="checkbox"/>
Provide adequate amounts of a balanced ration.	<input type="checkbox"/>	<input type="checkbox"/>
Provide adequate housing and bedding.	<input type="checkbox"/>	<input type="checkbox"/>
Control internal and external parasites.	<input type="checkbox"/>	<input type="checkbox"/>
If animals are to be castrated and/or dehorned do this when animals are young.	<input type="checkbox"/>	<input type="checkbox"/>
Train animals to be handled at a young age.	<input type="checkbox"/>	<input type="checkbox"/>
Have a planned health program to prevent disease.	<input type="checkbox"/>	<input type="checkbox"/>
Observe animals daily and immediately treat those who need care.	<input type="checkbox"/>	<input type="checkbox"/>
Identify animals. (tag, tattoo, ear notch, etc.)	<input type="checkbox"/>	<input type="checkbox"/>
Keep feed and treatment records.	<input type="checkbox"/>	<input type="checkbox"/>
Be aware of animal comfort at all stages of production.	<input type="checkbox"/>	<input type="checkbox"/>
Use proper techniques for vaccination and treatment.	<input type="checkbox"/>	<input type="checkbox"/>
Observe and follow drug residue avoidance rules.	<input type="checkbox"/>	<input type="checkbox"/>
Observe and follow label directions including withdrawal times on medications, feeds, and vaccines.	<input type="checkbox"/>	<input type="checkbox"/>
Sort and load animals safely and with concern for them.	<input type="checkbox"/>	<input type="checkbox"/>

(adapted from Iowa State University Extension VI-1042DJH Oct. 1991)

Table 11.02

After deciding in which areas you want to improve, list your specific goals for the year.

Goals \_\_\_\_\_

### Questions

Did you accomplish your goals? \_\_\_\_\_

What worked well? \_\_\_\_\_

What would you change? \_\_\_\_\_

# Treatment Record Factors

## **Veterinarian-Client-Patient Relationship (VCPR)**

is established when a veterinarian, who knows about an animal's health by having seen it or other animals in the same herd, takes charge of the medical decisions about the animal's treatment. The veterinarian has to be available for follow-up, in case the animal does not respond as expected, and the caretaker of the animal has to agree to follow the veterinarian's instructions regarding the treatment program.

**Withdrawal Time** is the time needed to allow the residue to diminish to a safe level. It is the period which must elapse after the last treatment and before harvest (slaughter) of meat animals, the use of milk for human consumption from dairy animals, or use of eggs from chickens for human consumption.

**Extra-label drug use** is using a medication in a way other than that stated on the label by the manufacturer. For instance, using a medication as a treatment for a disease not listed on the label for that type of animal is extra-label use. Extra-label use, if not directed by a veterinarian with an established VCPR, is illegal.

**Veterinary drugs** are available in two categories, **over the counter (OTC)** and **prescription (Rx)**. To be an OTC product, the medication must meet certain criteria for safety to both the animal and the person handling the product. If simple directions can adequately be written on the label by the manufacturer, a product can be classed as an OTC. The OTC medications may be sold through retail outlets such as farm supply stores in the same manner as aspirin is sold at a grocery store.

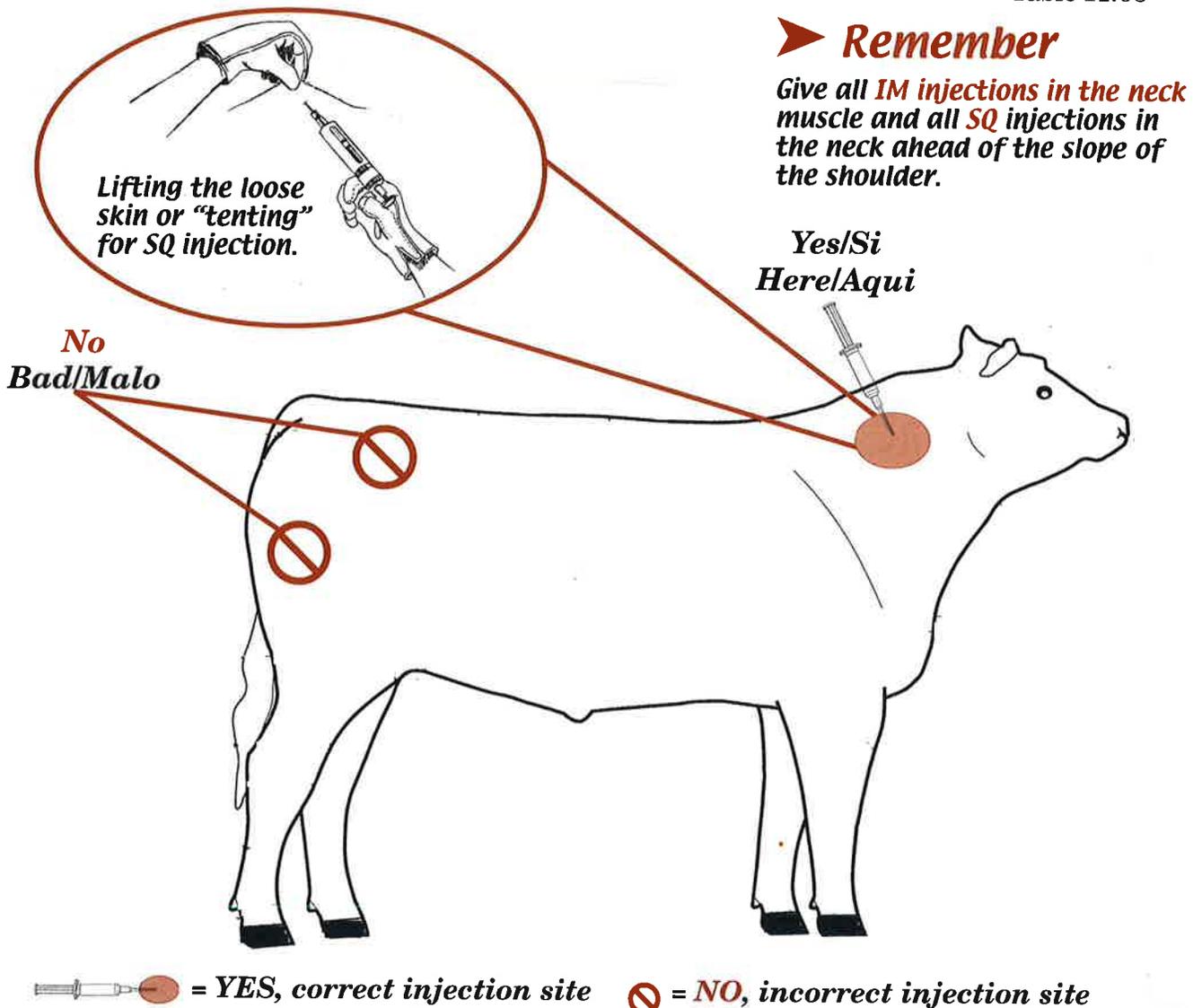
When human and animal safety, proper diagnosis, and special directions are concerns, medications are classed as prescription (Rx) products. A prescription product can be identified because the exact following statement will appear on the container: **Caution: Federal law restricts this drug to use by or on the order of a licensed veterinarian.** Just as veterinarians are not allowed to authorize extra-label drug use without a valid VCPR, neither are they permitted to prescribe Rx medications for animals where a valid VCPR has not been established. Rx medications are available only from or on the order of a veterinarian much as prescription drugs for people are only available from physicians and from a pharmacist by prescription.

(Figure 11.01)

## Suggestions for Proper Injection of Animal Drugs

- Properly restrain the animal before giving an injection.
- Give injections according to label instructions. Route: Subcutaneous (SQ) means under the skin; intramuscular (IM) means in the muscle; intravenous (IV) means into the blood; orally (PO and/or O) means in the mouth or in water; and (MF) indicates medicated feeds. >>> Route of Administration <<<
- When the label directions permit, give injections under the skin so that the muscle tissue is not injured.
- Use sterilized needles and syringes. Keep the bottle cap clean.
- Give injections at clean, dry sites on the animal, avoiding the areas where the muscles (meat cuts) are of high value.
- Do not transfer needles back and forth from animal to bottle because you may carry bacteria from the animal's skin back into the bottle.

Table 11.03



(Figure 11.02)

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## National Cattlemen's Beef Association (NCBA)

### Injection Procedures

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- All products labeled for subcutaneous (SQ) administration shall be administered SQ ahead of the point of the shoulder.
  - All products labeled for intramuscular (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 practiced. (Proper injection site placing is --- having NO injection site closer than six inches from another site.)
  - No more than 10cc of product is to be administered per IM injection site.
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Table 11.04

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### Guide to Reading Drug Label on Outside of Container

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**Active Ingredients:** Chemical name(s) of what is in the drug.

**Withholding/Withdrawal Times:** Withdrawal time is the period that must elapse after the last treatment and before processing (harvest/slaughter) of the animal for its meat or harvesting animal products (milk, eggs) for human consumption. It is the time it takes for the drug/chemical to be used up by the animal's body after it has been administered (or the time it takes a drug/chemical to wear off). A residue is a substance that remains in an animal's body tissues after the animal has been exposed to that substance. The substance can enter the animal's body as a feed or water additive, as an injection or external treatment.\*

**Cautions and Warnings:** Tells things to be cautious about when using the product. Examples: a) Do not give to certain kinds of animals, b) do not give too much, c) pay attention to withholding times (see above).

**Storage:** Tells how the medication should be kept while not in actual use. Many medications may lose their potency when exposed to moisture, direct light, warm and/or freezing temperatures. Most also lose effectiveness with time. The label will indicate how the product should be stored to retain maximum strength.

**Quantity of Contents:** Tells how much is in the container. Usually in metric units [liquid measure: 1 fluid ounce = 29.6 milliliters (ml), 1 cubic centimeter (cc) = 1 milliliter (ml); dry measure: 1 pint = 551 milliliters (ml)].

**Lot Number:** (may also be referred to as serial number) A manufacturer's reference number indicating the day or batch in which this product was made. These numbers are needed if the product is recalled.

**Date of Expiration:** Discard (do not use) drugs when this date is reached.

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\* Remember, you are responsible for everything your animal consumes even if it is an accident.

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Table 11.05

# Medication Label



**Before administering any drug to an animal, you must have a knowledge of the information found on the drug label and insert. Make sure you are able to identify the parts of the medication label and medication insert**

**Name of Drug**

**OMNIBIOTIC**

(hydrocillin)

**Active Ingredient(s)**

**Directions for use:**

**See package insert**

**Cautions and Warnings**

**Warning:** Milk that has been taken from animals during treatment and for 48 hours after the last treatment must not be used for food. The use of this drug must be discontinued for 30 days before treated animals are slaughtered for food. Exceeding the highest recommended dosage level may result in antibiotic residues in meat or milk beyond the withdrawal time.

**Withdrawal Times**

**Store between 2° and 8° C (36° and 46° F)**

**Keep dry and away from light**

**Storage**

**Quantity of Contents**

Net contents: 100 ml

Distributed by

**USA Animal Health, Inc.**

**Name of Distributor**

**Lot Number**

Lot # 0009900-Q123

Expiration Date 05/17/XX

**Date of Expiration**



This activity adapted from information found in the *Quality Assurance and Animal Care: Youth Education Program* - based upon work supported by the Extension Service, United State Department of Agriculture, under special project number 93-EFSQ-4096

(Figure 11.03)

# Medication Insert

**OMNIBIOTIC**

*Name of Drug*

(Hydrocillin in Aqueous Suspension) *Active Ingredient(s)*

For use in Beef Cattle, Lactating and Non-Lactating Dairy Cattle, Swine and Sheep *Species and Animal Class*

*Read entire Brochure Carefully Before Using This Product*

**For Intramuscular Use Only**

**Active Ingredient(s):** Omnibiotic is an effective antimicrobial preparation containing hydrocillin hydrochloride. Each ml of this suspension contains 200,000 units of hydrocillin hydrochloride in an aqueous base.

**Indications:** **Cattle** – bronchitis, foot rot, leptospirosis, mastitis, metritis, pneumonia, wound infections. **Swine** – erysipelas, pneumonia. **Sheep** – foot rot, pneumonia, mastitis and other infections in these species caused by or associated with hydrocillin-susceptible organisms.

**Recommended Daily Dosage**

*The usual dose is 2 ml per 100 lb of body weight given once daily.  
Maximum dose is 15 ml / day.*

Dosage	Body Weight	Dosage
}	100 lb	2 ml
	300 lb	6 ml
	500 lb	10 ml
	750 lb or more	15 ml

*Continue treatment for 1 to 2 days after symptoms disappear.*

**Caution:** 1. Omnibiotic should be injected deep within the fleshy muscle of the neck. Do not inject this material into the hip or rump, subcutaneously, into a blood vessel, or near a major nerve because it may cause tissue damage. 2. If improvement does not occur within 48 hours, the diagnosis should be reconsidered and appropriate treatment initiated. 3. Treated animals should be closely observed for at least 30 minutes. Should a reaction occur, discontinue treatment and immediately administer epinephrine and antihistamines. 4. Omnibiotic must be stored between 2° and 8° C (36° to 46° F). Warm to room temperature and shake well before using. Keep refrigerated when not in use.

**Warning:** Milk that has been taken from animals during treatment and for 48 hours after the last treatment must not be used for food. The use of this drug must be discontinued for 30 days before treated animals are slaughtered for food

*Route of Administration*

*Storage Requirements*

*Withholding Time*

**How Supplied:** Omnibiotic is available in vials of 100 ml.



**Approved Uses**

**Cautions and Warnings**

**Sizes Available**

This activity adapted from information found in the *Quality Assurance and Animal Care: Youth Education Program* - based upon work supported by the Extension Service, United State Department of Agriculture, under special project number 93-EFSQ-4096

(Figure 11.04)

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## Guide to Reading Medication (package) Insert Label (sometimes found on outer label)

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- **Species and Animal Class:** The species and animal class in which the drug is to be used. (Example: Cattle: lactating/non-lactating, sheep, or swine)
- **Approved Uses (Indications):** The situation for which the drug is to be used. Indicates the particular type of animal, condition, illness, etc.
- **Dosage:** How much to give and how often/how many times given.
- **Route of Administration:** How is the product given to the animal? Basically, there are three routes of administering medications:
  1. **Oral Route** - Administering drugs through the mouth. Tablets, pills, capsules, and liquid medications are easily administered orally. A drenching tube, balling gun, or oral dosage syringe is usually used to place the liquid or pill at the base of the tongue at the back of the mouth. Make sure the medication goes down the throat and the animal swallows it. Make sure the animal is not choked by the medication going down the trachea (windpipe). You can also administer medication in the animal's feed or water.
  2. **Topical Route** - Applying the medication to the skin or to the mucous membranes of the eyes, ears, nasal passages. Such medications are available as ointments, aqueous solutions, powders, and aerosols (sprays). Do not allow these products to come in contact with the animal's eyes, nose, reproductive tract, or mouth unless it is specifically formulated for that use.
  3. **Injectable Route** - Administering the drug directly into an animal's body with a syringe and needle. Injections are the most common method of administering medications to individual animals. The label will specify which of the following injection methods to use.
    - Subcutaneous (SQ) injections** are accomplished by inserting the needle just under the skin and not into the muscle. This is important because SQ injectables are designed for a slower rate of absorption or are highly irritating to muscle tissue.
    - Intramuscular (IM) injections** are the most commonly used. This is accomplished by inserting the needle straight into the skin and deep into the muscle.
    - Intravenous (IV) injections** are sometimes used. Some medications are labeled for "intravenous injection only" because they are strong irritants to muscle tissue and can cause damage. The IV route of administration provides a rapid means of getting the medication into the system of a sick animal as well as eliminating the chance of tissue damage. IV injections are given directly into the bloodstream.

---

Table 11.06

Brand Name



Product Name

Purpose of Feed

Formulated protein supplement for Growing/Finishing Beef Cattle

Purpose of Medication

Medicated For Beef Cattle only. For improved feed efficiency.

Medicated

Active Drug Ingredient(s) and Amount(s)

Minimum Crude Protein Content

Active Drug Ingredients Monensin (as Monensin Sodium)..... 400 G/Ton

Non-Protein Nitrogen

Guaranteed Analysis Crude Protein..... min 52.00% [This includes not more than 26.00% equivalent crude protein from non-protein nitrogen (NPN).]

Minimum Crude Fat

Crude Fat..... min 1.00%

Maximum Crude Fiber

Crude Fiber..... max 10.00%

Minerals

Calcium..... min 5.00% max 6.00% Phosphorus..... min 1.00% Salt..... min 4.00% max 5.00% Potassium..... min 2.00% Selenium (as Sodium Selenite)..... min 6.00 PPM Vitamin A..... min 50,000 IU/lb.

Guaranteed Analysis

Vitamins (optional)

Ingredients

Plant Protein Products, Processed Grain By-Products, Ground Limestone, Urea, Salt, Calcium Phosphate, Potassium Sulfate, Magnesium Sulfate, Potassium Chloride, Animal Fat, Sodium Selenite, Vitamin A Acetate, Vitamin D-3 Supplement, Vitamin E Supplement, Zinc Sulfate, Zinc Oxide, Copper Sulfate, Manganous Oxide, Calcium Iodate, Cobalt Carbonate, Ferrous Sulfate.

Ingredient Statement

Feeding Instructions

Feeding Directions

Each pound of supplement will provide 200 mg of monensin. Thoroughly mix and feed at the rate of one pound of supplement with grain and roughage to provide 200 mg of monensin per head per day. Feed continuously.

Warning: FEED ONLY TO CATTLE BEING FED IN CONFINEMENT FOR SLAUGHTER.

Caution

Do not feed to lactating dairy cattle. Do not allow horses or other equines access to formulation containing monensin. Ingestion of monensin by equines has been fatal. Monensin-medicated cattle feed is safe for use in cattle only. Consumption by unapproved species may result in toxic reactions. Do not exceed the levels of monensin recommended in the feeding directions. As reduced average gains may result. Feeding undiluted or mixing errors resulting in high concentrations of monensin could be fatal to cattle; Must be thoroughly mixed in feeds before use; Do not feed undiluted.

Precautionary Statement

Name and Address Distributor

DO NOT feed to sheep or non-ruminants

Manufactured By: Adventure Mills Livestock Feeds Cowtown, OH 43210

Net Weight Statement

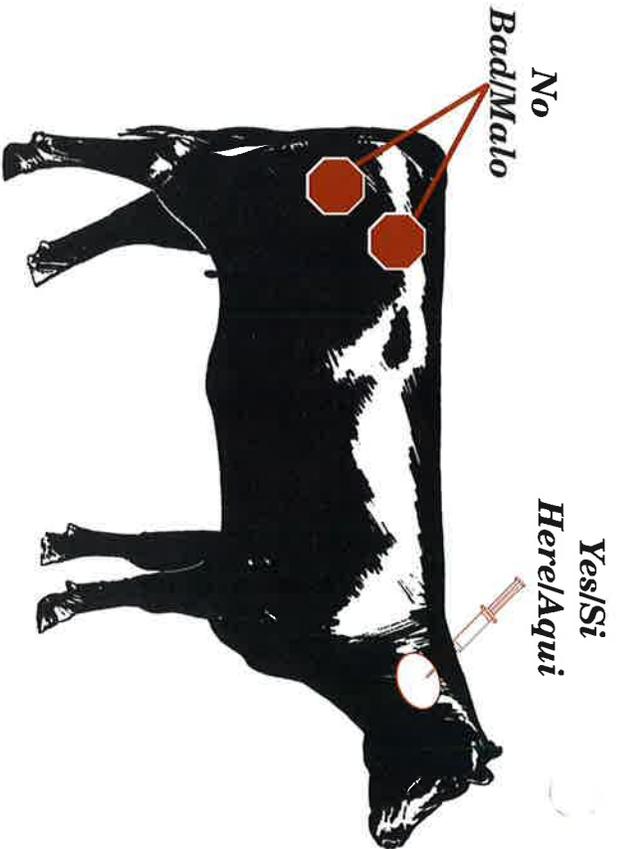
Net Weight 50 pounds (22.7 Kilograms)

or as shown on shipping document

(Figure 11.05)

## Suggestions for Proper Injection of Animal Drugs

- Properly restrain the animal before giving an injection.
- Give injections according to label instructions. Subcutaneous (SQ) means under the skin; intramuscular (IM) means in the muscle; intravenous (IV) means into the blood; orally (PO and/or O) means in the mouth or in water; and (MF) indicates medicated feeds.
  - >>> SQ, IM, IV, O, PO, & MF are examples of routes of administration <<<
- When the label directions permit, give injections under the skin so that the muscle tissue is not injured.
- Use sterilized needles and syringes. Keep the bottle cap clean.
- Give injections at clean, dry sites on the animal, avoiding the areas where the muscles (meat cuts) are of high value.
- Do not transfer needles back and forth from animal to bottle because you may carry bacteria from the animal's skin back into the bottle.



## Treatment Record for Vaccines, Drugs / Medications, and Medicated Feeds

Treatment (date and time)	Animal Identification (name, species, sex, ID number, description)	Condition being treated	Estimated weight	Treatment given (medication dispensed, amount and route of administration -- also include product lot/serial number if available)	Person who gave treatment (print name)	Instructed (meat/milk/egg) Withdrawal (days/hours)	Results (recovered, sold, or died)	Withdrawal Completed (date and time)	If this is an extra label or Rx drug, list the licensed veterinarian's name, address, and phone number who prescribed or directed the treatment
Aug 15, 'XX @ 3:00 p.m.	FPH Joyce - Beef Heifer #787 P. Hereford	Pinkeye	675 lbs.	LA-200™, 30cc IM (3 sites)	Rob Warren	28 days meat	Cloudy right eye	Sep 12 3:00 p.m.	N/A
Oct 10, 'XX @ 10:00 a.m.	Mark - Mkt Steer #328 Red X-Bred	Shipping fever	500 lbs.	Naxcel™, 7cc IM	Dr. Jones	None	Improved	N/A	J. A. Jones, DVM 364 Smith Ave. Columbus, OH 43210 Ph.# 614.555.1000
Oct 11, 'XX @ 7:30 a.m.	Mark - Mkt Steer #328 Red X-Bred	Shipping fever (retreat)	500 lbs.	Naxcel™, 7cc IM	Dee Smyth	None	Improved	N/A	J. A. Jones, DVM
Oct 12, 'XX @ 7:00 a.m.	Mark - Mkt Steer #328 Red X-Bred	Shipping fever (retreat)	500 lbs.	Naxcel™, 7cc IM	Dee Smyth	None	Improved	N/A	J. A. Jones, DVM

Keep these records for 24 months

## Quality Assurance Medication Label/Treatment Record Activity

“Ben,” #123, the Hereford steer you plan to exhibit at the fair next month, is lame in the left front leg. Today the veterinarian has diagnosed the steer’s problem as **foot rot** and gave “Ben” an initial treatment at the time of the examination. The veterinarian has left additional, prescribed medication with you to continue the treatment. The directions on the medication instruct you to give the steer **1cc per 100 pounds body weight, once daily, for 3 days**. You are to begin tomorrow and to give it by intramuscular injection. Your steer weighs 1,000 pounds. Remember, your veterinarian treated the steer today, **April 3, 20XX**, around 5:00 p.m. and you will treat it three more days as directed.

The hold (withdrawal) time on this product is 14 days.

April 20XX						
S	M	T	W	R	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

### Bottle Label

Emily Edwards, D.V.M.  
100 Quality Ave.  
Hometown, OH 43000  
614.555.5555

<b>Owner:</b> Jennifer Wilson	<b>Date:</b> April 3, 20XX
<b>Animal ID:</b> Hereford #123 - Ben	<b>Indications:</b> Foot Rot
<b>Directions:</b> 1cc per 100 lbs. body weight, IM once daily, for 3 days	
<b>Precaution:</b> Avoid the muscle tissues of high carcass value	
<b>Warning:</b> >>> Use of this drug must be discontinued for 14 days before slaughter or market for food <<<	
<b>Product/Active Ingredient(s):</b> Hydrocillin	
<b>Expiration Date:</b> September 30, 20XX	

Answer the following questions based on the above information.

1. How much medication will you give the steer each day?
2. How much medication will you need to treat the steer for three days?
3. What is the date and time the withdrawal period will be completed?
4. Where is the preferred site for the intramuscular (IM) injection?

# Answers for Medication Label/Treatment Record Activity

Treatment Record									
Treatment (date and time)	Animal Identification (name, species, sex, ID number, description)	Condition being treated	Estimated weight	Treatment given (medication dispensed, amount and route of administration) >>> also include product lot/ serial number if available <<<	Person who gave treatment (print name)	Instructed (meat/milk/egg) Withdrawal (days/hours)	Results (recovered, sold, or died)	Withdrawal Completed (date and time)	If this is an extra label or Rx drug, list the licensed veterinarian's name, address, and phone number who prescribed or directed the treatment
Apr 03, 'XX @ 5:00 p.m.	Ben • Beef Steer #123 Hereford	Foot Rot	1,000 lbs.	Hydrocortin, 10cc IM	Emily Edwards	14 days meat	X	04-17-XX 5:00 p.m.	Emily Edwards, DVM 100 Quality Ave. Hometown, OH 43000 ph.# 614.555.5555
Apr 04, 'XX @ 5:00 p.m.	Ben • Beef Steer #123 Hereford	Foot Rot	1,000 lbs.	Hydrocortin, 10cc IM	Roger Wilson	14 days meat	X	04-18-XX 5:00 p.m.	Emily Edwards, DVM 100 Quality Ave. Hometown, OH 43000 ph.# 614.555.5555
Apr 05, 'XX @ 5:00 p.m.	Ben • Beef Steer #123 Hereford	Foot Rot	1,000 lbs.	Hydrocortin, 10cc IM	Roger Wilson	14 days meat	X	04-19-XX 5:00 p.m.	Emily Edwards, DVM 100 Quality Ave. Hometown, OH 43000 ph.# 614.555.5555
Apr 06, 'XX @ 5:00 p.m.	Ben • Beef Steer #123 Hereford	Foot Rot	1,000 lbs.	Hydrocortin, 10cc IM	Roger Wilson	14 days meat	X	04-20-XX 5:00 p.m.	Emily Edwards, DVM 100 Quality Ave. Hometown, OH 43000 ph.# 614.555.5555

X = Information not supplied in the situation, therefore you could not complete this box.

1. How much medication will you give the steer each day?  
10cc
2. How much medication will you need to treat the steer for three days?  
30cc
3. What is the date and time the withdrawal period will be completed?  
April 20, 20XX, 5:00 p.m.

4. Where is the preferred site for the intramuscular (IM) injection?  
All products labeled for intramuscular (IM) use shall be given in the neck region only (no exceptions, regardless of age).



# Adventure Mills HeiferSupp

**Formulated protein supplement  
for Growing/Finishing Beef Heifers**  
> Feed as Directed on Tag <

## Medicated

For increased rate of weight gain, improved feed efficiency, and suppression of estrus (heat) in heifers fed for slaughter.

### Active Drug Ingredients

Melengestrol Acetate ..... 0.00022%  
(equivalent to 1.0 mg/lb)

### Guaranteed Analysis

Crude Protein ..... min 10.00%  
Crude Fat ..... min 2.00%  
Crude Fiber ..... max 25.00%  
Calcium ..... min 5.50%  
Calcium ..... max 6.50%  
Salt ..... min 4.50%  
Salt ..... max 5.50%  
Potassium ..... min 0.60%  
Selenium ..... min 13.00 PPM  
Vitamin A ..... min 100,000 IU/lb.

### Ingredients

Processed Grain By-Products, Roughage Products, Ground Limestone, Salt, Potassium Sulfate, Magnesium Sulfate, Sodium Selenite, Vitamin A Acetate, Vitamin D-3 Supplement, Vitamin E Supplement, Zinc Sulfate, Zinc Oxide, Copper Sulfate, Manganous Oxide, Calcium Iodate, Cobalt Carbonate, Ferrous Sulfate.

### Feeding Directions

Each pound of supplement will provide 1.0 mg of melengestrol acetate. Thoroughly mix and feed at the rate of 0.5 lb. per head, per day to provide 0.5 mg of melengestrol acetate per head, per day. Feed continuously throughout the period heifers are being grown and finished for slaughter. This supplement should be fed in controlled amounts with roughage and other feed ingredients.

**See back of tag  
for Caution**

**Note - Not effective  
for spayed heifers or steers.**

Manufactured By:  
**Adventure Mills Livestock Feeds**  
Cowntown, OH 43210  
Net Weight 50 pounds  
(22.7 Kilograms)  
as shown on shipping document

## How to Read a Feed Tag

### "HeiferSupp" feed tag questions.

1. What is the main ingredient in this feed supplement?
2. What is the active drug ingredient in this ration?
3. For how many days prior to slaughter should this feed be removed?
4. What is the minimum crude fat level of this diet?
5. What is the minimum crude protein level of this diet?

1. Processed Grain By-Products
2. Melengestrol Acetate
3. No withdrawal requirement stated, therefore none required (zero days)
4. 2.00%
5. 10.00%

### Answers to HeiferSupp feed tag questions.

Adapted from materials created by

Dan Frobose, Agriculture and Natural Resources Agent, Ohio State University Extension - Wood County



## Questions

1. What are special quality assurance issues that relate to your project?

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2. Why is it important that your animal be permanently identified?

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3. What is the difference between a prescription and over-the-counter medication?

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---

4. What is extra-label drug usage? When is it allowed? Who can prescribe or order extra-label drug usage?

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---

5. What is a medication withdrawal time? Why is it important?

---

---

6. Explain what is meant by a Veterinarian-Client-Patient Relationship (VCPR).

---

---

7. What information should be recorded when an animal is given medication?

---

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8. How do you think the consumer would view the way your project is housed?  
Fed? Handled?

---

---

## Show Ring Ethics

One of the most visible components of 4-H and FFA is livestock shows. Much of the public's contact with 4-H and FFA is at the county fair where show ring events draw large crowds. What the audience sees reflects on the total Junior Fair program and the entire livestock industry. How are you contributing to that image?

The desire to win at any cost has tarnished the record of 4-H and FFA members personally and livestock shows in general. Why have YOU chosen to show an animal? What motivates some to act dishonestly in the show ring?

Competition, if you keep it in perspective, can be a positive tool to help develop important skills in your life. Many 4-H and FFA alumni who showed animals during their youth attribute successes in their careers to the diverse skills gained as a 4-H or FFA member. You use decision-making skills and critical thinking techniques to select your animal and choose a feeding program. Answering the judges' questions in a confident manner helps you gain poise, which is beneficial in many other situations. The ability to be a good sport is a characteristic we all need. Certainly self-esteem is affected in the show ring when people watch and applaud your performance!

Is your only goal to win—or do you want to get more out of it than that? Your ability to think while paying attention to the judge, your animal, and other exhibitors is an important skill. Keeping a level head and staying composed will be good practice for other challenges in your life. Many long lasting friendships are developed from showing animals.

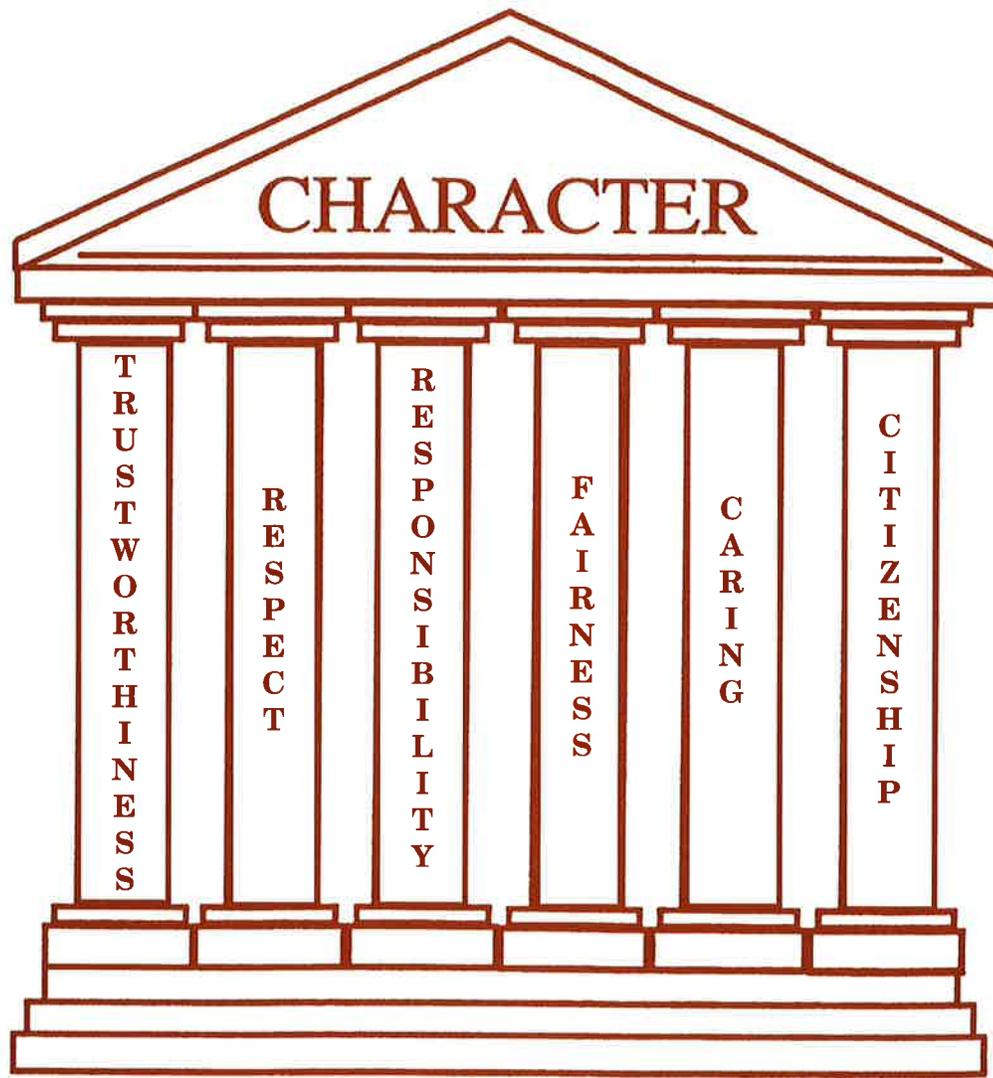
Proper training of your animal for the show ring should only include techniques that offer no risk of injury or pain to the animal. *If a TV camera was present when you were working with your animal, would you do anything differently than you normally do?*

Putting in many long hours of practice with your animal is the only way to achieve that polished, confident look with the animal giving complete response to your commands.

The effects of unethical practices on animals can be harmful or even fatal. If your animal goes to slaughter and residues are found in the tissue, the animal will be rejected. How does this reflect on you and the animal industry?

Even if you do win, your moment in the spotlight with a champion is short lived. Think about what will stay with you after the thrill of winning has worn off. What image of the meat industry did consumers perceive while watching you present your animal?

Using unethical techniques to train, feed, or show your animal is wrong. If you see it happening, don't turn your back. Tell a committee member or show official.



---

***Pillars of Character***  
*Adapted from materials developed  
by the Josephson's Institute of Ethics*

---

- ***Trustworthiness*** - being honest, standing for what is right.
  - ***Respect*** - judge people on their merits or good things they do.
  - ***Responsibility*** - do your best, be a good example.
  - ***Fairness*** - use the same rules or standards for everyone.
  - ***Caring*** - treat others as you want them to treat you.
  - ***Citizenship*** - being committed to the welfare of your community, state, country, or world.
-



## Questions

1. List the six pillars of character. Then choose one pillar and describe how you will practice that pillar. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
2. List some proper techniques that you can use to prepare your animal for the show ring. \_\_\_\_\_  
\_\_\_\_\_
3. a. What have you seen or heard about that you think was an unethical practice in relationship to showing an animal? \_\_\_\_\_  
\_\_\_\_\_  
b. Why do you feel that it might have been wrong?  
\_\_\_\_\_  
\_\_\_\_\_
5. List the benefits you have gained from your past show ring experiences.  
\_\_\_\_\_  
\_\_\_\_\_
6. Describe what you feel is appropriate behavior when you win. What behavior is appropriate when you don't place where you had hoped? \_\_\_\_\_  
\_\_\_\_\_
7. Can you be a "winner" showing an animal without getting a purple or blue ribbon? What are your reasons? \_\_\_\_\_  
\_\_\_\_\_
8. What are some ways to recognize exhibitors for skills gained other than winning in the show ring? \_\_\_\_\_  
\_\_\_\_\_

## **Ohio Farm Animal Care Commission** *- a vital part of the Ohio Livestock Coalition*

**P.O. Box 479, Two Nationwide Plaza, Columbus, OH 43216-0479**

**614/249-2435  
FAX 614/249-2200**



### ***Policy Statement***

The Ohio Farm Animal Care Commission (OFACC) was organized in 1990 to provide leadership on matters related to farm animal care. In 1997 the organization changed its name to the Ohio Livestock Coalition (OLC) to provide leadership and lend support to the recommendations made by the Ohio Livestock Industry Task Force which released its report in late 1996. The Ohio Farm Animal Care Commission was then designated as a vital part of the Ohio Livestock Coalition.

The commission has dedicated itself to the promotion of sound animal husbandry practices in the care and efficient production of animals used for food and fiber. The use of proper animal husbandry practices minimizes stress, improves animal efficiency and profitability for the farmer, and insures a safe, healthy, and wholesome product to the consumer at a reasonable price.

The Ohio Farm Animal Care Commission believes animals play a vital part of human existence and therefore, deserve our protection and compassion. Humans have had a inseparable relationship with animals and nature, as people have served as their sole caretakers for centuries. Yet, humanity is answerable to another set of laws and concepts that is uniquely a product of human society. Animals cannot be made subject to the laws that we as human beings are governed by and therefore, do not have the rights of humans.

The Ohio Farm Animal Care Commission firmly believes that all animals use other animals for their existence. Thus, the responsible use of animals by humans is natural and appropriate.

The Ohio Farm Animal Care Commission believes that farmers take pride in their responsibility to provide proper care for their animals and endorse the following "Code of Practices."

### ***Code of Practices***

The following describes general responsibilities of the farmer and all persons in his or her authority in the proper care and handling of animals raised for food and fiber.

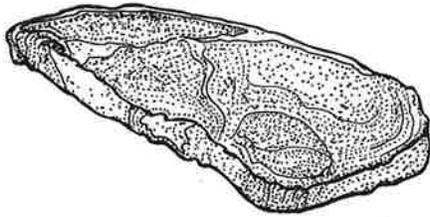
- To provide food, water, and care necessary to protect the health and welfare of my animals.
- To provide a safe and healthy environment for my animals that is clean, well ventilated, and provides ample space.
- To provide a well-planned disease prevention program to protect the health of my herd or flock. This includes a strong veterinarian-client relationship.
- To use humane and sanitary methods when it becomes necessary to dispose of my animals.
- To make timely inspections of all animals to evaluate the health and insure that all basic requirements are being met.
- To insure proper handling techniques are used to eliminate any undue stress or injury when manual manipulation is necessary.
- To provide transportation for my animals that avoids undue stress or injury caused by overcrowding, excessive time in transit, or improper handling when loading or unloading.
- The willful mistreatment of my animals or the mistreatment of any animal will not be tolerated. In cases of mistreatment, I will notify the proper authorities.
- To make management decisions based on scientific fact and to consider the welfare of my animals.
- We encourage livestock producers to complete species-specific quality assurance programs.

*Source: Ohio Farm Animal Care Commission*

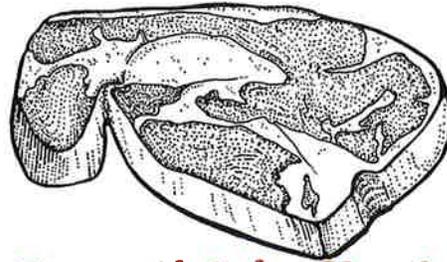
# REMEMBER

*You are Producing  
Someone's Next Meal*

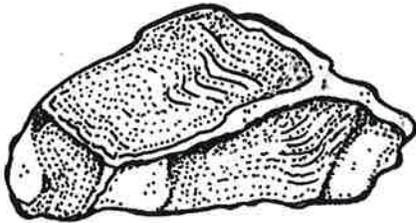
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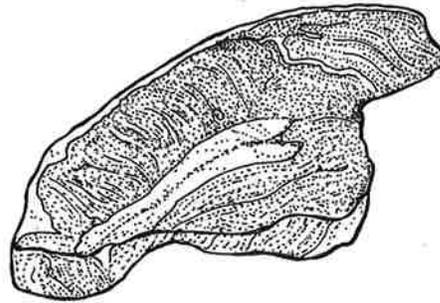
*Boneless Top Loin Steak*



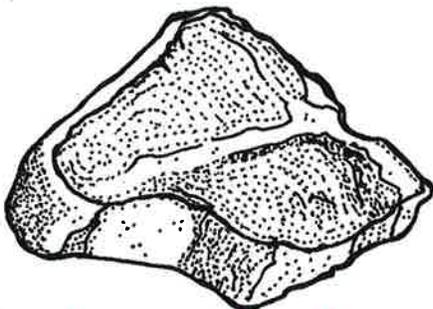
*Pin Bone Sirloin Steak*



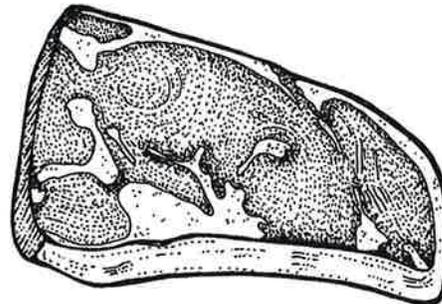
*T-Bone Steak*



*Flat Bone Sirloin Steak*



*Porterhouse Steak*



*Wedge Bone Sirloin Steak*



The majority of information presented in this *Caring for Animals* chapter was originally published and distributed by Ohio State University Extension in the *Caring for Animals - Discussion Guide*. The *Discussion Guide* was for use in conjunction with the *Caring for Animals - Video*.  
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**Written and Reviewed by:** *Jodi P. Black*, State Extension Associate, 4-H/Animal Science,  
Ohio State University Extension - 4-H Youth Development/Animal Sciences  
*Gary Bowman*, D.V.M., Extension Veterinarian, Swine,  
Ohio State University Extension - Veterinary Preventive Medicine  
*R. Warren Flood*, Associate Director, Curriculum Materials Service,  
The Ohio State University - Department of Agricultural Education  
*Ann McGovern Kleilein*, Ohio Farm Bureau  
*Holly Myers*, Agricultural Education Student,  
The Ohio State University - Human and Community Resource Development  
*Sherry Nickles*, Extension Agent, 4-H Youth Development,  
Ohio State University Extension - Wayne County  
*William Shulaw*, D.V.M., Extension Veterinarian, Cattle and Sheep,  
Ohio State University Extension - Veterinary Preventive Medicine  
*David R. Smith*, D.V.M., Veterinarian, Ashland, Ohio

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# Environmental Assurance

## *In this chapter*

- **Aesthetics and Neighbor Relations**
- **Techniques for Improving Management of Livestock Facilities**
- **Air Quality**
- **Manure Production**
- **Water Quality**
- **Summary**

As a 4-H beef producer, you serve as a youth ambassador for the beef industry. Your actions towards environmental management issues will reflect on the entire industry. Livestock waste must be handled properly in order to:

- Protect the environment and public health.
- Protect surface waters and the plant and animal life that lives in or depends on those waters.
- Protect groundwater quality that affects drinking water quality on your farm and in your neighborhood.
- Protect the air quality of your home and that of your neighbors.

Disposing of livestock waste in an environmentally friendly manner requires careful planning and the right attitude. Both of these traits are important to the livestock producer who wants to be a “good neighbor”.

Given the economic and social climate under which beef producers are currently operating, good records are an absolute must. It is important to keep track of when, where, and how manure from the barn, or barn lot, is disposed. A manure management plan is unique to each operation because every situation is different. Good record keeping leads to sound management decisions. Keeping detailed records is the right thing to do for your farm, the environment and your neighborhood.

## *Aesthetics and Neighbor Relations*

Aesthetics (how nice something looks) and neighbor relations should be a consideration when locating and managing livestock facilities. Well-maintained buildings and landscaping indicate that the producer is concerned about the environment. Trees and shrubs can help screen facilities and reduce odor and noise. Manure storage, and other necessary parts of the operation commonly associated with odor, should be located as far from public view and smell and residential areas as possible.

Livestock producers should consider their neighbor's activities when planning operations that may increase odor. For example, ask nearby neighbors about any planned outdoor events when preparing to clean out the barn. If possible, cleaning livestock facilities of manure and applying manure to fields should occur when prevailing winds are not in the direction of nearby homes. You should do your best to be a good neighbor!

## *Techniques for Improving Management of Livestock Facilities*

- **Appearance of the operation.** How a facility looks has a large impact on what people think and their perceptions of odor.

- **Cleanliness of the operation.** Having a clean facility improves herd health, reduces odor and makes management easier. Dead animal disposal is critical for good sanitation and the impression it makes on neighbors.
- **Maintenance.** Having a routine building maintenance program helps reduce environmental accidents.
- **Record keeping.** Keep a manure management record keeping system.
- **Water use and drainage.** Understanding the locations of surface waters, drainage patterns and tile-lines reduces the chances of environmental contamination.

## *Air Quality*

There are two major air quality concerns when evaluating environmental assurance. We all know that odor can be a problem, but air quality for people who are working with animals should also be considered.

### *Odor*

On many farms, odor is likely to be the number one environmental issue for both livestock producers and the general public. When people smell an offensive odor, they assume there is an environmental problem. Keep in mind, your neighbors and other members of the community may have a different perception of livestock odors than you.

## Sources of Odor

The good news is that odor can be managed by reducing sources of the odor. Decomposing manure is a likely source of odor from a livestock operation.

Generally, decomposing manure that has undergone some type of anaerobic (without oxygen) breakdown has a more offensive odor than fresh manure. The actual odor is determined by the type of diet, specie of animal and environmental conditions in which the manure is stored or spread. Decomposing feed and dead animals can also contribute to the odor.

## What makes manure smell?

The primary odor-causing components in manure are ammonia and hydrogen sulfide. When these compounds are present in confined spaces at high enough concentrations and without proper ventilation, health problems for producers as well as livestock inside these facilities may result. However, odor from manure does not have human health consequences in normal manure handling or spreading situations.



## Manure Production

A 1000 pound beef animal will produce about 60 pounds (one cubic foot) of manure per day. Fresh manure is a mixture of urine and feces that combine to be about 12% solids and 88% water. Additional waste is generated from dirty bedding, spilled feed and water. *Table 12.01* lists the characteristics of the waste produced per day from beef cattle of various weights.

Livestock manure does benefit soil quality. Along with nitrogen, phosphorous and potassium, several trace minerals are also found in manure. If properly applied, the nutrients in manure can reduce the amount of commercial fertilizer needed for cropland. Along with the nutrient value, manure can increase microorganisms and improve soil organic matter. These improvements in soil quality can reduce erosion, improve drainage and increase soil productivity if nutrients are applied in balance with crop nutrient needs. Keeping soil fertility and manure application rates in “balance” is important.

## Characteristics of Waste Produced by Beef Animals

Animal Size lbs.	Total manure storage allowance			Nutrient content of fresh manure		
	lb/day	ft <sup>3</sup> /day	gal/day	N	P lb/day	K
500	30	0.50	3.8	0.17	0.056	0.12
750	45	0.75	5.6	0.26	0.084	0.19
1,000	60	1.00	7.5	0.34	0.11	0.24
1,250	75	1.20	9.4	0.43	0.14	0.31
Cow	63	1.00	7.9	0.36	0.12	0.26

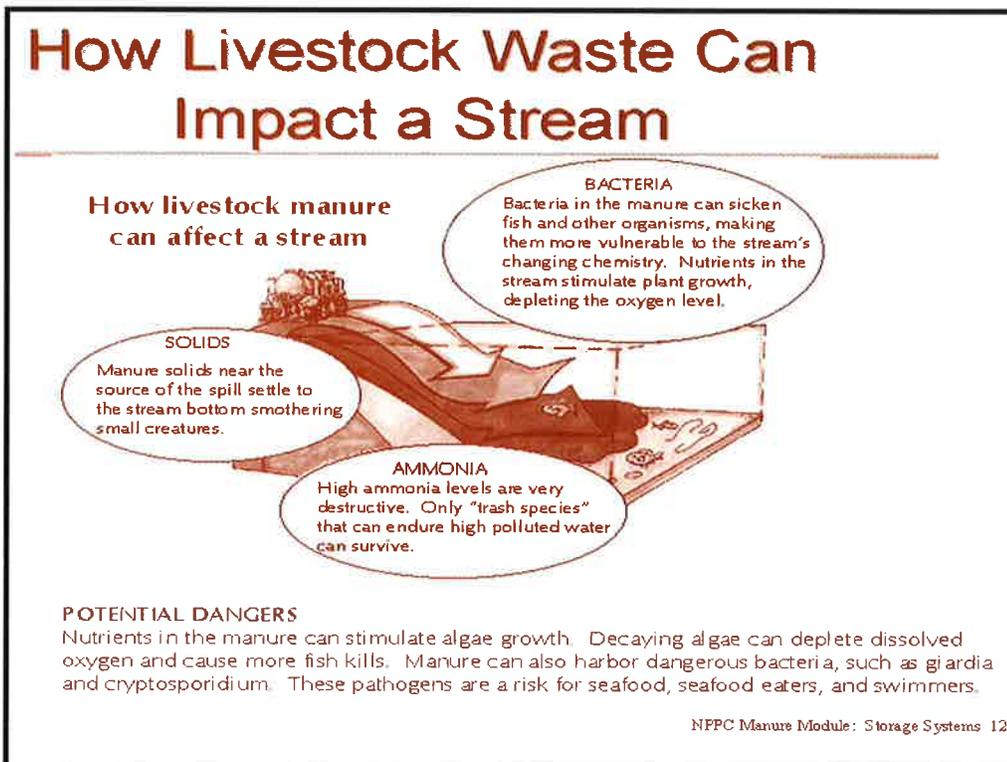
Table 12.01

# Water Quality

We all depend on clean air and water. The water supply we use for both personal use and our livestock comes from either surface water (lakes, streams, and rivers) or groundwater. Groundwater is the most important source for most livestock operations. It provides drinking water for half of the US population and nearly the entire rural population. Because groundwater is such a vital source, any type of contamination is a concern.

Both manure and fertilizers have been used extensively to increase crop production in order to feed a growing world population. However, improper application of these substances to cropland can result in contamination of ground and surface water. When soils containing manure nutrients and fertilizer move into water, negative things can happen.

- Nitrate nitrogen and ammonium nitrogen are produced through the biological breakdown of manure. Nitrate nitrogen in water can be harmful to humans. The Public Health Service has set the drinking water standard at 10 parts per million (ppm) of nitrate. Doctors recommend using bottled drinking water when nitrate levels exceed this amount.
- Manure can harbor dangerous bacteria such as giardia and cryptosporidium. These pathogens are a risk for seafood, seafood eaters and swimmers.
- Bacteria in manure can sicken fish and other organisms, making them more vulnerable to the stream's changing chemistry.
- High ammonia levels are very destructive. They can actually kill certain species of fish.
- Solids from soil erosion decrease the water quality and disrupt the food chain by harming microorganisms, invertebrates and insect larvae.





## *Summary*

Environmental assurance is a very important, but often over looked area of beef production. 4-H members raising beef cattle need to be aware of the issues surrounding environmental assurance and do everything they can to be responsible neighbors!



The information in this ***Environmental Assurance*** chapter was;

- Developed by:** *Dan Frobose*, Extension Agent, Agriculture and Natural Resources,  
Ohio State University Extension - Wood County  
*Steven Moeller*, Assistant Professor and Extension Specialist - Animal Sciences,  
The Ohio State University - Department of Animal Sciences  
*Clint Rusk*, Extension Livestock Specialist, 4-H Youth Development, Purdue University
- Reviewed by:** *Jodi P. Black*, State Extension Associate, 4-H/Animal Sciences,  
Ohio State University Extension - 4-H Youth Development/Animal Sciences  
*R. Warren Flood*, Instructional Design Intern,  
Ohio State University Extension - 4-H Youth Development  
*Steve Foster*, Extension Agent, Agriculture and Natural Resources,  
Ohio State University Extension - Darke County  
*John Grimes*, Extension Agent, Agriculture and Natural Resources,  
Ohio State University Extension - Highland County  
*Greg Meyer*, Extension Agent, Agriculture and Natural Resources,  
Ohio State University Extension - Warren County  
*Holly Myers*, Student Assistant - 4-H/Animal Sciences,  
The Ohio State University - Agriculture Education -  
Department of Human and Community Resource Development  
*Jeanne M. Osborne*, Associate to the Chair,  
Department of Animal Sciences - The Ohio State University

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Columbus, Ohio, USA