Western Beef Resource Committee

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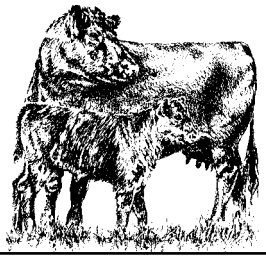

Cattle Producer's Handbook

Quality Assurance Section 211

Hazard Analysis and Critical Control Points (HACCP) Management System at the Producer Level

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Hazard Analysis and Critical Control Points (HACCP) is a management system in which food safety is addressed through the analysis and control of biological, chemical, and physical hazards. HACCP systems are applied at various production segments from raw material production (including animal production); procurement and handling; to manufacturing, distribution, and consumption of finished food products.

Consumers demand a safe, wholesome, high quality food product, and all livestock producers have important roles in producing that product. The use of the HACCP system places emphasis on the quality of all ingredients and all process steps so that safe products will result. The system is designed to control potential problems at the point of production and preparation.

The HACCP concept was started at the Pillsbury Company in 1971, in collaboration with NASA (National Aeronautics and Space Administration) and the U.S. Army Research Laboratories. The goal of the program was to provide a food product that was absent of foodborne organisms, so astronauts would not become ill in space. Since then HACCP programs have been implemented throughout the food industry, particularly within the meat industry.

HACCP at the Producer Level

Producers raise and care for animals that will become part of the human food chain. Thus, livestock producers have active roles in maintaining a wholesome food product. Studies have shown that injections given to calves at branding (50 days of age) and/or weaning (205 days of age) can cause injection site blemishes, thus decreasing the quality of meat.

As with any biological system there are risks. If problems are limited, however, a better and safer product will be produced. HACCP plans help producers recognize potential hazardous areas and establish corrective actions in order to provide a wholesome and safe food product.

A team of people, including the owner, manager, and worker(s), need to work together in preparing the HACCP plan. Producers should also call on livestock specialists, feed consultants, extension educators, veterinarians, and others to be part of the process to help them understand and regulate hazards that can be present in their operation.

HACCP Principals

Seven principles need to be considered in order to form an HACCP plan.

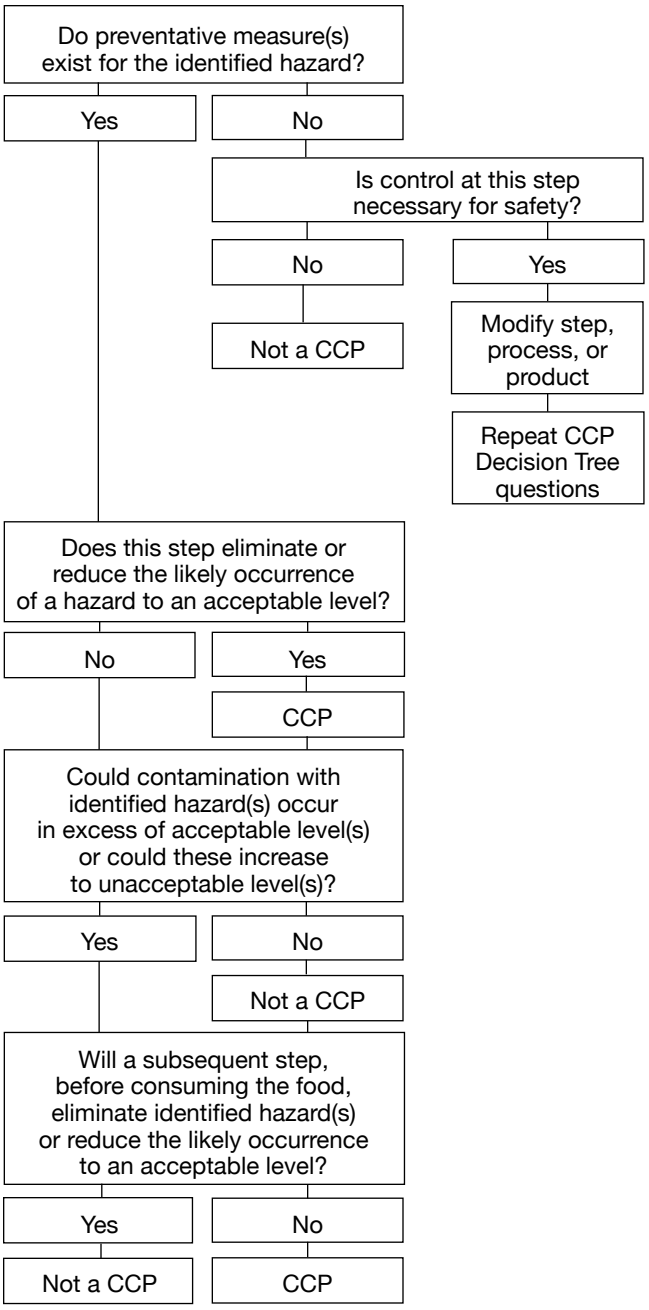
1. Conduct a Hazard Analysis

Develop a list of hazards at each processing step, which can affect quality if not controlled. The identification of potential hazards will indicate modifications needed to a process or procedure. Examples at the producer level may include new livestock arrivals, sick pen, incoming feed, midseason treatment, and shipment of finished livestock. It is important to consider the ingredients and raw materials used at each step in the process, plus product storage, distribution, and final preparation.

Producers need to decide which potential hazards must be addressed in the HACCP plan. These hazards should be based on severity and likely occurrence. Hazards identified in one operation or facility may not be significant in another operation producing the same or a similar product.

2. Determine Critical Control Points (CCP)

Critical control points in a procedure are places at which control can be applied and are essential to prevent, eliminate, or reduce, to an acceptable level, a hazard. The identification of CCP is important in controlling hazards. One way to help identify each CCP is to use a sequence of questions called a CCP Decision Tree (Fig. 1).



Source: The National Advisory Committee on Microbiological Criteria for Foods (1992).

Fig. 1. Critical Control Points (CCP) Decision Tree.

An HACCP team uses the hazard analysis information and the decision tree to help identify which steps in the procedure are CCP. Answering the questions in Fig, 1 allows producers to determine if the identified hazard can be controlled at a certain production point. Low-risk hazards may be excluded and do not necessarily need an HACCP plan.

Also, producer facilities can differ in the hazards identified and the CCP. This is because of differences in facility layout, equipment, selection of ingredients or feeds, and procedures employed. Examples of CCP may include receiving areas for livestock or feedstuffs, processing, or shipping livestock.

3. Establish Critical Limits

Critical limits are a maximum or minimum value to which a biological, chemical, or physical parameter must be controlled at a CCP. Limits are used to prevent, eliminate, or reduce the occurrence of a hazard. Critical limits are also used to distinguish between safe and unsafe operating conditions at a CCP. Critical limits should be scientifically based.

The following examples are not to be used as a treatment guideline. Always read and follow the label or directions from a veterinarian:

- Feed supplement contains 0 percent animal byproducts.
- Antibiotic in receiving rations should not exceed 7 days.
- Withdrawal periods for treated livestock are 30 days before market.
- Feed grains should contain less than 1 percent of metal contamination.

4. Establish Monitoring Procedures

Observations or measurements are to be collected to assess whether a CCP is under control and to produce an accurate record for future use in verification. Monitoring serves three main purposes:

- Facilitates tracking of the operation (if there is a trend toward loss of control, then action can be taken to bring the process back into control before a deviation from a critical limit occurs).
- Determine when a deviation occurs at a CCP.
- Provides written documentation for use in verification.

All records and documents associated with CCP monitoring should be dated and signed or initialed by the person doing the monitoring. Examples: (1) Recording the date in a feedlot ear tag of the livestock being sent to market. This monitors the withdrawal period of pharmaceuticals that may have been used. (2) Documentation of visual appraisal of hay received. This can reduce the exposure of mold or blister beetles in horse hay, which can cause death.

5. Establish Corrective Actions

When there is a variation from a set of critical limits, corrective action is necessary. Workers should be trained in procedures to follow when there is a trend toward loss of control so that adjustments can be made in a timely manner to assure that the process remains under control. Corrective actions should be developed **in advance** for each CCP and be included in the HACCP plan.

The HACCP plan should specify what is done when a deviation occurs, who is responsible for implementing the corrective actions, and determine the fate of noncompliant products. (Is it still safe, can it be reprocessed, or is there a withdrawal period) and record, develop, and maintain records of the actions taken.

Example: If pharmaceuticals are received un-refrigerated they are rejected and sent back.

6. Establish Verification Procedures

These are procedures, other than monitoring, that determine the validity of the HACCP plan and that the system is operating according to the plan. The HACCP team needs to make sure that the plan is scientifically and technically sound, and that all hazards have been identified and that if the HACCP plan is properly implemented these hazards will be effectively controlled. The information needed to validate the HACCP plan often includes:

- Expert advice and scientific studies
- In-plant observations, measurements, and evaluations

7. Establish Record-Keeping and Documentation Procedures

The records maintained for the HACCP management system should include the following:

1. A summary of the hazard analysis, including the rationale for determining hazards and control measures.
2. Listing of the HACCP team and assigned responsibilities.
3. Description of the product, its distribution, intended use, and consumer.
4. HACCP plan summary table that includes information for (Table 1):
   - ° Steps in the process that are CCP,
   - ° The hazard of concern,
   - ° Critical limits,
   - ° Monitoring,
   - ° Corrective actions,
   - ° Verification procedures and schedule, and
   - ° Record keeping procedures.
5. Support documentation, such as validation records.
6. Records that are generated during the operation of the plan.

Conclusion

A high quality, safe, wholesome food product is the goal of every livestock producer. Implementation of an HACCP management system allows producers to prevent potential hazards before they become a health threat to animals or consumers. By applying the above seven basic principles livestock producers should be able to keep biological, chemical, and physical hazards under control in their operation.

Table 1. HACCP plan summary of processing newly arrived feeder cattle at a feedlot. (This is only an example. The dosages given are not to be used as a treatment guideline. You should always read and follow the label of the products used.)

Critical control point	Squeeze chute
Hazards	Vaccination overdose, abscess development, foreign object contamination,
Critical limits	2 cc for 8-way, 2 cc for Pyramid 4, 1 cc/100 lb of wt. for Ivomec, 1 needle used for every 5 head processed.
Monitoring	Record number of needles used, amount of pharmaceutical used or remaining.
Corrective action	When overdose occurs, notching or marking of ear tag. When abscess develops review Beef Quality Assurance procedure on proper injects. When foreign object contamination occurs remove broken needle from animal.
Verification	Foreman does a visual appraisal of new arrivals, 10 days after vaccinations, to record number of abscesses.
Documentation	Records are kept of date, number of head processed, pharmaceuticals used. The manager signs off on the paperwork.

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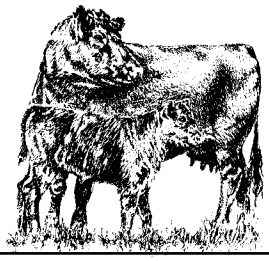

Western Beef Resource Committee *Fourth Edition*

Cattle Producer's Handbook

Quality Assurance Section 212

Beef Quality Assurance: Preventing Drug Residues

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Today's consumer expects each food product that is purchased to be safe, wholesome, high quality, and consistent. Consumers have various choices for protein sources in the marketplace today. In order to maintain consumer demand for beef, the industry has found it necessary to address and eliminate consistency and quality shortfalls.

One area of concern is drug residues. Violative drug residues are unacceptable levels [levels above tolerances set by the U.S. Food and Drug Administration (FDA) and the Environmental Protection Agency (EPA)] of chemical remnants found in the edible tissues of carcasses at the time of slaughter. Persons administering animal health products are responsible for any drug residue problem found in edible tissues collected at slaughter.

In the 1994 Tissue Residue Annual Report, failure to adhere to approved withdrawal times was cited as being the primary cause of residue violations. Disregard of withdrawal times accounted for 43.4 percent of the cited drug residue violations. In addition to failure to adhere to approved withdrawal times, violative residues may result from the improper use of veterinary and animal health products (antibiotics, feed additives, implants, parasiticides, vaccines, anti-inflammatories, minerals, etc.), and the improper administration of these products. In the 2010 Residue Violation Report, the U.S. Department of Agriculture - Food Safety Inspection Service (USDA-FSIS) listed the following percentages of residue violations in various major classes of cattle: beef cows 0.11%; bob veal calves 0.48%; dairy cows 0.15%; bulls 0.07%; steers 0.06%; and heifers 0.00%.

In the 2007 National Market Cow and Bull Quality Audit (NMCBQA), during face-to face interviews, beef packers cited antibiotic residues as one of the leading (ranked 4th out of 10) concerns facing the industry because of potential food safety implications. The beef industry's affiliated organizations were also quick to list antibiotic residues as a major concern facing the industry, even though the 2007 NMCBQA demonstrated a reduction in antibiotic residue concern compared to the 1999 NMCBQA where residues ranked second in the list of top 10 concerns. According to the audit, for every cow and bull that is marketed and slaughtered, the beef industry loses 92 cents for antibiotic residue handling and testing. The figure may seem modest, but it should be understood that it does not include the losses/costs associated with cuts and carcasses being trimmed and condemned as a result of violative residues.

Violative residues can result in economic losses to individual producers and to the beef industry as a whole. Drug residue problems may cause negative publicity for the beef industry and may undermine consumer confidence in beef when food safety and health issues arise. Following are a few management tips to help prevent violative drug residues, enhance beef quality, and maintain consumer demand for beef.

Read and Follow Drug Labels

Federally (FDA) approved animal health products are tested and have met stringent requirements. Testing regimes ensure that products consistently perform according to manufacturer claims and ensure that products will not harm animals when administered accord-

ing to label directions. Manufacturers bear the responsibility for labeling over-the-counter (OTC) drugs, and veterinarians bear the responsibility when prescription drugs are dispensed.

Producers should read the label before purchasing and using animal health products. Labels are provided to ensure that proper drugs are selected, that drugs are administered properly, and that the possibility of residues is minimized. If at any point (pre-treatment, treatment, post-treatment) questions, concerns, or misunderstandings arise regarding label contents and instructions, a veterinarian should be consulted.

Extra-label use drugs (ELUD) are any drugs used in a manner, or under conditions, that are not identified/specified on the label or package insert. There are specific FDA guidelines for ELUDs and all require veterinary supervision, an appropriate prescription, and defensible justification for the extra-label use.

Administer Drugs Properly

Animal health products should be administered in such a way that treated animals can use the products effectively and efficiently. The method and route by which a drug is administered is dependent upon the biological properties of the drug, how quickly a response to the drug is required, and the site in the body where the drug action should take place. In all cases, label directions should be followed when administering drugs.

Some points to remember when administering animal health products include:

1. Place all injections in front of the animal's shoulder.
2. If label allows, choose a route of administration that minimizes risk of tissue damage (subcutaneously vs. intramuscularly).
3 Select sharp, sanitary needles of the correct length and gauge.
4. Do not use bent, burred, or broken needles.
5. Do not inject more than 10cc of product in one injection site.
6. Keep injection sites at least 4 inches apart.
7. Follow withdrawal periods.
8. Do not use products that have expired or are out of date.
9. Do not use animal health products, even over-the-counter products, in an extra-label manner without a prescription.

By law, any animal health drug (prescription or over-the-counter) used in an extra-label manner requires a prescription from a licensed veterinarian. Consider the following example. Penicillin G is available OTC (non-prescription) and has a labeled dose of 1cc per 100 pounds of body weight with no more than 10cc given per injection site. Veterinarians are the only individuals to determine if an alternate (other than labeled) dose or route of administration is medically appropriate. In these situations, veterinarians must add a prescription label to the drugs and provide the necessary withdrawal period for the drug being used in an extra-label manner.

Keep Proper Records

Maintaining a permanent record of all animal health product use is key to eliminating drug residues and maintaining consumer confidence in beef. Treatment records may be kept on individual animals or on entire groups of cattle that were worked and treated at the same time and in a similar fashion. Whether the records are for individuals or for groups, they should:

1. Identify the animal(s) treated,
2. Specify the date(s) of treatment,
3. List the drug administered,
4. Record drug lot numbers,
5. List the dosage given,
6. Provide the route of administration,
7. Identify the injection site,
8. Identify the person who administered the drug,
9. Show the withdrawal period for the drug administered, and
10. List date that treated animals can safely be marketed/slaughtered.

Personnel associated with beef cattle enterprises should be provided with treatment records and should familiarize themselves with the documents. This will help to prevent treated animals from being prematurely marketed before they have cleared their drug withdrawal period.

Strictly Adhere to Drug Withdrawal Times

Every federally approved drug, or animal health product, has a withdrawal period printed on the label or package insert. Withdrawal periods represent the amount of time it takes for an animal to metabolize the administered animal health product and the amount of time it takes for the product concentration in the tissues to decrease to a safe, acceptable level. A withdrawal period is the time from the last administration of the drug to the time the treated animal can be marketed for harvest.

Before they use an animal health product, producers should refer to the label and/or package insert, determine the proper withdrawal period, and calculate a safe marketing date. Most beef cattle animal health products carry a withdrawal period that ranges from 0 to 60 days. Animals treated with a product that has a withdrawal period of 60 days should be withheld for **at least** 60 days before being marketed for harvest. Withdrawal periods may be extended when combinations of drugs are used or when extra-label drug use occurs. In these situations, or at any time a producer is uncertain of a specific drug withdrawal period, a veterinarian should be consulted.

NOTE: The following web page (URL listed below) is made available to assist producers in becoming familiar with and adhering to approved drug withdrawal periods. This resource is made available by MWI Veterinary Supply in Boise, ID, and is presented for educational purposes only. Changes in drug withdrawal information occur periodically. Therefore, it is the responsibility of the beef producer to read and follow all animal health product labels and package information. If at any point there is a question on a drug's withdrawal period, a veterinarian should be consulted.

Website: http://www.mwivet.com

Instructions: On MWI homepage, select "Compendium" under "Industry Resources" (tabs on left side of homepage).

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