

Western Beef Resource Committee

# Cattle Producer's Library

Quality Assurance Section

CL211

## 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.

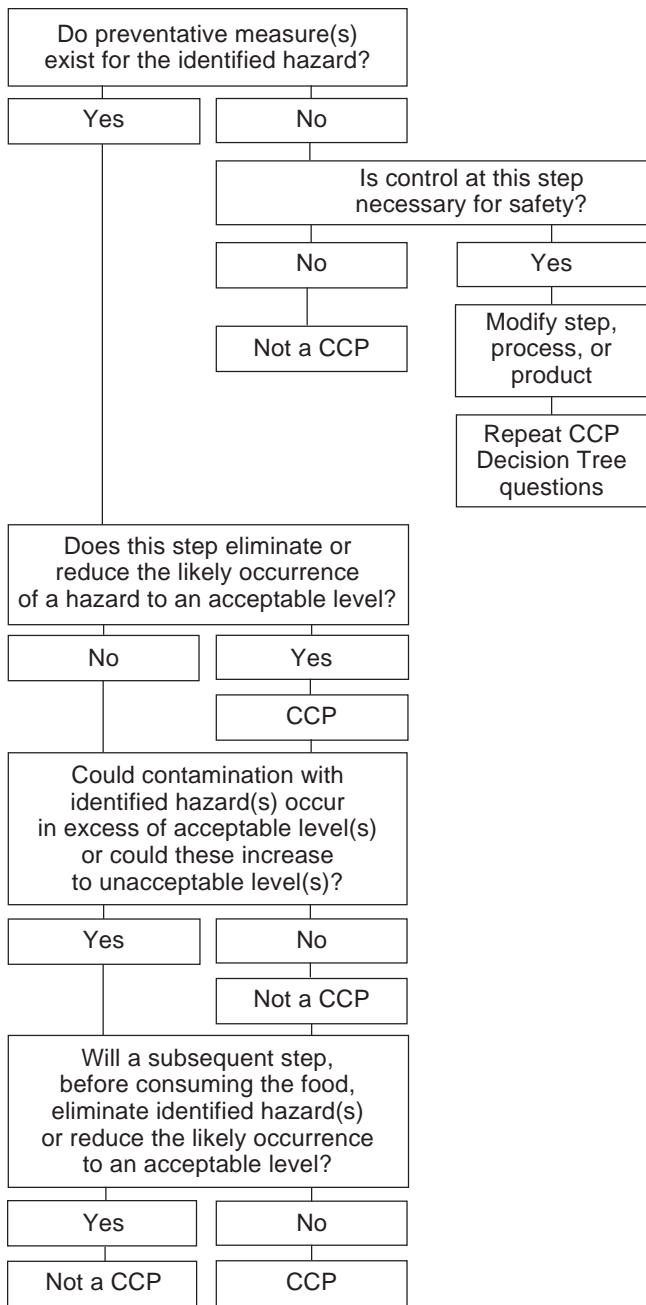
#### 1. Conduct a Hazard Analysis

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



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

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

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).

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 non-compliant 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

**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.)

<b>Critical control point</b>	Squeeze chute
<b>Hazards</b>	Vaccination overdose, abscess development, foreign object contamination,
<b>Critical limits</b>	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.
<b>Monitoring</b>	Record number of needles used, amount of pharmaceutical used or remaining.
<b>Corrective action</b>	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.
<b>Verification</b>	Foreman does a visual appraisal of new arrivals, 10 days after vaccinations, to record number of abscesses.
<b>Documentation</b>	Records are kept of date, number of head processed, pharmaceuticals used. The manager signs off on the paperwork.

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.

## References

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