

Principle 4: Monitoring

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HACCP Principles

1. Conduct a Hazard Analysis (HA)
2. Identify Critical Control Points (CCPs)
3. Establish Critical Limits (CLs)
- 4. Establish CCP Monitoring Requirements**
5. Establish Corrective Actions (CA)
6. Establish Verification Procedures
7. Establish Record-Keeping Procedures

Monitoring Definitions

- ❑ Planned sequence of observations or measurements to assess whether a CCP is under control and to produce an accurate record for future use in verification
- ❑ To conduct a planned sequence of observations or measurements to assess whether control measures are operating as intended

FSMA

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Examples of Monitoring Procedures

- ❑ Visual observations
- ❑ Temperature
- ❑ Time
- ❑ pH level
- ❑ Moisture level

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FSMA Rules for Animal Feed

As appropriate to the nature of the preventive control

- (a) Establish and implement written procedures, including frequency ...
 - (b) Monitor the preventive controls with adequate frequency ...
 - (c) Document the monitoring in accordance with record keeping requirements
- (2)(i) Records of refrigeration temperature ...

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Monitoring Describes:

- **Type of monitoring procedure**
 - What will be monitored
- **Specifies procedures used**
 - How and where it will be monitored
- **Establishes frequency**
 - When it will be monitored
- **Identifies person(s) responsible**
 - Who will perform monitoring procedures

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What will be monitored?

- ❑ Critical limit (e.g. bill of lading to ensure approved supplier & correct ingredient)

The critical limit and monitoring activity must be compatible (e.g. feed mash temperature must be >165 measure pellets via thermometer or if monitoring the conditioning process measure steam flow and residence time of feed mash in the conditioner).

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How will it be monitored?

- ❑ If the CL is numerical (e.g. mixing time \geq 180 sec.) then monitoring involves measurement of a variable (time in the mixing example)
- ❑ If the CL is defined as the presence or absence of an attribute (no ruminant protein) then monitoring involve observation (e.g. bill of lading, approve supplier, microscopy)

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When will it be monitored?

- ❑ Continuous monitoring is preferred, but not always possible in feed manufacturing
- ❑ If monitoring the CL is discontinuous, frequency of monitoring must be addressed (ideally using sampling statistics at specified confidence levels and intervals)

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Continuous Monitoring

- ❑ Ideal – all products tested
- ❑ Equipment **must** be calibrated
- ❑ Automated equipment or sensors
 - Residence time/temperature

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Discontinuous Monitoring

Properties:

- ❑ Tests must be rapid
- ❑ Microbial testing – not usually possible

Examples:

- ❑ pH
- ❑ Moisture content or water activity
- ❑ Visual inspection of bill of lading

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Who is responsible for monitoring?

Each CCP must be monitored by a specific individual who is:

- ❑ Designated in the HACCP plan
- ❑ Trained prior to assuming the responsibility
- ❑ Responsible (must sign monitoring record)

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Personnel to Consider

- Qualified individuals:
 - Mill supervisors
 - QC personnel
 - Selected mill employees
 - Maintenance

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Other Considerations

- Personnel must:
 - Understand the importance and purpose of monitoring
 - Have ready access to appropriate instrumentation and calibration
 - Be capable of reporting deviations immediately and accurately

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Identifying Critical Limits, Monitoring and Corrective Actions

Processing category – Cattle medicated feed

Process step/CCP	Critical Limit	Monitoring Procedures	Corrective Action
Write in process step and CCP #	Write in CL for this CCP	What will be measured? Where will the CL be measured? How will it be measured? Who will monitor the CL? How often will the CL be measured?	Cause of deviation? How will the process be corrected? Product disposition? Measure to prevent recurrence. Who is responsible for implementing the CA?

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