

Almond Board of California

Hazard Analysis and Critical Control Point (HACCP)

Overview

HACCP is the final stage of an integrated, proactive food safety program targeting the handler, and designed to prevent contamination before it occurs. For HACCP to be a fully functional part of overall product quality management, prerequisite programs must be established. GAP's provide guidelines to growers on how to minimize potential biological hazards during production and harvesting of almonds. GMP's define procedures to be used by handlers to allow almonds to be processed, packed and sold under sanitary conditions. SSOP's ensure a clean and sanitary environment in the facility. Together, these programs provide a framework for a HACCP program by proactively eliminating or minimizing potential sources of contamination.

HACCP provides a systematic approach to identify, assess and control the risk of biological, chemical and physical hazards that can be reduced, prevented, or eliminated. The idea is to develop a plan that anticipates and identifies places in the production process – known as critical control points (CCP's) – where contaminants might be introduced or other food safety concerns can be identified. When critical limits are exceeded, corrective action must be taken and documented. An independent third party should be used to verify or validate the effectiveness of a HACCP plan.

At the moment, almond handlers are not required under US law to implement HACCP procedures in their operations. However, handlers should recognize the benefits of HACCP practices to their customers and integrate them into their production routines.

The recommendations and guidelines included in this section are based on scientific principles and the review of required HACCP programs implemented in many other industries. They are intended to raise the awareness of the elements of a HACCP program. A HACCP program is unique and specific to each processing facility, and requires a thorough analysis of each phase of processing at that facility. The use of an individual trained in developing HACCP programs is recommended.

Definitions

Control point means any step at which biological, chemical, or physical factors can be identified.

Critical control point (CCP) means a point, step, or procedure in a food process at which control can be applied, and a food safety hazard can as a result be prevented, eliminated, or reduced to acceptable levels.

CCP decision tree is a sequence of questions to assist in determining whether a control point is a CCP.

Critical limit means the maximum or minimum value to which a physical, biological, or chemical parameter must be controlled at a critical control point to prevent, eliminate, or reduce to an acceptable level the occurrence of the identified food safety hazard.

Food safety hazard means any biological, chemical, or physical property that may cause a food to be unsafe for human consumption by rendering it reasonably likely to cause illness or injury in the absence of its control.

Preventive measure means physical, chemical, or other factors that can be used to control an identified food safety hazard.

Process-monitoring instrument means an instrument or device used to indicate conditions during processing at a critical control point.

Handling means, with respect to almonds or almond products: processing, storing, preparing, changing into different marketable forms, manufacturing, packing, and/or labeling.

Processor, with respect to almonds or almond products, means any person engaged in commercial, custom, or institutional processing. A processor includes any person engaged in the production of foods that are to be used in market or consumer tests.

Shall is used to state mandatory requirements.

Should is used to state recommended or advisory procedures or to identify recommended equipment.

Developing a HACCP plan

HACCP plans are specific to each facility and the products it produces. A series of steps must be completed before a HACCP plan can be developed.

- Assemble an HACCP team
- Provide a general description of:
 - The food/food product, including any ingredients
 - Its processing, distribution, and storage methods
 - Intended use and consumer
 - Typical consumers
- Develop a simple flow diagram describing steps involved in production of each product. A sample Plant Flow Chart can be found at the end of this section.
- On-site verification of the flow diagram by the HACCP team.

The Seven Principles of HACCP

1. **Conduct a Hazard Analysis** – Assess the food safety hazards that are reasonably likely to occur and that must be controlled for almonds or almond products. A food safety hazard that is reasonably likely to occur is one for which a prudent handler would establish controls because experience, illness data, scientific reports, or other information provide a basis to conclude that there is a reasonable possibility that it will occur in the particular almond or almond product being processed in the absence of those controls. Food safety hazards can be introduced from within and outside the facility, and can include food safety hazards that occur before, during, and after harvest. Hazards can be biological, chemical, or physical. A Hazard Analysis Worksheet will be found after this section.
2. **Determine Critical Control Points** – All hazards identified by the Hazard Analysis must be controlled at some point in the process. Decision trees can be used to identify CCP's. A sample HACCP decision tree is at the end of this section. The number of CCP's identified depends on the product being produced, the ingredients (if any) used, the processing methods employed, and the effectiveness of and extent to which prerequisite programs are implemented.
3. **Establish Critical Limits** – Critical limits are tolerances beyond which the related CCP is out of control and a potential hazard can exist. A critical limit is a maximum and/or minimum value at which control must be maintained for the CCP. CCP limits cannot be average values or ranges of values.

4. **Establish Monitoring Procedures** – Monitoring is a scheduled observation of a CCP and its limits. The procedure must be reliable enough and performed often enough to ensure that the hazard is under control. Testing is not an acceptable substitute for monitoring a CCP. Determine what will be monitored, how it will be monitored, when it will be monitored, and who will perform the monitoring. You can use the HACCP Plan Form found at the end of this section to establish control limits and monitoring procedures.
5. **Establish Corrective Actions** – When there is deviation from an established CCP, corrective actions must be taken to prevent a product that may be unsafe from reaching the consumer. Corrective action could include placing the product on hold pending completion of repairs, re-calibration, or cleaning/sanitation of the CCP. Corrective action steps taken must be documented.
6. **Establish Verification Procedures** – Every HACCP plan should be examined to validate its ability to control food safety hazards that are reasonably likely to occur, and that the plan is being effectively implemented. Verification should include, at a minimum:
 - a. Reassessment of the HACCP plan. Reassess the adequacy of the HACCP plan whenever any changes occur that could affect the hazard analysis or alter the HACCP plan in any way, or at least annually. Changes may include: Raw materials or sourcing of raw materials, handling methods or systems, finished product distribution systems, or the intended use or consumers of the finished product. The HACCP plan must be modified whenever a reassessment reveals that the plan is no longer adequate.
 - b. Ongoing verification activities. Ongoing verification activities include a review of any consumer complaints that have been received by the handler to determine whether they relate to the performance of CCP's or reveal the existence of unidentified CCP's, the calibration of process-monitoring instruments, and the performing of periodic end product or in-process testing.
 - c. Records review. A review, including signing and dating, by an individual who has been trained in accordance with appropriate HACCP practices, including:
 - i. The monitoring of critical control points
 - ii. Ensuring that the records are complete and that documented values are within the critical limits
 - iii. The taking of corrective actions

7. **Establish Record Keeping and Documentation Procedures** – The HACCP plan must be on file at the handling facility. It must include documentation relating to CCP's and any action on deviations and/or disposition of product. Types of records could include:
- a. Processing: records of all monitored CCP's
 - b. Deviation: records of any deviations from the HACCP plan
 - c. Ingredients: supplier qualification, ingredient certification, audit records
 - d. Product safety: records on safe shelf-life, microbiological testing, microbiological challenge studies
 - e. Storage and distribution: traceability data

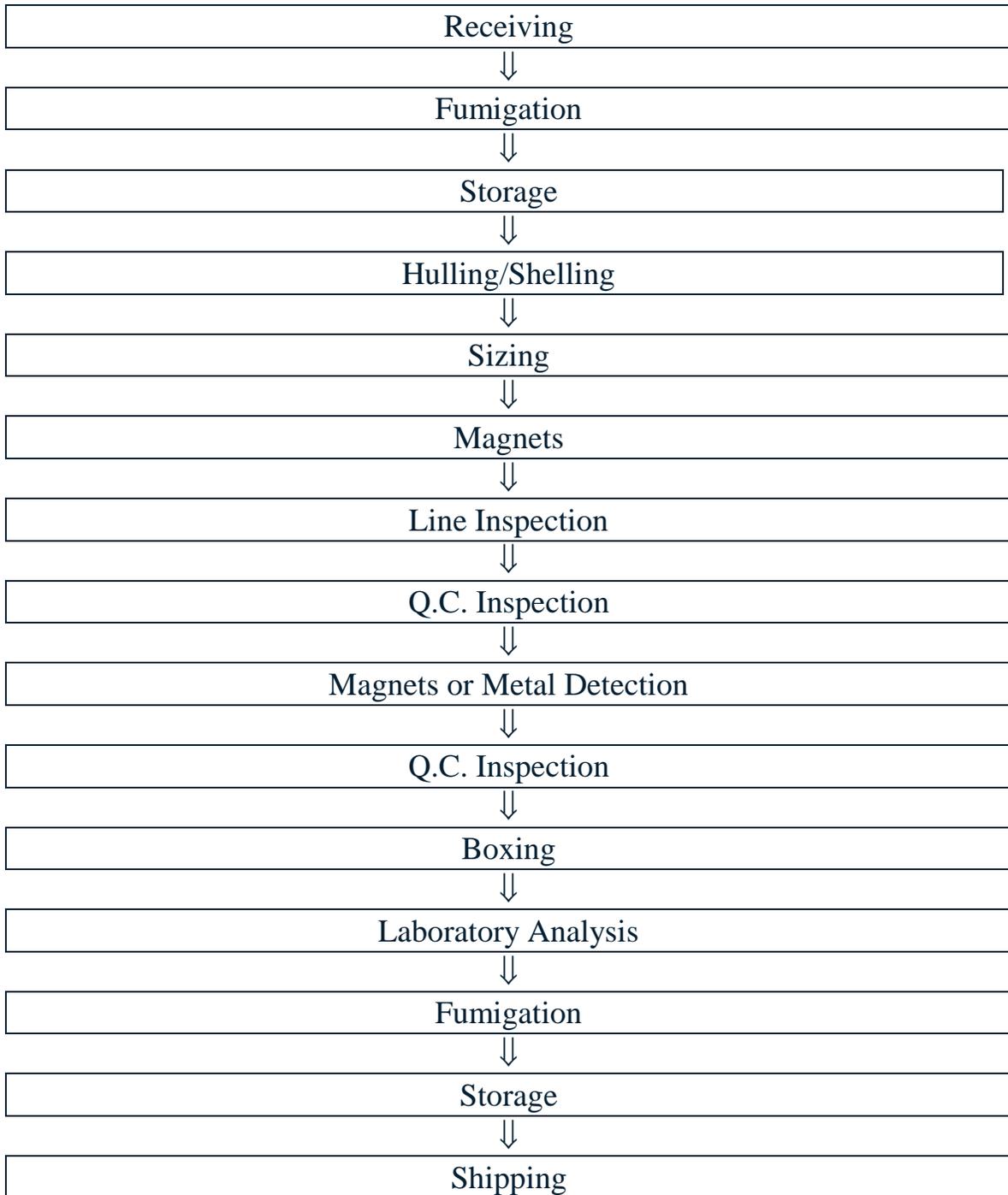
Reference (A copy of this document will be found under “Regulations and Guidelines”)

FDA

- HACCP Principles and Application Guidelines

Plant Flow Chart

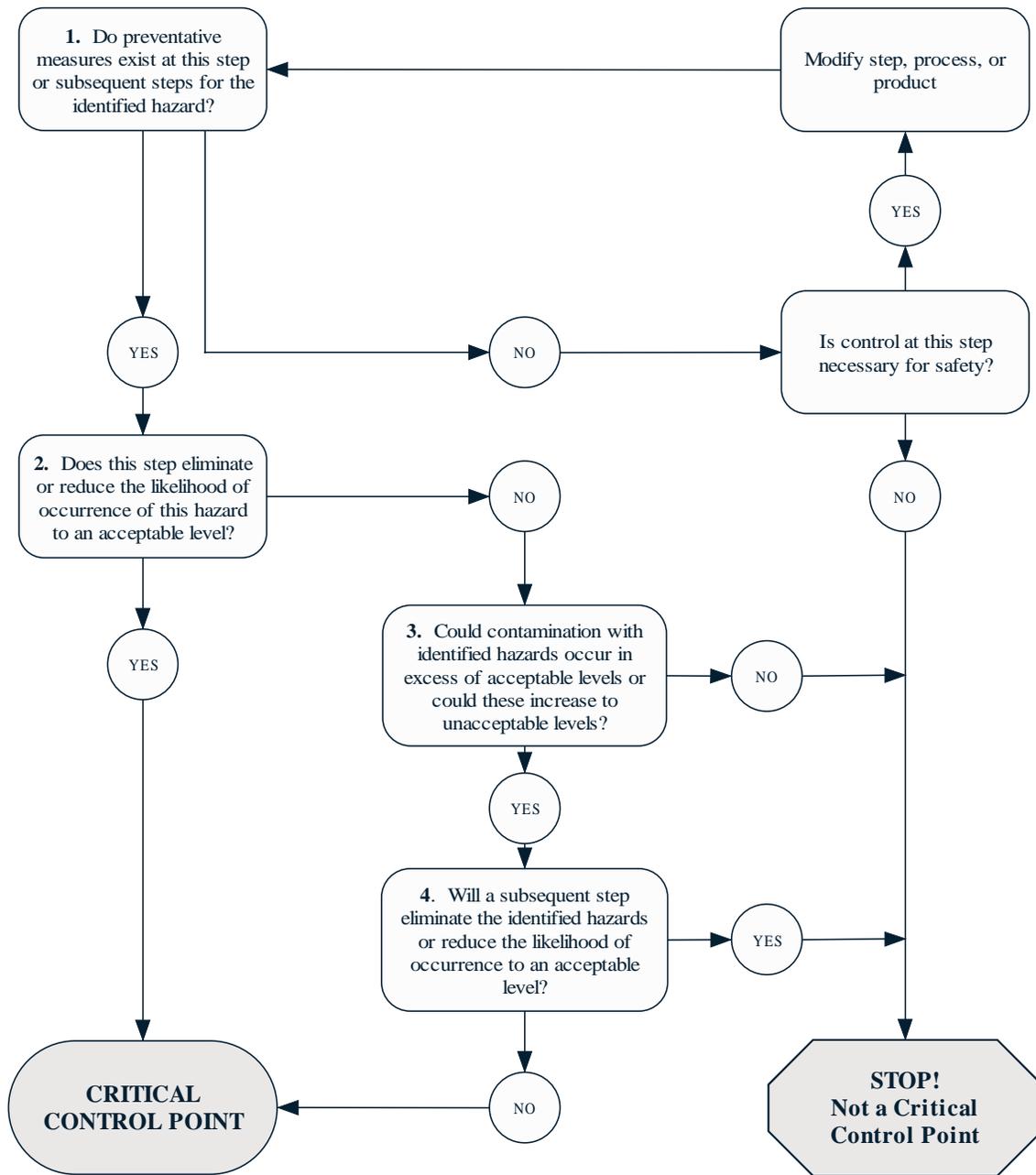
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Hazard Analysis Worksheet

Firm Name:		Product Description: (each product must have its own hazard analysis)			
Firm Address:		Methods of Distribution and Storage:			
Date of Analysis:		Intended Use and Consumer: Typical Consumer:			
Processing step	Identify potential hazards introduced, controlled, or enhanced at this step	Are any potential food safety hazards significant? (Yes or No)	Justify your determination of hazard significance	What control measures can be applied for the significant hazard?	Is this step a Critical Control Point? (Yes or No)
Receiving	Biological:				
	Chemical:				
	Physical:				
Fumigation	Biological:				
	Chemical:				
	Physical:				
Hulling/Shelling	Biological:				
	Chemical:				
	Physical:				
Sizing	Biological:				
	Chemical:				
	Physical:				
Packing	Biological:				
	Chemical:				
	Physical:				
Storage	Biological:				
	Chemical:				
	Physical:				
Shipping	Biological:				
	Chemical:				
	Physical:				

HACCP Decision Tree



HACCP Plan Form

Firm Name:			Product Description:						
Firm Address:			Method of Storage & distribution:						
			Intended Use and Consumer						
			Monitoring						
CCP	Significant Hazard	Critical Limits	What	How	Frequency	Who	Corrective Action (s)	Records	Verification