



# Developing a Food Safety Plan that Fits Your Agricultural System: Hazard Analysis and Control 101

Food Safety for Organic  
Production and Handling of Fresh  
Produce

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# Hazard Analysis

- Hazard Analysis is an integral step in a HACCP program
- An excellent tool to identify the hazards, understand the risk and put controls in place to mitigate that risk
- HACCP is widely used in manufacturing, not widely excepted as an on farm system
- Hazard Analysis can be used on farm



## What is H.A.C.C.P.?

- Hazard Analysis Critical Control Point
  - Goal is food safety; control and prevent contamination of food products
- Hazard Based Food Safety Control
  - Pre-requisite programs in place
  - Hazard Analysis
  - Creation of control points and critical control points
  - Validation of control
  - Continuous verification of control



# H.A.C.C.P. History

- 1960's - Pillsbury/NASA: Zero Defects
- 1971 - HACCP Principles Introduced to Public
- 1974 - FDA Low Acid Canned Food Regulations
- 1980's - HACCP Standardized and Adopted
- 1996 - USDA HACCP
- 1997 - FDA Seafood HACCP
- 2004 - Juice HACCP



# The HACCP Seven Principles

- **Principle 1: Conduct a hazard analysis.** Plants determine the food safety hazards and identify the preventive measures the plant can apply to control these hazards. A food safety hazard is any biological, chemical, or physical property that may cause a food to be unsafe for human consumption.
- **Principle 2: Identify critical control points.** A critical control point (CCP) is a point, step, or procedure in a food process at which control can be applied and, as a result, a food safety hazard can be prevented, eliminated, or reduced to an acceptable level.
- **Principle 3: Establish critical limits for each critical control point.** A critical limit is the maximum or minimum value to which a physical, biological, or chemical hazard must be controlled at a critical control point to prevent, eliminate, or reduce to an acceptable level.
- **Principle 4: Establish critical control point monitoring requirements.** Monitoring activities are necessary to ensure that the process is under control at each critical control point. In the United States, the [FSIS](#) is requiring that each monitoring procedure and its frequency be listed in the HACCP plan.
- **Principle 5: Establish corrective actions.** These are actions to be taken when monitoring indicates a deviation from an established critical limit. The final rule requires a plant's HACCP plan to identify the corrective actions to be taken if a critical limit is not met. Corrective actions are intended to ensure that no product injurious to health or otherwise adulterated as a result of the deviation enters commerce.
- **Principle 6: Establish record keeping procedures.** The HACCP regulation requires that all plants maintain certain documents, including its hazard analysis and written HACCP plan, and records documenting the monitoring of critical control points, critical limits, verification activities, and the handling of processing deviations.
- **Principle 7: Establish procedures for ensuring the HACCP system is working as intended.**



# Hazard Types

- Physical -
  - Dirt, wood, metal, hair, glass, plastic, rocks, shot, etc.
- Chemical -
  - Acids, solvents, sanitizers, pesticides, lubricants, fuel, etc.
- Biological -
  - E. Coli 0157-H7, Salmonella, Hepatitis A, Shigella, etc.



# Considerations for Hazard Analysis

- People
  - good hygiene, good agricultural practices, conscientious, knowledgeable
- Machinery
  - Right tool for the job, good working order, well cleaned
- Methods
  - Know your process and document if necessary
- Environment
  - Understand on farm and adjacent land use, materials and techniques
- Materials
  - Know your suppliers and their process



# Hazard Analysis – The process

- Analysis can be done on a process, product or equipment
  - Flow diagrams, descriptions, product specifications may be helpful
  - Use templates to standardize the process of analysis
  - Validate conclusions via literature or testing
  - Verify controls by monitoring and documenting if necessary
  - Perform analysis when system, product, or equipment change



## Hazard Analysis – examples

- Products - be sure to identify intended or unintended use
  - Baby greens for salad, whole head iceberg, strawberries, potatoes, grapes, oranges, *compost*, etc.
- Equipment - be sure to identify intended or unintended use
  - *Tractor*, shovel, hoe, cart, bucket, knife, etc.
- Process - be sure that process is consistent
  - Planting, *composting*, pruning, harvesting, thinning, weeding, etc.



# Hazard Analysis Worksheet

Date: \_\_\_\_\_

Product, Equipment or Process Step: \_\_\_\_\_

Product, Equipment, or Process Step	Hazard Type	Hazard Justification	Risk Assessment-		Is Hazard fully controlled by Prerequisite Program?	Control Measure	Control Justification	CCP Needed
			Likelihood	Severity				
	Chemical							
	Physical							
	Biological							

Prepared by: \_\_\_\_\_

Approved: \_\_\_\_\_



# Hazard Analysis - product

Date: \_\_1/22/08\_\_\_\_\_

Product, Equipment or Process Step: \_\_\_\_\_

Iceberg Lettuce

Product, Equipment, or Process Step	Hazard Type	Hazard Justification	Risk Assessment-		Is Hazard fully controlled by Prerequisite Program?	Control Measure	Control Justification	CCP Needed
			Likelihood	Severity				
Iceberg	Chemical	oil, fuel	M	L	Yes	Inspection and maintenance of equipment	Regular inspection and maintenance will prevent leaks	
	Physical	shot	L	M	No	No hunting allowed		
	Biological	Hepatitis A	M	H	Yes	GAP training, hygiene compliance, illness reporting	Proper handwashing and illness reporting will control hazard	

Prepared by: \_\_\_\_\_

Approved: \_\_\_\_\_



# Hazard Analysis – equipment

Date: \_\_1/22/08\_\_\_\_\_

Product, Equipment or Process Step: \_\_\_\_\_

Harvest Knife

Product, Equipment, or Process Step	Hazard Type	Hazard Justification	Risk Assessment-		Is Hazard fully controlled by Prerequisite Program?	Control Measure	Control Justification	CCP Needed
			Likelihood	Severity				
Knife used for harvest	Chemical	sanitizer	L	L	Yes	sanitizer levels for cleaning monitored and knife rinsed thoroughly with fresh water prior to use - periodic audit for sanitizer levels will show compliance	Sanitizer levels (chlorine) must be <4 PPM free chlorine for organic compliance	
	Physical	knife pieces	L	H	Yes	Sanitation of knives will also call for inspection and maintenance. Poor condition knives will be repaired or removed	Proper monitoring and control will prevent this from becoming an issue	
	Biological	pathogens, viruses, etc	M	H	Yes	Sanitation program, GAP, hygiene	provide lit citations	

Prepared by: \_\_\_\_\_

Approved: \_\_\_\_\_



# Hazard Analysis – a process

Date: 1/22/08

Product, Equipment or Process Step: \_\_\_\_\_

Composting

Product, Equipment, or Process Step	Hazard Type	Hazard Justification	Risk Assessment-		Is Hazard fully controlled by Prerequisite Program?	Control Measure	Control Justification	CCP Needed
			Likelihood	Severity				
windrow composting	Chemical	pesticides, fertilizers, etc.	L	L	Yes	only organically grown green waste applied	all waste coming from on farm	
	Physical	garbage/foreign material	L	L	Yes	only green waste and manure applied, no yard or municipal waste used	All waste coming from on farm	
	Biological	pathogens, viruses, etc	H	H	No	Process must meet or exceed composting standards to reduce or eliminate the hazard - 131 -170 for at least 15 days with 5 turns	NOP 205.2 terms "Compost" Need to validate internal process to justify time and temperature	

Prepared by: \_\_\_\_\_

Approved: \_\_\_\_\_



## Hazard Analysis – next steps

- Have you sliced the pie into enough pieces?
- Validation of controls
- Documentation/verification
- When do I perform a new hazard analysis



# Hazard Analysis References

- <http://www.cfsan.fda.gov/~lrd/haccp.html>
- <http://en.wikipedia.org/wiki/HACCP>
- <http://www.foodsafety.gov/~fsg/fsghaccp.html>
- <http://sop.nfsmi.org/HACCPBasedSOPs.php>
- [http://www.fsis.usda.gov/Science/Hazard\\_Analysis\\_&\\_Pathogen\\_Reduction/index.asp](http://www.fsis.usda.gov/Science/Hazard_Analysis_&_Pathogen_Reduction/index.asp)



Will Daniels

[will@ebfarm.com](mailto:will@ebfarm.com)

831-623-7880