

HACCP

Have you ever hear of Hazard Analysis of Critical Control Points for the Seafood Industry (HACCP)? Are you incorporating the seven Steps as an integral part of your food safety program? You may ask, “Why do I need to start a HACCP Program if retail establishments (restaurant & supermarkets), harvesters and common carriers (truckers, airlines & ships), are exempt?” A better question could be: “Is all this additional paperwork necessary?”

At the present time, HACCP applies to food service establishments in one state – Rhode Island; your state may be next!

The following article is a condensation of a three-day seminar presented by the National Marine Fisheries Service.

A BRIEF HISTORY

The origins of HACCP are based in the Total Quality Management (TQM) principles. HACCP principles were developed on the prevention rather than reaction concept. The Pillsbury Company did the first commercial application of TQM principles for the food industry in the early 1960's. Pillsbury in cooperation with NASA and the US Army Natick Research Laboratory were developing foods for the space program. It was determined the traditional mode of end product testing was not effective to achieve the desired near 100% safe food product goal. To reach this goal by using end product testing, it would mean destroying nearly all their product – obviously a 100% food cost was unacceptable in their industry as well! Controls were implemented throughout their entire system from the arrival of the raw materials to the end user, in this case the astronauts.

The National Marine Fisheries Service launched the HACCP inspection program in 1992 as a voluntary safety quality program.

We all know the USDA controls the meat & poultry industries, but numerous regulatory agencies jurisdictions overlap when it comes to the Seafood industry. The US Department of Commerce (USDC) oversees the national Oceanographic and Atmospheric Administration to which, the National Marine Fisheries Service provides a fee based service.

Also under the USDC umbrella issuing directives is the Bureau of Weights & Measures. The US Health & Human Services covers the Food & Drug Administration and Cosmetic

Act governing food color and other seafood additives and the National Shellfish Sanitation Program. Also in the picture are the Environmental Protection Agency, US Customs and lest we not forget our state, county & city regulations!

Now you start to realize why it has been difficult to monitor seafood quality!

Seven Principles of HACCP

1. Hazard Analysis and Risk Assessment with all the aspects of the product being produced and the relationship to the end use of such product.
2. Identification of the Critical Control Points required to control the respective hazards.
3. Establishing the Critical Limits that must be met for each Critical Control Point to control the identified hazards.
4. Establish Monitoring Procedures for each Critical Limit at each Critical Control Point.
5. Establish Corrective Actions to be taken if Critical Limits are met or exceeded during the monitoring process. This Corrective Action is designed to bring the product and the process back into control.
6. Establish a Record-keeping system which documents that Critical Limits are not exceeded and if they are exceeded, what Corrective Actions are taken to bring the system back into control.
7. Establish Verification Procedures to demonstrate your HACCP program is functioning as planned.

Getting Organized

The first step is the most time consuming and requires perseverance!

You may even want to consider enlisting the help of someone certified in the HACCP techniques or take the course yourself. It's not necessary to have a HACCP certified person on-site but a person knowledgeable in the techniques will help immensely. An idea may be to contact your fish purveyors – according to the regulations; they have to have a person knowledgeable in HACCP on staff.

The best way to commence is to use the TQM technique of team building. Your team members could include some or all of the following: chef, purchaser, receiving person, stock person/handler, sanitation crew, management, accountant, vendors/purveyors, salespersons, management and customers. In order for your plan to get up and going, it's extremely important to have management commitment and support.

After the team is formed, their initial task is to do a complete Product Description. List all the types of seafood you use, the methods of distribution, intended consumer- YOPI

(Young, Old, Pregnant, Immuno-compromised), and intended consumer use (cooked to 140 plus degrees Fahrenheit, ready to eat, raw...).

Components of your Product Description will include the species –whether histamine producers, potential harvest area toxins; preparation ingredients – potential food allergies; additives – food coloring and packaging materials.

A way to help simplify your product Description may be to subdivide your products into Similar Product Groups. Instead of doing a separate description for each finished product, you could group them by similar processes (i.e. fresh, frozen, cooked-ready to eat, smoked, live molluscan shellfish-served on the half shell, cooked crustacean shell fish...). Another facet of your similar product groups is the determination of High Risk/Low Risk.

High risk Products – Group 1 (consumer use: not intended to be thoroughly cooked) includes: sushi, cold smoked salmon, live molluscan shellfish (clams, oysters...) and prepared items like surimi...

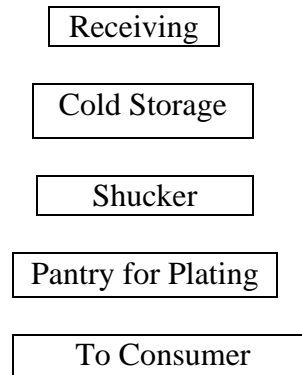
High Risk Products - Group 2 (species related hazards) includes: histamines, ciguatera toxin and tetrodotoxin...

Low Risk Products (consumer use: to be fully cooked) all fresh/frozen fillets, steaks and loins to be thoroughly cooked before consumption.

In order for the HACCP team to make the product descriptions/groupings, they have to be familiar with all processing operations. This helps to make the similar product groups by ensuring they share a similar process flow, share the same risk category or consumer use.

After your similar product groups have been identified, you're ready to develop a process flow chart. This is an important tool that helps the team (and anyone else) understand the steps the product goes through before it reaches the consumer. It helps ensure that no processing steps are missed in your hazard analysis. Accuracy is very important and must be verified. A significant health/ safety hazard may exist if a step is missed!

An example of a flow chart for clams may look like this:



Your HACCP team should do a facility “walk-through” of your flow chart. This will allow you to make changes and will give the team members a complete understanding of your products and the processes they go through.

Not required by the HACCP program is incorporating your Standard Operation Procedures (SOP) as part of your plan, yet by doing so, you may discover you already have controls in place.

Noted earlier, the initial phase is time consuming and detail intensive. Once you have invested this time, you’ll realize it was necessary to start your Hazard Analysis & Risk Assessment.

Hazard Analysis and Risk Assessment

Definition of Hazard: “The chance for or risk of a biological, chemical or economic property in a food that could result in an injury or illness or otherwise negatively impact the end user.”

The team approach brings many different skills and experiences. This is why you may want to consider bringing in your seafood purveyors. Their assistance may make it easier to complete the process for each similar product group.

In this step of the process, you identify all activities or conditions that may effect the product and determine whether they occur continually, occasionally or sporadically. The team has to analyze all the processes and identify the hazards. If not done properly, the team will not meet the HACCP goal of producing a safe, wholesome and properly labeled product.

A good approach to Hazard Analysis is to use the following 3-step method.

- Brainstorm all the possible hazards which may occur at each operational step
- Qualify the hazard into one of the following categories
 - FOOD SAFETY
 - WHOLESOMENESS
 - ECONOMIC INTEGRITY
 - *Exclude any hazards that don't fit into the scope of your HACCP plan
 - * Keep all of your sanitation-related hazards as part of your written Sanitation Standard Operating Procedure (SSOP) where you already have controls in place
- Identify Significant Hazards
 - a. Conduct probability assessment
 - b. Conduct severity assessment

HAZARDS COVERED BY THE NMFS HACCP PROGRAM
(FYI: The FDA HACCP plan only covers Food Safety)

FOOD SAFETY	
BIOLOGICAL	Bacteria: Salmonella, Listeria, E. coli Virus: Hepatitis, Norwalk Parasites: Anisakis
CHEMICAL	Natural Toxins: Scomboid, Ciguatera, PSP Man-made Toxins: Pesticides, DDT, PCB, Fuels
PHYSICAL	Glass, Bones, Staples, Jewelry, Filth
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WHOLESOMENESS	
DECOMPOSITION	
PHYSICAL	Adulterated Product: Insects, Filth
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ECONOMIC INTEGRITY	
MISLABELING	Incorrect species
SHORT NET WEIGHTS	

Sanitation can control many of your safety issues. Your written SSOP can outline all your sanitation related hazards and is a separate document from your HACCP Critical Control Points. Any hazard that can't be adequately controlled by SSOP must be further evaluated. This is where the team's probability and severity assessments will be used.

Probability is the likeliness that a hazard will occur. The team will be able to determine if it is a Low, Medium or High rating.

The Severity Assessment relates to Food Safety, Economic Integrity or Wholesomeness. Ratings are **A** – Automatically resulting in the hazard, **M/L** – May / Likely occur or **N/L** – Not Likely to result.

PREVENTATIVE MEASURES are an integral part of your Hazard Analysis. The HACCP team has to look at the procedures already in place and then develop additional control measures as necessary. For good measures already in place, refer to any written operating procedures and food safety literature you may have.

Remember, the HACCP principles are:

- 1.) Being proactive and
- 2.) Having effective preventative measures in place.

See Table 1, 2 & 3 for worksheets developed by the FDA and NMFS that you may enlarge and utilize. The FDA recommends the use of the HACCP Plan Form (Table 1) as it lists all the CCP components.

CRITICAL CONTROL POINT (CCP) DETERMINATION AND DEVELOPMENT

Definitions:

“A CONTROL POINT (or operational point) is any point in the process where biological, physical, chemical or economic factors can be controlled”

“A CRITICAL CONTROL POINT (CCP) is the point in the process that if not properly controlled, may result in an unacceptable food safety, wholesomeness or economic integrity risk. In other words, a CCP is a point, step or procedure in the process at which control can be applied and a hazard eliminated, prevented or reduced to an acceptable level.”

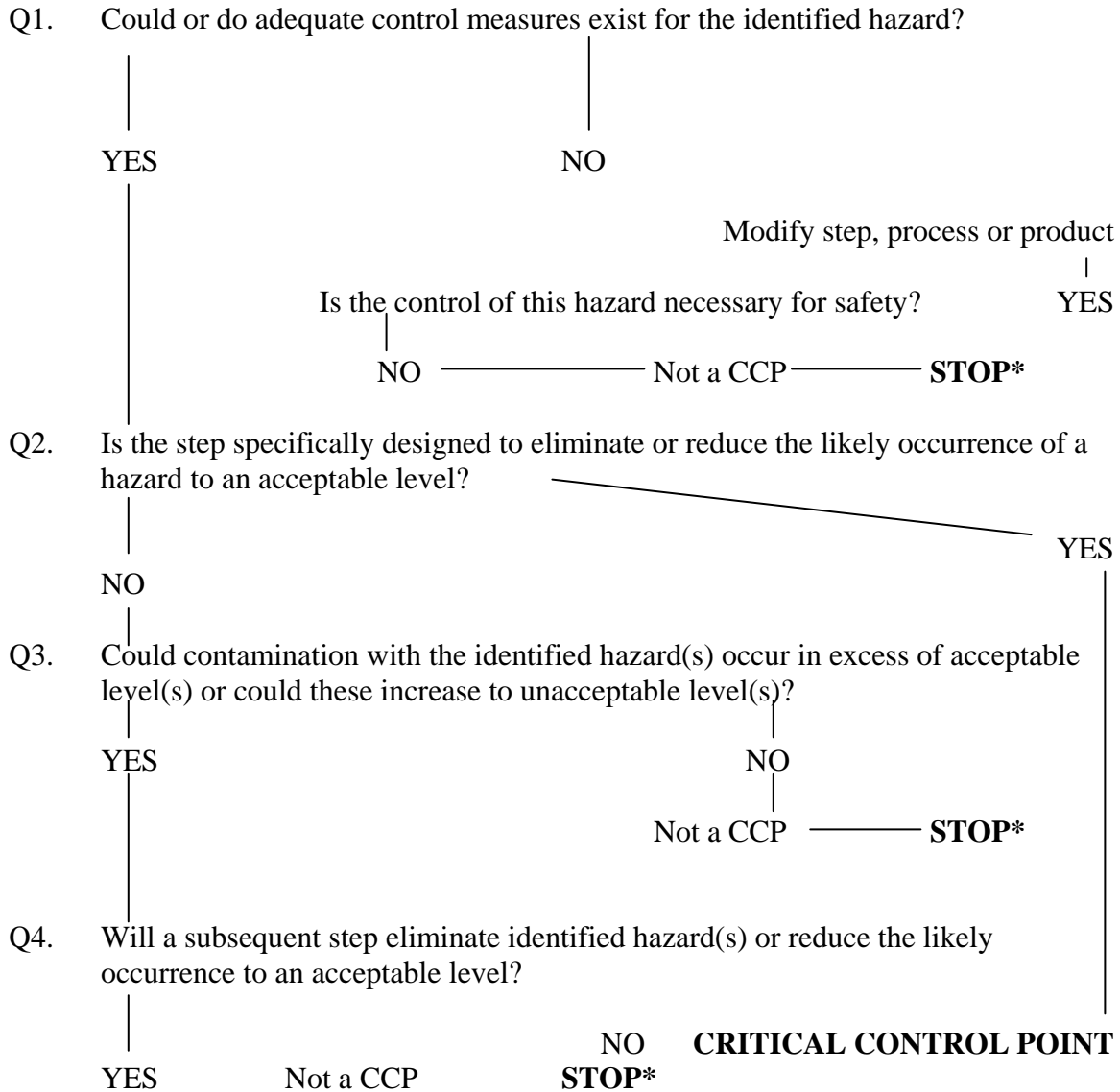
The most important factor in working on control points or critical control points is to apply the KISS technique (Keep It Simple and Short).

“RULES OF THUMB”

- Not every control point is a CCP
- CCP have to be product & process specific
- Hazards do not have to be controlled at the earliest part of the process
- A CCP may be used to control numerous hazards (i.e. cooler temperature may control histamine formation & pathogen growth)

See CCP Decision Tree (Table 4)

CCP DECISION TREE



- Proceed to next step in the described process

Developed by Codex Alimentarius
 Adopted by National Advisory Commission on Microbiology Criteria for Foods
 March 1992

Another definition to be introduced is Critical Limits (CL): “established points or tolerances, which either, must be met or not be exceeded if a hazard is to be controlled at a CCP.”

Simply stated, you must have a critical limit for each CCP you have established and a CCP may have more than one Critical Limit.

When you establish your critical limits they must meet all local, state and federal laws and regulations as well as be science based. Also you must keep in mind that setting CL too close to the regulatory requirements may not allow you time to react before a limit is exceeded.

MONITORING PROCEDURES

Definition: “The scheduled testing and/or observations recorded by the facility to report the findings at each CCP.”

These procedures and other records show your HACCP plan is working.

Your monitoring procedures help collect data, provide an early warning, prevent / minimize loss of product and pinpoint problems. They can either be an observation or a measurement. For measurements: you can record a time and temperature. For observations: it can be the smell of fish decomposing.

When you design monitoring procedures for your critical limits:

- List the location & what will be monitored.
- List how the critical limits will be monitored.
- How often you will monitor.
- Also anticipate to select and train those who will be monitoring, use unbiased collectors and give them the tools necessary – e.g. simple forms and baby doll thermometers.

CORRECTIVE ACTIONS

DEFINITION: “Predetermined actions to be followed when a critical limit is exceeded.”

These are the procedures you’ll utilize to reestablish control and if necessary, state who is responsible to take the corrective action.

Your Corrective Action options are:

- Reevaluate the hazard
- Rework the non-compliant product
- Divert the product to a safe use
- Reject the product
- Destroy the product

For Example: Your salmon for tonight's Salmon Tartare appetizer arrives from the purveyor with a 60° F internal temperature. Do you think you should use it for the Tartare? Or perhaps, go and get some other salmon for the Tartare and then either reject the shipment or ensure this fish is thoroughly cooked.

A point to remember, if a product can not be reworked or diverted to another use, it must be destroyed and the final disposition documented. If you take any corrective actions, FDA HACCP regulation require you to log on a corrective action form the name of the processor/importer, date and time of Corrective Action occurrence, product identification and processing or other relevant information observed.

RECORDKEEPING

This is the glue that holds your HACCP plan together and verifies your system is working.

Your records will assist you to spot trends in a process, which may lead to problem elimination before a Critical Limit is exceeded and it is positive proof that your system is working.

The forms that accompany this article will be of great assistance and you may consider enlarging them to 11" X 17" so you'll have adequate room to record your measurements, corrective actions...

Keep all you records in one area and have separate files for daily reports, corrective actions and consumer complaints.

How long do you have to keep these records? One year for fresh product, two years for frozen product from the date of initial preparation.

VERIFICATION PROCEDURES

The are two different times that verification procedures are used.

Daily Verification Procedures: A person who did not conduct the monitoring procedure(s) reviews and initials the previous days monitoring log. FDA requirements state this must be done within one week. The person responsible for verification must be familiar with HACCP concepts, HACCP implementation and the facilities' processes.

Periodic Verification Procedures: The HACCP team should review the entire HACCP plan: all CCP, any new safety/health concerns related to the products used and the production site to ensure the product is being processed according to the flow chart. The team should also look at the consumer complaints, equipment used and the control measures for equipment calibration according to FDA regulations.

CONSUMER COMPLAINTS

Have a complaint log book for items that fall within your HACCP plan. As noted, it should be a separate file. Your written plan will designate someone to take the complaint, follow up on the complaint and note what action was taken.

RECALL PROCEDURES

Basically designed for manufacturers. However, if you are preparing for a party of 100 or 1000, you are processing a product. You must develop a strategy that states your planned course of action from the depth of the recall, the need for public warning and the extent of the effectiveness checks to ensure all the intended persons are notified of the recall.

As you can see, HACCP is a straight forward, well thought out plan for seafood safety ... that requires a lot of paperwork. However, for member safety and for your own peace of mind, it's a great project to implement. For information from the National Marine Fisheries Service, call them at (978) 281-9124.

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