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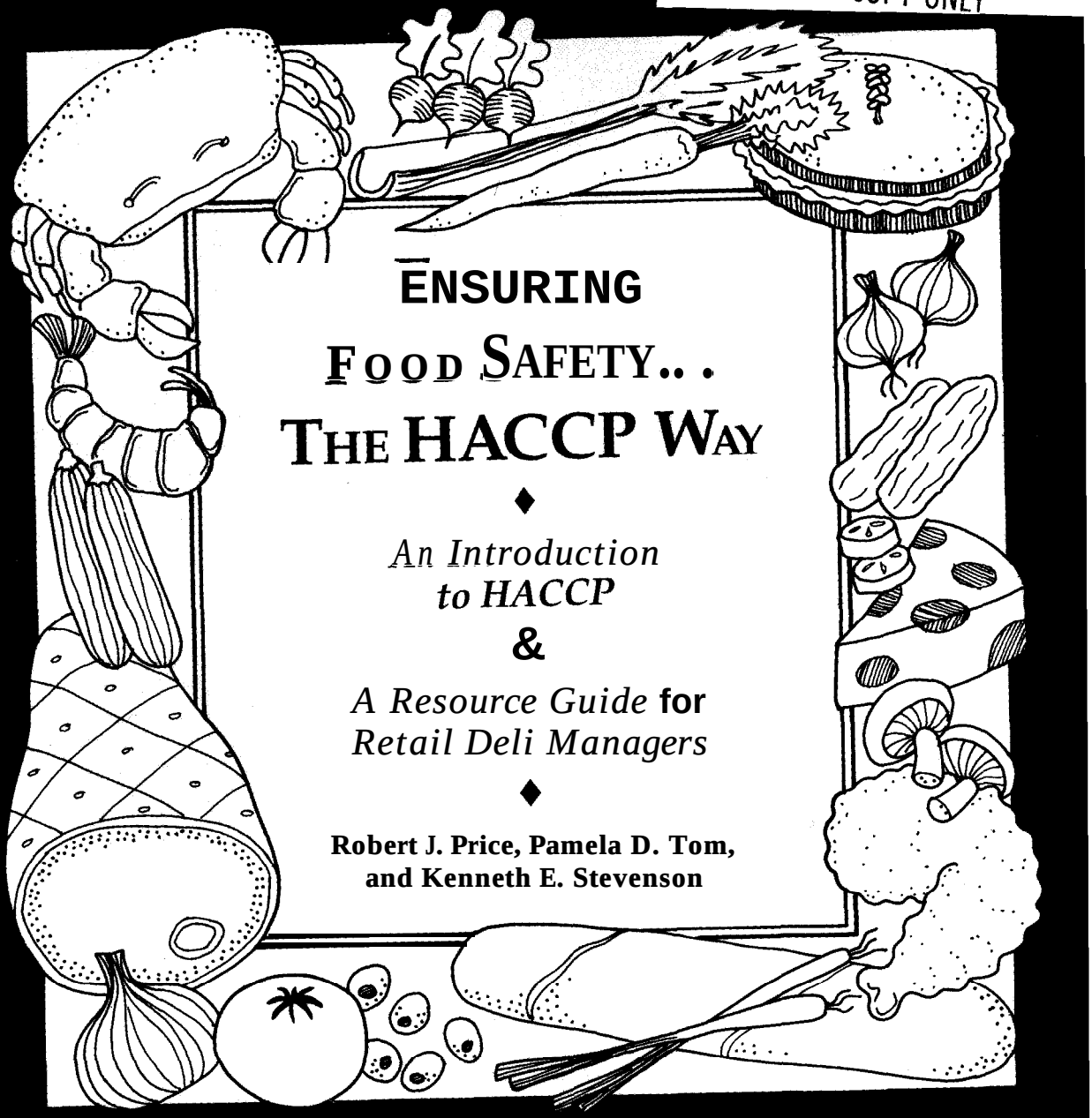

ENSURING FOOD SAFETY... THE HACCP WAY

♦

An Introduction to HACCP

&

A Resource Guide **for** *Retail Deli Managers*

♦

Robert J. Price, Pamela D. Tom, and Kenneth E. Stevenson

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Extension Service,
U.S. Department of Agriculture
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PREFACE

This booklet introduces the "Hazard Analysis and Critical Control Point" (HACCP) system of food safety control in retail delis. It includes an introduction to HACCP, an example of how to set up a HACCP plan for the preparation and display of seafood salads, a listing of resource materials, examples of HACCP plans for some deli foods, and examples of forms for record keeping. The intent of the publication is not to train you to become a HACCP expert, but to familiarize you with this important new concept of food safety control.

The HACCP concept does not stand alone. For HACCP to work properly, your store must first have Standard Operating Procedures (SOPs) for equipment sanitation and personal hygiene, and be operating under Good Manufacturing Practices (GMPs). This booklet assumes that these procedures and practices are in place and are being followed.

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We tried very hard to address all of the suggestions and criticisms made, but unavoidably we have fallen short in some cases. Further, participation of these individuals should in no way be taken as an endorsement of this publication by them or the organizations they represent.

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TABLE OF CONTENTS

Introduction **7**
What Is HACCP?, 7

HACCP Systems **9**
The Seven Steps in HACCP, 9

Setting Up a HACCP Plan for Seafood Salad **13**
Preparing a Seafood Salad. 13 Conclusion, 18

Flowcharts and Critical Control Points for Selected Deli Foods **19**
Seafood Salad, 20 Fried Chicken, 21 Potato Salad, 22 Hot Entrees, 23 Sliced Poultry/Meat Sandwich. 24

HACCP Training Materials **25**
Books and Printed Materials, 25 Food Safety Information Hotlines, 30 Posters and Signs, 31
Slide Sets and Transparencies, 32 Videotapes, 32

Bibliography **35**

Appendices **37**
Receiving Reject Form, 37 Receiving Temperature Form. 38 Cooler Temperature Form, 39
Display Product Temperature Form. 40

INTRODUCTION

What Is HACCP?

HACCP (pronounced "Hassip") is a difficult name for a simple and effective way to ensure food safety. HACCP stands for the "Hazard Analysis and Critical Control Point" system. It allows you to predict potential risks to food safety and to prevent them before they happen. By using HACCP, delis will no longer have to rely solely on routine inspections to spot potential food safety hazards.

How Will HACCP Help You?

Food safety is key to good business. Selling unsafe foods can cause illness, lost sales, and lost customers. Keeping foods safe means jobs, good business, and happy customers.

You probably already know that deli foods may cause illness. Figure 1 lists the most common prepared foods linked to illness. The foods are in order of decreasing risk, so those with the greatest risk are at the top. Many of these foods are commonly prepared in delis.

As a deli manager, you understand the importance of food safety. And you know that it is your responsibility to provide safe foods. The HACCP system is the best way to keep foods safe.

The HACCP system has other benefits as well. HACCP focuses only on critical areas and thus saves time. HACCP makes inspections more useful by concentrating only on potential problems. Once you identify problems, you can easily correct them.

Records produced for the HACCP system also have benefits. Tracking food temperatures and other data lets deli workers become interested in food safety. Workers' interest can lead to better food handling, improved food quality, and improved pride in their work.

Is HACCP New?

In the 1960s The Pillsbury Company developed HACCP for foods as part of its effort to produce foods for the space program. You can imagine how serious it would be if astronauts got food poisoning in space. So Pillsbury developed a system to predict and prevent safety problems throughout the food-preparation process.

The system Pillsbury developed identified potential problems with food safety in advance and set up methods to control each possible hazard. The company kept records to make sure the controls worked. With this HACCP system, Pillsbury made safe foods. Testing the foods for safety was unnecessary. The HACCP system prevented food safety problems.

Today, many food companies use the HACCP system to make sure their products are safe. The U.S. Food and Drug Administration, Department of Agriculture, and Department of Commerce all encourage HACCP safety plans for food processing. This includes deli food preparation in retail food stores.

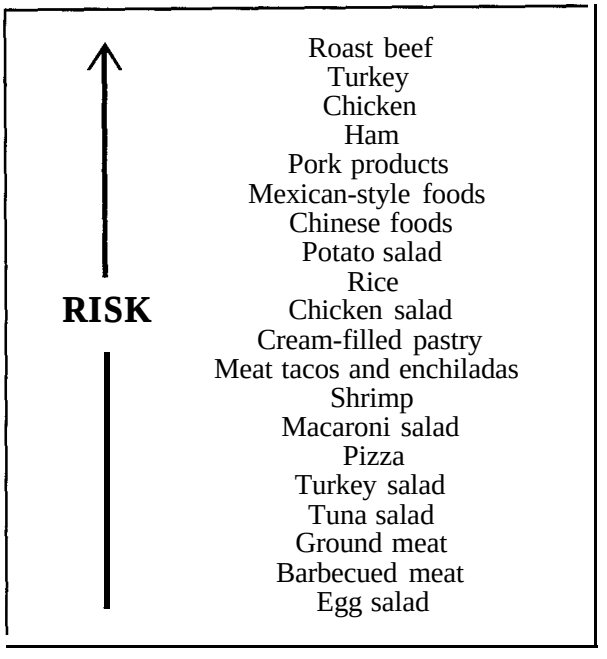


Figure 1. Prepared **foods tied to outbreaks of food poisoning. Foods at the top of the list have the greatest risk. Those at the bottom have the lowest risk.**

HACCP SYSTEMS

The Seven Steps in HACCP

A HACCP food safety system has seven basic steps. Each one is necessary for the overall program to work.

The Seven Basic Steps

The seven steps are these:

1. **Identify potential food safety hazards. (Do a hazard analysis.)**
2. **Determine where and when to prevent problems. (Identify which stages are Critical Control Points.)**
3. **Set limits to control potential problems. (Set critical limits at Critical Control Points.)**
4. **Set up methods to monitor limits. (Monitor Critical Control Points.)**
5. **Set up procedures to handle control problems. (Identify corrective actions.)**
6. **Keep good records and make routine reviews of records to check that controls work. (Review records.)**
7. **Conduct periodic audits to ensure that the HACCP system works properly. (Audit the HACCP system.)**

Let's examine each step in turn.

Do a Hazard Analysis

Step 1. Identify potential food safety hazards.

A **Hazard** is any food property that may cause an unacceptable health risk to your customers. Hazards may be biological, chemical, or physical.

- Biological hazards include harmful bacteria, viruses, or other micro-organisms.
- Chemical hazards include toxins, heavy metals, and improperly used pesticides, cleaning compounds, and food additives.
- Physical hazards include foreign objects that may cause illness or injury-for example, metal, glass, plastic, and wood.

Recall that the first two letters in HACCP stand for **"Hazard Analysis."** When you do a hazard analysis, you determine the primary potential food safety risks at each stage of the preparation process.

Each food-preparation process has its own potential safety hazards. These hazards may vary from deli to deli and from recipe to recipe. Figure 2 gives examples of improper practices that may cause potential food safety hazards.

Identify Critical Control Points

Step *2.* **Determine where and when to prevent problems.**

In addition to determining major potential hazards, you will need to identify at what point in the food-preparation process these hazards can best be controlled.

A **Critical Control Point (CCP)** is a stage in the food-preparation process where (1) hazards can be reduced or eliminated, and where (2) later stages won't correct these safety problems if they are not controlled here. Thus, a CCP is a stage where hazards to food safety *can* and *must* be controlled. Examples of CCPs might include:

- Cooking, reheating, and hot-holding stages
- Chilling, chilled-storage, and chilled-display stages
- Receiving, thawing, mixing ingredients, and other food-handling stages

So the HACCP system includes two major ideas: Hazard Analysis (HA) and Critical Control Points (CCP).

Set Critical Limits

Step 3. Set limits to control potential control problems.

Once you identify CCPs, you must determine **Critical Limits** that will reduce or eliminate potential hazards. Examples of critical limits might include:

- Purchasing specifications
- Cooking, reheating, and hot-holding temperatures
- Chilling and chilled-storage times, temperatures, and handling practices

Figure 3 gives examples of some specific critical limits for reducing or eliminating potential safety hazards.

Monitor CCP

Step 4. **Set up methods to monitor limits.**

Now that you have established limits for potential hazards, you must set up methods to be sure they are followed. Typical methods for **Monitoring CCP Limits** may include:

- Visual observations (watching the practices of deli workers, inspecting raw materials)
- Sensory evaluations (smelling for off-odors, looking for off-colors, or feeling for texture)
- Chemical measurements (pH or acidity, viscosity, salt content, or water activity)
- Physical measurements (time and temperature)

Cross-Contamination

Storing raw foods with ready-to-eat foods
Practicing poor employee sanitation
Failing to clean equipment properly
Failing to protect food adequately from contamination
Improperly storing refuse in food-preparation areas

Improper Hot or Cold Storage

Storing foods at improper temperatures
Using coolers and display units without thermometers
Using poor cooling practices; overloading refrigeration units
Using hot display cases without thermometers
Storing food in improperly labeled containers

Other Hazards

Using improper or inadequate cleaning and sanitation practices
Using poor food preparation and handling practices
Using utensils or food contact surfaces made from improper materials
Keeping inadequate documentation and records
Storing chemicals and personal items improperly

Figure 2. Examples of practices that increase potential food safety hazards.

CCPs: Receiving

Potentially hazardous foods must be at or below 40° F
Frozen foods must not have thawed
There must be no evidence of spoilage, abuse, foreign objects, or contamination in foods

CCPs: Cooking, Reheating, and Hot Holding

Cook poultry to at least 165° F
Cook pork to at least 150° F
Cook roast beef to at least 130° F
Reheat all foods rapidly to at least 165° F
Hold all hot foods at 140° F or higher

CCPs: Chilling and Chill Storage

Chill roast beef from 120° F to 55° F in less than 6 hours, and continue to chill to 40° F
Chill all other foods from 130° F to 80° F in 1 1/2 hours, and from 80° F to 40° F in 6 hours
Do not leave potentially hazardous foods at room temperature
Do not overload or stack containers in coolers
Do not cover hot foods tightly in the cooler until chilled
Chill and store foods in shallow pans (2-3 inches deep)

CCPs: Food Handling (Covered by sanitation SOPS and GMPs)

Thoroughly wash **vegetables** in clean cold water
Use proper hand-washing techniques
Use proper dish-washing and sanitizing techniques
Cover and protect open cuts and scratches
Handle cooked foods only with clean gloves or utensils
Use clean and sanitized equipment and utensils
Stay home when sick

Figure 3. Examples of critical limits to reduce or eliminate potential hazards at CCPs.

Identify Corrective Actions

Step 5. Set up procedures to handle control problems.

Problems occur when critical limits are not met. You must set up procedures to deal immediately with such failures. These procedures are called **Corrective Actions.** Examples of corrective actions might include:

- Rejecting products that do not meet buying specifications
- Adjusting a cooler's thermostat to get the proper temperature
- Extending cooking time
- Recooking or reheating a product to the proper temperature
- Modifying food-handling procedures
- Discarding products

Review Records

Step 6. **Keep records and make routine reviews of records to check that controls work.**

Record keeping is an essential part of the HACCP system. Monitoring results for each CCP must be recorded for review by management. These records indicate to management and government inspectors that you properly evaluated, handled, and processed foods and ingredients.

A daily record review ensures that controls are working, that proper information was recorded, and that workers handled foods properly. If records indicate potential problems, investigate immediately. Document your findings.

Audit the HACCP System

Step 7. **Conduct periodic audits to make sure the HACCP system works.**

Management should conduct an in-depth audit of the entire HACCP system at least once a year. Additional audits should be conducted whenever there are new products, new recipes, or new processes. Each of these requires a new HACCP plan.

HACCP plans should cover all deli foods. For most foods, this requires only common sense and a knowledge of basic food-preparation practices. For multi-ingredient foods, you may need technical assistance. Together, your HACCP plans for each food product make up your HACCP system.

SETTING UP A HACCP PLAN FOR SEAFOOD SALAD

Preparing a Seafood Salad

Let's see how to use the seven basic steps to develop a HACCP plan for preparing and storing seafood salad.

List Ingredients

For our seafood salad example, the ingredients will be as follows:

- Chilled cooked seafood
- Salad dressing
- Celery
- Onions
- Lemon juice
- Spices

The ingredients in deli foods can increase or decrease the risk of safety problems.

You know that raw animal foods (such as meat, poultry, seafood, dairy products, and eggs) often contain spoilage and illness-causing bacteria. So do raw vegetables, like the celery and onions in our seafood salad. You may not realize that herbs and spices frequently contain spoilage bacteria, and some of these may survive cooking. Most of these bacteria occur naturally in foods. Deli workers may add others during preparation and handling.

On the other hand, some ingredients (like lemon juice, mayonnaise, and salad dressing) are acidic. Acidic ingredients may help to slow or stop bacterial growth.

In our seafood salad, the cooked seafood, raw celery, and spices contain spoilage bacteria. They may also contain illness-causing bacteria. The dressing and lemon juice are acidic and should help to slow bacterial growth. Thoroughly wash raw celery in cold water to remove many of the surface bacteria. Peel onions to remove bacteria on the outer skin. Never use less dressing or lemon juice than the recipe calls for. Measure the quantities added to the salad.

Make a Flowchart

To get started on the HACCP plan, you will need to make a simple diagram that shows the stages you go through in preparing your salad. An example of such a diagram, called a **Flowchart,** appears in Figure 4.

Then study each stage in the flowchart to determine where potential hazards occur and how you can control them.

Let's start at the first stage in the process shown in Figure 4, receiving.

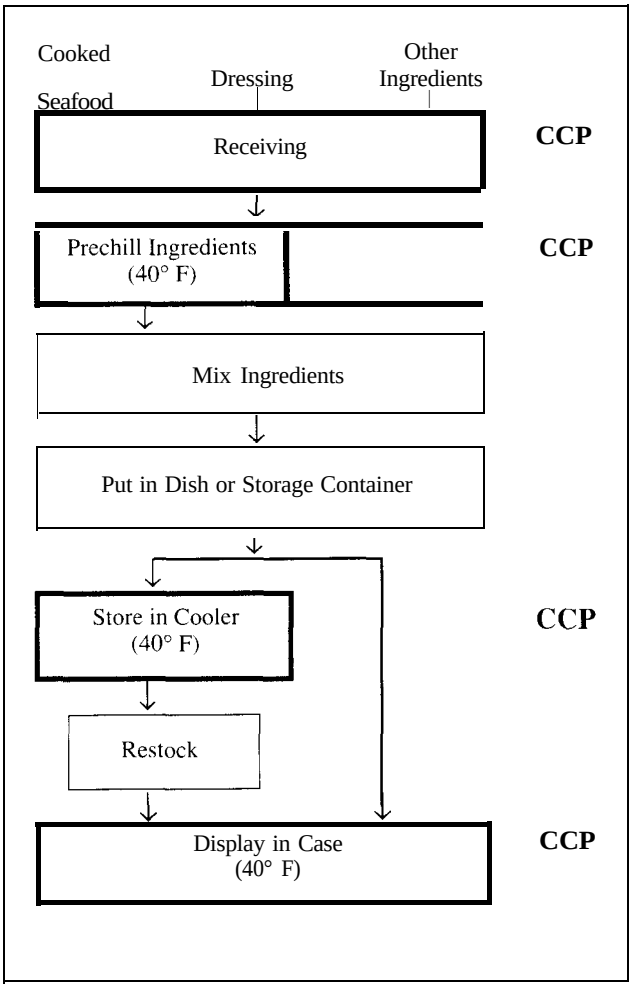


Figure 4. Flowchart showing the stages in the preparation and storage of seafood salads. Note that those stages that are Critical Control Points are shown by bold, colored boxes.

Receiving

Receiving is the first stage in the preparation of all deli products. The safety of ingredients received directly affects the safety of deli products prepared from those ingredients. In your mind, focus on the receiving stage as you think through each of the HACCP steps.

Potential hazards during receiving of seafood salad ingredients include:

- Contamination
- Spoilage
- Rapid bacterial growth
- Foreign objects

Cooked seafood is more likely to have a problem with rapid bacterial growth than is any other ingredient. Fresh celery may show signs of spoilage. All of the ingredients could be contaminated or contain foreign objects.

Is receiving a Critical Control Point for seafood salad? Receiving is a stage where these potential hazards can be controlled. Also, later stages in the salad preparation process will not correct these hazards. So receiving is a CCP. That means you must control the potential hazards at receiving. Trying to control or eliminate them later in the process wastes time and money, and may be impossible.

Set limits for accepting or rejecting seafood salad ingredients. Include these limits in buying specifications. For example, set limits on damaged, outdated, and contaminated ingredients. Set maximum acceptable temperature limits for cooked seafood. Limits for seafood salad ingredients might include:

- Chilled cooked seafood below 40° F
- No contaminated, damaged, or spoiled ingredients
- No ingredients containing foreign objects

Monitor the limits to control potential hazards at receiving:

- Check for proper temperature
- Visually inspect all incoming ingredients for damage, contamination, spoilage, and foreign objects

When control problems occur at a CCP, such as receiving, immediate action is necessary. This means rejecting or discarding foods that do not meet the HACCP limits. For example, reject the following:

- Damaged, spoiled, or contaminated ingredients
- Chilled cooked seafood above 40° F
- Ingredients that do not meet company buying specifications

Record rejected or discarded items on the invoice or on a Receiving Reject Form (Appendix 1). Make sure rejected ingredients do not get into the deli. If contamination or damage is found after receiving and traced back to the delivered products, management should review and revise the HACCP plan to prevent further problems.

Record chilled food temperatures on the invoice or on a Receiving Temperature Chart (Appendix 2). Sign or initial the invoice after the inspection to indicate that all products are acceptable.

Supervisors should review and initial charts and records daily to assure that the controls are working. Investigate irregularities immediately.

At least annually, and whenever conditions, processes, or ingredients change, management should review the HACCP plan for seafood salad as part of its review of the HACCP system for all deli products. A new HACCP plan must be developed for every new product, new recipe, or new process.

Now let's move along to the next stage on the flowchart in Figure 4, prechill ingredients.

Prechill Ingredients

As you continue to think about preparing the seafood salad, remember that rapid bacterial growth is still a potential hazard. Prechill is a CCP because rapid bacterial growth can and must be controlled by prechilling the major ingredients.

What limits should you set to control bacterial growth at this stage? You will want to store or chill the major salad ingredients in a cooler with an air temperature cold enough (below 40° F) to chill the ingredients to 40° F or below. Your seafood will chill faster if you keep it in shallow containers no deeper than 3 inches. So your limits at the Prechill stage are 40°F and containers 3 inches deep or less. Here are other things to keep in mind:

- Chill foods in high-chilling-capacity walk-in coolers rather than reach-in coolers.
- Caution deli workers to keep the cooler doors closed. Opening doors frequently causes the inside air to rise above 40° F.
- Always store finished products away from raw foods to prevent contamination.

Monitor this CCP (Prechill) by measuring and recording the air temperature in the cooler every 4 hours. Record the temperature on the Cooler Temperature Form (Appendix 3) or install a recording thermometer. If the air temperature in the cooler is above 40° F, lower the thermostat to get the desired temperature. Record any thermostat changes made. Periodically, verify that the foods are chilling rapidly by monitoring foods placed in the cooler.

Review cooler temperature records daily. Investigate any irregularities.

Mix Salad Ingredients

As you apply the HACCP steps to this preparation stage, keep in mind that mixing seafood with other ingredients can lead to bacterial and viral contamination of the salad. Contamination can come from workers' hands, utensils, or the mixer. This stage is *not* a CCP, however, because later stages in the process (storage and display at 40° F or below) will control any potential hazards.

Just because this stage is not a CCP does not mean you should ignore it. To control this stage:

- Make sure the major salad ingredients are at 40° F or below
- Avoid hand contact with the salad
- Use clean utensils and mixer
- Comply with sanitation and with personal hygiene rules in your Standard Operating Procedures (SOPs)
- Follow Good Manufacturing Practices

If necessary, modify SOPs and handling practices to prevent contamination.

Thoroughly mix dressing and lemon juice with the seafood and other ingredients to lower the risk of a safety problem.

Transfer to Dish or Container

Transferring the seafood salad to a dish or storage container may result in contamination if the dish or container is not clean and sanitized. This step is *not* a CCP either, because later stages in the process (storage and display at 40° F or below) will control any potential hazards.

To control potential contamination:

- Use clean and sanitized dishes, containers, and utensils
- Comply with sanitation and personal hygiene SOPs
- Follow Good Manufacturing Practices

If necessary, modify SOPs and handling practices to prevent contamination at this stage.

Store Salad in Cooler

Bacterial growth continues to be a hazard during storage of the seafood salad in the cooler. Because it can and must be controlled during storage, this stage *is* a CCP. Set limits on the temperature and maximum storage time. For example:

- Set cooler temperature below 40°F
- Cover the container, and label it with the date and time of preparation
- Store the salad for only 2 to 3 days to make sure bacterial growth is not a problem

You can monitor the temperature limit by measuring and recording the air temperature of the cooler every 4 hours. Use a recording thermometer or record temperatures on a Cooler Temperature Form (Appendix 3). Verify periodically that the cooler is keeping the salad at 40°F or below by measuring the temperature of the salad. If necessary, lower the cooler thermostat to keep the temperature of the salad at 40° F or below.

Display Salad in Case	As in the cooler, growth of harmful bacteria continues to be a potential hazard in the display case. This stage *is* a CCP. Your limits at the display stage might include the following: • Keep seafood salad at 40° F or below • Hold salad for no longer than 2 to 3 days Monitor this limit by measuring and recording the temperature of the display case every 4 hours. Record the temperature on a Product Temperature Form (Appendix 4) or use a recording thermometer. Verify periodically that the temperature of the display case is keeping the salad at 40° F or below. If necessary, lower the thermostat to keep the salad at 40° F or below.
Restocking Salad	When restocking the salad in the display case, remember that contamination can occur from workers' hands and utensils. This stage is *not* a CCP, however, because display at 40° F or below will control this potential hazard. To control contamination: • Transfer old salad to a smaller container, and put the fresh salad in a new container • Do not add new salad on top of old salad • Use clean utensils and containers, and avoid hand contact with salad • Comply with sanitation and personal hygiene Standard Operating Procedures • Follow Good Manufacturing Practices Observe replenishing practices to make sure proper procedures are followed. If necessary, modify Standard Operating Procedures and handling practices to prevent contamination.

Conclusion

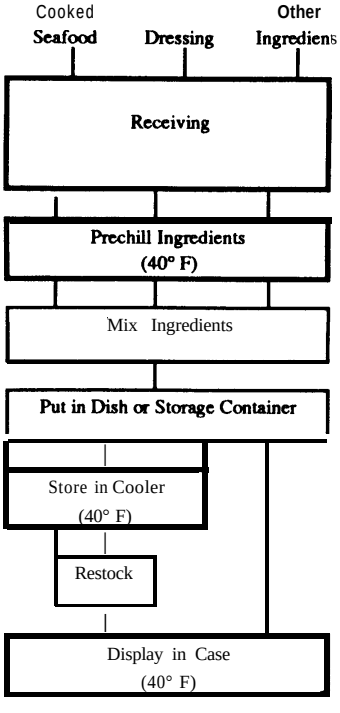
This example of setting up a HACCP plan for seafood salad shows you how easy it is for most products. And HACCP is a simple system for deli workers to follow. HACCP concentrates on critical hazards and will help prevent foodborne illness.

Remember that customers may add potential safety problems depending on how they handle and store the food they buy at your deli. Instructions and informative labels may lower the probability of these safety problems.

FLOWCHARTS AND CRITICAL CONTROL POINTS FOR SELECTED DELI FOODS

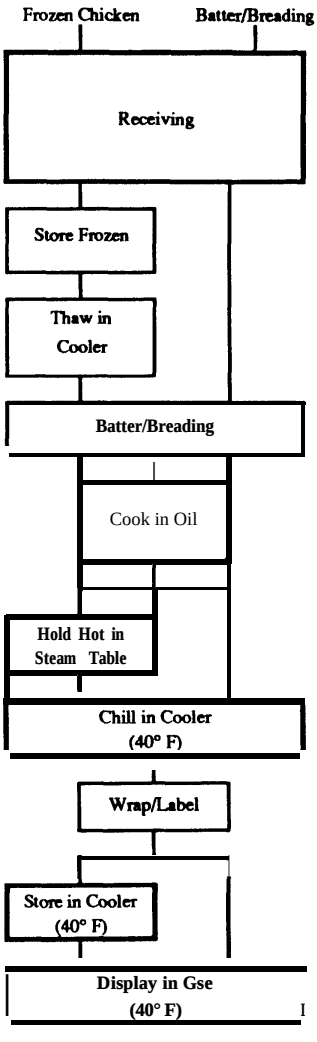
The following flowcharts give examples of critical control points for some deli foods. The HACCP manual prepared by the Food Marketing Institute (FMI) contains similar flowcharts and HACCP plans for most deli foods. (See Food Marketing Institute [1989a] in the Bibliography.)

SEAFOOD SALAD



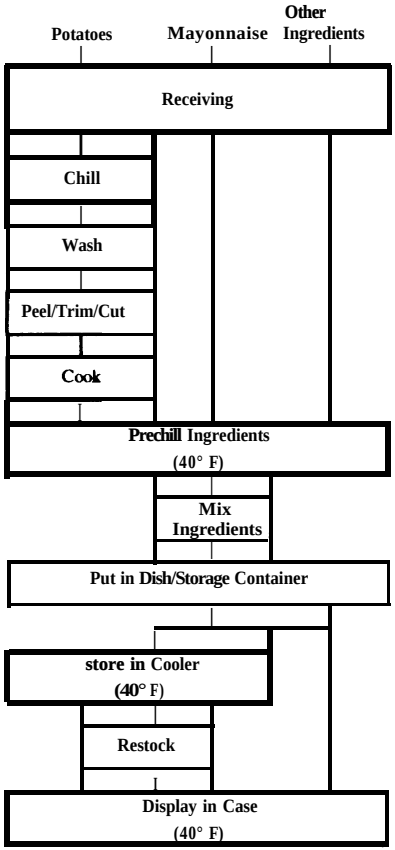
Potential Hazards	C C P	Critical Limits	Monitoring Procedures	Corrective Actions
Rapid bacterial growth; Spoilage; Contamination; Foreign objects	CCP	Chilled items below 40° F; Frozen items with no signs of thawing; No spoilage, contamination. or foreign objects	Visual inspection; Measure/retard temperature	Reject thawed frozen items. chilled items above 40° F, and items with spoilage, contamination, or foreign objects
Rapid bacterial growth	**CCP**	Chill in shallow containers to below 40°F	Measure/record cooler air temperature every 4 hours	Adjust thermostat
Contamination		Minimize **hand** contacts; Use clean utensils	**Observe practices**	Modify practices
Contamination		Use clean dish/container	**Observe practices**	Modify practices
Rapid bacterial growth	CCP	Product below 40°F	Measure/record cooler air temperature every 4 hours	Adjust thermostat
Contamination		Avoid hand contact	Observe practices	Modify practices
Rapid bacterial growth	**CCP**	Product below 40° F	Measure/record display case temperature every 4 hours	Adjust thermostat

FRIED CHICKEN



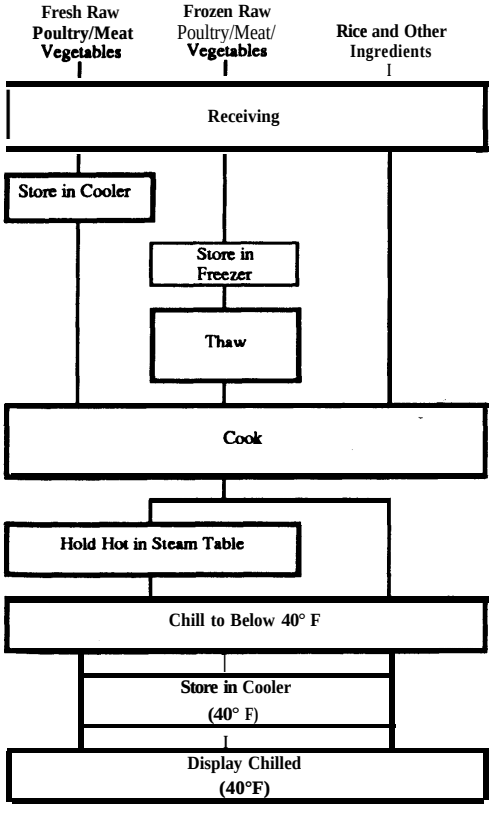
Flowchart	Potential Hazards	CCP	Critical Limits	Monitoring Procedures	Corrective Actions
Receiving	Rapid bacterial growth; Spoilage; Contamination; Foreign objects	CCP	Chilled items below 40° F; Frozen items with no signs of thawing; No spoilage, contamination, or foreign objects	Visual inspection; Measure/record temperature	Reject thawed frozen items, chilled items above 40° F. and items with spoilage, contamination, or foreign objects
Store Frozen					
Thaw in Cooler	Incomplete thawing can cause undercooking; Rapid bacterial growth		Thaw in cooler or under cold running water Chill to 40° F after thawing	observe thawing	Modify thawing practice
Batter/Breading	contamination		Do not recycle used batter/breading	observe practices	Modify practices
Cook in Oil	Undercooking may not kill illness-causing bacteria	CCP	Internal temperature of 165° F; Immediate transfer to hot hold after cooking	Follow time/temperature instructions; Measure/record center temperature	Continue cooking until center temperature reaches 165° F
Hold Hot in Steam Table	Rapid bacterial growth	CCP	Product above 140° F; Hold batches less than 5 hours	Measure/record case temperature every 4 hours	Reheat or chill
Chill in Cooler (40° F)	Rapid bacterial growth	CCP	Product below 40° F	Measure/record cooler air temperature every 4 hours	Adjust cooler thermostat
Wrap/Label	Contamination		Avoid hand contact	Observe practices	Modify practices
Store in Cooler (40° F)	Rapid bacterial growth	CCP	Product below 40° F	Measure/record cooler air temperature every 4 hours	Adjust cooler thermostat
Display in Gse (40° F)	Rapid bacterial growth	CCP	Product below 40° F	Measure/record case temperature every 4 hours	Adjust use thermostat

POTATO SALAD

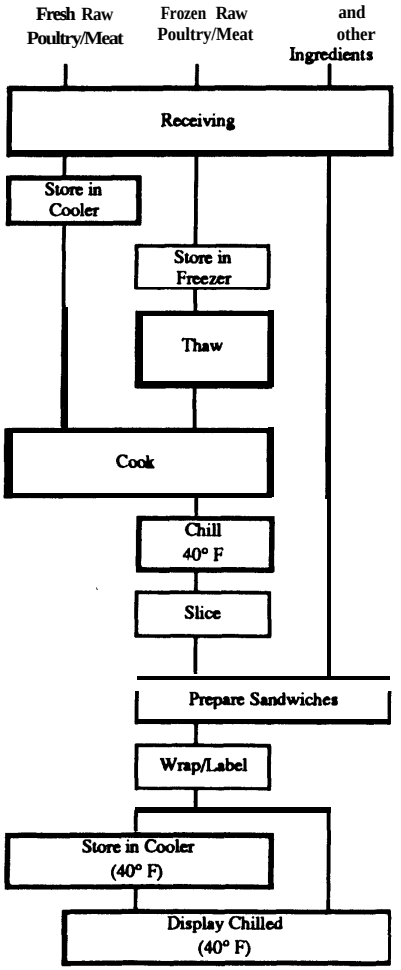


Flowchart	Potential Hazards	CCP	Critical Limits	Monitoring Procedures	Corrective Actions
Receiving	Spoilage; Contamination; Foreign objects	CCP	No spoilage, contamination, or foreign objects	Visual inspection	Reject items with spoilage, contamination, or foreign objects
Chill	Spoilage	CCP	Chill to below 40° F	Measure/record cooler air temperature	Adjust cooler thermostat
Wash			Use clean sink; Rinse sink between items	Observe practices	Modify practices
Peel/Trim/Cut	Contamination		Spoilage removed	Observe practices	Modify practices
Cook				Follow time/temperature instructions	Cook longer
Prechill Ingredients (40° F)	Rapid bacterial growth	CCP	Chill in shallow containers to below 40° F	Measure/record cooler air temperature every 4 hours	Adjust cooler thermostat
Mix Ingredients	Contamination		Minimize hand contact; Use clean utensils	Observe practices	Modify practices
Put in Dish/Storage Container	Contamination		Use clean dish/container	Observe practices	Modify practices
store in Cooler (40° F)	Rapid bacterial growth	CCP	Product below 40° F	Measure/record cooler air temperature every 4 hours	Adjust cooler thermostat
Restock	Contamination		Avoid hand contact	Observe practices	Modify practices
Display in Case (40° F)	Rapid bacterial growth	CCP	Product below 40° F	Measure/record case temperature every 4 hours	Adjust case thermostat

HOT ENTREES

Flowchart	Potential Hazards	CCP	Critical Limits	Monitoring Procedures	Corrective Actions
					
	Spoilage; Contamination; Foreign objects	CCP	No spoilage, contamination, or foreign objects	Visual inspection	Reject items with spoilage, contamination, of foreign objects
	Rapid bacterial growth	CCP	Chill to below 40° F	Measure/record cooler air temperature every 4 hours	Adjust cooler thermostat
	Incomplete thawing; Rapid bacterial growth	CCP	Thaw in cooler or under cold running water, chill to 40° F after thawing	Observe thawing	Modify thawing practice
	Undercooking may not kill illness causing bacteria	CCP	Cook to internal temperature of 165° F, Immediate transfer to hot-hold after cooking	Measure/record center temperature	Continue cooking
	Rapid bacterial growth	CCP	Product above 140° F; Hold batches less than 5 hours	Measure/record center temperature every 2 hours	Reheat or chill
	Rapid bacterial growth	CCP	Chill in shallow container to below 40° F	Measure/record cooler air temperature every 4 hours	Adjust cooler thermostat
	Rapid bacterial growth	CCP	product below 40° F	Measure/record cooler air temperature every 4 hours	Adjust cooler thermostat
	Rapid bacterial growth	CCP	Product below 40° F	Measure/record cooler air temperature every 4 hours	Adjust display thermostat

SLICED **POULTRY/MEAT** SANDWICH



Flowchart	Potential Hazards	CCP	Critical Limits	Monitoring Procedures	Corrective Actions
Receiving	Spoilage; Contamination; Foreign objects	CCP	No spoilage, contamination. or foreign objects	Visual inspection	Reject items with spoilage. contamination, or foreign objects
Store in Cooler	Rapid bacterial growth	CCP	Chill to below 40° F	Measure/record cooler air temperature every 4 hours	Adjust cooler thermostat
Store in Freezer / Thaw	Incomplete thawing; Rapid bacterial growth	CCP	Thaw in cooler or under cold running water; chill to 40° F after thawing	Observe thawing	Modify thawing practice
Cook	Under cooking may not kill illness-causing bacteria	CCP	Cook to internal temperature as specified for each product	Measure/record center temperature	continue cooking
Chill 40° F	Rapid bacterial growth	CCP	Chill in shallow container to below 40° F	Measure/record cooler air temperature every 4 hours	Adjust cooler thermostat
Slice	Contamination		Avoid hand contact; Use disposable gloves	Observe practices	Modify practices
Prepare Sandwiches	Contamination		Avoid hand contact; Use disposable gloves	Observe practices	Modify practices
Wrap/Label	Contamination		Avoid hand contact; Use disposable gloves	Observe practices	Modify practices
Store in Cooler (40° F)	Rapid bacterial growth	CCP	Product below 40° F	Measure/record cooler air temperature every 4 hours	Adjust cooler thermostat
Display Chilled (40° F)	Rapid bacterial growth	CCP	product below 40° F	Measure/record cooler air temperature every 4 hours	Adjust display thermostat

HACCP TRAINING MATERIALS

Materials are free, unless a price is noted.

Books and Printed Materials

Bacterial hazards: *Clostridium perfringens* **in food.** An English/Spanish consumer leaflet. (1981) A brief description of the cause and prevention of *Clostridium perfringens* contamination. U.S. Food and Drug Administration, Industry Programs Branch, HFF-326, Center for Food Safety and Applied Nutrition, 200 C Street, SW, Washington, D.C. 20204-0001. Tel: 202/205- 5251.

Bacterial hazards: *Escherichia coli* **in food.** An English/Spanish consumer leaflet. (1981) A brief description of the cause and prevention of *Escherichia coli* contamination. US. Food and Drug Administration, Industry Programs Branch, HFF-326, Center for Food Safety and Applied Nutrition, 200 C Street, SW, Washington, D.C. 20204-0001. Tel: 202/205- 5251.

Bacterial hazards: *Salmonella* **in foods.** An English/Spanish consumer leaflet. (1982) A brief description of the cause and prevention of *Salmonella* contamination. U.S. Food and Drug Administration, Industry Programs Branch, HFF-326, Center for Food Safety and Applied Nutrition, 200 C Street, SW, Washington, D.C. 20204-0001. Tel: 202/205 - 5251

Bacterial hazards: *Shigella* **in food.** An English/Spanish consumer leaflet. (1981) A brief description of the cause and prevention of *Shigella* contamination. U.S. Food and Drug Administration, Industry Programs Branch, HFF-326, Center for Food Safety and Applied Nutrition, 200 C Street, SW, Washington, D.C. 20204-0001. Tel: 202/205- 5251.

Bacterial hazards: *Staphylococci* in food. An English/Spanish consumer leaflet. (1981) A brief description of the cause and prevention of *staphylococci* contamination. U.S. Food and Drug Administration, Industry Programs Branch, HFF-326, Center for Food Safety and Applied Nutrition, 200 C Street, SW, Washington, D.C. 20204-0001. Tel: 202/205-5251.

Bacteria that cause foodborne illness. (1990) FSIS facts. FSIS-40. This 1l-page leaflet gives information and statistics on foodborne illness. U.S. Department of Agriculture, Food Safety and Inspection Service, Information Office, South Agriculture Building, Independence Ave., SW, Washington, D.C. 20250. Tel: 202/447- 9113.

Bakery D.A.T.E. (Development and Training Evaluation). (1991) A 10-page test booklet designed to test your knowledge of bakery safe handling principles, merchandising, and food facts. Jonessco Enterprises, Inc., 17610 Midway Rd. #134331, Dallas, TX 75287. Tel. 214/985-7961.

Basic food safety program. A packet covering microbiology, personal hygiene, time/temperature controls, cross-contamination, and cleaning and sanitizing. (1991) Includes two laminated posters on proper hand washing, cleaning and sanitizing procedures, and temperature control stickers. Contact John Misock (307/777-6587) or Bud Anderson (307/777-6588), Wyoming Department of Agriculture Food and Drug Section, 2219 Carey Avenue, Cheyenne, WY 82001. $5.

California Uniform Retail Food Facilities Law (California Health and Safety Code Section 27500 et seq.). California Department of Health Services. Check with County Environmental Health Departments or the California Department of Health Services Food and Drug Branch.

***Campylobacter* questions and answers. (199**1) A four-page consumer leaflet discussing causes and prevention. U.S. Department of Agriculture, Food Safety and Inspection Service, Information Office, South Agriculture Building, Independence Ave., SW, Washington, D.C. 20250. Tel: 202/447-9113.

A Chinese guide to safe food handling practices This guide is based on the 1976 U.S. Food and Drug Administration Food Service Rules. First Edition. By W. Adler. (1991) A 72-page manual in English/Chinese; some illustrations included. Safe Foods in Different Languages, 1655 NW 21st Avenue, Rochester, MN 55901. Tel: 507/285-l155. $7.50.

Deli D.A.T.E. (Development and Training Evaluation). (1992) A 14-page test booklet designed to test your knowledge of deli safe handling principles, merchandising, and food facts. Jonessco Enterprises, Inc., 17610 Midway Rd. #134331, Dallas, TX 75287. Tel. 214/985-7961.

E. coli* facts. (1989)** A fact sheet that answers the most commonly asked questions about ***E. coli 0157:H7 and Hemolytic Uremic Syndrome. Send a self-addressed, stamped envelope to Acute Disease Epidemiology Section, Minnesota Department of Health, 717 S.E. Delaware Street, PO Box 9441, Minneapolis, MN 55440. Tel: 612/623-5414.

Employee food safety: A self-instruction text. (1988) Employers can give this self-instruction booklet to job applicants or new employees to introduce them to safe food-handling concepts and practices. Hospitality Institute of Technology and Management, 830 Transfer Road, Suite 35, St. Paul, MN 55114. Tel: 612/646-7077. $6.95/copy, plus $2.50 for postage and handling.

Food handler's pocket guide for food safety & quality. (1989) A 20-page basic guide to: personal hygiene, receiving, storing, preparation, display, cleaning, sanitizing, pest control, and temperature. Publications Sales, Food Marketing Institute, 800 Connecticut Ave., N.W., Washington, D.C. 20006. Tel.: 202/452-8444. $2.50 (member) $5.00 (nonmember).

Food store sanitation. By R.B. Gravani. (Available June, 1993). This book advises managers how to increase perishable shelf life; increase equipment life and reduce maintenance costs; organize a personnel training program; and plan, implement, and maintain an ongoing sanitation program. Lebhar-Friedman Books, 3922 Coconut Palm Dr., Tampa, FL 33619-8321. Tel: 813/664-6700; Fax: 813/664-6884. $39.95 (paperback).

Guidelines for handling Hepatitis A in the food industry. (1990) Prepared by the Food Protection Section of the National Environmental Health Association, this booklet details the precautions food managers should take to protect their employees and customers from Hepatitis A and the procedures they should follow in the event of an infectious hepatitis illness among the staff. The guidelines also specify actions public health agencies can take to help food service and retail food operations prevent the spread of Hepatitis A. National Environmental Health Association, 720 S. Colorado Boulevard, Suite 970, South Tower, Denver, CO 80222. Tel: 303/756-9090. $2 (member) $2.50 (nonmember).

A handbook for the practical application of the HACCP approach to foodservice establishment inspection. (1990) By J.A. Pisciella. This 5l-page booklet discusses critical control points and guidelines for developing a HACCP flow diagram in a food service establishment. Philadelphia Conference of the Central Atlantic States Association of Food and Drug Officials, c/o William Kinder, Pennsylvania Department of Agriculture, P.O. Box 300, Creamery, PA 19430. $5.

Hand washing guide. By G.H. Reed, Jr. (1989) A two-page guide to the whys and wherefores of hand washing. Send a self-addressed, stamped envelope to George H. Reed Jr., MPH, Senior Environmental Health Specialist, Division of Environmental Health and Safety, University of Massachusetts, N. 414 Morrill Science Center, Amherst, MA 01003.

HACCP principles and applications. (1992) By M.D. Pierson and D.A. Corlett, Jr. (Eds.) Covers HACCP topics presented at a 1991 short course sponsored by the Continuing Education Committee of the Institute of Food Technologists. This text is designed as a reference for those who are responsible for food safety management. 230 pp. Van Nostrand Reinhold, 115 Fifth Avenue, New York, NY 10003. Tel: 800/926-2665. $54.95.

HACCP regulatory applications in retail food establishments. (199**1)** A 39-page document providing a simple explanation of HACCP and basic instructions for applying HACCP to regulatory work in retail food service establishments. U.S. Food and Drug Administration, State Training and Information Branch, HFC-61, Rm. 1207, 5600 Fishers Lane, Rockville, MD 20857. Tel: 301/443-5871; Fax: 301/443-2143.

HACCP: The hazard analysis critical control point system manual. (1989) This training manual is aimed at helping retail managers reduce the risk of bacterial contamination of prepared foods. Publications Sales, Food Marketing Institute, 800 Connecticut Ave., NW, Washington, D.C. 20006. Tel.: 202-452-8444. $95 (member) $195 (non-member).

Here' s how. (1988) A guide that tells food handlers what to do to keep foods safe "for health and for profit." Training Aids Dept., Charles Felix Associates, P.O. Box 1581, Leesburg, VA 22075. Tel: 703/777-7448. $10 per 100 copies.

1991 Information Catalog, Food Protection Report. (1991) This 39-page catalog lists audiovisuals and printed material on a wide variety of topics and training aids of interest to food safety professionals. Charles Felix, Editor and Publisher, Food Protection Report, P.O. Box 1581, Leesburg, VA 22075. Tel: 703/777-7448; Fax: 703/777-4453. $10.

Information materials for the food and cosmetic industries (booklet). (1988) DHHS Publication, No. (FDA) 88-1146. A 29-page listing of publications and audiovisuals on retail food protection, regulations, sanitation, imports, etc. U.S. Food and Drug Administration, Industry Programs Branch, HFF-326, Center for Food Safety and Applied Nutrition, 200 C Street, SW, Washington, D.C. 20204-0001. Tel: 202/205-5251.

Insect infestation at retail: Detection and control. (1990) By A. Kraft. A colorful 4-page brochure with numerous tips on pest control and preventive measures. Austin Kraft, Quality and Maintenance Manager, Hershey Chocolate U.S.A., 19 East Chocolate Avenue, Hershey, PA 17033-0815. Tel: 717/534-4676.

Inspecting incoming food materials (booklet). (1990) DHHS Publication No. (FDA) 90-2017. This 12-page brochure contains photos and a sample inspection report for checking incoming product. U.S. Food and Drug Administration, Industry Programs Branch, HFF-326, Center for Food Safety and Applied Nutrition, 200 C Street, SW, Washington, D.C. 20204-0001. Tel: 202/205-5251.

Microorganisms in foods 4. Application of the hazard analysis critical control point (HACCP) system to ensure microbiological safety and quality. (1989) A reference for managers. Includes a discussion on perishable delicatessen foods (luncheon meat and self-service salad bar). International Commission of Microbiological Specifications for Foods. 372 pp. Blackwell Scientific Publications, Inc., 238 Main St., Cambridge, MA 02142. Tel: 800/759-6102. $59.95.

Preventing foodborne illness. (1990) H&G bulletin 247. A 22-page consumer leaflet providing general storage and handling tips for meat and poultry items, power outage advice, and an overview of the most common foodborne illness bacteria. U.S. Department of Agriculture, Food Safety and Inspection Service, Information Office, South Agriculture Building, Independence Ave., SW, Washington, D.C. 20250. Tel: 202/447-9113.

Preventing foodborne listeriosis. (1992) This 8-page leaflet explains listeriosis and preventive measures. U.S. Department of Agriculture, Food Safety and Inspection Service, Information Office, South Agriculture Building, Independence Ave., SW, Washington, D.C. 20250. Tel: 202/447-9113.

Procedures to implement the hazard analysis critical control point system. (1991) International Association of Milk, Food and Environmental Sanitarians, Inc., Committee on Communicable Diseases Affecting Man. A 72-page manual providing step-by-step, "how-to-do-it" instructions on implementing HACCP. IAMFES, 200W Merle Hay Center, 6200 Aurora Avenue, Des Moines, IA 50322. Tel: 800/369-6337; Fax: 512/276-8655. $5 (member) (7.50) (non-member); add $1.50 to cover postage and handling for the first copy, $.75 for each additional copy.

Retail food sanitation code. (1982) This booklet provides industry, state and local governments with a uniform food protection code for operation of retail food stores. Association of Food and Drug Officials, P.O. Box 3425, York, PA 17402-3425. Tel: 717/757-2888. $4.

Retail seafood cross-contamination. By R.J. Price. (1990) UCSGEP 90-6. A 2-page leaflet discussing cross-contamination, good sanitation, personal hygiene, and seafood handling practices. University of California, Food Science & Technology Department, Davis, CA 95616.

Retail store sanitation, insect control. By A. Kraft. (1990) A colorful 3-page brochure with tips on handling and storage measures. Austin Kraft, Quality and Maintenance Manager, Hershey Chocolate U.S.A., 19 East Chocolate Avenue, Hershey, PA 17033-0815. Tel: 717/534-4676.

Salmonella **and food safety.** (1988) A 4-page consumer leaflet describing salmonellosis and its prevention. U.S. Department of Agriculture, Food Safety and Inspection Service, Information Office, South Agriculture Building, Independence Ave., SW, Washington, D.C. 20250. Tel: 202/447-9113.

Translation of selected food code provisions in designated languages [English, Chinese, Korean, Spanish and Vietnamese]. (1989) U.S. Department of Health & Human Services, Food and Drug Administration, Retail Food Protection Branch, HFF-342, Center for Food Safety and Applied Nutrition, 200 C Street, SW, Washington, D.C. 20204-0001. Tel: 202/205-8140.

A Vietnamese guide to safe food handling practices. Based on the 1976 U.S. Food and Drug Administration Food Service Rules. First Edition. By W. Adler. (1989) A 65-page manual in English/Vietnamese; some illustrations included. Safe Foods in Different Languages, 1655 NW 21st Avenue, Rochester, MN 55901. Tel: 507/285-l155. $7.50.

Food Safety Information Hotlines

American Seafood Institute Telephone: 800/EAT-FISH
406A Main St.
Wakefield, RI 02879

Expertise: Buying, storing, cooking, and handling fish and shellfish
Time: Monday – Thursday, 9 am – 5 pm eastern time for consumers; through Friday for industry inquiries.

Centers for Disease Control Information Telephone: 404/332-4555
1600 Clifton Road, NE
Atlanta, GA 30333

Expertise: An automated information hotline that includes foodborne illness information.
Time: Available by touchtone phone on a 24-hour basis.

National Center for Nutrition and Dietetics of the American Dietetic Association Telephone: 800/366-l655
216 West Jackson Blvd.
Chicago, IL 60606-6995

Expertise: Provides consumers with reliable nutrition information and free brochures on nutrition topics. Staffed by registered dietitians.
Time: Monday – Friday, 9 am – 4 pm central time (to speak to a registered dietitian). Recorded messages (also in Spanish) available 24 hours daily; after the message you may leave your name for a copy of the brochure. Messages change monthly. Usually three messages available.

U.S. Department of Agriculture Telephone: 800/535-4555
Food Safety and Inspection Service Washington, DC: 202/720-3333
External Affairs (telecommunications device for hearing impaired)
Room 1165-S
Washington, DC 20250

Expertise: This meat and poultry hotline is designed for consumers, but advice is also given to industry. The hotline is staffed by registered dietitians and home economists.
Time: Monday – Friday, 10 am – 4 pm eastern time.

U.S. Food & Drug Administration Telephone: 800/FDA- 4010
Office of Seafood Washington, DC: 202/205- 4314
1110 Vermont Avenue, NW Suite 110
Washington, D.C. 20005

Expertise: This service answers consumer questions about labeling, buying, handling, and storage of seafood products. More urgent calls, including illness will be referred to specialists.

Time: Automated menu system operates 24 hours. An FDA consumer affairs specialist is on duty Monday – Friday, 10 am – 2 pm eastern time.

Posters and Signs

Food safety posters (four). No date. Covers: personal hygiene, cross-contamination, temperature danger zones and safe cooling and reheating. Food Marketing Institute, 800 Connecticut Ave., N.W., Washington, D.C. 20006. Tel: 202/452-8444. $8 (member/non-member). Order no. 2-61.

Hand washing poster. (No date) This 8-l/2" x 11" laminated poster shows the steps to hand and fingertip washing procedure. Hospitality Institute of Technology and Management, 830 Transfer Road, Suite 35, St. Paul, Minnesota 55114. Tel: 612/646-7077. $1.50 plus $2.50 for postage and handling.

Help prevent foodborne illness-follow these rules to protect food in the delicatessen (sign). 8-l/2" x 11". (1992) Covers safe food handling practices. U.S. Department of Agriculture, Food Safety and Inspection Service, and the U.S. Department of Health and Human Services, Food and Drug Administration. USDA/FSIS Information Office, South Agriculture Building, Independence Ave., SW, Washington, D.C. 20250. Tel: 202/447- 9113.

Food Handling posters (five) 11 -l/4" x 13". (1989) These posters advise food handlers to be on their guard about health, food protection, clean hands, clean service, and correct temperatures. Charles Felix Associates, Training Aids Dept., P.O. Box 1581, Leesburg, VA 22075. Tel: 703/777-7448. $7.50 per 20 sets (100 posters); add $2 to cover postage and handling for every $10 incremental order.

Temperature guide for food processing procedures in foodservice poster. No date. This colorful, laminated 11" x 17" poster gives food processing temperatures as related to pathogen multiplication temperatures and food quality temperature standards. Hospitality Institute of Technology and Management, 830 Transfer Road, Suite 35, St. Paul, MN 55114. Tel: 612/646-7077. $2 plus $2.50 for postage and handling.

Slide Sets and Transparencies

Food safety quality assurance for food service employees. (1992) Topics include: "The illness hazards," "Microorganisms that cause illness," "Personal hygiene," "Cleaning and sanitizing," "Safe food preparation," "Proper thermometer care and use," and "Correct storage techniques." Hospitality Institute of Technology & Management, 830 Transfer Road, St. Paul, MN 55114. Tel: 612/646-7077. Slides — $100; text — $15; test packet — $5.

The necessary step - a sanitation package. (1982) A guide to compliance with FDA's model ordinance for sanitation in retail stores. Publications Sales, Food Marketing Institute, 800 Connecticut Ave., NW, Washington, D.C. 20006. Tel: 202/452-8444. $75 (member) $150 (nonmember). Order no. 2-53.

Safe food handling: Health, an ounce of prevention and Serve food, not illness. (1989) These eleven transparencies with instructional materials from the U.S. Department of Agriculture, Food and Nutrition Service may be obtained through interlibrary loan from the Food and Nutrition Information Center at the National Agricultural Library, Beltsville, MD 20705. Tel: 301/344-3755. F&N order no. F-322.

Your sanitation responsibilities. (1989) A very basic 39-slide, sound cassette program for food service workers. Available through interlibrary loan from the Food and Nutrition Information Center at the National Agricultural Library, Beltsville, MD 20705. Tel: 301/344-3755. F&N order no. 138.

Videotapes

Back of the House II. (1987) Receiving: inspected delivered items and monitoring food and equipment temperatures. Storage: storeroom maintenance and product inspection and rotation. (Also available in Spanish) National Restaurant Association, The Educational Foundation, 250 S. Wacker Dr., Suite 1400, Chicago, IL 60606-5834. Tel: 800/765-2122. $99 (member) $129 (nonmember).

Back of the House III. (1987) Preparation and handling: maintaining food quality and forecasting quantities. Holding and serving: avoiding bacteria and contaminants, and labeling and dating foods. Cleaning and sanitizing: cleaning procedures and sanitizing dishes, utensils, equipment and work surfaces. (Also available in Spanish) National Restaurant Association, The Educational Foundation, 250 S. Wacker Dr., Suite 1400, Chicago, IL 60606-5834. Tel: 800/765- 2122. $99 (member) $129 (nonmember).

Basic facts about AIDS for food service employers (tape 1). AIDS — What you [the employees] need to know (tape 2). (1988) These two videos cover the disease, laws on employment of persons with AIDS, and dealing with patron and employee fears. National Restaurant Association, 1200 17th St., NW, Washington, DC 20039. Tel: 800/424-5156. $33.95.

The Danger Zone (a deli food safety and sanitation program). (1989) International Dairy-Deli Association, P.O. Box 5528, Madison, WI 53705. Telephone: 608/238-7908. $65 (member) $105 (nonmember).

Food safety is no mystery. (1989) A food service sanitation video training program produced by the U.S. Department of Agriculture, Food Safety and Inspection Service. Produced by Modern Talking Picture Service, 5000 Park St. North, St. Petersburg, FL 33709. Tel: 800/237-4599. $20.50 (English) $36 (Spanish/English includes four posters in Spanish and English).

Foodborne Disease: It's your business. (1992) Introduces HACCP to foodservice owners and managers. Contact: Duain Shaw, Chief, Food Service Facilities Section, Pennsylvania Department of Environmental Resources, P.O. Box 2357, Harrisburg, PA 17120.

Grime fighters. (1991) Covers store-level employee food handling and safety practices. Publications Sales, Food Marketing Institute, 800 Connecticut Ave., NW, Washington, D.C. 20006. Tel: 202/452-8444. $200 (member) $400 (nonmember).

HACCP: Safe food handling techniques. (1990) Discusses how to implement a HACCP program in a food service operation. The only drawback for U.S. trainers is that the graphics present temperatures in Celsius rather than in Fahrenheit, although the narration includes both. Comes with a 20-page "Leader's Guide." 22 minutes. Canadian Restaurant and Foodservices Association, 80 Bloor Street West, Suite 1201, Toronto, Ontario, Canada M5S 2Vl. Telephone: 416/923-8416. $90 (members, academics, and health departments).

The invisible challenge: food safety for food handlers. (1989) Two-part video with four food safety posters, a probe thermometer, a copy of Food Handler's Pocket Guide for Food Safety and a Consumer Guide to Food Quality & Safe Handling. Publications Sales, Food Marketing Institute, 800 Connecticut Ave., N.W., Washington, D.C. 20006. Tel: 202/452-8444. $95 (member) $225 (nonmember).

100 Degrees of doom! The time and temperature caper. (1988) A private eye approach investigates the causes of a salmonella food poisoning outbreak. Includes: videocassette, instructor's guide, two posters and a metal stem thermometer. 14 minutes. Educational Communications Inc., 761 Fifth Avenue, King of Prussia, PA 19406. Tel: 215/337-1011. $95.

Safe hand washing. (1988) Covers the procedure and microbiological reasons for keeping hands clean. Comes with "Instructor's Technical Background" booklet, student lesson sheet with quiz, laminated hand washing poster, and fingernail brush. Hospitality Institute of Technology & Management, 830 Transfer Road, Suite 35, St. Paul, MN 55114. Tel: 612/646-7077. $65 (English), $95 (Spanish/English).

Sanitation: It's your responsibility. Three videos on: "Preventing foodborne illness," "Keeping microbes in check," and "Personal hygiene in food service." (1989) Also available in Spanish. Advantage Media, Inc., 21356 Nordhoff Street, Suite 102, Chatsworth, CA 91311. Tel: 800/545-0166; 818/700-0504. $850/set; $395 each. These videos may also be borrowed through interlibrary loan from the Food and Nutrition Information Center at the National Agricultural Library, Beltsville, MD 20705. Tel: 301/344-3755. F&N order no. F-1787.

Sanitizing for safety: foodborne illness, how you can prevent it. (1990) Discusses basics of correct food service sanitation and sanitization with bleach. Clorox Company, Inquiry Handling Services, Receiving Department, 200 Parkside Drive, San Fernando, CA 91340.

SERVSAFE Serving Safe Food Program. Four videos on: "Introduction to food safety: employee health and hygiene," "Safe food handling: receiving and storage," "Safe Foodhandling: preparation and service," and "Cleaning and Sanitizing." (1991) Also available in Spanish. Every video includes a leader's guide. National Restaurant Association, The Education Foundation, 250 South Wacker Drive, Suite 1400, Chicago, IL 60606. Tel: 800/765-2122. $329/set or $115 each (member) $399/set or $135 each (nonmember).

The Spoilers I. (1969) Stresses using time and temperature to thwart bacterial growth plus the importance of constantly checking for the right temperatures everywhere food is handled or stored. This tape is a basic course in food safety. Publications Sales, Food Marketing Institute, 800 Connecticut Ave., NW, Washington, D.C. 20006. Tel: 202/452-8444. $50 (member) $100 (nonmember). Order no. 2-53.

Spoilers II. (1987) Covers the dangers of bacteria, methods of preventing cross-contamination, and basic steps to keep departments with perishables clean and safe. Also presents information on hot delicatessens, bakeries, and fish departments. Includes instructor's guide. Publications Sales, Food Marketing Institute, 800 Connecticut Ave., NW, Washington, D.C. 20006. Tel: 202/452-8444. $50 (member) $100 (nonmember). Order no. 2-53.

The purpose of this guide is to provide a source for training aids and background information. No endorsement of named products or services is intended, nor is criticism implied of similar products or services that are not mentioned. Some of this material has not been reviewed by the authors; no statement regarding the quality or usefulness of the material is intended.

BIBLIOGRAPHY

Bjerklie, S. 1992. HACCP in your plant: What HACCP is, what it isn't and how your operations will be affected. *Meat and Poultry. 38(2): 14-22.*

Bryan, F. L. 1988a. Risks associated with vehicles of foodborne pathogens and toxins. *.Journal of Food Protection. 51(6):498-508.*

Bryan, F. L. 1988b. Risks of practices, procedures and processes that lead to outbreaks of foodborne diseases. *Journal of Food Protection. 51(8):663-673.*

Bryan, F.L. 1990a. Hazard analysis critical control point (HACCP) concept. *Dairy, Food and Environmental Sanitation, 10(7):416-418.*

Bryan, F.L. 1990b. Hazard analysis critical control point (HACCP) systems for retail food and restaurant operations. *Journal of Food Protection, 53(* 11):978-983.

Buchanan, R.L. 1990. HACCP: A re-emerging approach to food safety. *Trends in Food Science & Technology,* November 1990, Elsevier Science Publishers, Inc.

Corlett, D.A., Jr. 1989. Refrigerated foods and use of hazard analysis and critical control point principles. *Food Technology. 43(2):91-94.*

FMI. 1989a. *A program to ensure food safety in the supermarket — the hazard analysis critical control point system.* Food Marketing Institute, Washington, DC.

FMI. 1989b. *Food handler's pocket guide for food safety and quality.* Food Marketing Institute, Washington, DC.

Kemp, S. 1991. Start a quality improvement program. North Carolina State University, Sea Grant College Program, Raleigh, NC. *Seafood Current, 5(* 1).

IAMFES. 1991. *Procedures to implement the hazard analysis critical control point system.* International Association of Milk, Food and Environmental Sanitarians, Inc., Des Moines, IA.

ICMSF. 1986. *Microorganisms in Foods 2. Sampling for microbiological analysis: Principles and specific applications.* 2nd ed. International Commission on Microbiological Specifications for Foods, University of Toronto Press, Toronto.

ICMSF. 1989. *Microorganisms in Foods 4. Application of hazard analysis and critical control point (HACCP) system to ensure microbiological safety and quality.* Blackwell Scientific Publications, Boston.

Lee, J.S. with Hilderbrand Jr., K.S. 1992. *Hazard analysis & critical control point applications to the seafood industry.* ORESU-H-92-001. Oregon Sea Grant, Oregon State University, Corvallis, OR.

McIntyre, C.R. 1991. Hazard analysis critical control point (HACCP) identification. *Dairy, Food and Environmental Sanitation,* 11(7):357-358.

NACMCF. 1992. Hazard analysis and critical control point system. *International Journal of Food Microbiology,* 16:1-23.

NEFDA. 1991. *HACCP manual for processors. New* England Fisheries Development Association. 309 World Trade Center, Boston, MA 0221O-2001. Telephone: 6 17/439-5480 Fax: 6 17/439-5481. $45.

NFI. 1991. *Seafood industry, hazard analysis critical control point, HACCP, training manual.* National Fisheries Institute. Arlington, VA.

NFPA. 1992. HACCP and total quality management-winning concepts for the 90's: A review. Microbiology and Food Safety Committee of the National Food Processors Association. *Journal of Food Protection, 55:459-462.*

Pisciella, J.A. 1991. *A handbook for the practical application of the hazard analysis critical control point approach to food service establishment inspection.* Central Atlantic States Association of Food and Drug Officials, c/o William Kinder, Pennsylvania Department of Agriculture, P.O. Box 300, Creamery, PA 19430. $5.

Price, R. J. (Ed.) 1985. *Seafood retailing manual,* third edition. University of California, Sea Grant Extension Program, Davis, CA.

Price, R. J. 1990. *Retail seafood cross-contamination.* UCSGEP 90-6. University of California, Food Science & Technology Department, Davis, CA 95616.

Price, R. J. 1990. Retail seafood temperature control. UCSGEP 90-5. University of California, Food Science & Technology Department, Davis, CA 95616.

Snyder, O.P. 1991. HACCP in the retail food industry. *Dairy, Food and Environmental Sanitation,* 11(2):73-81.

Snyder, O.P. 1992. HACCP - an industry food safety self-control program-part I. *Dairy, Food and Environmental Sanitation.* 12(1):26-27.

Snyder, O.P. 1992. HACCP - an industry food safety self-control program-part II. *Dairy, Food and Environmental Sanitation. 12(2):84-86.*

Snyder, O.P. 1992. HACCP - an industry food safety self-control program-part III. *Dairy, Food and Environmental Sanitation. 12(3):164-167.*

Snyder, O.P. 1992. HACCP - an industry food safety self-control program-part IV. *Dairy, Food and Environmental Sanitation. 12(4):230-232.*

Snyder, O.P. 1992. HACCP - an industry food safety self-control program-part V. *Dairy, Food and Environmental Sanitation. 12(5):291-295.*

Stevenson, K.E. 1990. Implementing HACCP in the food industry. *Food Technology, 42(5):179-180.*

Sumner, S.S., *et al.* 1992. Food Safety/Food Sanitation Workshop, *Introduction to HACCP Procedures — Final Report* (special project number 91-EFSQ-4021). Nebraska Cooperative Extension, University of Nebraska, Lincoln, NE 68583-0919.

USDA and USHHS. 1992. *Listeria: Deli manager letter.* FDA Prime Connection, Food Conference Bulletins, Bulletin FC92-09. U.S. Department of Agriculture, Food Safety and Inspection Service and U.S. Department of Health and Human Services, Food and Drug Administration, Washington, DC.

APPENDIX 1

Date _____

Receiving Reject Form		
Product	**Rejected for:**	**Initials/Comments**

Reviewed by: _____ Date _____

APPENDIX 2

Date _____

Receiving Temperature Form		
Product	**Temp.**	**Initials/Comments**

Reviewed by: _____ Date _____

APPENDIX 3

Date _____

Cooler Temperature Form				
	Temperature			
Time	**#1**	**#2**	**#3**	**Initials/Comments**
7:00 A.M.				
11:00 A.M.				
3:00 P.M.				
7:00 P.M.				
11:00 P.M.				
3:00 A.M.				

Reviewed by: _____ Date _____

APPENDIX 4

Date _____

	Display Product Temperature Form					
Product:						
Initial Temp.						
Time	Product Temperature					Initials
7:00 A.M.						
9:00 A.M.						
1 1:00 A.M.						
1:00 P.M.						
3:00 P.M.						
5:00 P.M.						
7:00 P.M.						
9:00 P.M.						
11:00 P.M.						
1:00 A.M.						
3:00 A.M.						
5:00 a.m..						

Reviewed by: _____ Date _____