

RESTAURANT MANAGERS PERCEPTIONS AND
ATTITUDES OF THE IMPLEMENTATION OF
HAZARD ANALYSIS CRITICAL CONTROL
POINT (HACCP) PROGRAM IN THEIR
ESTABLISHMENT

By

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Chapter	Page
I. INTRODUCTION	1
Statement of the Problem.....	3
Purpose.....	4
Objectives.....	4
Limitations.....	4
Assumptions.....	5
Definitions.....	5
II. REVIEW OF LITERATURE.....	7
Attitudes.....	7
Hazard Analysis Critical Control Points	12
Implementation.....	19
Foodborne Illnesses.....	26
Sanitation.....	31
Training.....	32
Summary.....	38
III. METHODOLOGY.....	39
Research Design.....	39
Methods.....	41
Summary.....	42
IV. RESULTS AND DISCUSSION.....	43
Response Rate.....	43
Managers HACCP Knowledge.....	44
Employees HACCP Knowledge	46
Employees Attitude Toward Workload.....	48
Managers Attitudes Toward Implementation.....	51
Organizational Sanitation Practices.....	55
Demographics.....	58
V. CONCLUSIONS AND RECOMMENDATIONS.....	64
Conclusion.....	65
Recommendations.....	66
BIBLIOGRAPHY.....	68

Chapter	STUDY TABLES	Page
APPENDICES.....		71
APPENDIX A - APPROVAL FORM FOR OKLAHOMA STATE UNIVERSITY INSTITUTIONAL REVIEW BOARD FOR HUMAN SUBJECTS RESEARCH.....		72
APPENDIX B - HACCP QUESTIONNAIRE.....		74

CHAPTER I

LIST OF TABLES

Table		Page
I.	Managers HACCP Knowledge.....	44
II.	Employees HACCP Knowledge.....	46
III.	Employees Attitude Toward Workload.....	48
IV.	Managers Attitude Toward Implementation.....	51
V.	Organizational Sanitary Practices.....	55
VI.	Health Inspection Changes.....	57
VII.	Staff Demographics.....	58
VIII.	Manager Demographics.....	60
IX.	Establishment Demographics.....	61

CHAPTER I

Introduction

In the United States, it is estimated that up to 33 million foodborne illnesses occur each year, costing nearly \$6.7 billion (Cotterchio, Gunn, Coffill, Tormey, & Barry, 1998). "All Americans need to have confidence in what they eat, whether they eat in a four star restaurant, a supermarket deli counter, a fast food restaurant, or at home" (Tisler, 1994, p. 2). Consumers should feel confident that the food has been properly processed, shipped, handled, and stored at the right temperature. Over the last few years, the foodservice industry has adopted a system, that originated in the food processing industry, Hazards Analysis Critical Control Points (HACCP). This is a food safety assurance system that addresses the consumers' concerns that only safe foods be available. "HACCP requires an analysis of all processes and identifies points where microbial contamination can occur, then setting up controls and documentation to prevent or reduce the hazards" (Tisler, 1994, p.4).

As more restaurants begin to implement the HACCP program there will be an extensive need for employee training. First, the managers must be properly trained, so that they can train their employees. The key elements to an effective training program are (1) the motivation of the instructor, (2) as well as the motivation of the employees. Therefore the employee's must perceive that the training is linked to their job performance and advancement (Krout, 1994). Furthermore, from prior experience and personal observation accumulated through years of training restaurant employees, the

training program must be an ongoing process. With the high turnover rate in the restaurant industry, training is a necessary continuous process.

History of HACCP

The Hazard Analysis of Critical Control Points (HACCP) concept was first developed in the late 1950's by The Pillsbury Company, which was challenged by the National Aerospace and Space Administration to produce safe food for the space program (Loken, 1995). The risk of foodborne illnesses was eliminated so that the astronauts would not become ill during space flight. Pillsbury decided that the best approach was to design a preventive and proactive system around NASA requirements. The system was so successful that it later was adopted by some food processing plants (Loken, 1995).

HACCP in the Foodservice Industry

Though restaurants in the United States are not required to have a HACCP system in place, it has been mandated for restaurants in England. Restaurants are at risk for outbreaks of foodborne illness because large quantities of different foods are handled in the same kitchen (Anonymous, 1998). In 1993, the Food and Drug Administration (FDA) conducted a pilot study in the United States with twelve individual restaurants spanning eleven states (Tisler, 1994). After intensive training sessions, simulated regulatory inspections tested the HACCP plan. Results from the FDA pilot study show that implementation of a HACCP plan in a retail food establishment was more difficult than in the food processing industry. The difficulties were due to high employee turnover and maintaining the desired refrigeration temperatures (Tisler, 1994). Maintaining a well-trained staff is often difficult since the food service industry has such a broad

spectrum of employees, from highly trained chefs to entry level dishwashers.

Sanitation

The SERSAFE Certification class is divided into two main areas. First, the program encompasses disease causing bacteria and microorganisms, and second, the training incorporates the histories and characteristics of the common food poisoning organisms (Richardson, 1981). Not only does the SERSAFE class cover the causes of foodborne illnesses, but it also provides a detailed insight into personal hygiene. Personal hygiene is very important in the foodservice sector because it can prevent diseases from being spread in the establishment (Richardson, 1981). Personal hygiene consists of employee's bathing regularly, wearing clean uniforms, and thorough hand washing techniques.

The National Restaurant Association (NRA) says it has certified 500,000 managers through its SERSAFE course (NRA website, 1999). In the state of Oklahoma there are many different requirements for foodservice establishments as set by the individual county health departments. In the majority of counties in Oklahoma, at least one manager must be working in the establishment who has been SERSAFE certified. Many managers become certified to teach the SERSAFE class so they in turn can train their employee's in foodservice sanitation.

Statement of the Problem

Many restaurant managers have not implemented the HACCP programs because they regard HACCP programs as being too complicated and the needed training is time consuming.

Statement of Purpose and Objective

The purpose of this study was to assess and explore the attitudes of foodservice managers in the state of Oklahoma on the implementation of HACCP programs in their establishments. The objectives of this study were to study information from general managers, catering managers, and food and beverage directors to determine exactly what areas of food safety training were below standards. The information that is revealed in this research project will be used to (1) determine what types of food safety training are currently in place, (2) examine manager's attitudes regarding food safety, (3) and to investigate the depth of manager's knowledge on food safety.

Limitations

The study was limited to managers of foodservice establishments within the state of Oklahoma. The size of the population was another limitation to the study. The results of this study do not necessarily portray the attitudes and perceptions of managers of foodservice establishments outside the state of Oklahoma and, therefore, cannot be generalized beyond the population that was surveyed.

The fact that the managers are answering the questions for the employee's should be considered as a limitation.

In addition, the manner in which the population was selected, systematic randomization, the selection of every fifth name from the list could be considered a limitation because the random sample was compromised.

Furthermore, the reliability of the questions in the survey instrument is in question. The researcher designed these questions, and pilot tested the questions, but had

no verifiable way of testing them for reliability.

Assumptions of the Study

It was assumed that the respondents answered the open-ended questions truthfully and objectively. Because of the wide array of settings within each foodservice establishment, it was assumed that the answers given to the open-ended question pertained directly to the foodservice manager. It was assumed that prior acquaintances in the foodservice industry, and association with the Oklahoma Restaurant Association (ORA) had no bearing on participation in the study. Last, it was assumed that the respondents were not biased or influenced in any way by the fact that the ORA would be receiving the results of the study.

Definition of Terms and Acronyms

For the purposes of this study, the following terms were defined so that the researcher's intent is specifically understood. The study defines:

Foodservice establishments – Retail operations that serve food and beverages to the public (Applied Foodservice Sanitation, 1992).

SERVSAFE – The manager sanitation certification course presented by the National Restaurant Association (NRA website, 1999).

HACCP Team – The group of people who are responsible for developing a HACCP plan (Tisler).

HACCP Plan – The written document which is based upon the principles of HACCP, and which delineates the procedures to be followed to assure the control of a specific process

or procedures (Tisler).

HACCP program – The result of the implementation of a HACCP plan

Hazards – A biological, chemical, or physical property that may cause a food to be unsafe for consumption (Tisler).

Critical Control Points – A point, step, or procedure at which control can be applied and a food safety hazard can be prevented, eliminated, or reduced to acceptable levels (Tisler).

Corrective action – Procedures to be followed when critical limits are not met (Tisler).

Critical limit – A criterion that must be met for each preventive measure associated with a critical control point (Tisler).

Foodborne illness – a disease that is carried or transmitted to human beings by food (Tisler).

Personal hygiene – personal practices that are conducive to cleanliness (Applied Foodservice Sanitation).

Sanitation – the creation and maintenance of healthful, or hygienic, conditions (Applied Foodservice Sanitation).

Structure

This study is organized into five chapters. Chapter I included the introduction, statement of the problem, purpose and objective of the study, limitations, assumptions, definition of terms and acronyms. Chapter II contains a review of literature. Chapter III includes the methodology, the sample surveyed, and a comprehensive description of the questioning methodology utilized in collecting data for the study. Chapter IV includes the analysis of the data. Chapter V has conclusions and recommendations for future research based on the results of this study.

CHAPTER II

Review of Literature

Attitudes

Attitudes are an important concept that helps people to understand their social world (Feldman, 1995). Attitudes help us define how we perceive and think about others, as well as how we behave toward them (Feldman, 1995). Many definitions exist that attempt to determine what exactly an attitude reflects. These definitions often include the component of enduring evaluations of people, objects, or issues (e.g. an attitude toward food safety may be stated as "I like Hazard Analysis Critical Control Points the best").

Most psychologists concur that attitudes are learned through mere exposure, conditioning, and socialization. Specifically, attitudes can be acquired from others (i.e. social learning) in the form of classical conditioning, instrumental conditioning, and modeling; as well as being acquired via direct experience (Feldman, 1995, p. 319).

Social Learning

Social Learning, often referred to as "socialization" refers to the "gradual acquisition of language, attitudes, and other socially approved values through reinforcement, observation, and other learning processes" (Feldman, 1995, p. 319). This definition implies that one's interaction with others, such as parents, teachers, peers, relatives, newspapers, books, television, and religious groups can effect our attitudes toward various objects. This type of "learning" attitude occurs in four diverse ways (1) classical conditioning (2) instrumental conditioning (3) modeling (4) direct experience.

Classical Conditioning

Classical conditioning is learning-through-association, which involves the pairing of stimuli (Feldman, 1995). "When one stimulus regularly precedes another, the one that occurs first may soon become a signal for the one that occurs second." (Feldman, 1995, p. 317). After frequent pairings, there exists an expectation that when the first stimulus occurs, the second will then follow (Feldman, 1995). For example, a machine that emits a loud noise just before it breaks down. Over time, the loud noise may serve as a signal to the unpleasant occurrence. Attitudes can be conditioned in this way as well. This can occur when an attitude object is frequently paired with other objects or experiences that are pleasant or unpleasant (Feldman, 1995). Consider a supervisor who frequently frowns or rolls their eyes whenever they interact with a particular employee. Initially the work group may have a neutral feeling toward the new worker. However, after repeated pairings of the supervisor's signs of displeasure and the presence of the employee, the work group may come to regard the new employee in a negative way.

Instrumental Conditioning

Rewards and punishments are commonly used to accomplish goals. Skinner, (1975) theorized that whenever responses are immediately followed by positive rewards, these responses become more frequent in the future. In contrast, punished responses become less frequent. These same techniques are often utilized, either consciously or unintentionally, to form attitudes (Feldman, 1995). For example, when praise, smiles, or other positive forms of recognition are given to a student who participates in class discussion, the result will reflect the student development of a fondness for speaking in

groups.

Modeling

This third process of forming attitudes often occurs without intention (Feldman, 1995). This process often referred to as "Social Learning Theory" suggests that behaviors and attitudes are acquired by observing and imitating the actions displayed by parents and peers (Bandura, 1969). So, for example, if a coworker is observed enjoying a particular meal from the cafeteria, another worker may also select the same meal and enjoy it, regardless of their personal taste.

Direct Experience

Finally, attitudes can be acquired from the mere exposure to a particular object (Feldman, 1995). Such direct experience, repeated over time, often results in a preference for that object when compared to objects less often encountered (Feldman, 1995). For example, when asked to choose a preference for the way a task should be completed, most workers will select the method with which they are most familiar. The more familiar the object or task, the more the task is generally liked (Feldman, 1995).

Cognitive Dissonance

Not all attempts at attitude change stem from messages from others (Feldman, 1995). Often, individuals change their own attitudes. This occurs, according to cognitive dissonance theory (Festinger, 1957). Individuals experience aversive psychological effects when two conflicting attitudes are held simultaneously or when an attitude is inconsistent with one's behavior. For example, when asked your opinion about a new

production procedure during an important meeting with your boss and several others present, you praise the process. This occurs despite your negative attitude toward the new procedure. This inconsistency of being "forced to comply" with your boss's expectations for an agreeable or loyal employee causes an unpleasant state of dissonance (Feldman, 1995). This state can then be restored to a sense of consonance by a number of methods.

A person's attitude toward their work may have an effect on their performance (Feldman, 1995). Given the conditions, under which attitudes and behavior are consistent, it would be expected that job satisfaction would be an excellent way to speculate about worker performance. (If you are happy at work, you'll work harder). Although this is often true, there are several other factors that effect this relationship (Feldman).

Organizational factors that affect this relationship include:

- reward systems,
- quality of supervision,
- work load,
- interest value of work,
- physical working conditions;

Personal factors that affect this relationship include:

- personality traits,
- status and seniority,
- life satisfaction,
- genetic factors, etc.

Each of these factors may help in determining who is satisfied with their jobs. However, turning this satisfaction into increased performance is not always possible because some jobs do not allow for variation in performance (Feldman, 1995). Job satisfaction may result in other positive outcomes for the organization, besides improved performance, such as loyalty and commitment. Positive employee attitudes create positive actions toward organizational goals (Feldman, 1995). Employee attitude is increasingly cited in surveys as the number one performance-related issue of companies, large and small. As attitudes deteriorate, so do commitment, loyalty and most importantly, performance (Feldman, 1995).

Satisfied employees are more likely to make constructive suggestions, help coworkers, and praise the company to outsiders. Theories that attempt to explain why these results may occur involve the various motivation theories. These theories include the need fulfillment approaches, expectancy theory, social information processing, and the opponent-process model (Feldman, 1995).

As cited by Reichler & Dalton in a study done during the spring of 1995 at two culinary schools in the northeastern United States, chef's knowledge of food safety affects the way they prepare food (Reichler & Dalton, 1998). The survey was a three-part questionnaire that totaled fifty questions. Section one measured each chef's food science knowledge, section two measured the frequency with which chef's used food preparation practices consistent with the 1990 U.S. Dietary Guidelines. Section three measured the chef's attitudes towards food safety. The purpose of the research was to determine the chef's food nutritional knowledge, food preparation practices, and attitudes towards food safety. The results of the study indicated that chefs had poorer attitudes

towards food safety knowledge.

Bryan defines a hazard as an "unacceptable contamination, survival or growth of

HAZARD ANALYSIS CRITICAL CONTROL POINTS

microorganisms of concern to safety, or spoilage, or unacceptable persistence in foods of

products. Whitehead defined HACCP as "the identification of all the known potential

hazards which can be associated with the food being processed" (Whitehead, 1998, p.

11). Whitehead also defines critical control points as "areas where controls can be

exercised to prevent, reduce or eliminate hazards" (Whitehead, 1998, p. 11). The critical

control points must be constantly monitored to insure that the critical control points are

not violated. If the critical control point is violated, appropriate corrective actions are

required to insure the food is safe.

According to Bryan, (1988), HACCP was first described at the Food Protection

Conference in 1971, and consists of the following six elements; (1) "identification of

hazards and assessment of the risks posed to a raw material or food product in relation to growing or, harvesting, processing, distributing, marketing, preparing or using"

(2) "Determination of critical control points required to prevent or control identified

hazards" (3) "Establishment of effective preventive or control measures and specification

of criteria that indicate whether and operation is under control at a particular critical

control point" (4) "Monitoring of each critical control point to evaluate whether criteria

are being met and the operation is under control" (5) "Implementation of appropriate

intermediate corrective action whenever results of monitoring indicate that an operation

at a critical control point is not under control or that criteria are not been met"

(6) "Verification of the HACCP system indicates appropriate critical control points have

been designated, that they are effectively and properly monitored, and that appropriate

action is taken whenever criteria are not being met" (Bryan, 1988, p. 400).

Bryan defines a hazard as an "unacceptable contamination, survival or growth of microorganisms of concern to safety, or spoilage, or unacceptable persistence in foods of products such as toxins, enzymes or histamines of microbial mechanisms" (Bryan, 1988, p. 400). Bryan defines risk as "an estimate of the probability of occurrence of the hazard or several hazards" (Bryan, 1988, p. 400). The critical control point is defined as "an operation and or a step of an operation, at or by which a preventive measure can be exercised that will eliminate, prevent or minimize a hazard that occurred prior to this point" (Bryan, 1988, p. 400). Monitoring is defined by Bryan as "the checking of a processing or handling procedure at each critical control point meets established criteria" (Bryan, 1988, p. 400). Bryan defines verification as "the use of supplemental tests or review of previous monitoring records to determine that the HACCP system is in place and functioning as planned" (Bryan, 1988, p. 401).

Hazard Analysis Critical Control Points (HACCP) requires an analysis of all processes to identify points where microbial contamination can occur, then setting up controls and documentation to prevent or reduce the hazards. The plans are to be based on seven principles devised by the National Advisory Committee on Microbiological Criteria for Foods: hazard analysis, critical control point identification, establishment of critical limits, monitoring procedures, corrective actions, record keeping, and verification procedures (Kvenberg, 1998).

According to the Food and Drug Administration (FDA), the HACCP system is made up of seven principles. The following seven principles have been developed by Kvenberg, (1998).

6. Establish Verification Procedures. This process makes sure that the entire system is in

1. Perform a Hazard Analysis. The first principle is to understand your operation and defining the hazards that are likely to occur. This involves determining the steps that you take as food is received and moves through out your operation. This is where you try to understand how people, equipment, methods, and foods all affect each other. also be used.

2. Determine the Critical Control Points (CCP's). Which of the operational steps in principle #1 are critical to a safe product? Where can a hazard be reduced, eliminated, or prevented to acceptable level? Are there steps to correct the hazard? It is important to know that not all steps are CCP's because there are only a few CCP's in each process.

3. Set the Critical Limits. First we set boundaries for each CCP to define safety. What determines a CCP that is under control? Critical limits are the standards that define safety and can be found in the Food Code. "The critical limit for cooking a hamburger is 155 degrees Fahrenheit for 15 seconds". "When a critical limit is not met, it could mean that the food is not safe."

4. Establish Procedures to Monitor CCP's. "Once the operational steps that are critical have been defined, and critical limits have been set, someone needs to track the CCP's in the flow of food through the operation." Monitoring should focus on keeping the CCP's under control and within the critical limits."

5. Establish Corrective Actions. What are the corrective actions taken when a critical limit has not been met? You need to plan ahead and decide the corrective actions to be taken, then communicate them to the employees, and train them to make those decisions. A proactive approach is a must when applying HACCP. When a problem arises, it needs to be identified and corrected before someone becomes ill.

6. Establish Verification Procedures. This process makes sure that the entire system is in place and operational. It requires periodic observations, calibration of all equipment and thermometers, review all record logs and actions taken, and finally have discussions with your employees about the process. These steps will verify if your system is operational and will provide a system of checks and balances. An outside source should also be used, a health inspector or a Director of Operations.

7. Establish a Record Keeping System. Written records documenting the steps taken and actions that correct the problem are needed to verify the system is working to an outside source. According to the FDA, the record keeping system is the most important part of a HACCP program. The record-keeping aspect of the HACCP programs could be the difference between passing or failing a health inspection; the health inspector's decision will be based on the written records. There are several aspects to the HACCP record-keeping requirements, in addition to written hazard analysis HACCP plan, documentation regarding critical control points and limits, and frequency of monitoring and verification and must be kept.

Record keeping should be as simple as possible so the employees will have the time to keep them. There are software packages available to simplify the process even further. They use hand-held computers that record the temperatures of all of the food products then print them out. It requires very little effort and makes HACCP simple.

According to Kvenberg, "the process approach to the use of HACCP principles can best be summed up as dividing the numerous flows into broad categories, analyzing the risks, and placing controls on each grouping" (Kvenberg, 1998, p. 7). The flow of food is simply the way food moves from receiving to storage, preparation, cooking,

holding, serving, cooling and re-heating through an establishment. Identification and control of hazards are at the heart of a HACCP system, which uses flow charts as a tool to determine and illustrate critical points in recipes. "Food that flows through retail food establishment operations can be placed into the three following processes: buying chain"

1. Receive - Prepare - Serve (example: a customer finds a rock in the beans)
2. Receive - Prepare - Cook - Hold - Serve (this is used for hot foods they purchase)
3. Receive - Prepare - Cook - Cool - Reheat - Hot Hold - Serve" (Kvenberg, 1998, p. 7).

Furthermore, Kvenberg states that "the HACCP system must provide food safety controls for all hazards within each of these processes" (Kvenberg, 1998, p. 7).

Some operational steps, such as cooking, require procedures to control various hazards related to several different products. A single operational step may have multiple control limits for multiple product specific hazards. For example, poultry requires a final cooking temperature of 165° F. for 15 seconds, whereas hamburger is only cooked to 155° F. for 15 seconds to control E-coli bacteria" (Kvenberg, 1998, p. 8).

In a study of health care facility dietitians done by Giamalva, Redfern & Bailey, it was found that dietitians would be more willing to pay for foods that are inspected by the HACCP process (Giamalva, Redfern & Bailey, 1998). The dietitian's support for chemical rinses and irradiation was far lower than the support for a HACCP process. Dietitians supported processes designed to increase the safety of the food they purchased and served, and dietitians were willing to pay more for the increase safety.

"Since the foodservice industry is the closest to the consumer, blame and suspicion for food safety failures will come to the foodservice industry first, even though the cause of the problem may have occurred earlier in the food manufacturing chain" (Setiabuhdi, Theis, Norback, 1997). For example, a customer finds a rock in the beans. The foodservice establishment will be blamed for this incident even though they purchase pre-washed beans that are guaranteed to be free from contamination by the manufacturer. For a foodservice establishment to reap the benefits from a HACCP system, a complete knowledge of the menu item production system detailed in flow charts is needed. In a HACCP system the menu items are converted to flow charts and a phased in one at a time in order for the HACCP team to review the effectiveness of the steps detailed in the flow chart. For example, the HACCP team converts the easiest recipe first, reviews the flow of the steps for potential hazards, then when the team is certain it is correct they move to the next recipe until the whole menu has been converted. Setiabuhdi et al. further states that "a common misconception about HACCP is that it will cause excessive extra work" (Setiabuhdi et al., 1997, p. 890). A HACCP plan should be as simple as possible so the newest employee can follow it without problems. All of the recipes should have every step detailed from start to finish, from washing their hands before proceeding to cooling the product after cooking. The HACCP record keeping process can be simplified by computer software. The computer software comes with a portable unit equipped with a thermocouple that will record the temperatures of the foods on the serving line, and then the temperatures are downloaded into the establishment's computer. The extra work depends on the HACCP planners and how difficult they make the HACCP plan.

According to the Journal of the American Medical Association, "restaurants plan provide opportunities for outbreaks of foodborne disease because large quantities of different foods are handled in the same kitchen, and failure to wash hands, utensils, or counter tops can lead to contamination of foods that will not be cooked." (Anonymous, 1998, p. 1341). For example, a cook could cut raw chicken on a cutting board, then cut lettuce on the same cutting board and contaminating the lettuce with Salmonella. Cross-contamination is frequently a source of foodborne illnesses.

Coleman & Griffith contend that the benefits of the HACCP program are that the foodservice manager "is required to think analytically about the potential for food risk and its encourages a reflective attitude towards food preparation" (Coleman & Griffith, 1998, p. 299). Analytical thinking involves constantly questioning the food production process to see if all the hazards have been identified and eliminated. In order to reduce the risks of food poisoning a more proactive approach to food safety needs to be taken by foodservice managers to protect the consumer. That is why HACCP programs have been required in the food processing industries, because it represents a proactive approach to food safety.

The key to get any workable HACCP plan in place is to bring the inspectors into the loop so that they can help you determine the critical control points (Demetrakakes, 1998). The inspectors will be able to verify that all of the hazards have been identified, critical limits have been established, and that there are no holes in the HACCP plan. Once the health inspectors realize that the foodservice manager is serious about food safety, they will become an ally rather than a foe. It is also important that employee-training focus on monitoring, recording, verification and validation of critical control

points. This is due to the fact that the employees will be working with the HACCP plans on a daily basis, and should be considered the first line of defense in the HACCP plan. If a CCP has been violated they will be the first to notice it and notify the management.

IMPLEMENTATION

Steps to building a HACCP system

Assessing hazards

Review your menu, recipes, and items contained in them by examining each ingredient and the way in which it is prepared (Loken, 1995). Keep in mind that potentially hazardous foods that may harbor bacteria can be contained as an ingredient in a recipe or alone. The flow food must be examined from receiving, storing, preparing, cooking, holding, serving, cooling, and reheating (Loken, 1995). For example, when a box of chicken is received from the purveyor's truck it should be examined to see if the chicken is at the proper temperature and if it has been thawed and refrozen. If it is acceptable then it must be stored in the freezer, thawed before cooking, and then cooked according to the HACCP plan. Once it has been cooked it must either be put on the serving line or cooled according to the HACCP plan.

Identifying hazards:

After examining your recipes and ingredients for potential hazards, you need to decide what hazards if any can occur during the flow food. A hazard is a biological, chemical, or physical property that may cause a food to be unsafe for consumption (Loken, 1995). They include microorganisms that can grow during preparation, storage,

and or holding; microorganisms or toxins that can survive heating; chemicals and objects that can contaminate food or food contact surfaces (Loken, 1995). Much can be learned by watching your staff and asking them for facts on how temperatures are taken, measured, and recorded. Take notes about possible hazards in any opportunities for contamination and bacterial growth.

Identifying the risks

When estimating risk one must look in several factors, first the type of customer that you will be serving (Loken, 1995). If you are serving in a retirement home or a hospital then one must consider the condition of their immune system. Foodservice operators who serve the general public must consider foods that are risky and have a history of foodborne illnesses, such as oysters or clams. Secondly the suppliers that you buy from need to be reputable and some cases such as fresh seafood certified (Loken, 1995). Certified purveyors are approved by the federal government through several inspections, and are currently using a HACCP program. The third factor when identifying risks is to assess the size of your operation in terms of equipment vs. holding proper temperatures (Loken, 1995). Does your establishment have enough equipment to maintain the proper food temperatures on the serving line? If the proper temperatures cannot be maintained this could be a risk. The final factor when evaluating risk is that employees need training to properly handle food. The training could be in the form of weekly meetings, training manuals, HACCP manuals; the National Restaurant Associations SERVSAFE course, or from computer based training. Any employee who handles food should have some sort of sanitation or food safety training to eliminate any

risk of foodborne illness.

Identifying Critical Control Points

Once the hazards have been identified within a foodservice establishment the HACCP team must set up the critical control points with which the hazards can be controlled or prevented (Loken, 1995). For example, if the chile on the serving lines temperature were to drop below 140° Fahrenheit, that would be a critical control point, and some corrective action must be taken to remedy the problem. Avoidance of cross contamination and good personal hygiene is needed at each step to maintain the Critical Control Points (CCP). Cooking and cooling are critical control points because thorough cooking kills vegetative bacteria, and rapid cooling prevents bacteria growth (Loken, 1995). For instance, if a pan of cooked product is not cooled from 140° F. to 70° F. in two hours, and then from 70° F. to 41° F. in four hours a CCP has been violated and corrective actions should be taken. The corrective action would be to start the process of reheating to 165° F for 15 seconds and cool using the previously mentioned process. Under most HACCP plans the recommended way for rapid cooling is to use ice baths or blast chillers to achieve the desired cooling temperatures.

Designing flow charts

The flow chart is simply a diagram showing the flow of food for a particular recipe with all of the critical control points in critical control limits, as well as any facts that might help in eliminating risk when delivering safe food (Loken, 1995). The flow chart can be considered a picture of what happens to the ingredients through receiving,

storing, preparing, cooking, holding, serving, cooling, and reheating. The recipes will all include a flowchart of the preparation process, all of the CCP's included in the preparation process, and the directions for preparation.

Setting of procedures and standards for Critical Control Points

Set the standards that must be met for each critical control point. Standards and critical limits are the same and they are times, temperatures, or other requirements that must be met to keep food safe (Loken, 1995). The standards must be part of your recipe and flow chart. You may well need more than one standard at each critical control point; each standard should be measurable, based on fact, from experience, advice, research, and regulations (Loken, 1995). They must be correct for the recipe according to the work environment, room temperature, number of employees, and amount of orders. Finally, there must be a clear direction to take a specific action, such as taking the temperature or cooking an item certain length of time (Loken, 1995). For example a standard for reheating beef stew might be to heat it rapidly, only once, to 165° F internal temperature or higher for 15 seconds within two hours. There should also be standards to prevent contamination such as wash, rinse, sanitize, etc.

Monitoring Critical Control Points

When you monitor you're checking to see if your standards are being met (Loken, 1995). You should focus on critical control points throughout the flow food. It is also important to determine if your standards are being met. Making certain your staff is involved in the process and that they understand the critical control points and know your

standards as detailed in your plan and recipes easily does this.

Taking Corrective Action

by Loken,

If a standard for a critical control point is not been met, correct it immediately using the corrective actions set forth in the plan for that Critical Control Point (Loken, 1995). It may be as simple as cooking until a certain temperature is reached or not so simple which may require discarding an item in which case you may want them to ask a supervisor. Refer back to setting procedures, because it must be based on fact and the measurable. For example the standard for turkey may read hold at 140° F. or higher until served. The corrective action if the standard is not met may read: if held over two hours, discard. If held for less than two hours and the temperature falls below 140° F. reheat to 165° F. or higher for 15 seconds one time only.

Setting up a record-keeping system

Records should be simple and easy for employees to keep (Loken, 1995). You may want to keep blank forms on the clipboard near work areas. You may want temperature logs hung on equipment for easy use. It is always a good idea to keep a bulletin board and posts converted recipes, flow charts, production sheets, and other sanitation logs in forms for the employees to view.

Verifying that the system is working

This occurs after the plan is implemented to prove this system is working (Loken, 1995). You should verify the following:

- (1) Monitoring equipment is calibrated
- (2) The listed procedures are in order
- (3) All hazards have been identified and assessed
- (4) Standards have been set
- (5) Critical control points have been selected
- (6) Monitoring procedures have been selected
- (7) The plan of corrective action has been developed
- (8) The forms and procedures for record keeping are in place
- (9) Setting procedures to make certain monitoring is done properly
- (10) Noted any problems in procedures

There are five areas that must be considered before implementing the HACCP program: (1) "developing staff competence; (2) preparing the foodservice industry in the public for the new approach; (3) setting priorities for establishments at which the HACCP program should be initiated; (4) conducting hazard analysis, identifying critical control points, and monitoring these points; and (5) evaluating food safety and effectiveness of monitoring procedures within establishments" (Bryan, 1985, p. 241).

When designing a foodservice safety program it is important to identify foods that are potentially hazardous, because they require more attention (Applied Foodservice Sanitation, 1992). Furthermore, the well-designed foodservice safety system will not only focus on potentially hazardous foods, but will cover the entire operation.

"Lack of control and abuse in the application of agricultural chemicals, environmental contamination, use of unauthorized additives, improper food quality control in handling practices during food processing and other abuses of food along the food chain can all contribute to the introduction of hazards or the failure to reduce hazards related to food" (Whitehead & Field, 1995, p. 15). Food hazards can be classified into three categories; physical, chemical and biological. An example of physical hazards would be bones in chicken, or a rock in beans. A chemical hazard can be characterized as the introduction of some cleaning compound, such as bleach or degreaser. An example of a biological hazard would be Salmonella bacteria found on a chicken or E-coli in an undercooked hamburger.

There are three central problems that have hindered the HACCP implementation process, and are attributed mainly to lack of knowledge and expertise (Panisello & Quantick, 1998). The first problem is when hazards are not recognized and they cannot be controlled, such as thawing foods for an extended length of time, or not checking items in when they are received. The second problem occurs in the implementation of the HACCP program is that the hazards are recognized but the risks are not addressed, such as cooking frozen foods avoiding the defrosting step. This can result in food that is under cooked resulting in more risk than the defrosting process. The final and most common problem found in the implementation of HACCP is when the hazards and risks are identified, but the measures to prevent them are not followed due to lack of resources such as time or money (Panisello & Quantick, 1998).

FOODBORNE ILLNESSES

"Foodborne disease is defined as a disease due to ingestion of food contaminated with infectious microorganisms or toxic substances" (Gilchrist, 1981 p.12). "Infectious diseases of bacterial origin are the most common types of foodborne disease in the United States (Gilchrist, 1981, p. 12). The reporting of foodborne illness began about 1923 with the formation of the public health service. Since the responsibility for reporting foodborne illness was transferred to the Center for Disease Control (CDC). There are two federal agencies in charge of food protection, the Food and Drug Administration (FDA), and the U.S. Department of Agriculture (USDA). The CDC defines foodservice establishments as "locations where food is prepared for public consumption, i.e., restaurants, cafeteria's, caterers, hospitals, industrial plants, etc." (Gilchrist, 1981, p. 14). In order for microorganisms to grow in foods to hazardous levels there must be several factors present such as food, moisture, acidic environment, heat, and time (Gilchrist, 1981). "The cause of most reported foodborne illness outbreaks are due to faulty food handling practices rather than primary contamination prior to harvest or slaughter" (Gilchrist, 1981, p. 12). Staphylococcus aureus is usually transmitted by food handlers with infected cuts, burns, and boils. It is most commonly transmitted from nose to hand contact with food. "The most significant factors that contribute to Staphylococcus aureus food poisoning are inadequate cooling of foods, infected person touching cooked foods, and preparing foods a day or more in advance of serving" (Gilchrist, 1981, p. 17).

"Foodborne illnesses are one of the most widespread problems in the world today, the illnesses are toxic or infectious by nature and are caused by agents that enter the body through ingestion of contaminated food or water"(Notermans & Borgdorff, 1997, p.

1395). contamination incidents. If strawberries were associated with an outbreak of foodborne illness. Tauxe, Kruse, Hedberg, Potter, Madden, & Wachsmuth, (1997), said that in the foodborne diseases found in fresh produce are often caused by time and temperature abuse which allow the bacteria to survive and grow. The surface of produce is difficult to clean and the bacteria cling to the produce. Mechanically processed produce increases the risk of bacterial growth because the surface of the produce is often compromised (Tauxe et al., 1997). It is often difficult to investigate foodborne illnesses associated with produce because the distribution patterns in the United States are geographically diverse (Tauxe et al., 1997). The outbreaks associated with fresh produce are often wide spread and with a low incidence rate. The authors state many factors that could be involved in produce related foodborne illnesses, some of these are larger more centralized production units, and longer food chains and distribution chains. Furthermore, they state that "to prevent foodborne diseases associated with fresh produce, it is necessary to prevent initial contamination, to decontaminate or pasteurize potentially contaminated foods, and to prevent additional contamination and amplification of pathogens throughout the processing chain" (Taux et al., 1997, p.1401). The authors conclude that the "proper sanitation is crucial that all levels in the fresh produce chain, from farm to table, basic principles of good food sanitation need to be observed in the final preparation steps" (Tauxe et al., 1997, p. 1407).

Eom (1994) conducted a study that investigated consumers risk perceptions toward safer produce in Raleigh, North Carolina. The researcher determined that consumers evaluate food safety risk under different conditions than scientific experts. It was found that consumers would avoid foods that have been reported in food

contamination incidents. If strawberries were associated with an outbreak of foodborne illness, most consumers would avoid purchasing them until they felt it was safe. In the study respondent's preferences for safe produce are shown to vary depending on the perceived health risk and by price differences. If there were a big sale on strawberries after a reported foodborne illness outbreak the consumer would be more likely to purchase the more expensive raspberries because they were not a reported foodborne illness threat. Eom, (1994) also showed the consumers are willing to pay premium prices for only a small reduction in risk.

Some of the more common problems include Campylobacter jejuni, Salmonella, Clostridium botulina, Botulism, Trichinosis and Hepatitis A. According to the Journal of the American Medical Association, (1998), foodborne illnesses associated with Campylobacter jejuni infection are sporadic. Outbreaks have been traced to unpasteurized milk and contaminated drinking water. However, most cases are associated with improper handling and preparing of poultry. "Campylobacter jejuni has been found in up to 88 percent of chicken carcass is in the United States." (Anonymous, 1998, p. 1342)

Salmonella is produced in the intestinal tract of animals. It cannot be traced to any single source along food chain. "Outbreaks of Salmonella are most often due to inadequate cooling of foods, ingested contaminated raw foods or ingredients, inadequate time or temperature or both during heat processes, and cross contamination from raw foods to cooked foods" (Gilchrist, 1981 p.18). The key to reducing the growth of Salmonella is proper cooking temperatures and proper reheating temperatures (Gilchrist, 1981).

Clostridium botulinum is one of the most abundant microorganisms found in nature, its presence is found in the soils, dust, and water, and is part of the normal bases of intestinal makeup of most animals (Gilchrist, 1981). Since it is found in the animal intestinal tract is most often spread during slaughter and processing. Outbreaks can be caused by inadequate cooling of foods, preparing foods too far in advance, improper hot storage, and improper reheating of previously cooked foods.

Currently there are seven different strains of Botulism (Gilchrist, 1981). There only four types that affect foodborne illnesses recorded United States and two forms are associated with birds. The spores of Botulism are commonly found in soils, freshwater and marine environments, and in raw foods (Gilchrist, 1981). Faulty canning processes of low acid foods generally cause outbreaks of Botulism. Boiling the product for 10 minutes can prevent Botulism. "Historically, most outbreaks have been traced to preserved food" (Gilchrist, 1981 p.19).

Trichinosis is caused by parasite that is found in the animals muscle tissue (Gilchrist, 1981). It occurs mainly in swine, rats, and wild animals. Trichinosis has been nearly eliminated with the improvements in swine farming techniques. Heating, freezing, and curing can kill the Trichinosis (Gilchrist, 1981).

Hepatitis A is spread mainly through human contact, and sewage polluted rivers (Gilchrist, 1981). Human contact is due to food handler's lack of hand washing after using the restroom and then touching food that is not heat-treated. One infected restaurant worker can spread the disease too many people (Gilchrist, 1981). When there is one case at a foodservice establishment, then everyone who possibly could have been infected should receive treatment.

The diagnosis of foodborne illness usually occurs within a short time frame among persons have eaten one or more common foods (Gilchrist, 1981). Single cases of foodborne illnesses are hard to identify due to lack of evidence. "The majority and foodborne illnesses can be described as short-term, gastrointestinal symptoms such as vomiting and diarrhea, and incubation periods ranging from 2 to 36 hours" (Gilchrist, 1981 p.15).

About 40 percent of all communicable diseases that must be reported by physicians to health departments are associated with foodservice establishments (Richardson & Nicodemus, 1981). Communicable diseases are defined as diseases that can be passed from person to person (Richardson & Nicodemus, 1981). According to Richardson & Nicodemus, (1981), the three most common unsafe practices by food service workers are working with unsanitary hands, improper handling of eating utensils, and improper handling of glassware.

In a study of foodborne illnesses in Mexican food restaurants in the state of Washington, Bryan & Bartleson (1985) found that "81 percent of the foodborne illnesses were due to inadequate reheating, 71 percent were due to cooling in large masses, 42 percent were due to improper holding temperatures, 35 percent were due to foods prepared a day or more before serving, 32 percent were due to prolonged room temperature storage, and 10 percent were due to improper cooling temperatures." (Bryan & Bartleson, 1985, p. 509)

Approximately 90 percent of all foodborne illnesses are transmitted from animals to humans (Hunter, 1995). Poor processing, shipping, and storage is common in the meat and poultry industries. The carcasses are often contaminated from bacterial attachments

to the processing equipment, which is known as "biofouling". This term refers to contaminated meat on the processing equipment contaminating any product that comes in contact with it during processing.

Other problems cited in this study were the

SANITATION

Foodservice sanitation programs are based on government regulations and procedures for cleaning and sanitizing equipment (Setiabuhdi et al., 1997). "The objective of sanitation is to prevent contamination of food materials" (Setiabuhdi et al., 1997, p. 890). Sanitation programs control the hazards without knowing the specific hazards themselves. Alone, the sanitation program will not ensure food safety, but in conjunction with the HACCP program it will result in a verifiable food safety system. The first step in sanitation is to clean anything that comes in contact with food materials with soap and water. The definition of clean is free from soil or food debris (Setiabuhdi et al., 1997). The next step in sanitation is to sanitize the utensils, tables, cutting boards, and cooking surfaces, by immersing the items in hot water (180° Fahrenheit) for 30 seconds or treating them with the chemical sanitizing compounds (100 ppm) such as bleach or a Quaternary sanitizer. The hands of employees are also considered food contact surfaces, and hand-washing techniques that are recommended in the sanitation program must be followed to prevent contamination of food materials.

Another important aspect of sanitation is hygiene. "Effective hygiene management depends upon the proper use of equipment and chemicals by trained staff using sound working methods throughout the whole operation to control the threat of bacterial contamination" (Wade, 1998, p. 83). In the study done by Wade on the catering

industry in London, poor building design, insufficient staff to do the work, and staff turnover were cited to as the three most important problems in maintaining high standards of cleanliness and hygiene. Other problems cited in this study were the behavior of customers, untrained staff, and lack of equipment.

"The key to sanitary food handling is for management to be sincere about sanitation" (Walczak, 1997, p. 69). In culinary schools student chefs are taught to "clean as you go." However in the heat of the moment cleaning and sanitizing is often overlooked when trying to serve the customer.

TRAINING

According to Linton, McSwane & Woodley, (1998) the key to preventing and reducing foodborne illnesses associated with food establishments is educating and training food handlers. All levels of management must support the education and training efforts for the program to be successful. If the management is not behind the training efforts then the employees will interpret the training as unimportant, and only go through the motions of the procedures to gain the management's approval. It is important for the managers to support the training effort because the managers received the food safety and sanitation training, and then in turn trains the employees to prepare and serve the food properly.

In addition, Linton, McSwane & Woodley, (1998) contend that the relationship between the health inspectors and the retail foodservice worker is important in maintaining safe food handling. Both parties should work together on improving the education, training process, and the development of food safety certification programs.

It is the joint responsibility of the health inspectors and foodservice managers to ensure that every customer is served a safe food and beverage product.

ADA. In a study done by Cotterchio, Gunn, Coffill, Tormey, & Barry, (1998) changes in restaurants sanitary inspections scores following food managers completion of the training and certification program were evaluated by examining health inspection records for three years post hoc. Cotterchio et al., (1998) performed the study on groups of restaurant managers who, due to numerous health violations, were required to attend the training and certification program. This study provided support for the hypothesis that food manager certification training programs significantly improved sanitation inspections scores. The study also found that "the average number of critical violations decreased significantly one year after a manager training in certification program" (Cotterchio et al., 1998, p. 357). One area in which the training and the certification program had limited impact was in the storage of toxic material and maintaining hand-washing facilities. The researchers suggested further research needed to be done on storage of toxic material and maintaining hand-washing facilities because there were no obvious reasons to explain the lapse in sanitation standards in these areas.

In the study done on directors of undergraduate programs and members of The American Dietetic Association (ADA), it was found that undergraduate dietetic students need courses in foodservice management and food safety in order to compete with foodservice and culinary professionals in the hospitality field (Marisco, Borja, Harrison, & Loftus, 1998). The hospitality industry's perception was that dieticians were lacking experience and knowledge in these critical areas. The results of this study should help directors of undergraduate dietetic programs to develop the necessary curriculum to

prepare the dietetic students for careers in hospitality industry. The results of the study should help them focus on areas of their curriculum that are perceived as weak by the ADA, directors of dietetic undergraduate programs, and the hospitality industry.

In a study done by the National Safety Council on supervisors that read Occupational Health and Safety magazine, Krout (1994) found "that trainees were more motivated to learn when they perceived that their training would be related to performance in their current job, or provide them with the opportunity for future advancement" (Krout, 1994). The results of this study showed "that more than 20 percent of our supervisors have no ongoing training" (Krout, 1994, p. 58). In the hospitality industry ongoing training is critical due to the high turnover rate, and the seriousness of the illnesses that could result with a lapse in sanitary standards.

Heyes & Stewart, (1996), contend that " employees who have undergone training have better attitudes toward their jobs and employers" (Heyes & Stewart, 1996, p. 17). The relationship between the employer and the employees is based on attitude and reliability (Heyes & Stewart, 1996). Those employees who had undergone training associated training with enhanced job motivation due to the perception of future job security. "When training was not perceived to improve promotion prospects or job security, employees were less likely to seek further training" (Heyes & Stewart, 1996, p. 19). The study also found that training was not associated with monetary rewards, and that this could be a factor in some employee's decisions whether to engage in future training (Heyes & Stewart, 1996). The researchers also found "that 70 percent of the respondents stated that they had received training within the past 12 months while 29% had received training within the previous four-week period" (Heyes & Stewart, 1996, p.

19). There are indications that management behavior in determining access to training affected employee attitudes (Heyes & Stewart, 1996). This could be attributed to the fact that the employees felt excluded, or that the management was showing favoritism towards certain employees. According to Spitzer, (1982) the biggest problem in training was getting employees to transfer what they had learned in a training session to their job. The biggest problem with change was that new training takes time to integrate into the existing work behaviors. Spitzer, (1982) outlines several techniques to follow up with employee training. The first technique is personal action planning; this consists of having the employee complete in action plan to identify how they will apply their new skills to their job duties (Spitzer, 1982). Secondly, group action planning is the same is personal action planning that focuses on workgroups (Spitzer, 1982). It is signed by the work team to build group commitment. The third technique is multi-phase programming, this involves dividing the training program into parts and allowing the employees to build upon their training and on the job experiences before progress into the next training level (Spitzer, 1982). The buddy system is the fourth technique Spitzer (1982) recommends. This consists of training people from the same department at the same time. When they returned to their jobs they will rely on each other as sources of training information. The fifth technique is performance aids. "This can include check sheets, decision tables, charts and diagrams, to provide guidance in the early stages of on the job training" (Spitzer, 1982, p. 471). The sixth training technique is recognition systems (Spitzer, 1982). They are designed to give employees recognition inform such as gift certificates letters of merit, and feedback. "Recognition is a powerful incentive to any work

environment that offers few other perks" (Spitzer, 1982, p. 413). The seventh technique is training trainees as trainers (Spitzer, 1982). This would apply in the hospitality service industry by allowing managers to designate training supervisors thereby freeing up the manager to perform his regular duties. The final technique Spitzer, (1982) talks about is follow-up sessions, "these give the participants an opportunity to come together again as a group to share ideas and solve problems, it is extremely useful in multi-phase training programming" (Spitzer, 1982, p. 472).

"The goal of all job-related training is simply to achieve long-term improvements in the way employees do their jobs" (Spitzer, 1985, p. 477). Spitzer describes two concepts the first of which is inertia. "Inertia is the tendency to resist change" (Spitzer, 1985, p. 477). What (Spitzer, 1985) is implying is that employees will resist any efforts to improve their performance no matter the reward. The second concept is entropy, "the tendency towards chaos, disorder and deterioration" (Spitzer, 1985, p. 477). Entropy can be a problem in training programs because training programs can deteriorate overtime unless they are continually energized, some reasons for entropy are "lack of management support for training, supervisor indifference, lack of follow-up after training, and low expectations for training" (Spitzer, 1985, p. 478).

Rahn, (1976), contends that to validate the effectiveness of your training you should test to trainees before you train them. Rahn, (1976) also proposes that training effectiveness can be improved by exposing the employees to key concepts during a pre-test. Another positive benefit to pre-testing is that it helps measure the employee's knowledge of the areas covered by the training program.

According to Nabali, Bryan, Ibrahim, & Atrash, (1986) managers who attended sanitation-training courses showed an improvement in hygienic practices in foodservice establishments. Their findings show that there is a significant improvement in refrigerator temperatures after the training because the managers were more aware of the importance of maintaining the correct temperatures (Nabali et al., 1986). It was also found that the managers either obtained thermometers or used them more frequently (Nabali et al., 1986). The researchers also observed fewer cross contamination situations after the training; once again this was due to the managers awareness of the potential foodborne illnesses that could result from cross contamination. Another finding from the study was that fruits and vegetables were washed and cleaned more frequently to remove dirt, debris, and pesticide residues (Nabali et al., 1986). One reason and these areas seem to improve is that the managers were provided with the routine inspection checklist, which provided them with a list of sanitary standards required by foodservice establishments. "The result of this study support activities that call for the development of manager training programs and revealed that the training of managers was effective in improving some sanitation standards of the establishments, through improving the practices the supervising food handlers" (Nabali et al., 1986, p. 317).

"The importance of training short-term foodservice employees is to protect the public from foodborne illness, not marking violations on inspection sheet, therefore training must be geared to meaningful results proper food handling behavior" (Travis, 1986, p. 265).

Cluskey & Messersmith, (1991) contend that "training is defined as any organized activity designed to change in employees on the job skills, knowledge, or attitude to meet

a specified organizational need" (Cluskey & Messersmith, 1991, p. 1239). Furthermore, Cluskey & Messersmith, (1991), state that "to meet the minimum standards of quality, continual training of foodservice employees is necessary" (Cluskey & Messersmith, 1991, p. 1239). The results of the study show that foodservice supervisors conduct 85% of the training to employees, managers from corporate offices provided 26% of the training to employees, and 34 percent of the training was out of house conference training (Cluskey & Messersmith, 1991).

In the study done by Bryan & Bartleson, (1985), on foodborne illnesses in Mexican food restaurants in the state of Washington, it was found that many times employees who were wearing latex gloves had more bacteria on the gloves than the foodservice workers using their bare hands. It was also found that the employees that wore gloves often handled raw foods and did not always wash and disinfect them before handling cooked foods, nor did the employees change the gloves after handling raw products.

Summary

In summary, the literature review helps one understand the linkage between attitudes, knowledge of HACCP, implementation of HACCP, and sanitary training of managers and employees. All of the aspects discussed in the literature are all connected by the fact that they affect the sanitary conditions under which the food is prepared for the customers.

CHAPTER III

METHODOLOGY

The methodology related to research design, population and sample population, instrument and data analysis will be discussed. The purpose of the study was to explore the attitudes of restaurant managers in Oklahoma on the implementation of a HACCP program and the types of food safety training they are currently using, as well as their needs for future training.

Research Design

This study utilized the survey method of descriptive research in order to analyze an already existing situation.

Population and Sample Size:

The Population sample size was selected from the population of Oklahoma Restaurant Association (ORA) members. The ORA provided a mailing list of all its members comprising 1761 members. A sample size of 300 was selected randomly because it was determined to be 20% of the finite population. Systematic random sampling was used to randomly select the sample. The sample size of 300 was selected from the total population of 1761. The resulting number (5.87) was rounded down to every fifth member being selected for the sample. If a member of the Oklahoma restaurant association was selected who was not a foodservice establishment the next corresponding member was selected.

Instrumentation

Survey Instrument

For this study a questionnaire had to be developed since there was no evidence of one being used before in the literature review. The survey instrument was based on the literature review concerning managers and manager's perceptions of employees knowledge and attitudes of food safety, and addressed concerns about current training and future training needs. The survey instrument was divided four areas, two of which were designed to obtain information about restaurant manager's knowledge and attitudes toward implementing HACCP programs. The other two areas of the survey instrument were designed so that the managers could relate their perceptions of employee attitudes and knowledge toward the implementation of HACCP programs. The survey instrument utilized open-ended questioning, a Likert-type scale ranking of attitudes on HACCP implementation, and multiple choice questions to rate their knowledge on HACCP programs, and current training procedures. Several questions were also incorporated to ascertain demographic information from the respondents.

In order to assess perceived attitudes toward HACCP implementation, the Likert-type scale was used for various attitudes. The Likert-type scale is a technique that indicates how strongly one agrees or disagrees with the statement. Each participant in this survey was asked to respond to the statement ranging from the strongly disagree to strongly agree.

The questionnaire that was developed was reviewed for clarity repeatedly by the researcher, some committee members, and several faculty members. The questionnaire

was field tested with several local restaurant managers. The researcher solicited personal acquaintances to field test, and these responses were not included in the sample population. The purpose of the field test was to further review the survey instrument by unbiased sources to see if the questioning was clear.

METHODS

Data collection

The data for the HACCP research project was collected from restaurant managers in Oklahoma who were members of the Oklahoma Restaurant Association. The participants were sent a three-page survey instrument for ranking managers and employee's attitudes and knowledge regarding food safety and HACCP programs. The mailing of the survey instruments included a cover letter explaining the purpose of the study and a business reply return-mailing label printed on the survey.

The participants were asked to relate their knowledge of HACCP, and to rank their attitudes towards HACCP implementation along with their current training methods and current food safety practices.

The same participants were asked to relate their perception of their employee's knowledge of HACCP, and to also relate the perception of employee's attitudes towards HACCP implementation.

Research Design Analysis

The researchers question was "what are the attitudes of restaurant managers toward the implementation of a HACCP program?" This question was the basis for

collecting data on this research project. The questionnaire solicits responses from the participants in the form of rank order of attitudes on general food safety and HACCP knowledge. The data obtained from the survey forms concerning attitudes on HACCP implementation were transferred to the PC file computer program by the researcher and then statistically analyzed by the researcher using the Statistical Analysis Software package. Participants were asked to rank their attitudes on HACCP and HACCP implementation with one being strongly agree in five being strongly disagree. The frequency and percentages were calculated and compiled into Tables I through IX. There were several items on the survey instrument for which frequencies were not available. For these items the means and standard deviations were calculated and the questions were ranked from highest two lowest means.

Summary

Chapter Three covers the different aspects of the research design. The population and sample were designated and include all the foodservice managers who are members of the Oklahoma Restaurant Association. The instrument that is used for the collection of data was identified, and details of how it was constructed were covered.

The data collection method for the rank order of attitudes, food safety training, and HACCP knowledge involved the mailing of the survey to foodservice managers who were members of the ORA.

The methods of the analysis and statistical tests utilized were discussed. The results are presented in chapter IV.

data was included. There was also three

CHAPTER IV n As shown in the survey

of the survey asked yes and no questions regarding the

RESULTS AND DISCUSSION

sanitary practices

The purpose of this study was to examine the attitudes and knowledge of foodservice managers in the state of Oklahoma, in regard to food safety and HACCP programs. For ease of presentation, the results are divided into six specific areas.

- (1) Managers knowledge in regard to HACCP,
- (2) Employees knowledge in regard to HACCP as perceived by the manager,
- (3) Managers attitudes in regard to HACCP implementation,
- (4) Employees attitudes in regard to HACCP workload as perceived by the manager,
- (5) Organizations sanitary practices,
- (6) Demographics of the respondents.

All six of these areas are discussed in depth relative to the survey instrument used to collect the data.

Response Rate

In order to collect sufficient data allowing the researcher to generalize about overall HACCP knowledge and attitudes in Oklahoma, the researcher developed the survey instrument based on previous foodservice experience and the literature review.

The survey instruments were mailed to 300 Oklahoma Restaurant Association members in this spring of 1999. There was no follow-up reminder given to subjects that did not respond by the due date. Forty-one responses or (14%) were returned. Three

responses were incomplete, but all usable data was included. There was also three surveys returned as return to sender address unknown. As shown in the survey instrument (appendix A), participants were asked yes and no questions regarding their food safety and HACCP knowledge and training practices.

Table I shows the mean, standard deviation, frequency and percentages related to managers HACCP knowledge.

Table I.

Managers HACCP Knowledge

	Mean	Standard Deviation
How long have you known about HACCP?	4.05 years	3.07 years
	Frequency	Percentage
Have you heard about HACCP?		
• Yes	40	97.6
• No	1	2.4
Where did you first learn about it?		
• ORA	16	39
• Trade Publication	11	26.8
• Health Inspector	9	21.9
• Other	6	15.4
• Food Vendor	2	5
• News Media	1	2.4
Multiple Responses Included		
How many managers in your establishment have completed the SERVSAFE certification course sponsored by the National Restaurant Association?		
• 1-2	15	36.5
• 3-4	13	31.7
• None	4	9.75
• 5-6	4	9.75
• 7-10	3	7.3
• 10 or More	2	4.8
N = 41		

Over 97.6 percent of those responding indicated that they had heard HACCP. The remaining 2.4 percent of the respondents did not respond.

Almost 40% of the respondents replied that they first learned about HACCP while attending an ORA seminar. Almost 27 % indicated that they learned of HACCP from a trade publication. Almost 22 % of the respondents first learned of HACCP from the health inspector. Of those sampled 15.4% of the respondents learned of HACCP from other sources such as company management training and colleagues. Only 5% of the respondents reported first learning of HACCP from their food vendors. And only 2.4% of those responding, first learned the HACCP from the news media.

The majority of those responding, 36.5%, had one to two managers certified in food sanitation through the National Restaurant Associations SERVSAFE class. Almost one third of the respondents, 31.7%, indicated that three to four managers had attended the SERVSAFE certification course. Alarming, almost 10% of those surveyed responded that they had no managers certified by the SERVSAFE course. Another 10% replied that there were five to six managers in their establishment certified in foodservice sanitation. The respondents indicated that 7.3% of the establishments had seven to ten managers SERSAFE certified, and the remaining 4.8% of the establishments had ten or more of the managers certified by the SERVSAFE course.

Overall the managers responding to this survey appeared to have ample knowledge of food safety ascertained from the SERVSAFE certification course. The fact that 10% of the establishments had no managers certified by the SERVSAFE course, was a surprising revelation. This problem should be brought to the attention of the State Health Department.

Employees HACCP Knowledge

Table II shows frequency and percentages related to employees' HACCP knowledge as perceived by managers.

The participants, foodservice managers, were asked to relate their perceptions of their employee's food safety and HACCP knowledge based on current training procedures. The majority of respondents used multiple forms of training to provide their employee's information about food safety.

Table II

Employees HACCP Knowledge

	Frequency	Percentage
What type of sanitation training do you provide your employees?		
• On the Job Training	39	95.1
• Training Manual	30	73.2
• SERVSAFE Videos	18	43.9
• Weekly Meetings	8	19.5
• Computer / CDROM	4	9.75
• HACCP Manuals	3	7.3
Multiple Responses Included		
How many employees in your establishment have completed the SERVSAFE certification course sponsored by the National Restaurant Association?		
• None	18	46.3
• 1-2	11	26.8
• 10 or More	6	14.6
• 3-4	5	12.2
• 7-10	1	2.4
• 5-6	0	0
N = 41		

The majority of respondents, over 95%, confirmed that they used on- the- job training to teach their employees about foodservice safety. This is a common training

method used in the Hospitality industry. Over 73% of the respondents stated that they provided training manuals to the employees to teach food safety. Nearly 44% of the respondents reported that they used the SERVSAFE videos indicating that the majority of foodservice managers took advantage of free materials provided to them by the National Restaurant Association. Only 20% of the managers used weekly meetings as a form of sanitation training. The low number of responses could be attributed to the fact that many establishments conduct monthly meetings as opposed to weekly meetings. Almost 10 percent of the respondents replied that they use computer CD-ROM based training. And 7.3% of the respondents used HACCP manuals. This low number indicates that there are very few establishments in Oklahoma with HACCP plans currently in operation.

The preponderance of those responding, 46.3% stated that none of their employees had attended the certification course. This high number of respondents reporting that none of their employees had attended the SERVSAFE course could be due to the fact that the foodservice managers do not have the funds available for sanitation training. Whereas, 26.8% reported that there were one to two employee's in their establishment that had attended the certification course. Foodservice managers reported that almost 15% of the establishments had ten or more employees certified by the SERVSAFE course. There were 2.4% of the respondents reporting that there were seven to ten employees who had attended the certification class, and there were no responses for establishments with five to six employees certified by SERVSAFE.

Table III

Employee's Attitude Toward Workload as perceived by managers.

	Frequency	Percentage
My employees are receptive to procedural change under HACCP.		
• Neutral	15	36.6
• Disagree	13	31.7
• Agree	12	29.2
My employees do not have time to take and Record the temperatures of the food on the serving line on an hourly basis.		
• Disagree	23	56.1
• Agree	13	31.7
• Neutral	4	9.7
A HACCP program would require too much training for my employees.		
• Disagree	22	53.6
• Neutral	10	24.4
• Agree	9	22
My employees would not be able to follow a HACCP plan on a daily basis.		
• Disagree	21	51.2
• Agree	10	24.4
• Neutral	10	24.4
The HACCP plan would increase my employee's workload.		
• Agree	27	65.8
• Neutral	8	19.5
• Disagree	8	19.5
N = 41		

The attitudes of the employees were ascertained from the foodservice managers, as they perceived them. Participants were asked to rank order their attitudes regarding HACCP, on a scale of 1 -- 5 with one being strongly agree, and five being strongly

disagree. Respondents were instructed to circle a number that best describes their opinion. The attitudes of employees as perceived by managers, regarding HACCP are rank ordered in Table III.

According to the foodservice managers, 36.6% indicate that their employees would have neither a positive or negative attitude regarding procedural change under HACCP. Whereas, 31.7% of the foodservice managers felt that the employees would not be receptive to change under a HACCP plan. In addition, almost 30% of the foodservice managers felt that their employees would be receptive to change under a HACCP plan.

When the respondents were asked if to rank the statement, “my employees do not have time to take and record the temperatures of the food on the serving line on an hourly basis”, the majority of the managers indicated that they disagreed with that statement. They felt that the employees did have the time to obtain the temperature readings on an hourly basis. However, 31.7% of the managers reported the employees did not have time to obtain the temperature readings on an hourly basis. In addition, 9.7% of the respondents were neutral regarding the employee’s attitudes on the hourly temperature readings.

When the respondents were asked to rank the employees attitudes regarding the statement, “A HACCP program would require too much training for my employees”, the majority of the managers disagreed with the statement. They felt that implementing a HACCP plan would not be too much training for the employees. Only 22% of the respondents agreed with the statement, and felt that a HACCP plan would be too much training. Moreover, 24.4% of the respondents were neutral regarding the statement.

When the managers were asked to rank their employees attitudes regarding the

statement, "my employees would not be able to follow a HACCP plan on a daily basis", over half (51.2%) responded that their employees would be able to handle working with a HACCP plan on a daily basis. Moreover, 24.2% indicated that their employees would not be able to work with the demands of a HACCP plan on a daily basis. The respondents who had no opinion regarding the statement and were neutral represented 24.4% of those surveyed.

Respondents were asked to rank their employee's attitudes regarding the statement, "a HACCP plan would increase my employee's workload". The majority of the respondents (65.8%) felt that a HACCP plan would increase their employee's workload. This indicates that two-thirds of all the respondents believe that the HACCP program would be additional work for the staff. Moreover, only 19.5% of those responding indicated that a HACCP plan would not increase the employee's workload. Interestingly, the foodservice managers who indicated that their establishment did have a HACCP plan in place reported the workload for employees was not increased. In addition, 19.5% had no opinion regarding the increase or decrease of the workload implementing a HACCP plan would require. It appears that the managers already using HACCP feel it does not increase the workload, while those not using it believe that it will increase the employee's workload.

Table IV

Managers Attitudes Toward Implementation

	Frequency	Percentage
If a HACCP plan were to be implemented, would you, as a manager, oversee the implementation?		
• Yes	40	97.5
• No	1	2.5
As a manager would you consider hiring HACCP consultant?		
• Yes	34	83
• No	7	17
Would you, as a manager, purchase computer software to make the record keeping aspect of the HACCP plan easier?		
• Yes	18	44
• No	23	56
How often do your employee's record the temperatures of food on your serving line?		
• Only as needed	14	34
• Once per shift	8	19.5
• More than once per shift	7	17
• Never	7	17
• Hourly	5	12
If a critical control points is violated what corrective measures do your employees take now?		
• Notify manager	12	29
• Throw-out product	10	24.4
• No Response	9	22
• None	7	17
• Reheat to 165 degrees / 15 min.	3	7
• Correct the problem	3	7
Do you require your employees to maintain a time and temperature logbook?		
• No	35	85
• Yes	6	15
A HACCP plan will only be more work for me as a manager.		
• Agree	28	68.3
• Neutral	7	17.1
• Disagree	6	14.6
N = 41		

Table IV (continued)

As a manager, I would not implement HACCP program unless required by the Health Department.

• Agree	23	56.1
• Disagree	12	29.3
• Neutral	6	14.6

The cost of implementing the HACCP system outweighs the benefits.

• Disagree	20	48.8
• Agree	13	31.7
• Neutral	8	19.5

N = 41

Table IV shows the frequency and percentages related to managers attitudes.

When respondents were asked, “if a HACCP plan were to be implemented, would you, as a manager, oversee the implementation?” Almost all of the respondents (97.5%) indicated that they would oversee the implementation process. Only 2.5% of the respondents indicated that they would not oversee the implementation process. This could indicate that the manager planned to delegate the task, or that the respondent was a subordinate and their superior would be in charge of implementation.

When asked if they would hire a HACCP consultant, most of the respondents (83%) replied that they would not hire an outside consultant. Whereas, only 23% of the respondents indicated that they would hire a consultant.

Of those responding, 56% indicted that they would not purchase computer software to aid in the record keeping of a HACCP plan. On the other hand, 44% of those surveyed indicated that they would consider purchasing computer software to aid in the record keeping aspect of a HACCP plan.

When asked, “how often do your employee’s record the temperatures of food on your serving line”? The respondents indicated that 34% obtained the temperature of the food on the serving line “only as needed.” In addition, 19.5% of those responding indicated that they checked they temperatures of food on the serving line once per shift. Only 17% of those surveyed indicated that they audited the temperatures on the serving line more than once per shift. Moreover, 17% of the managers replied that their establishment never checked the temperatures of the food on the holding line.

The participants were asked “if a critical control points is violated what corrective measures do your employees take now”? The majority of respondents (29%) indicated that they would notify the manager on duty. Moreover, 24.4% of those responding indicated that they would throw out the product in question. Those respondents (22%) with very little knowledge of HACCP chose not respond. In addition, 17% of the respondents indicated that no action was taken when a critical control point was violated. Whereas, only 7% responded that they would reheat the product to 165° Fahrenheit for 15 seconds within two hours. The remaining 7% of the respondents indicated that they would correct the problem.

The respondents were asked, “do you require your employees to maintain a time and temperature logbook”? The majority of respondents (85%) replied that they did not require their employees to maintain a time and temperature logbook. Whereas, the remaining 15% did require their employees to maintain a logbook for record keeping purposes.

Participants were asked to rank order their attitudes regarding HACCP, on a scale of 1 to 5, with one being strongly agree, and five being strongly disagree. Respondents

were instructed to circle a number that best describes their opinion. The attitudes of managers regarding HACCP are rank ordered in Table IV.

The respondents were asked to rank their perception based on the statement “As a manager, I would not implement HACCP program unless required by the Health Department.” The majority of respondents, 56.1%, indicated that they agreed with the statement and would not implement HACCP unless the Health Department required it. It appears that over half of the respondents would not implement a HACCP plan until there was some sort of legislation to mandate the food safety plan. However, 29.3% of the respondents replied that they disagreed with that statement and that they would implement a HACCP plan without a Health Department intervention. Moreover, 14.6% of the respondents had no opinion on the statement.

When the respondents were asked to rank their attitude on the statement “the cost of implementing the HACCP system outweighs the benefits,” almost half of the respondents (48.8%) indicated that they disagreed with the statement. However, almost 32% indicated that they agreed with the statement, and the costs do outweigh the benefits. Although there is no mention of how much it would cost to implement a HACCP plan, based on the respondents perceptions the cost is greater than reducing foodborne illnesses in their establishment, and increasing the food safety knowledge of the managers and employees. In addition, almost 20% of the respondents had a neutral attitude regarding the statement. The respondents possibly felt that there was not enough information presented to form an opinion on whether the cost of a HACCP program would outweigh the benefits. Since not many restaurants in Oklahoma are currently using a HACCP program information on the cost may have been difficult for them to obtain.

they indicate that 53.6% of those responding had a customer

Table V

However, 46.4 % of those responding indicated that

Organizational Sanitary Practices

do not have any customers report a foodborne illness.

	Frequency	Percentage
Has your establishment ever had complaints from customers about the foodborne illness?		
• Yes	22	53.6
• No	19	46.4
As a manager are you active in the monitoring of sanitation standards, such as the hand washing of employees in your establishment?		
• Yes	36	87.8
• No	5	12.2
Do your employees wear latex gloves when handling food?		
• Yes	21	51.2
• No	19	48.8
As manager, I believe HACCP would help prevent foodborne illnesses in my establishment.		
• Agree	28	68.3
• Disagree	10	24.4
• Neutral	3	7.3
As a manager, a HACCP plan will help me train my employees about food safety.		
• Agree	27	65.8
• Neutral	9	22
• Disagree	5	12.2
How many hours per week do you spend on sanitation training?	Mean	Standard Deviation
	1.37	1.81

Table V shows frequency and percentages related to sanitary practices.

Foodservice managers were asked to respond to the question “Has your establishment ever had complaints from customers about the foodborne illness”?

The results of their responses indicate that 53.6% of those responding had a customer complain about a foodborne illness. However, 46.4 % of those responding indicated that their foodservice establishment did not have any customers report a foodborne illness.

Managers were then asked to respond to the question "as a manager are you active in the monitoring of sanitation standards, such as the hand washing, of employees in your establishment"? The majority of those responding indicated that they were active in monitoring the sanitation standards in their foodservice establishment. However, 12.2 % indicated that they were not active in monitoring the sanitation standards in their foodservice establishment. The role of monitoring sanitation standards may have possibly been delegated to another manager, or the manager simply did not worry about sanitation standards.

Managers were asked " do your employees wear latex gloves when handling food"? Over 50 percent of the respondents (51.2%) indicated that their employees did wear latex gloves when handling food. However, almost 50 percent reported that their employees did not wear latex gloves and handling food.

The attitudes of managers regarding sanitary practices are rank ordered in Table V. The respondents were asked to rank their attitude regarding the statement "as manager, I believe HACCP would help prevent foodborne illnesses in my establishment". The majority of respondents (68.3%) indicated that they agreed with this statement, and HACCP would prevent foodborne illnesses in their establishments. However, 24.4 % of the respondents disagreed with this statement and up the HACCP would have no benefit in preventing foodborne illnesses. On the other hand, 7.3 % of the respondents indicated that they had no opinion regarding the statement.

When asked to rank their attitude regarding the statements "as a manager, a HACCP plan will help me train my employees about food safety," the majority of the respondents (65.8%) agreed with the statement to HACCP plan would help them train their employees about food safety. Moreover, 22 % of the respondents neither agreed nor disagreed with the statement. Whereas, 12.2 % of the respondents disagreed with the statement and felt that HACCP plan would not help them train their employees about food safety.

The final question foodservice managers were asked regarding sanitary practices in their establishment was "how many hours per week are spent on sanitation training." The responses to this question were quite varied, ranging from 0 to 8 hours per week. However, the average amount of time spent on training was 1.37 hours per week.

Table VI

Health Inspection Changes

	Frequency	Percentage
As a manager, if there were one thing you could change about the health inspection system, what would be?		
• No response	9	22
• Consistency	6	14.6
• Better inspectors	5	12.2
• Nothing	5	12.2
• Frequency	3	7.3
• Nicer Inspectors	2	4.9
• Cooperation	2	4.9
• Follow ups	2	4.9
• No Favoritism	1	2.4
• Seminars for restaurants	1	2.4
• Less attention to equipment	1	2.4
• Results kept out of media	1	2.4
• Advanced warning	1	2.4
• More lenient	1	2.4
• Return to percentage scores	1	2.4

means, standard deviations, frequency and percentages relative

Demographics

This information was collected in order to generalize information about the respondent's attitudes to their background. Questions were also asked to ascertain information about their establishment, and the type of ownership currently overseeing the operations. The final question was to find out where they purchased their food and supplies to see if managers were buying from reputable purveyors. The results have been compiled into Tables VII through IX.

Table VII

Staff Demographics

	Mean	Standard Deviation
How long have you been at this position?	6.7	7.31
How many people do you supervise?	55.76	84.63
How many people are employed a your establishment?	74.0	89.14
What is the seating capacity of your establishments?	149.4	158.1
	Frequency	Percentage
The title of my current position is?		
• Owner	11	26.8
• General manager	9	21.9
• Manager	7	17
• Kitchen Manager	6	14.6
• F&B Director	4	9.75
• Asst. Manager	2	4.9
• Executive Chef	1	2.4
• Supervisor	1	2.4
N = 41		

Table VII shows means, standard deviations, frequency and percentages relative to Staff Demographics. Respondents were asked "how long have you been at your current position"? The responses varied from the three months to 30 years. The mean for number of years at the position was 6.7 years, and the standard deviation was 7.31 years.

The average number of people that the respondents supervised was 55.76, and the standard deviation was 84.63.

The respondents indicated that the average number of people employed at their establishments was 74.0, and standard deviation was 89.14.

The respondents indicated that, the average seating capacity for their establishments was 149.4, with the standard deviation of 158.1. The responses to this question varied from 0 to 999. The establishment with zero seating capacity was a pizza carryout, and the establishment with the seating capacity of 999 was a group of five restaurants supervised by one individual.

The respondent's current position or job titles were quite diverse. Almost 30% of those responding indicated that they were the owners of the establishment. While, 22% reported that they were the general managers of their operation. Moreover, 17% said that they were a manager at their location, whereas, almost 15% stated that they were the kitchen manger of their organization. Whereas, almost 10% indicated that they were the food and beverage director, and almost 5% of the respondents indicated that they were an assistant manager of the foodservice establishment. The positions of executive chef and supervisor both represented 2.4% respectively.

Table VIII

Manager Demographics

	Frequency	Percentage
Gender		
• Male	32	78
• Female	7	17
• No Response	2	5
Education		
• Some College	13	31.7
• Bachelors Degree	12	29.3
• High School	9	22
• Some Graduate School	4	9.75
• Graduate Degree	2	4.9
• Post Graduate Degree	1	2.4
	Mean	Standard Deviation
• What is your age?	38.9	9.75
N = 41		

Table VIII shows the frequency and percentage of the managers gender and education. In addition, Table VIII also shows the mean and standard deviation of the age of the managers. The respondents were asked to indicate their gender as part of the demographic information. Of those responding 78% were male, and 17% were female. There were two respondents who did not answer the question.

Respondents were asked to indicate the highest level of education that they had achieved. Almost 32% of the respondents indicated that they had attended some college. Furthermore, 29.3% of the respondents reported that they had obtained a Bachelors degree. Moreover, 22% indicated that they were high school graduates. There were 9.75% of the respondents reporting that they had attended some graduate school. Whereas, almost 5% of the foodservice managers responding indicated that they had

achieved a graduate degree. However, only 2.4% of the respondents surveyed had obtained a post graduate degree.

The average age of those responding to the survey was 38.9 years, with a standard deviation of 9.75. Responses ranged from twenty-four to sixty-two years of age.

Table IX

Establishment Demographics

	Frequency	Percentage
What type of establishment is your organization?		
• Casual Dining	19	46.3
• Fast Food	16	39
• Other	4	9.75
• Fine Dining	3	7.3
• School Cafeteria	0	0
• Hospital	0	0
What type of ownership does your establishment have?		
• Corporation	20	48.8
• Franchise	11	26.8
• Sole proprietor	7	17.1
• Chain ownership	2	4.9
• Other	1	2.4
What purveyor do you purchase your Food and supplies from?		
• Sysco	13	25
• U.S Foodservice	12	23.1
• Ben E. Keith	10	19.2
• Alliant	5	9.6
• Ameriserve	2	3.8
• Multifoods	2	3.8
• MBM	2	3.8
• Central Oklahoma Produce	2	3.8
• Quality Foods	1	1.9
• Marriott Distribution Services	1	1.9
• Domino's Distribution	1	1.9
• Fast Food Merchandisers	1	1.9
N = 41 Multiple Responses Included		

Table IX shows the frequency and percentages relative to (1) the type of food establishment, (2) the ownership of the establishment, (3) the purveyors used by the establishments. The respondents were asked what type of establishment was their organization? The majority of the respondent's (46.3) indicated that their establishment was classified as casual dining. Furthermore, 39% of the respondents indicated that their establishment was a fast food restaurant. However, almost 10% reported their establishment was "other". The four respondents that responded other said their establishment was a delivery, carryout, hotel, or a country club. There were no respondents that said their establishment was a school cafeteria or a hospital.

When the respondents were asked what type of ownership their establishment had, almost 50% of the respondents said that a corporation owned them. In addition, almost 27% said that their establishment was franchised owned. Moreover, 17% of the respondents indicated they were sole proprietor owned. Only 5% of the respondents replied that a national chain owned their establishment. One respondent (2.4%) responded that "other" owned their establishment. The respondents failed to elaborate any farther as to what they meant by other type of ownership.

Based on the respondents answers to the question "what purveyor do you use to purchase your food and supplies from", the majority of the respondents purchase from three suppliers. The top three suppliers are Sysco (25%), U.S. Foodservice (23.1%), and Ben E. Keith (19.2%). These numbers are based on multiple responses. Of those responding, Alliant Foodservice represented 9.6% of the responses. The respondents indicated four purveyors, Ameriserve, Multifoods, MBM, and Central Oklahoma

Produce, which represented 3.8% of the responses respectively. The final four purveyors, Quality Foods, Marriott Distribution Services, Domino's Distribution, and Fast Food Merchandisers represented 1.9% of the responses respectively.

CHAPTER V

The study was conducted to determine the attitudes and expectations of the respondents regarding the food safety and quality of the food.

The study was conducted in the following manner:

- 1. The study was conducted in the following manner:
- 2. The study was conducted in the following manner:
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CHAPTER V

Conclusions and Recommendations

The purpose of this study was to examine the attitudes and knowledge of foodservice managers in the state of Oklahoma, in regard to food safety and HACCP programs. For ease of presentation, the results are divided into six specific areas.

- (1) Managers knowledge in regard to HACCP,
- (2) Employees knowledge in regard to HACCP as perceived by the manager,
- (3) Managers attitudes in regard to HACCP implementation,
- (4) Employees attitudes in regard to HACCP workload as perceived by the manager,
- (5) The organizations sanitary practices,
- (6) Demographics of the respondents.

All six of these areas are discussed in depth pertaining to the survey instrument used to collect the data.

In order to collect sufficient data allowing the researcher to generalize about overall HACCP knowledge and attitudes in Oklahoma, the researcher developed the survey instrument based on previous foodservice experience and the literature review.

The survey instruments were mailed to 300 Oklahoma Restaurant Association members in this spring of 1999. There was no follow-up reminder given to subjects that did not respond by the due date. Forty-one responses (14%) were returned. Three responses were incomplete, but all usable data was included. There was also three surveys returned as return to sender address unknown. As shown in the survey instrument (Appendix A), participants were asked yes and no questions regarding their

food safety and HACCP knowledge and training practices. P program unless required by

The literature review suggested that the success of implementing training programs was enhanced when it was initiated and supported by top management. The literature review also suggested that in order for training to be successful it must be a continuous, ongoing process.

When evaluating food safety practices, the overall attitude of the manager and the employee are of great importance. Such attitudes toward food safety and training will be needed by management and employees to ensure that the implementation of a HACCP plan is successful.

Conclusion

Summary of Findings

The average respondent has known about HACCP slightly over four years. Almost 40% of the respondents first learned of HACCP at an Oklahoma Restaurant Association seminar. This indicates that the majority of the respondents utilize the ORA as an important source of information.

The majority of the training occurring in the foodservice industry consists of on the job training, and employee's being given a training manual to read when they are hired. However, there are some proactive establishments who use other forms of training such as, SERVSAFE videos, meetings, and computer based training methods.

For the position of manager, the participants ranked their attitudes regarding HACCP. The three highest rated attitudes as perceived by managers were:

- (1) A HACCP program will only be more work for me as a manager,

(2) As a manager, I would not implemented HACCP program unless required by the health department,

(3) Would you oversee the implementation of the HACCP plan.

The employee's attitudes as perceived by the manager, regarding HACCP were ranked. The three highest rated attitudes are as follows:

(1) The HACCP plan would increase in employees workload.

(2) Employees do have the time to take and record the temperatures of the food on the serving line on an hourly basis.

(3) A HACCP plan would not require too much training for my employees.

The manager's attitudes regarding the sanitary practices in their establishment were ranked. The three highest rated attitudes as perceived by managers were:

(1) I believe HACCP would help prevent foodborne illnesses in my establishment.

(2) A HACCP plan would help me train my employees about food safety.

(3) I am active in monitoring the sanitation standards of my employees.

Recommendations

The results of this research reveals similarity in attitudes held by managers and employees regarding HACCP and its implementation. However, this could be due to the fact that the managers were answering the questions in regard to their employee's attitudes. The identification of these attitudes can be used in the future development of training programs for the implementation of HACCP, and for curriculum development for the SERVSAFE course sponsored by the National Restaurant Association.

Recommendations for foodservice managers are as follows. It is recommended

that foodservice managers utilize as much time as possible for food safety training. Not every employee will comprehend the concepts and food safety practices the first time they are trained. It is also recommended that they utilize as many different forms of training as they have available to them. Individuals all have different learning styles, and food safety is too important for an employee to not learn. The findings of this research study would benefit the Oklahoma Restaurant Association and their efforts to construct training programs and seminars on HACCP and food safety. It would also be beneficial in helping to increase restaurant manager's awareness of these seminars so that they would be more likely to attend them.

The most beneficial outcome of this study would be that it increased restaurant managers awareness of the importance of food safety, and sanitation. Furthermore it is hoped that this study increased foodservice operators awareness of a food safety program referred to as HACCP.

Recommendations For Future Research

- (1) Future researchers should investigate the amount of food safety sanitation training each individual employee receives when first hired and through the course of their employment.
- (2) Future research should investigate the number of restaurant that currently have a HACCP plan in place.
- (3) Furthermore the research needs to focus on why these select establishments decided to implement a HACCP plan.

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OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD

IRB # 14-00000

IRB # 14-00000

REVISIONS TO THE IRB PROTOCOLS OF THE DEPARTMENT OF
OF A STUDY PROGRAM

Principal Investigator
Dr. [Name]
William [Name]

IRB # 14-00000

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IRB # 14-00000

IRB # 14-00000

IRB # 14-00000

APPENDIX A

OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD

Date: March 24, 1999 IRB #: HE-99-086

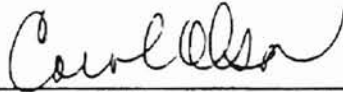
Proposal Title: "RESTAURANT MANAGERS PERCEPTIONS ON THE IMPLIMENTATION OF A HACCP PROGRAM"

Principal Investigator(s): Dr. Jerrold Leong
Dr. Lynda Martin
William Simmons

Reviewed and Processed as: Pending Revision

Approval Status Recommended by Reviewer(s): Approved

Signature:



Carol Olson, Director of University Research Compliance

March 24, 1999

Date

Approvals are valid for one calendar year, after which time a request for continuation must be submitted. Any modification to the research project approved by the IRB must be submitted for approval. Approved projects are subject to monitoring by the IRB. Expedited and exempt projects may be reviewed by the full Institutional Review Board.

300 deaths occur each year as a result
of an undersized fire grill at

a) From restaurant food safety success
measures of those who work at the
restaurant? manager to receive
the following information:

18 years according to the survey. The
survey also shows that
the survey and the survey results
show that the survey will draw
an attention to the survey results
of the survey.

APPENDIX B



3-23-99

Oklahoma State
University
Department of
Food Safety
and Inspection
Service
Confidential

Dear Restaurant Manager,

In the United States, it is estimated that 10,000 deaths occur each year as a result of foodborne illnesses. Your opinion is needed to help us understand the effect of Hazardous Analysis Critical Control Points (HACCP) on restaurant food safety success. It is important that we receive the responses and consensus of those who work in the foodservice field. You have been randomly selected as a restaurant manager to receive this survey regarding the implementation of HACCP. Whether you are unaware of HACCP or an expert on HACCP, we will appreciate your responding to this survey. The future of Food Safety requires input from all foodservice managers. The responses that you provide and your participation are completely voluntary and will be kept strictly confidential, there is no penalty for refusal to participate, and you are free to withdraw your consent and participation in this project at any time without penalty. None of your responses will be associated with you personally or your establishment.

Please take about ten minutes to respond to the enclosed survey. It is for my thesis and I must complete it this semester in order to graduate. When you have completed the survey you can return it to Oklahoma State University using the prepaid, self-addressed return mailing label.

If you would like to receive the final results of the survey, please check the box below either yes or no, and the final results will be sent to you.

Yes

No

Thank you very much for your time and response to this survey. We appreciate your help with this project, and we look forward to hearing from you. In the near future, if you have any questions please call me at (405)-377-8164, or email at Bsim3@aol.com or contact my advisor Dr. Jerrold Leong at 744-6713. You may also contact Sharon Bacher, IRB Executive Secretary, 203 Whitehurst, Oklahoma State University, Stillwater, OK 74078; (405) 744-5700.

Sincerely,

William T. Simmons
Graduate Student

Enclosure (1) HACCP Questionnaire
HACCP QUESTIONNAIRE

HACCP QUESTIONNAIRE

This survey is being conducted for the School of Hotel and Restaurant Administration at Oklahoma State University. The information in this survey will assist in determining the procedures used to implement a HACCP program, and the results will be given to the Oklahoma Restaurant Association (ORA). Your opinion is important, and completing this survey will help plan for the future of food safety. Please complete the survey. Your answers are not personally identifiable, and will be kept strictly confidential.

We would like to know your opinion relative to management and employee HACCP training.

1. How long have you known about HACCP? _____
1. Where did you first learn about it?
 ORA seminar Trade publication News Media
 Health Inspector Food Vendor Other _____
3. Has your establishment ever had complaints from customers about a foodborne illness? Yes No
4. How many managers in your establishment have completed the SERVSAFE certification course sponsored by the National Restaurant Association?
 None 3-4 7-10
 1-2 5-6 10 or more
5. If a HACCP plan were to be implemented would you, as a manager, oversee the implementation? Yes No
6. As a manager would you consider hiring a HACCP consultant? Yes No
7. As a manager are you active in the monitoring of sanitation standards, such as the hand washing, of employees in you establishment? Yes No
8. Would you, as a manager, purchase computer software to make the record keeping aspect of the HACCP plan easier? Yes No
9. As a manager, if there were one thing you could change about the health inspection system, what would it be? _____
10. What type of sanitation training do you provide to your employees? Check all that apply.
 Training manual SERVSAFE videos HACCP manuals
 On the job training Weekly meetings Computer/ CD-ROM

11. How many employees in your establishment have completed the SERVSAFE certification course sponsored by the National Restaurant Association?

- None 3-4 7-10 Strongly Disagree
 1-2 5-6 10 or more

12. What type of cleaning products do your employee's use to sanitize work areas?

13. Do your employee's wear latex gloves when handling food? Yes No

14. How often do your employees record the temperatures of food on your serving line?

- Hourly Once per shift More than once per shift
 Only as needed Never

15. If a Critical Control Point is violated what corrective measures do your employees take now?

17. Do you require your employees to maintain a time and temperature logbook?

- Yes No

We would like to know the attitudes of managers and employees relative to HACCP. On a scale of 1-5 with 1 being strongly agree, and 5 being strongly disagree, please rank the following statements by circling the number that best describes your opinion.

17. A HACCP program will only be more work for me as a manager.

Strongly Agree 1 2 3 4 5 Strongly Disagree

18. As a manager, I would not implement a HACCP program unless required by the Health Department.

Strongly Agree 1 2 3 4 5 Strongly Disagree

19. As a manager, I believe HACCP would help prevent foodborne illnesses in my establishment.

Strongly Agree 1 2 3 4 5 Strongly Disagree

20. As a manager, a HACCP plan would help me train my employees about food safety.

Strongly Agree 1 2 3 4 5 Strongly Disagree

21. The cost of implementing a HACCP system outweighs the benefits.

Strongly Agree 1 2 3 4 5 Strongly Disagree

22. My employees are receptive to procedural change under HACCP.

Strongly Agree 1 2 3 4 5 Strongly Disagree

My employees do not have time to take and record the temperatures of the food on the serving line on an hourly basis.

Strongly Agree 1 2 3 4 5 Strongly Disagree

24. A HACCP program would require too much training for my employee's.

Strongly Agree 1 2 3 4 5 Strongly Disagree

25. My employees would not be able to follow a HACCP plan on a daily basis.

Strongly Agree 1 2 3 4 5 Strongly Disagree

26. A HACCP plan would increase my employee's workload.

Strongly Agree 1 2 3 4 5 Strongly Disagree

Demographic Information

27. The title of my current position is _____

28. How long have you been at this position? _____

29. How many people do you supervise? _____

30. How many people are employed at your establishment? _____

31. How many hours per week do you spend on sanitation training? _____

32. What is your age? _____ What is your gender? () Male () Female

33. What is your current level of education?

() High School () Some College () Graduate Degree
() Bachelor Degree () Some Graduate School () Post Graduate Degree

34. Please estimate your establishments gross annual sales.

() \$10,000 – \$99,999 () \$300,000 - \$399,999 () \$600,000 - \$699,000
() \$100,000 - \$199,999 () \$400,000 - \$499,999 () \$700,000 - \$799,000
() \$200,000 - \$299,999 () \$500,000 – \$599,000 () \$800,000 – OR MORE

35. What type of establishment is your organization?

() Fine Dining () Fast Food () Hospital
() Casual Dining () School Cafeteria () Other _____

36. What type of ownership does your establishment have?

- Sole proprietor
- Corporation
- Franchise
- Chain ownership
- Other _____

37. What is the seating capacity of your establishment? _____

38. What purveyor do you purchase your food and supplies from?

Have you ever been involved in PERCEPTIONS AND ATTITUDES
 WITH THE IMPLEMENTATION OF HAZARD ANALYSIS CRITICAL
 CONTROL POINTS (HACCP) PROGRAM IN THEIR ESTABLISHMENT?

THANK YOU FOR YOUR TIME AND CONSIDERATION
PLEASE FOLD THE SURVEY SO THE PREPAID BUSINESS REPLY IS ON THE
FRONT, THEN STAPLE THE SURVEY AND MAIL.

William T. Simmons School of Hotel and Restaurant Administration
Oklahoma State University 210 HESW, Stillwater, Ok 74078

Please return by April 14, 1999

Vita ²

William Tracy. Simmons

Candidate for the Degree of

Master of Science:

Thesis: RESTAURANT MANAGERS PERCEPTIONS AND ATTITUDES
OF THE IMPLEMENTATION OF HAZARD ANALYSIS CRITICAL
CONTROL POINT (HACCP) PROGRAM IN THEIR ESTABLISHMENT

Major field: Hospitality Administration

Biographical:

Personal data: Born in Stillwater Oklahoma, February 18th, 1966, the son of Tim E. and Dixie L. Simmons. Married Kelle S. Eakins August 10th, 1991.

Education: Graduated from Worthington high school, Worthington, OH in May 1984; receive a bachelor's of science degree in psychology from Oklahoma State University, Stillwater, Oklahoma in May, 1997; completed requirements for the Master of Science Degree with the major in Hospitality Administration at Oklahoma State University in May, 1999.

Professional Experience: Kitchen Manager at Mexico Joe's, Stillwater, Oklahoma from April, 1988 to January, 1998. Graduate Research Assistant for Oklahoma State University, Department of Hotel and Restaurant Administration, from February, 1998 to May, 1999.

Professional Organizations: Oklahoma Restaurant Association