

HACCP... HAZARD ANALYSIS AND CRITICAL CONTROL POINTS IN THE FOOD INDUSTRY

COURSE OUTLINE

- **Millions of people get sick from foodborne illnesses every year, and thousands of them die.**
- **Hazardous materials contaminating the food supply can also cost companies tens of millions of dollars and do untold damage to their reputations as well.**
 - As a result, food safety has become an important issue in all stages of the food processing industry, from growers and manufacturers to distributors and retailers.
- **To address this problem, over the years a number of food safety programs have been developed to help assure that the food that reaches consumers is, in fact, safe enough to eat.**
 - The oldest and most widely used of these programs, both nationally and internationally is HACCP, the "Hazard Analysis and Critical Control Points" system.
- **If you work in any facet of the food industry, it is very important to have a clear understanding of the HACCP (Hazard Analysis Critical Control Points) food safety system.**
- **HACCP was created in 1958 to ensure that the food America's astronauts would be eating was safe for them to consume, and is based on a set of NASA's engineering principles.**
- **Now the U.S. Department of Agriculture and the Food and Drug Administration either require or recommend that HACCP be used by companies in every segment of the food processing industry, and encompass all elements of the "food chain", including:**
 - Growing.
 - Harvesting.
 - Processing.
 - Manufacturing.
 - Distribution.
 - As well as "retailers" such as grocery stores and restaurants.

- **Before HACCP, food inspection generally relied on the "senses" (sight, smell and touch) to detect potential hazards.**
 - The most thorough inspections were typically done "after the fact", when the product was ready to go out the door or actually be eaten.
- **HACCP makes this activity "proactive", using an approach that focuses on prevention and risk analysis.**
 - It is a continuous process, with adjustments being made as things change within the food processing environment.
- **HACCP employs seven "principles" to first determine what hazards food may be susceptible to as it is grown, processed and handled... and at what points these hazards can be eliminated or controlled.**
- **The system then defines how to monitor these "control points" to make sure that they are...**
 - Working effectively.
 - Correct any problems that surface.
 - Verify and document what has occurred.
- **HACCP is used to control three types of food safety hazards...**
 - Biological Hazards, such as viruses and bacteria like E-Coli, Listeria and Salmonella.
 - Physical Hazards, such as broken glass, metal fragments and pieces of plastic.
 - Chemical Hazards, such as cleaning solutions, pesticides, mis-measured food additives and even allergens like peanut dust.
- **Before starting to develop a HACCP Plan, it's important to understand what HACCP does and doesn't do.**
 - HACCP addresses food safety by focusing on the "processes" that the food is going through, such as cooking and refrigeration, and what could create hazards within these processes.
- **What it doesn't do is address "environmental issues", such as good manufacturing practices (GMP's) or hygiene standards.**
 - However, having these programs in place is essential to the success of a HACCP system, as they provide the "building blocks" upon which HACCP's seven principles of food safety rest.

- **In essence, they are "prerequisites" to successfully implementing a HACCP system, and include:**
 - Policies regarding employee hygiene, such as the use of hair nets and gloves, and practices like proper handwashing.
 - Pest control programs which prevent animals and insects such as mice and roaches from entering the food production process.
 - Regularly scheduled cleaning procedures for the equipment that is used in food processing and handling activities.

- **There are five steps that should be followed in creating a HACCP Plan, all of which focus on gathering the resources and information that the planning process needs.**
 - The first is to assemble the HACCP Team and begin to construct a HACCP Manual.

- **The team should include employees from as many departments and functions as possible, such as production, sanitation, management and quality control, so that multiple perspectives on the company's operations are represented.**
 - One of the team members should also be formally trained in the HACCP system.

- **The team will not only be responsible for creating the HACCP Plan, but for implementing and maintaining it as well.**
 - So members' names and contact information should be documented in the manual.

- **The second step in the planning process is to fully describe the products that the HACCP Plan will address. Descriptions should include things such as:**
 - Recipe and formulation information if there is any.
 - Packaging materials that are used with the products.
 - The conditions under which the products should be stored and their expected shelf life.
 - Distribution considerations and the potential for damage in transport.

- **The third step in preparing a HACCP Plan is to identify the "intended use" of the products and who will be consuming them.**
 - Any "special use" considerations should be included, such as glucose-free products being used by consumers who are glucose-intolerant.

- **It can often be productive to "group" products into categories where food safety considerations will be similar, such as:**
 - Animals that are slaughtered.
 - Other "raw product".
 - Food that will be thermally processed or otherwise heated.
- **Next, a "flow diagram" should be created, showing the steps that the food will go through as it is being processed and handled.**
 - This should include every step that is in direct control of the facility, from initially receiving and storing the food and associated materials, to packaging and shipping it out and stocking or serving it.
- **If the environment is a food processing plant, it can also be helpful to create a "plant schematic" that shows where each of the processing steps occur and how product, people and waste move within the facility.**
- **The fifth and last step in creating a HACCP Plan is to verify that the flow diagram is accurate.**
 - An initial pass at this can be done by having all of the members of the HACCP Team review the diagram and note any comments and questions that they have.
- **Once these are reconciled, a physical "walkthrough" should be conducted as a final verification.**
- **The best test of the diagram can often be to have the walkthrough done by someone outside of the team, who is not familiar with how the diagram has been created and has no preconceptions as to how things should work.**
- **The initial three principles of a Hazard Analysis and Critical Control Points system (HACCP) address the hazards that food which is being processed and handled may be subject to, and how to control or eliminate them.**
- **The first is to conduct a "Hazard Analysis", identifying the steps in the process where physical, chemical or biological contaminants could be introduced.**
 - It's important to look at the entire process flow during the analysis, from receipt, storage and preparation through to its final distribution and use.
 - The probability of the hazard occurring, and the severity of the consequences should be determined as well.

- **After a thorough review is completed and potential hazards are identified, a list of potential "control measures" should be assembled.**
 - "Control measures" are actions that would prevent, reduce or eliminate the hazards.
- **After the hazard analysis is completed, the second principle in the HACCP system can be applied, which is identifying "Critical Control Points" (CCPs) where the control measures can be taken.**
 - These could be actions such as testing the food for metal fragments, heating it to kill bacteria or refrigerating it to prevent spoilage.
- **Considerations in this step include determining whether the CCPs can be monitored and how they will be documented.**
 - It's important to remember that a CCP may not be located where the hazard occurs but could be later in the process.
- **The third principle in the HACCP system is to establish "Critical Limits" for each of the Control Points that have been identified.**
 - These are maximum and/or minimum values that will enable a hazard to be effectively controlled.
- **For example, if a Critical Control Point is refrigerating a food product, it's Critical Limit might be a range of 36 to 41 degrees Fahrenheit.**
 - Cooking a hamburger could have two Control Points for destroying potential bacteria, its cooking time and temperature.
- **Once the hazards that food being processed may be subject to, and how to control or eliminate them, are addressed, the remaining principles in the system then focus on four things:**
 - How to monitor these "control points" to make sure that they are working effectively.
 - What must be done to correct any problems that surface.
 - To verify and document what has happened, both with the Plan itself, and any problems that occur.
- **The first three principles of a Hazard Analysis and Critical Control Points system (HACCP) address the hazards that food which is being processed and handled may be subject to, and how to control or eliminate them.**
 - Once they are implemented the HACCP system turns its attention to making sure that everything is working correctly and that things are documented appropriately.

- **The fourth principle in the HACCP system is to establish "monitoring procedures" that measure the Critical Limits at each of the food processing's Critical Control Points (CCPs). These procedures should describe:**
 - How the measurements will be taken.
 - When the measurements are to be taken (the time of day or within the process).
 - How frequently the measurements should be taken.
 - Who is responsible for taking the measurements.
- **Hopefully, the monitoring process will confirm that all is going well.**
 - However, as we all know, at times things can go wrong.
- **When the monitoring procedures do detect a problem, the HACCP system's fifth principle, "Establishing Corrective Actions" comes into play.**
 - "Corrective Actions" are predetermined measures that should be taken when monitoring indicates that a deviation from the norm has occurred.
- **It's crucial that Corrective Actions for all of a process's Critical Control Points be defined before the process is started.**
 - This must be a proactive, not a reactive, activity.
- **Corrective Actions must address:**
 - Regaining control of the process.
 - Locating and segregating any affected product.
 - Determining if affected product should be disposed of, and how that should be done.
 - How to prevent a recurrence of the problem.
 - Documenting the problem and the actions that were taken to correct it.
- **Common "Corrective Actions" include things such as adjusting a thermostat to the correct temperature, reheating or recooking a product, and discarding a product that has spoiled.**
- **The sixth principle in the HACCP system is to establish "Verification Procedures" which confirm the validity of the HACCP Plan, verifying that it is complete and effective in achieving the desired safety outcomes.**
- **These procedures need to be utilized on an ongoing basis, and revisited any time that something in the food's processing or its handling changes.**

- **Activities that can be incorporated in the "Verification Procedures" include:**
 - Conducting periodic audits of the overall Plan as well as the Critical Control Points and Critical Limits.
 - Reviewing records of problems and their Corrective Actions.
 - Checking instrument calibrations.
 - Product testing.

- **The seventh and final principle in the HACCP system is "Recordkeeping".**
 - Its focus is to prove that the food in your facility has, in fact, been produced and handled safely.

- **Records must be complete and accurate, and include information on virtually everything within the facility's HACCP Plan and its execution, such as...**
 - The members of the HACCP Team.
 - Product descriptions.
 - Hazard analyses.
 - Flow diagrams.
 - Critical Control Points and their Limits.

- **Records must also be kept for...**
 - Any corrective Actions that have been taken.
 - Verification procedures that are being used.
 - Changes that have been made to the HACCP Plan over time.
 - Even the recordkeeping process itself.

- **Lastly, the Plan needs to specify who is responsible for maintaining the records, how long they should be kept and where they are stored.**

- **It is clear that implementing a HACCP system is a lot of work.**
 - But there are a number of advantages to having a HACCP system in place at your facility.

- **In the United States, both the Food and Drug Administration and the Department of Agriculture require or recommend its use for all of the facilities that they oversee.**

- **And it is fast becoming the de facto standard for food quality assurance in other parts of the world as well, which can help a company to do business in international markets.**

- **Most importantly, it shows that you care about the quality of your products, and the safety of your customers.**

*** * * SUMMARY * * ***

- **HACCP can be used by every group in the "food chain"... from growers to retailers.**
- **It's important to have basic "Prerequisite" programs in place before implementing a HACCP system.**
- **Establishing "Critical Control Points" and their "Critical Limits" are key to a HACCP Plan.**
- **The first area HACCP focuses on is creating a safe food processing and handling environment.**
- **HACCP's other emphasis is on maintaining that environment and documenting everything about it.**
- **Now that you know more about how HACCP works and why it is important to your company, you can do your part to help keep the food that you work with safe for everyone who eats it!**