

DEALING WITH ALLERGENS IN FOOD PROCESSING AND HANDLING ENVIRONMENTS

COURSE OUTLINE

- **A food allergen is a normally harmless substance, almost always a protein, which can cause an immediate allergic reaction in people who are sensitive to it.**
 - This results in their immune system going into “overdrive”.
- **Scientists are uncertain why some people develop allergies while others don’t.**
 - “Allergies” can present themselves in childhood.
 - They also tend to run in families, so genetics may play a role.
- **There are nine major food allergens that are known to cause allergic reactions in people, including...**
 - Milk
 - Eggs
 - Fish, such as bass, flounder, or cod
 - Crustacean shellfish, such as crab, lobster, or shrimp
 - Tree nuts, like almonds, pecans, or walnuts
 - Wheat
 - Peanuts
 - Soybeans
 - Sesame
- **In 2004, the “Food Allergen Labeling and Consumer Protection Act” identified eight of the above foods as common allergens.**
 - More than 160 foods were known to cause allergic reactions at the time.
 - But over 90% of serious reactions were linked to those eight foods.
- **In 2023, the Food Allergy Safety, Treatment, Education, and Research Act (FASTER) added “sesame” to the existing list of allergens.**
 - This Act supersedes the “Food Allergen Act”.

- **These allergens cause allergic reactions that vary in severity. Reactions can include...**
 - Mild symptoms, such as hives and lip swelling.
 - Severe symptoms, such as anaphylaxis, which can result in shock and even fatal respiratory problems.
- **Other allergic reactions can include...**
 - Flushed skin or a rash.
 - Tingling or itchy sensation in the mouth.
 - Swelling of the face or tongue.
 - Vomiting, diarrhea, and abdominal cramps.
 - Coughing or wheezing.
 - Dizziness or lightheadedness.
 - Swelling of the throat and vocal cords.
 - Difficulty breathing and even loss of consciousness.
- **Food allergies are sometimes confused with food intolerances.**
 - But the two are very different.
- **A food allergy affects the immune system.**
 - Even small amounts of the offending food can trigger a host of allergic symptoms.
- **People with food intolerances...**
 - Cannot properly break down certain foods.
 - Do not have an immune system reaction.
- **It is estimated that up to 20% of the world's population may have a “food intolerance.” This inability to break down foods can be due to...**
 - Enzyme deficiencies... such as having no lactose enzymes to break down the lactose found in milk and other dairy products.
 - Having adverse reactions to naturally occurring chemicals in foods or additives.

- **As with food allergens, there are a number of foods that people can have an intolerance to, including...**
 - Dairy products, like milk, cheese and yogurt.
 - Chocolate.
 - Eggs, particularly "egg whites".
 - Flavor enhancers such as MSG.
 - Food additives, such as preservatives and dyes.
 - Strawberries, citrus fruits and tomatoes.
 - Wine, particularly red wine.
- **People with food intolerances may experience nausea, abdominal pain, diarrhea, and bloating.**
 - While these symptoms are unpleasant, they are usually not life-threatening.
- **The presence of food allergens in the food supply chain is a serious concern for people suffering from food allergies.**
 - It is also a major issue for the food industry itself.
- **With so much at stake, people with food allergies must be vigilant in determining what ingredients are in the foods they eat.**
 - It can sometimes seem like foods that contain the allergens they can't tolerate are everywhere.
- **To keep people with food allergies safe, it is very important to avoid "cross-contamination" between allergen and non-allergen foods and food ingredients.**
 - This must start with farms and continue through food processing plants.
 - Then it must continue through grocery stores and restaurants.
- **Cross-contamination happens when an allergen protein is transferred directly to another food or a "food-contact surface".**

- **Cross-contamination can occur a number of ways on a farm, including...**
 - Trailers that are used for both peanut and produce harvests.
 - Eggs that are cleaned, graded and sorted on tables where ready-to-eat produce is also processed.
 - Soy and wheat that is harvested, stored, or transported using the same farm equipment.
 - Nut trees drop nuts into fresh produce that is stored uncovered in vehicles or containers that are parked under the trees.
 - Fish and other seafood that is harvested and transported on the same truck as fresh produce.
 - Cheese and other dairy products are improperly stored in coolers.
 - When food that is in community supported “agriculture subscription boxes” that also contain produce and other fresh foods such as eggs.
- **There are also a lot of “surfaces” that can come into contact with an allergen during production, processing and packaging, such as...**
 - Tools.
 - Equipment.
 - Packing and processing tables.
 - Workers’ hands.
- **Fortunately, there are several things that can be done to help prevent cross-contamination in your environment.**
 - To start with, you need to know what allergens might be present in your work areas.
 - Then you can identify the “risk points” where these allergens could contaminate other food.
- **You should make sure that everyone is trained to recognize allergens and where this cross-contamination could occur.**
 - With this in mind, everyone must implement good handling, storage and transport practices on the farm.

- **Specific steps that can be taken to keep your customers safe from cross-contamination include...**
 - Having effective cleaning and sanitizing protocols in place for equipment and food-contact surfaces.
 - Providing hand-washing stations in all areas.
 - Setting up separate packing, processing, and storage areas.
 - Posting signage that identifies areas where allergens may be found.
 - Designating employee break areas where personal food is stored and eaten.
 - Separating allergens from other foods during transportation.
- **Food ingredients arrive at manufacturing plants separated and in clearly marked, sealed containers.**
 - But the facility still needs to make sure that no cross-contamination takes place during the manufacturing process.
- **If allergens do end up in food without being listed on the ingredient label, your company could be subject to a product recall for “undeclared allergens”.**
 - Not only could people get sick, a recall could cost a lot of money... and your customers’ trust.
- **Undeclared allergen recalls happen frequently in food processing and manufacturing.**
 - Undeclared allergens” were the leading cause of food recalls by the Food and Drug Administration last year.
 - This has been true for the last several years.
- **So, how does the FDA recommend that you prevent cross-contamination in the manufacturing process? It starts with a facility’s basic design. You may need to...**
 - Use air flow controls such as a “positive air pressure” environment in the packaging area.
 - Install “micro air filtration” systems to prevent airborne allergen particles from getting into allergen-free zones.

- **Allergen cross-contact can also be avoided by:**
 - Isolating production lines that process allergens in separate rooms or buildings.
 - Keeping specific facilities, processing and packaging lines and equipment. reserved for “allergen-free production”
 - Designing traffic patterns in a facility to prevent allergens from coming into contact with other foods.
- **Other measures that the FDA requires in certain situations to prevent cross-contamination include...**
 - Providing partitions, covers and “catch pans” to protect unpacked products.
 - Implementing a production schedule that separates the manufacture of allergen-containing products from non-allergen-containing products.
- **In some cases, production lines must be shared and produce both allergen and allergen-free products.**
 - In these situations, processing allergen-containing products last can help to prevent cross-contamination.
- **Separately cleaning utensils and tools that are used in the production of allergen-free foods and storing them away from other equipment can also help keep finished food products allergen-free.**
- **While your facility’s design is important, employees also play a crucial role in preventing allergen cross-contamination.**
 - Workers should change out their hats, gloves, and other protective clothing frequently, so they don’t become carriers of dust and seeds.
- **Employee movement can be restricted between allergen-free and allergen areas of a plant.**
 - That way, once an employee leaves an allergen-free area and crosses into an allergen-containing area, they aren’t permitted to return to the allergen-free room.
- **The FDA requires that employees check the labels of incoming ingredients for accuracy.**
 - This makes sure foods are stored and handled properly on the production floor.
 - The food packages must also be checked for damage or leakage.
 - Colorful tags should be attached to all allergen-containing foods so that they can be easily identified.

- **Once the ingredients have cleared the receiving process, allergen-containing foods and non-allergen foods must be kept in different storage rooms or on different shelves in secure bins or containers.**
 - Allergen-containing foods should always be kept on lower shelves to avoid spillage or leakage onto non-allergen foods.
- **All of your safeguards won't protect your customers from food allergens if your facility isn't spotlessly clean.**
 - Without proper cleaning procedures, food allergens can get out into the air as dust particles or hide in the nooks and crannies of your food processing equipment.
- **That's why the Food and Drug Administration (the FDA) recommends that facilities that manufacture and handle food create written "Sanitation Standard Operating Procedures" (SSOPs) that are used for allergen management.**
 - This "cleaning plan" should include practices and processes that will help to ensure that your facility can prevent allergen "cross-contact."
- **The Sanitation Standard Operating Procedures should include:**
 - What needs to be cleaned, and how often.
 - The specific methods, chemicals, concentrations, temperature set-points, solution flow rates and other critical factors for each cleaning task.
 - Requiring the use of fresh cleaning solutions when moving from one area or type of equipment to another, rather than reusing solutions.
 - Using swabs to test rinse water for the presence of allergens.
 - How dirty equipment awaiting cleaning should be segregated, isolated and held.
 - How clean equipment and work areas will be protected from recontamination.
- **It's important that a food processor's sanitation control program can be verified by analyzing samples from a number of different areas, pieces of equipment and clothing for the presence of allergenic food residue including...**
 - Hand-held tools.
 - Clothes such as aprons or gloves.
 - Equipment surfaces.
 - Rinse water.
 - "Push-through" materials, ingredients and final products.

- **The best way to make sure all of this gets done is to create a “Cleaning Check List”.**
 - This should list all of the equipment where allergen build-up could occur or residual allergen proteins could be trapped.
 - Your list should include conveyor belts, fillers, mixers, silos, bulk tanks, shovels, packaging equipment, hand utensils, scrapers and protective clothing.
 - The checklist should specify equipment that should be swabbed both before and after cleaning to determine if there are allergens present.
- **If allergen cross-contact is found, you should immediately take the following corrective actions...**
 - Determine the best cleaning methods to use to correct the problem.
 - Conduct a study that compares your procedures with “best manufacturing practices”.
 - Modify operating procedures as appropriate to eliminate the potential for future problems.
 - Retrain all staff in proper food handling and contamination prevention procedures.
- **A retraining program will need to be implemented for personnel who collect samples and perform analyses.**
 - In-house testing should be periodically verified by an independent laboratory.
- **Food labels are on the front lines of helping people with food allergies and dietary restrictions avoid foods that will make them sick.**
- **Manufacturers are responsible for making sure the right label goes on the right package. The FDA requires that they create labels that ensure:**
 - Consumers know what they’re eating.
 - Everyone understands what nutrients a food contains and the specific portions of the nutrients in the food.
 - Shoppers can avoid foods that don’t agree with them or that they are allergic to.
- **The Federal Food, Drug, and Cosmetic Act requires that the labels of most packaged foods marketed in the United States disclose, in simple-to-understand terms, if they are made with a major food allergen.**

- **FDA has updated food labeling requirements, so labels have larger and bolder type for important information like servings and calories.**
 - Sugars must now be listed as “Added Sugars” along with how many grams there are and what percent of the “Daily Value” this represents.
- **The major way that the FDA food labeling regulation protects consumers if a food contains any of the nine major allergens is by requiring that this be listed on the label.**
 - This labeling requirement can be met if the “common” or “usual” name of an ingredient itself already identifies that allergen’s food source name, like “peanuts”.
 - Otherwise, the allergen’s food source must be shown in a parentheses following the ingredient name, or shown in a “Contains” statement.
- **A “May Contain” statement can also be used on a food label.**
 - It’s important to note that “*Contains*” and “*May Contain*” have different meanings.
- **“Whey”, “egg yolks”, and a “natural flavor” that contains peanut proteins have to be listed as ingredients respectively identified as “milk”, “egg” and “peanuts” in a “*Contains*” list.**
 - But if there is only a chance that allergens could unintentionally be present in a food, either a “*May Contain*” or a “*Manufactured, Processed or Packaged in a Facility Where Allergens Are Present*” statement can be used on the label.
 - These statements are voluntary warnings and are not defined or regulated, however they are helpful in informing customers.
- **A “*May Contain*” or a “*Manufactured, Processed, or Packaged in a Facility*” statement alerts consumers that a manufacturer uses the same equipment to make different food products, or that allergens are present in the facility, even if the processing equipment isn’t shared.**
- **For instance, even after cleaning equipment a small amount of an allergen, such as peanuts that were used to make cookies, could be present in crackers also made at the facility.**
 - In this case, people should be warned of the presence of peanuts with a “*May Contain*” or a “*Manufactured, Processed or Packaged in a Facility Where Allergens Are Present*” statement.

- **Not all manufacturers use “*May Contain*” or “*Produced in a Facility*” statements.**
 - But if you are looking to safeguard the public and avoid problems, including these statements is a wise thing to do.
- **In the near future, the FDA is slated to conduct additional research and propose a standardized front-of-package labeling system.**
 - Most content labels are currently on the back of product packaging.
 - This is a promising development since having nutritional labels on the front of foods will help people quickly assess if the product contains allergens and how “healthy” foods actually are.

*** * * SUMMARY * * ***

- **Food allergens are almost always a protein and are harmless to many people.**
- **For 6% of adults and children in the United States, food allergens are a serious problem that can cause their immune systems to produce an “allergic reaction”.**
- **Allergic reactions can range from minor ailments like flushed skin or a rash to life-threatening anaphylaxis.**
- **There are nine Major Food Allergens, ranging from milk to peanuts.**
- **Allergen-containing foods must be kept separate from all non-allergen foods in every part of the production and handling process.**
- **Food packages must be labeled according to FDA requirements, with all of the ingredients listed in an easy-to-understand format.**
- **Handling allergens in the food industry requires a real “team approach”. If everyone works together, consumers can enjoy the foods that they eat safely... every day!**