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FOOD ALLERGENS

MANAGING THE RISK

by Kurt E. Deibel, PhD and Lydia Midness, MS, RD

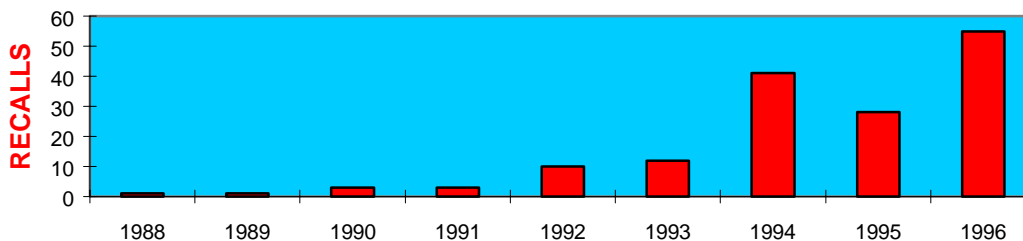
Public awareness regarding food allergens is at an all-time high. There has been a dramatic rise in the number of product recalls due to unlabeled allergens (i.e., products which contain an allergenic ingredient that is not in the ingredients statement). Some public schools are prohibiting students from bringing peanut butter to school for lunch because a few students are allergic to peanuts. The public and the press are developing a zero tolerance to having unlabeled allergens in food products. What can you, as a food manufacturer, do to protect the allergic consumer and your company? What are the most common food allergens? How can we make a difference as an industry? What programs can be implemented to prevent the unintentional addition of allergens to a product? This issue of Analytical Progress will answer these questions and provide insight into the benefit of a comprehensive allergen control program.

WHAT ARE FOOD ALLERGENS?

Food allergens are proteins in food that can create an immune response in sensitive individuals. As a result of past exposure(s) to the allergen, the allergic individual produces large amounts of IgE antibodies to fight off the offending protein. After the immune response has developed in an individual, exposure to even a small quantity of the protein, can result in a serious allergic responses through the activation of the specific IgE antibodies(1).

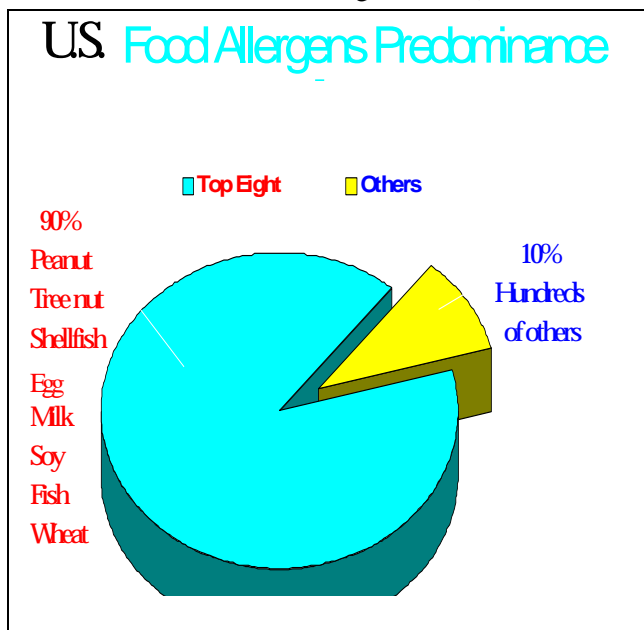
Once ingested, food allergens can cause a number of reactions, ranging in severity from hives and itching to anaphylaxis. Anaphylaxis is a severe reaction involving vomiting, diarrhea, difficulty breathing, swelling of the mouth, tongue and throat and a rapid drop in blood pressure(2). Without quick medical attention, death can occur from a condition known as anaphylactic shock.

ALLERGEN BASED FOOD PRODUCT RECALLS



Dr. Steve Taylor, head of the department of Food Science and Technology at the University of Nebraska, has identified some 160 foods that have been found to cause allergic reactions(3). Of that number, eight foods account for 90 percent of all severe reactions in the United States. These eight foods are peanuts, milk, eggs, shellfish, tree nuts, soybeans, wheat and fish. Peanuts are the most common allergenic food.

According to Anne Muñoz-Furlong, head of the Food Allergy Network, (a non-profit consumer education and awareness organization), children



tend to be most allergic to milk and eggs, but many tend to outgrow these allergies(4). An individual with an allergy to peanuts, however, will likely carry the allergy throughout their life.

WHO IS ALLERGEN SENSITIVE?

The incidence in the population of sensitive individuals to food allergens is estimated at 1-2 percent for adults and approximately 5-8 percent for children. It is important to note that although food allergies can turn up at any point in life, the vast majority have their onset in childhood, particularly in the first one to two years of life. Many young children who demonstrate a food sensitivity, particularly to milk and soy, can outgrow their allergic response over time, thus, the lower incidence rate in adults. If a child retains his or her allergy through puberty, however, he or she will likely have it for life.

ALLERGEN RISK MANAGEMENT

Managing the allergen risk is critical to the continued success of any food company. Preventive programs are the key management tool. If possible, try to dedicate the processing systems that produce your allergenic food to that allergenic food only, and systems that produce allergen free foods to allergen free foods only. Dedicate not only the process equipment, but also the employees, ingredient receipt, storage and transfer, packaging materials, and maintenance equipment; perhaps even consider dedicating a whole plant(5). If the system dedication option is not feasible, a strong sanitation program, backed up by good documentation should be developed to assure that products are labeled properly, that systems are adequately cleaned and that cross-contact and/or contamination issues are minimized. These steps are essential to your companies success and to the allergic individual.

LABELING

One of the most important steps in dealing with allergens is to identify all allergenic ingredients in products and accurately include them in the ingredients listing on the label. It is important to also identify if there are any allergenic sub-components in an ingredient, such as flavors. Once an allergen has been identified as part of the product formulation, a process control step must be identified and documented to verify that the allergen is correctly included on the label. Additionally, a system needs to be developed to verify the food product is placed in the correctly labeled package. This can be done by visually auditing the labels randomly throughout the run and documenting that the proper label is used or through an automated system for 100% inspection such as barcode scanners.

CROSS CONTACT/CONTAMINATION

Assuming that all the labeling of products is done correctly, allergens can still inadvertently appear in a product through a number of avenues. These avenues include poor equipment design and human error. Cross-contact of poorly cleaned shared equipment is a potential source of unlabeled allergens. The cross-contact issue can occur when common equipment are utilized for allergenic products and non-allergenic products. Even employee uniforms, hand utensils and repair tools that have been exposed to an allergen-

containing product can be vehicles to contaminate a non-allergen product.

Cross-contamination can occur when ingredients are not adequately controlled. This can be due to a lack of control of ingredient sources, storage and handling. Inadequate control of the movement of product and product dust residues can also be a source of allergens.

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CLEANING

Inadequately cleaned equipment constitutes another potential source for unlabeled allergens to contaminate allergen free products. It is difficult to define when a system is “allergen clean”, because quantities as small as a milligram of some allergens, (i.e., the allergenic protein), can elicit a response in some sensitive individuals(1). The food processing and handling system needs to be visually inspected to verify the cleaning procedure used is effective. It is imperative to have 100% of all components of the line accessible to visual inspection, and that 100% of the components be visually inspected and documented after cleaning(5).

SCHEDULING

One of the simpler means of managing the allergen risk is to schedule products that do not contain allergens at the start of a production run and follow with the allergen-containing product at the end of the production run. It is important to schedule the longest practical runs of the allergen-containing product and minimize the number of short time runs of these products.

INGREDIENTS

It is also important to build a strong program around understanding the risks of your ingredient suppliers. All of the checks and balances that you put in your manufacturing operation should also exist at your suppliers’ manufacturing and handling operations.

REWORK

Control of reworked material in the manufacturing operation is also imperative. Color-coded tags, coupled with complete documentation that monitors when the reworked product is produced, where it is stored, which product it is reworked back into, and the time it is added back into the line, will help minimize your risk.

EDUCATION

Finally, and most importantly, employees need to be educated in the area of food allergens. The training should include basics, such as; “What is a food allergen?” and “What is an allergic reaction?” Employees must be trained on the specific tasks that are related to their job function to prevent the addition of unlabelled allergens to a food product. It is ideal to have employees or family members share experiences of food allergies. This could be done through the development of an in-house video or through presentations to employees. It is also important to discuss the financial impact of an allergen recall to your organization and stress the potentially life-threatening effect on the allergen sensitive consumer.

“ONE OF THE MOST IMPORTANT STEPS IN DEALING WITH ALLERGENS IS TO IDENTIFY ALL ALLERGENIC INGREDIENTS IN PRODUCTS AND ACCURATELY INCLUDE THEM IN THE INGREDIENTS LISTING ON THE LABEL. ONE OF THE SIMPLER MEANS OF MANAGING THE ALLERGEN RISK (risk of cross contact or contamination) IS TO SCHEDULE PRODUCTS THAT DO NOT CONTAIN ALLERGENS AT THE START OF A PRODUCTION RUN.”

