

# CONTROLLING THE RISK OF ALLERGENS IN DAIRY PROCESSING

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Allergens are one of the many hazards that are a cause of great concern when producing food. In this article, we will cover the importance of knowing your supply chain and the origins of your ingredients (and any undeclared allergens those ingredients may come into contact with). We will also cover tips to avoid cross-contact of allergens in the dairy plant, including the steps to properly clean and validate tools and equipment.

Some sectors of the dairy industry, like ice cream producers, have experience working with multiple allergens but, typically in cheese, the main allergen of concern historically has been milk. However, as we see more creative cheeses and other dairy products with unique flavorings and ingredients, it's important to reassess allergen risks in the dairy plant to prevent unwanted recalls and deaths.

Although allergens may come from a biological source, they are considered a chemical hazard. Approximately 4% of adults and 8% percent of children have allergic reactions to common allergens and the number of individuals with food allergies is increasing. A study from the Centers for Disease Control (CDC) noted that there was about a 50% increase in food allergy prevalence in children from 1997-2011.

It's also important to differentiate allergic reactions, which can be life threatening, from food intolerances, which present more minor symptoms like gastrointestinal stress. Allergic symptoms can range from mild reactions, such as hives or stomach cramps, to severe and life-

threatening anaphylaxis. Due to this hazard, the Food Allergen Labeling and Consumer Protection Act (FALCPA) of 2004 was passed in order to help protect consumers with allergies. The Food Safety Modernization act has implemented that there be preventive controls in place for allergens.

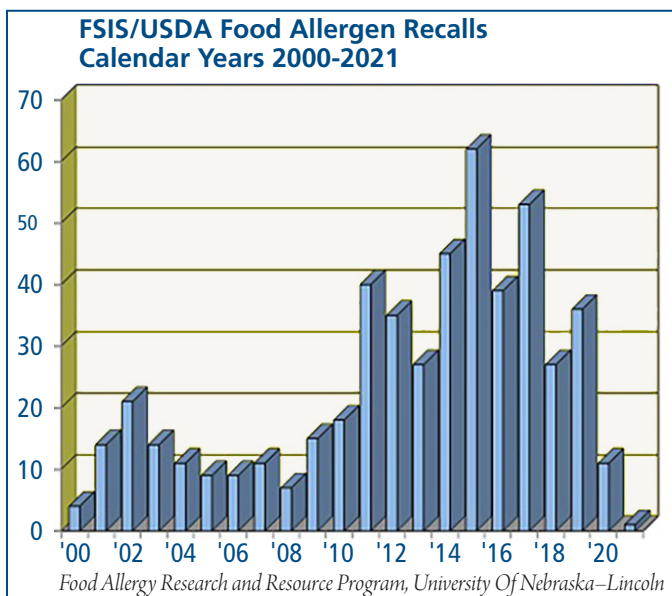
## What is an Allergen?

An allergen is any substance that causes a person's immune system to overreact. The majority of food allergens are proteins, but there are other substances that may illicit an immune reaction. The amount of an allergen needed to initiate a reaction varies. Peanuts and tree nuts are among the most common and potent allergens; only a very small amount is needed to trigger an allergic reaction. There is currently no tolerance for any undeclared allergenic material in food, except for Japan (which allows 10 nanograms/gram).

Given the prevalence of individuals who are allergic to certain foods/ingredients, it is of the utmost importance that a food manufacturing facility identifies and controls the potential ways that an allergen can enter the product stream.

The FDA currently recognizes 8 allergens and considers them the "Big 8 Allergens." These are believed to cause 90% percent of all allergic reactions. The "Big 8 Allergens" are: milk, egg, fish, Crustacean shellfish, tree nuts, wheat, peanuts, and soybeans.

As discussed earlier, there are two main ways that allergens can make it into the product stream: through the supply-chain (undeclared ingredient) or through cross-contact (accidental transfer).



## 8

FDA "BIG EIGHT" Food Allergens			
Milk	Tree nuts	Soybeans	Fish
Egg	Wheat	Crustacean shellfish	Peanuts

## Supply-Chain Preventative Controls

Understanding the risks that the ingredients you use in your finished products is essential for avoiding costly recalls related to allergen contamination. This starts with your supply chain preventative controls. On a yearly basis, ask your suppliers to provide an allergen statement for all products that are supplied to you. This statement should include: 1. any allergens that are present in the product and 2. a notice if the product is produced on the same line as other allergens. If this product is indeed run on the same line as other allergens that are not declared in the product, ask for a validation of the supplier's cleaning →

methods to ensure that the allergens are being effectively removed from production equipment.

When developing new products, make sure that allergens and potential allergen risks are discussed before starting production. This should be part of a robust commercialization process. For instance, there are many new, creative recipes for cheese that include dipping or washing the cheese in various beverages such as beer or wine. In this case, you need to identify potential allergens such as wheat or gluten that may be in beer or the sulfites that could be in wine. There are also cheeses that include tree nuts and some European cheeses incorporate wheat products in the rind.

When using highly refined oils like coconut oil, soy lecithin, etc., make sure to request a statement from your supplier that states that the oil has gone through a refining, bleaching and deodorizing process, and is therefore considered highly refined. Each one these steps either uses chemical or physical means (filtration, centrifugation) to remove unwanted components like phospholipids, gums, free fatty acids, oxidation products

Basic Steps of the Oil Refining Process		
Alkali or chemical refining	Physical Refining	Main groups of compounds removed
Degumming	Degumming	Phospholipids, Gums, Proteins
Neutralization	-	Free Fatty Acids, Proteins
Bleaching	Bleaching	Pigments, Metals, Soaps, Proteins
Winterization	Winterization	Waxes, Saturated triacylglycerols
Deodorization	Deodorization/Deacidification	Volatiles, Free Fatty Acids, Proteins

<https://lipidlibrary.aocs.org/chemistry/physics/frying-oils/oil-refining>

and trace metals. Below is a table that lays out the steps of the oil refining process.

If the oil is processed with a cold pressed method or is a crude oil, then this would have to be labeled as an allergen under FALCPA. Have the supplier give you a formal statement that their process utilizes a refining, bleaching, and deodorizing process and therefore does not need to be labeled as an allergen.

### Allergen Cross-Contact Risks

Cross-contact occurs when an allergen is accidentally transferred from one food to another. This is a very serious risk to your product stream. Here are some areas to focus on to reduce the risk of cross-contact in your plant.

**Break rooms |** Although break rooms may be overlooked when considering cross-contact risks, they pose a serious risk. For instance, consider what foods are sold in the vending machines. If you have several loose-nut candy bars or peanut-butter filled candies, these items have potential of reaching the product floor. Similarly, any foods that employees bring in and eat in the breakroom can reach the production floor as well. That is why it is so important to enforce GMP policies and have a robust handwashing program and sanitation program in your break room.

**Lubricants |** Food grade lubricants can be an unintentional source of allergen cross-contact. Ensure there are no allergens or like-allergens in the food grade lubricants you use.

**Product equipment and tools |** Having updated SSOPs and following proper verification that allergens are not present is paramount to keeping your tools and equipment free of from allergen cross-contact (see section below “Sanitation Standard Operating Procedures for Equipment and Tools”).

**Aging Boards |** When looking at tools and equipment, you should also consider your aging boards. If you use wood boards for aging, designate boards for different allergens, as it is much more difficult to remove allergen residues from wood as compared to stainless steel. To mitigate the risk even further, implement a color-coding system for allergens.

**Sanitizer Wipes |** It is important to remember that sanitizer wipes will not “kill” or inactivate an allergen. Allergens are not a microbiological hazard, but a chemical one. To protect against allergen cross-contact, ensure that you have a cleaning, rinsing and sanitizing program. Wipes are not enough to remove allergens from the surface of equipment and tools. This is also true when sanitizing hands. A sanitize wipe will still leave residual amounts of allergens on hands. ➡