



The Baking Industry's Response

to the

Food Allergen Cross Contamination

Challenge

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Baking Association of Canada

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1.0 INTRODUCTION:

The Baking Association of Canada (BAC) is the nation's trade association for the \$3.5 billion baking industry. BAC's more than 1,500 retail, in-store and commercial member outlets produce a wide variety of products including fresh breads & rolls, sweet goods, frozen doughs and bakery mixes.

The issue of undeclared food allergens is a great concern to BAC and its members. In response, BAC has been actively promoting this issue to its members through industry meetings, newsletters and various industry publications.

Additionally, BAC's Technical Committee has taken an active roll in consulting with the Canadian Food Inspection Agency and Health Canada while also reviewing the industry's ability to meet the challenge of food allergens and their possible cross contamination.

1.1 Bakery Recalls:

BAC shares the concern of Health Canada and CFIA officials regarding the increasing number of food recalls in the baking sector. We also appreciate that some 90% (statistic provided by CFIA in June/98) of these recalls are a result of product mis-labelling. In response, we have on numerous opportunities (beginning in July/98) offered to work with the CFIA in an industry education program to address the mis-labelling issue. BAC has also undertaken its own unilateral information and education initiatives as indicated above

1.2 Good Manufacturing Practises:

As part of its ongoing efforts to comply with food safety requirements, Canada's baking industry follow Good Manufacturing Practices established by Health Canada. Indeed, GMP's have been the standard measure for ensuring the food safety of Canadians.

1.3 Meeting the Cross Contamination Challenge:

Bakeries individually and in consultation with CFIA inspectors have reviewed and adjusted production practises were possible to limit the potential of cross contamination. This has been accomplished in the following ways:

- Where feasible, remove the food allergen(s) from production
- Where feasible, limit new product development from introduction of known allergens.
- Where feasible, relocate/consolidate "like" products to one production facility and/or production line.

However, the ability to relocate production to other facilities is extremely limited as the vast majority of commercial bakeries have only one production facility. Additionally, order quantities

(which are produced and shipped on a twenty-four-hour cycle – seven days a week) and the inherent short shelf life of baking products present challenges in production scheduling.

1.4 Zero Tolerance:

In addressing the issue of cross contamination, it is essential for clear direction on tolerance levels for food ingredients that cause severe allergic reactions. Unfortunately, neither CFIA nor Health Canada has provided this information.

However, recent actions by CFIA inspectors have demonstrated that **no acceptable levels of these ingredients** can be tolerated (i.e. cross contamination) if they do not appear on the ingredient declaration. This position was recently confirmed in a March 5/99 CFIA communication to the Ontario baking industry (see Appendix III)

2.0 OPTIONS FOR ADDRESSING CROSS CONTAMINATION IN COMMERCIAL BAKERIES

BAC has undertaken its own review of existing options available to bakers in order to address this important consumer issue. These options are:

1. Retain status quo.
2. Discontinue the use of food allergen ingredients.
3. Initiate comprehensive equipment cleaning between product runs.
4. Due to operational limitations, use precautionary labelling on all bakery foods for those allergens that may be cross contaminated during the production process

Option 1 Retain status quo

BAC is of the opinion that the status quo does not meet the needs of consumers, government nor the industry at large. Currently, adherence to GMP's, adjusting production schedules and in some cases relocating production is proving insufficient to prevent cross contamination and resulting product recalls.

Option 2 Discontinue the use of food allergen ingredients.

The very nature of bake foods makes food allergens such as wheat, egg, milk, sulphites indispensable in their production. Other allergens such as sesame seeds, nuts and tree nuts are used because of overwhelming consumer demand. To discontinue their use would either remove these products as a consumer option or lead the domestic industry to abdicate these markets to imports.

Option 3 Initiate comprehensive equipment cleaning between product runs.

Current GMP's have proven insufficient to address the zero tolerance enforcement by CFIA inspectors. Adjusting GMP's to require a greater frequency or method of cleaning must be considered within the context of the operational efficiency of a modern commercial bakery.

In order to be commercially viable, today's modern high-speed commercial bakeries may operate 24 hours per day up to seven days per week. Additionally, each plant may produce as many as 30 different products, up to 20 daily on a single production line.

We have identified the major areas within commercial bakeries where cross contamination may take place (Appendix 1). In order to reduce cross contamination, it would be necessary to undertake comprehensive cleaning between each product run. Assuming that cleaning could be completed simultaneously in all areas (for the purpose of this paper we have not addressed the

substantial increased labour costs), the production line would be shut down up to 8 hours. We have also provided an example in Appendix 2 of the methodology required to reduce the cross contamination potential when using sesame seeds as a topping.

As bakeries may complete 20 different product runs daily, the simple mathematics of the comprehensive cleaning as we detailed would reduce production to only 10% to 15% of the current rate. Such a reduction would eliminate the operational efficiency of a commercial bakery.

Option 4 Due to the lack of science based tolerance levels for food allergens and their operational limitations, bakeries should use precautionary labelling on bakery foods for those allergens that may be cross contaminated during the production process.

It is not proposed that precautionary labelling would replace current GMP's. Rather, precautionary labelling would provide an additional information tool for consumers that recognises their increasing need for more ingredient information while enabling commercial bakeries to continue to produce a low cost, high quality nutritious staple for Canadian consumers.

We note that this Option 4 is supported by the CFIA in a March 5/99 communication (Appendix 3) to the Ontario baking industry which states:

“If due to operational limitations, you cannot ensure total absence of such ingredients in your labelled products, consider using a precautionary statement following the list of ingredients to advise the allergic consumer of the increased risk of your product to their well being.”

3.0 RECOMMENDATION:

BAC recommends that the CFIA and Health Canada support on an industry wide basis:

Option 4 *Due to the lack of science based tolerance levels for food allergens and their operational limitations, bakeries should use precautionary labelling on bakery foods for those allergens that may be cross contaminated during the production process.*

Appendix I:

I.0 CANADA'S BAKING INDUSTRY:

Canada's baking industry can be defined into three distinct sectors:

Retail Bakers: Small retail outlets, which make (usually from scratch) and sell a wide variety of baked foods over the counter.

In-store Bakers: Bakery departments located inside a grocery store which make and sell a wide variety of baked foods over the counter. These products are made either from frozen doughs or dry bakery mixes.

Commercial Bakers: Do not sell product directly to the public. These bakeries make and sell product for sale either to retail grocery stores or the food service industry. Commercial bakeries produce a wide variety of products including breads & rolls, sweet goods and frozen doughs.

For the purpose of this document, a typical bread baking process used in a commercial bakery will be used to illustrate the issues that all bakers face with respect to the potential of cross contamination of food allergens.

Commercial bakeries are predominantly single plant operations producing a wide variety of fresh/frozen breads and sweet goods. Canada's major commercial bakers have multiple production facilities but even these tend to be single plant operations in a province. Only in Ontario and Quebec do we find companies with multiple production facilities.

Commercial baking is characterised as using technology widely to reduce labour costs. In the production of breads & rolls these high-speed bread plants produce in excess of 10,000 units per hour. In order to meet changing consumer demands, it is common for commercial bakeries to produce in excess of 30 different product varieties daily. Furthermore, commercial bakeries may produce up to 20 products on the same line. The result of these high-speed lines is the ability to deliver a low cost nutritious staple to Canadian consumers.

Appendix I Cont'd

I.I The Baking Process – Opportunities for Cross Contamination

The baking industry faces unique challenges in addressing the potential for cross contamination of food allergens.

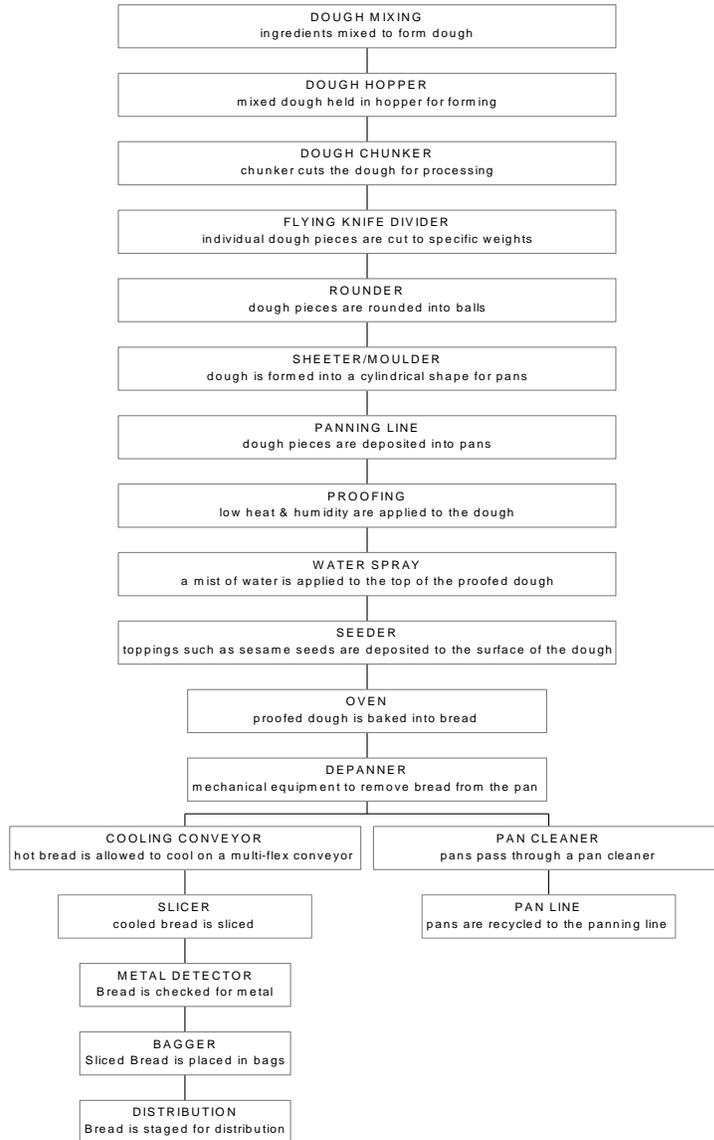
To begin with baked foods are for the most part “living organisms” prior to the actual baking stage. The fermentation of doughs and its inherent “adhesive quality” provides ample opportunity for the doughs to inadvertently adhere to a variety of equipment throughout the process.

Complicating the matter is that bakeries also use many different food allergens as ingredients both in the doughs and as toppings (e.g. wheat, milk egg, soy, sesame seeds).

Consumer expectations are also a reality for Canadian bakers. Consumers view baked foods, especially breads and rolls as a low cost, nutritious staple to their diets. Consumers also demand choice and variety in their selection of baked foods. The short shelf life of baked foods also requires bakeries to operate on a virtual 24 hours a day, seven-day a week basis.

To better understand the baking process, we have provided the following chart of a typical bread baking procedure.

BREAD MAKING PROCESS



Appendix I Cont'd

As a result of our review we have identified the following areas within the baking process where cross contamination may occur. We have also provided approximate cleaning times in order to reduce the risk of cross contamination.

- **Mixers:** Are currently dry cleaned/scraped between different types of dough and wet washed at the end of production. Dry cleaning leaves the potential for trace amounts of one dough to cross contaminate another. For example, doughs containing milk ingredients may contaminate non-milk containing other doughs mixed in the same mixer. A mixer takes a minimum of 2 hours to wet wash.
- **Proofer:** Are designed with a rack system that allows the dough a 60-min. rest period for dough fermentation. The opportunity exists for debris from the sides/bottom of pans (i.e. excess dough or toppings such as sesame seeds) to fall onto the top of doughs passing underneath another rack or proofer shelf. Since proofing conditions are fairly warm and wet (settings: temp 104°F, relative humidity 80%) there is the potential for trace amounts of allergens adhere to other products. Cleaning time for a proofer is approximately 5 hours.
- **Dough Hopper/Divider/Rounder/Sheeter/Moulder:** Although scraped (not wet washed) on a regular basis, small amounts of dough from previous runs may be caught in any area along the line and then inadvertently combined with the current batch. Minimum cleaning time for the Dough Hopper/Divider/Rounder/Sheeter/Moulder is at least 8hrs.
- **Pans:** Utilise air jets and vacuum to loosen and remove crust debris. There are occasions when small pieces of re-baked dough or topping residues may remain stuck on pans. In addition, most bakeries use a product release agent to facilitate depanning. The agent is sprayed on the pan surface and may act as an adhesive for small particles, trapping crumb and toppings like sesame seeds to the pan surfaces. Manual scrubbing of pans between production runs takes approximately 12hrs.
- **Conveyors:** Are located throughout the process enabling the transfer of dough, pans and product from each piece of processing equipment. Approximately 7,000 feet of conveyors are found in a typical commercial bakery. Bakeries use several different types of conveyors depending on their function, location and type of material that is conveyed. Toppings and/or dough may stick to the surfaces of the conveyors and trace amounts risk being transferred indirectly to a product. Conveyor cleaning is difficult due to their configuration.
- **Ovens/Cooling:** Similar to the proofer and conveyors, the oven and cooler can contribute to potential cross contamination. Cleaning ovens and coolers would require complete shutdowns of the equipment. The minimum time to properly clean an oven is 8 hours.

Appendix I cont'd

- **Slicers/Wrapping:** Slicer blades are cleaned via compressed air blowing as this is the only safe method of cleaning out the lattice work that hold each blade. Slicer blades are not wet washed between different product runs. Thorough cleaning time for this area is 3 to 4 hours.
- **Topping Application:** Several types of topping ingredients (sesame seeds, poppy seeds, rye, wheat, oat flakes etc.) are used in a bakery. While these topping are segregated, many applications are made through one seeder per production line. Potential exists for product carryover between varieties. Cleaning of toppling application system requires 15min.

Appendix II

PROCESS TO REDUCE THE POTENTIAL OF SESAME SEED CROSS CONTAMINATION IN A COMMERCIAL BAKERY OPERATION

I.0 Introduction

The following example is provided to demonstrate the challenges affecting the baking industry as it attempts to comply with a zero tolerance for cross contamination.

I.1 Focus:

We will focus on the possible cross contamination of sesame seeds as a topping on a high-speed bread line. High-speed bread lines include up to 120ft of oven conveyors and some 7,000ft of conveyors.

It should also be noted that high-speed bread lines exist in medium to large bakery operations. These operations are currently under CFIA inspection and comply with Good Manufacturing Practices (GMP's).

I.2 Why Sesame Seeds?

Sesame seed cross contamination was chosen due to their visually identifiable nature. Bakeries currently use a wide variety of other toppings including poppy, sesame, onion, garlic, sesame, rye meal, cornmeal, caraway, flax etc.

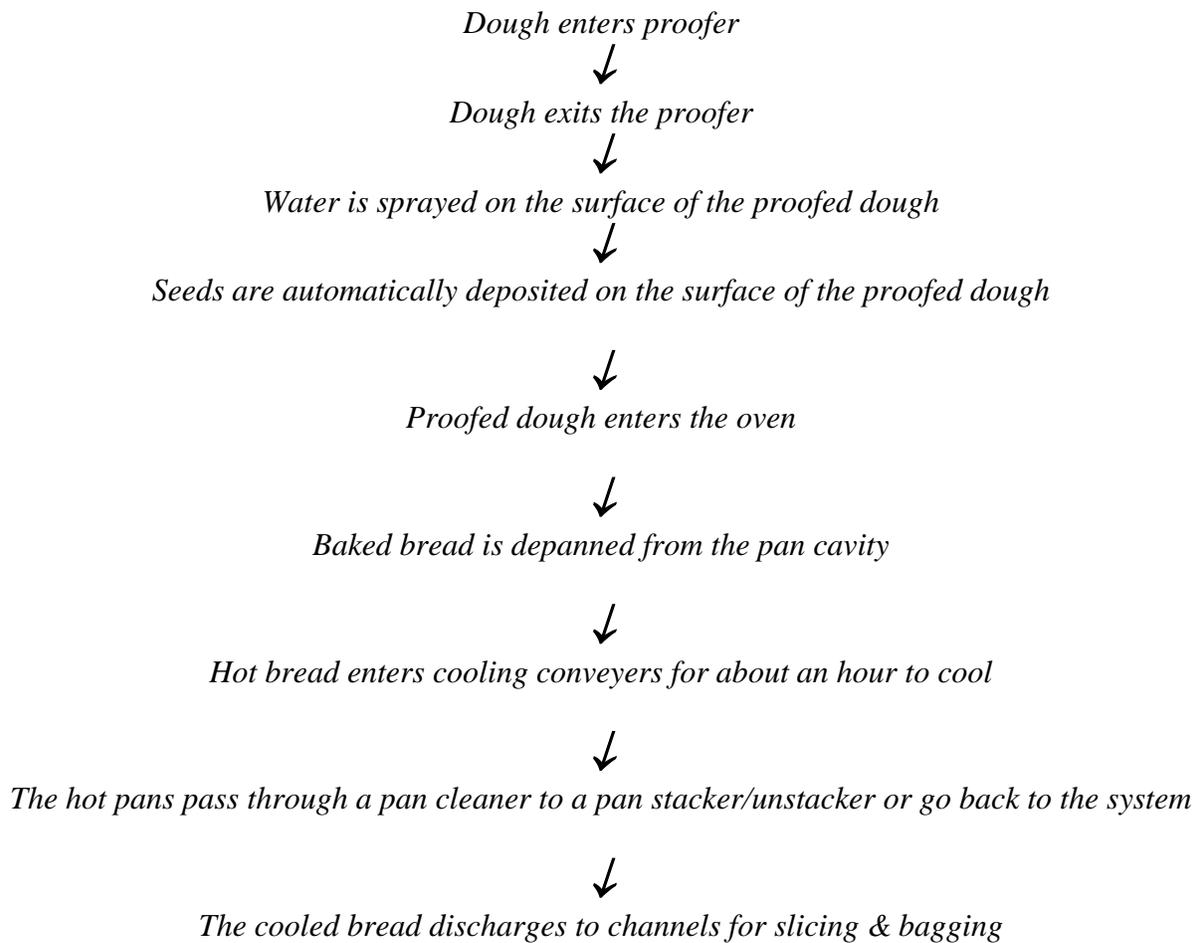
Many of the situations described would apply to cross contamination of other ingredients: milk, egg, nuts, peanuts, soy & wheat.

Note: The following example is based on the application of sesame seed as a topping only.

Appendix II Cont'd

II.0 Addition of Sesame Seeds to the Baking Process

The following chart is provided to clarify the method in which sesame seeds are applied in the baking process:



Appendix II Cont'd

III.0 The Cleaning Process

In order to reduce the potential of cross contamination the following cleaning should be undertaken:

III.1 Proofer

The proofer can range from 30 to 100 ft. in length.

The Interior

In the proofer interior, dough (from a different variety) from the upper level of the rack, framework or burners may accidentally fall on the product on the lower level.

The following steps should be completed to reduce the potential of cross contamination:

1. Exhaust the proofer to remove the CO₂ (carbon dioxide) that is produced from fermentation.
2. Shut off all electrical controls and lock them out.
3. Prepare cleaning chemicals that will be used to thoroughly clean the interior components.
4. Cover all electrical drive motors with plastic.
5. Remove all visible dough pieces from the floor and conveyor frames.
6. Wash interior surfaces. Great care must be taken not to get water into track surfaces. This may damage the bearings and other moving parts and may impede the conveying process when the equipment is started up.
7. Rinse the above equipment.
8. Check all floor drains for any build up of solids. This should be cleaned out prior to start up
9. Replace all tools and cleaning equipment that may have been is in the cleaning process.
10. Remove the plastic that was covering the equipment.
11. Remove lockouts.
12. Start heat & humidity to proofer.

Cleaning Time:

- Cool down time + cleaning time + Re-heat / Re- humidify time = approximately 5 hours.

Appendix II Cont'd

Proofer Exterior:

The dough making process (mixing, panning, proofer infeed, proofer discharge) may result in dough adhering to the sides or top of the proofer (depending on the configuration of the proofer). As a result, this may lead to different types of dough falling on fresh dough that is entering or leaving the proofer.

To clean the proofer exterior, the following steps are required

1. Cover all electrical panels, plugs, motors, and any other electrical device with plastic.
2. Dry clean the roof of the proofer with vacuum and brushes.
3. Dry clean the sides of the proofer with vacuum and brushes.
4. Display wet floor signs.
5. Wet clean the roof of the proofer to remove dough accumulation.
6. Wet clean the sides of the proofer to remove dough accumulation.
7. Remove all protective electrical coverings.
8. Dry floor area around the proofer walls.
9. Replace all cleaning equipment.

Cleaning Time:

- The above cleaning process requires approximately 4 hours.

III.2 Ovens

A conveyor oven can be up to 120 ft. in length

The Interior:

In the oven interior, sesame seeds from the upper level of the rack, framework or burners may accidentally fall on product on the lower level.

The following steps should be completed to reduce the potential of cross contamination:

1. Let oven cool from normal operating temperature of approximately 400 ° F to at least 100 ° F. It may take up to 6–8 hours to drop temperature to 100 ° F. No products can be baked during this cooling period.
2. Lock out the oven to prevent re-ignition of burners and disable motors and mechanical drives.
3. When oven has cooled down to 100 ° F brush all seeds from the burner tubes and interior angle iron.
4. Sweep the interior floor surfaces with a hard bristle broom.

Appendix II Cont'd

5. Damp mop floor.
6. Remove lock out.
7. Start oven up. It will take approximately 1.5 hrs to go from 100 ° F to 400 ° F.

Cleaning Time:

- Cool down time + Cleaning time + Re-heat oven time = between 8 – 10 hours.

Oven Exterior:

The depanning process may blow sesame seeds onto the oven roof. The potential then exists for sesame seeds to fall from the oven roof onto the product entering or exiting the oven.

The following steps should be completed to reduce the potential of cross contamination:

1. Sweep seed accumulation from open areas.
2. Scrape out any seeds that may be stuck to the oven roof.
3. Blow out any seeds from areas that are inaccessible with a brush.
4. Vacuum accessible cracks and space.

Cleaning Time:

- The above cleaning process utilises 2 people working 1.5 hours each.

III.3 Pans

Pan Stacker / Unstacker:

The automated nature of the Pan Stacker / Un-Stacker may cause seeds to adhere to the housing and frame of this equipment. Also any grease or dough that may be in the pans will increase the potential of seeds sticking to the pans.

The following should be completed to reduce the potential of cross contamination:

1. Lock out pan stacker and unstacker.
2. Brush and blow out seeds from the equipment.
3. Sweep the surrounding floor area between the pan stacker and unstacker
4. Remove lock out

Cleaning Time:

- The above cleaning process utilises 1 person working 1.0 hour.

Appendix II Cont'd

Pan Cleaner:

The Pan Cleaner may trap seeds in the equipment housing.

The following should be completed to reduce the potential of cross contamination:

1. Lock out the power supply to the pan cleaner.
2. Obtain a lift / ladder to gain access to catch tarp below pan cleaner.
3. Unzip catch tarp and allow seeds to fall into bakery waste bin
4. Open top access covers and remove seeds from between magnets and conveyor frame
5. Scrape any heavy seed accumulation from walls of pan cleaner.
6. Blow out cracks and crevices.
7. Sweep floor area below pan cleaner.
8. Remove lockout

Cleaning Time:

- The above cleaning process utilises 1 person working 1.0 hour. Manual cleaning (scrubbing) of pans between production runs can take up to 12 hours.

III.4 Slicing Area

This section will address the necessary steps to clean the Bagger Infeed and Slicer.

Bagger Infeed:

The Bagger Infeed will contain seeds that haven't fallen off in the process.

The following should be completed to reduce the potential of cross contamination:

1. Remove all large seed accumulation from beneath conveyor belt.
2. Scrape seeds from below running belt onto scraper.
3. Clean scraper as required with a dry sanitary cloth.
4. Scrape any seeds that have fallen on floor.
5. Wipe cleaning solution on running belt.

Appendix II Cont'd

Slicer:

The Slicer will contain seeds that haven't fallen off in the process.

The following should be completed to reduce the potential of cross contamination:

1. Lock out the slicer.
2. Sweep large accumulation of seeds out from beneath the conveyor line.
3. Blow out any cracks and crevices where seeds have accumulated during slicing.
4. Clean the slicer blades, slicer compartment, catch pans, guards and covers, mesh chain tables. The entire above are in close vicinity to the sharp slicing blades so great care should be taken when cleaning.
5. Clean up any seed accumulation on the floor
6. Remove lockout

Cleaning Time:

- Some operations may have up to five in-feeds. The above process must be repeated for each line.
- The bagger/slicer cleaning process utilises 1 person working 3-4 hours

Appendix III



Canadian Food Inspection Agency
Agence canadienne d'inspection des aliments

2301 Midland Avenue
Scarborough, Ontario
M1P 4R7

Your file Votre référence

Our file Notre référence

March 5, 1999

Dear Madam/Sir,

Re: Important "Allergy Related" Issues for the Baking Trade

The possibility for undeclared egg, milk products, sesame seeds, peanuts, tree nuts, soy and /or sulphiting agents (via raw materials with added sulphites, eg. coconut) has been identified as a concern within the baking trade.

To reduce the risk to the allergic consumer, these ingredients when added directly, or indirectly via ingredients should be declared when a product label is used.

Assess your entire operation and your suppliers' operation for possible use of the above ingredients.

If due to operational limitations, you cannot ensure total absence of such ingredients in your labelled products, consider using a precautionary statement following the list of ingredients to advise the allergic consumer of the increased risk of your product to their well being.

The precautionary statement is expected to be used only when all alternatives have been exhausted and its use is determined to be your last option to afford protection to the allergic consumer.

If you require further information, please contact Doug Morrison, Area Food Chemistry Specialist at (416)973-4226, or your local CFIA Inspector.

Sincerely,

Doreen H. Moore
A/Regional Director
North East Region

/dm

Canada

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