

FOOD SAFETY SENTINEL

STORAGE – THE LAST DEFENCE

A good storage program plays an integral part of any food safety program. It can act as the last line of defence and guards against product contamination in a food processing plant. Products that are not stored properly can encounter many hazards. A wholesome product can be adulterated during storage due to problems with temperature, humidity, dust, moisture, chemicals, cross-contamination, bacteria, odours and pests. In the end, your storage program protects consumers, industry and your business by preventing foodborne illness and the costly recalls associated with it.

Preventing Cross-contamination

Various items may be stored in a food processing facility including raw materials, cleaning and maintenance supplies, pesticides and finished products. Preventing cross-contamination is a goal of any good storage program. To prevent cross-contamination, make certain that raw materials, non-food items and finished products are all stored separately. Storage facilities should be constructed to:

- Protect food from contamination,
- Reduce deterioration of food as much as possible,
- Permit proper maintenance and cleaning, and
- Prevent pest access and harbourage.

The Danger Zone

When it comes to storing temperature-sensitive food products, the simplest food safety rule is to keep hot foods hot and cold foods cold. Food should always be kept out of the 'danger zone', which is the temperature between 4°C (39°F) and 60°C (140°F). Bacteria and spoilage organisms grow quickly in the danger zone, but they cannot grow as quickly at temperatures colder than 4°C or hotter than 60°C.

Temperature Control

- Monitoring the temperature of coolers, fridges and freezers with a calibrated thermometer can ensure that foods are kept out of the danger zone.
- Coolers and refrigerators should be maintained at a temperature of 4°C or less. Bacteria can still multiply and spoil food in a refrigerator, but it happens at a slower rate.
- To maintain quality of your food product, freezers should be kept at minus 18°C (0°F) or colder. While bacteria cannot grow on frozen food, prolonged storage in a freezer can result in an increased possibility of freezer burn.

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FIFO helps improve the shelf life and safety of raw materials and helps to ensure that raw materials with the earliest 'use by' date are used first. Generally these dates will coincide with the earliest date received.

Developing Food Storage Policies

Proper storage of raw materials, supplies and finished products helps protect against contamination. To ensure your finished products are safe, store all ingredients as well as the finished products in the right place, at the right temperature and for the right amount of time.

Here are a few key points you should consider when developing your own food storage policies:

- Label and date all incoming materials using the First in/First out (FIFO) system for storage and usage policies;
- Place received items that require refrigeration or freezing immediately into coolers or freezers to prevent the growth of bacteria and/or thawing;
- Set the maximum time allowed for moving product from the receiving area to the appropriate storage areas;
- Store food elevated off the floor on approved shelving or racks;
- Ensure dry storage is in a cool, dry area away from direct light;
- Keep dry storage temperatures below 21°C (70°F);
- Maintain freezer temperature at minus 18°C (0°F) or less;
- Maintain temperatures of refrigerators or coolers between 4°C (39°F) and 1°C (34°F);
- Load refrigerators or freezers so as not to restrict airflow;
- Store all opened bulk food packages in approved containers with tight fitting lids, with a contents and date label, showing date stored and other important information such as lot codes;
- Do not reuse chemical containers or single service containers;
- Cover all ingredients, packaging and finished products to avoid contamination from above;
- Identify, segregate and maintain control of allergen containing products.

FOOD SAFETY SUPPORT

Alberta Agriculture and RURAL DEVELOPMENT has a team of food safety specialists available to assist you to assess and improve your food safety programs.

www.agriculture.alberta.ca/aha

Contact 780-427-4054
or toll free 310-0000.

Improving food safety programs is a good business decision as doing so can:

- enhance food safety, quality and consumer confidence;
- reduce waste and recalls; and
- open doors to additional markets.

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WHAT IS DURABLE LIFE?

'Durable Life' is the period of time that a food product will retain its wholesomeness, good taste and nutritional value when stored properly. It is not a guarantee of food safety. Durable life begins on the day a product is packaged for retail sale and is generally expressed in number of days. A 'best before' date is another way of expressing durable life. It states the date up until the unopened product will retain its durable life. It should be shown on the product along with proper storage instructions.

A 'packaged on' date is placed on products when they are packaged at the retail store and must be shown with durable life information.

A 'durable life' date is required on pre-packaged foods with a durable life of 90 days or less, with the following exceptions:

- Pre-packaged fresh fruits and vegetables;
- Pre-packaged individual portions of food served by restaurants, airlines, etc. with meals or snacks;
- Pre-packaged individual servings of food prepared by a commissary and sold in automatic vending machines or mobile canteens; and
- Pre-packaged donuts.

Storage Tips

Cold Storage

- Keeping a temperature log for a storage unit will identify when the unit is not functioning properly and if foods have been in the danger zone.
- Label all items or pallets with the product name and the date that they were placed in storage. Use labels that will not fall off at cold temperatures.
- Keep similar items together. For example, store all meat together in one section, vegetables in another and liquids in another.
- Keeping coolers and freezers organized helps save time and energy by allowing quicker access to the food. Remember that the longer the cooler or freezer door is open, the more likely the temperature will change to unacceptable limits.
- Store partially-used ingredients in clearly labelled containers so that food can be identified. For traceability purposes, if the product is transferred from the original packaging, make sure you record the lot number.
- Inspect coolers regularly and remove products that are spoiled or have passed the suggested storage time.

Dry Storage

Dry foods, canned goods and high acid items generally have a low risk of bacterial growth, but even dried foods have a limited shelf life. To ensure the safety of your dry products, you should consider the following:

- Dry-storage rooms should be cool, dry, clean, brightly lit and well ventilated.
- Store food elevated off the floor in original packages or containers that are not easily damaged and that minimize access by pests. Place racks far enough from the wall to allow for cleaning and inspection.
- Humidity can affect the safety and quality of food products. A high humidity level can allow mould to develop while a low humidity level can lead to loss of flavour and texture. Humidity can be controlled through airflow.
- Never use food from cans or jars that are damaged, bloated or overflowing. These may indicate microbial growth.
- Some processing materials (e.g., nitrite) can become toxic when used improperly. They should be securely stored and separated from spice, seasoning and other ingredients.
- Try to maintain your stock at a reasonable volume to avoid excessive age of raw products and insect infestation (particularly in spices).
- Maintain pallets used for storage in a clean condition and in good repair. When wooden pallets are washed, make sure they are completely dry before use.
- If possible, store packaging materials away from raw materials and final product.



Allergen Storage

- Store allergen-containing ingredients in a separate section of your storage area away from other ingredients to prevent cross-contamination.
- If allergen dedicated storage area is not possible because of space constraints, store allergens at the bottom of your storage rack.
- If multiple allergens are identified in the facility, only similar allergenic ingredients should be stored above similar allergenic ingredients.
- Another way to prevent allergen cross-contamination during storage is to clearly identify raw materials to indicate they contain allergen (e.g., color-coded containers, allergen stickers, tags and labelled racks).
- In-use containers, especially the ones containing allergenic ingredients, should have individual transfer scoops. A common scoop for all containers is not a good practice. The best way to avoid misuse of scoops is to color code them.

Chemical Storage

- Cleaning substances, pesticides, paints, solvents, lubricants or other chemicals should be segregated from food items and stored in a room with limited employee access.
- Chemical storage areas should be clean, dry, brightly lit and adequately ventilated.
- All chemicals should be stored in appropriate containers that close tightly and are correctly labelled.

What is FIFO?

FIFO is a food rotation method that stands for First In/First Out (FIFO). Food rotation is an important part of a food safety system. The FIFO food rotation method helps ensure the safety of ingredients and final products, and reduces waste due to spoiled food.

The main steps in the FIFO process are:

1. Label incoming product with the date received or the 'use by' date. Stickers attached to the bottom layer of material will help ensure the pallet remains labelled even while the product is being used. Each label should include date received and, where applicable, the 'best before' date.
2. Store incoming materials and finished products to ensure older or 'first in' stock is used or shipped first.
3. Train all production, shipping and receiving staff to be aware of the in-plant FIFO procedures and their purposes.

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THAWING FROZEN PRODUCT SAFELY

Thawing frozen food is an important step because, if done improperly, harmful bacteria can grow presenting hazard to the finished product. Here are a few tips for thawing frozen materials safely:

- Ideally, frozen food should be thawed in a refrigerator or cooler.
- To improve air circulation and prevent the product from becoming insulated by the packing material, remove all packaging before thawing the food.
- Place a drip container under thawing product to catch liquid, thus preventing contamination of products or materials that may be stored underneath.
- Faster thawing must be done as rapidly as possible. The temperature of the product must be controlled to minimize the time that it is above 4°C. Acceptable active thawing methods include using microwaves, forced air and continuously circulating temperature controlled water. If these methods are used, it is important to document temperatures carefully. When using air for thawing, don't let the product surface temperature to become warmer than 7°C (44°F). When using circulating water, the water must be cold, potable and exchanged continuously.
- Monitor thawing to determine when all parts of the product are no longer frozen (i.e., they have reached a temperature of 0°C (32°F) or warmer. Once the product is completely thawed, process it immediately or store it at a temperature of 4°C (39°F) or colder.

