



FOOD SAFETY INFORMATION FOR BAKERIES

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Course summary

Pathogens commonly found in bakery products (p.9)

1. *Staphylococcus aureus*
 - Source: hand, nose and wound etc.
2. *Salmonella* spp.
 - Source: eggs, poultry and meat etc.
3. *Bacillus cereus*
 - Source: flour

Temperature and time control standard (p.10)

Temperature danger zone: **between 4°C and 60°C.**

The temperature of a chiller should normally be maintained at **4°C or below.**

The temperature of a freezer should be maintained at **-18°C or below.**

Perishable food ingredients (e.g. fresh cream) placed at room temperature for **more than four hours should be discarded.**

Preventive measures against food poisoning

Handwashing is the best way to avoid food poisoning. (p.17-p.18)

Ready-to-serve cakes (e.g. Tiramisu) **should not contain the yolks or the whites of raw eggs.** (p.14)

Bakery

In recent years, many bakeries introduce new varieties of bakery products in addition to the traditional ones in a bid to give their products a greater public appeal. Food poisoning cases may arise if the employees of bakeries fail to observe food safety practices when making new products.

The following course materials are designed to assist the industry in making safe bakery products and contain information on the risks involved and the appropriate control measures. The content of the course is divided into two parts:

Introduction to Food Safety Plan –

- Benefits of Food Safety Plan
- Basic steps for developing a Food Safety Plan

Food safety information for bakeries –

- Risk factors associated with bakeries
- Common pathogens
- Causes of food poisoning
- Preventive measures
- How to wash our hands

Benefits of Food Safety Plan

In recent years, Hazard Analysis and Critical Control Point (HACCP) system is recognized internationally as an effective food safety management system. The following is a Food Safety Plan (FSP) developed according to the principles of HACCP system.



Benefits of a Food Safety Plan :

- ✚ It is effective in preventing potential food safety problems.
- ✚ It protects public health and the reputation of food premises.
- ✚ It enhances consumers' confidence on food safety.
- ✚ It helps lower production costs in long run.



Basic steps for developing an FSP

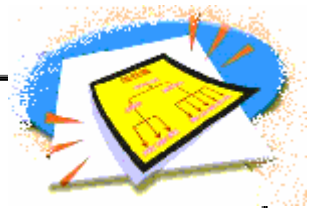
Stage 1: Planning



Set up a FSP team which is

- ▶ composed of one to five staff(s) who
 - ✧ have food safety knowledge and are familiar with the products as well as their processing procedures
- ▶ given adequate authorities and resources

Stage 2: Draw a flow diagram



- List every single step from purchasing raw materials to the end of production
- Draw different flow diagrams for different modes of operation

Stage 3: Develop a Food Safety Plan

Six Elements

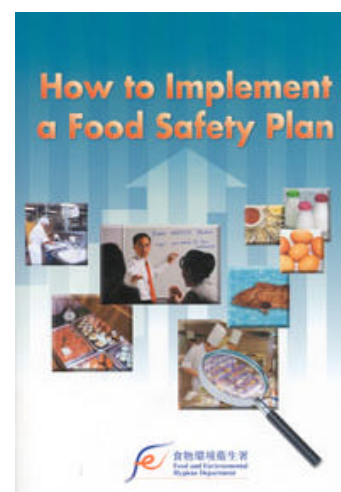
- (1) List potential food hazards of each production step
- (2) Identify preventive measures
- (3) Establish monitoring procedures
- (4) Establish corrective actions
- (5) Keep records
- (6) Check and review



With appropriate implementation of the above elements and application of basic hygiene practices (e.g. cleaning and sanitation, personal hygiene, pest control, waste disposal and staff training) during the course of production, potential hazards can be effectively prevented, thereby ensuring food safety.

* For details, please refer to the booklet "How to Implement a Food Safety Plan"

Copies of the booklet can be obtained by calling 2381 6096 or downloaded from the following website:
http://www.fehd.gov.hk/english/safefood/food_safety_plan/industry-safe.html



Risk factors associated with bakeries

1 Microbiological contamination of raw materials

- Raw eggs (including the shell, the yolk and the white) may contain *Salmonella* spp.
- Hams may contain *Staphylococcus aureus*
- Flour may contain *Bacillus cereus*

2 Production of high risk bakery products

For example:

- (A) Tiramisu which is made from raw eggs
- (B) Bakery products that will go through a number of manual procedures after baking (e.g. fresh cream cakes, swiss rolls etc.)
- (C) Pastries that have to be kept refrigerated (e.g. birthday cake)

3 Improper storage and display temperature

- Prolonged storage of perishable bakery products and their raw materials at room temperature results in continuous growing of pathogens

4 Contamination of bakery products by customers during display

- Customers use unclean utensils to pick bread
- Customers touch bread by hands

Pathogens commonly found in bakery products

The following are some pathogens commonly found in bakery products in Hong Kong:



Staphylococcus aureus

(skin, nose & wound etc. of food handlers)

Salmonella spp.

(Tiramisu which is made from raw eggs, & cut fruits)



Bacillus cereus

(Flour)

Causes of food poisoning relating to bakery products

There are two major causes of food poisoning attributable to the consumption of bakery products:

- (1) Microbiological contamination of food; and
- (2) Survival or growth of pathogens in bakery products.

Microbiological contamination of food



Use of raw materials from unapproved / unsafe source

Cross-contamination

- **Raw food** contaminate baked products
- **Handlers** contaminate bakery products
- **Utensils** contaminate bakery products

Infected food handlers

Survival or growth of pathogens in bakery products



Inadequate cooking of filling

Cakes contain raw eggs

Prolonged storage of perishable foods at temperature danger zone*

Improper hot-holding /chilling temperature

Improper handling of the unsold products

*temperature danger zone:

Perishable foods should not be kept at a temperature between **4°C and 60°C**.

Preventive Measures

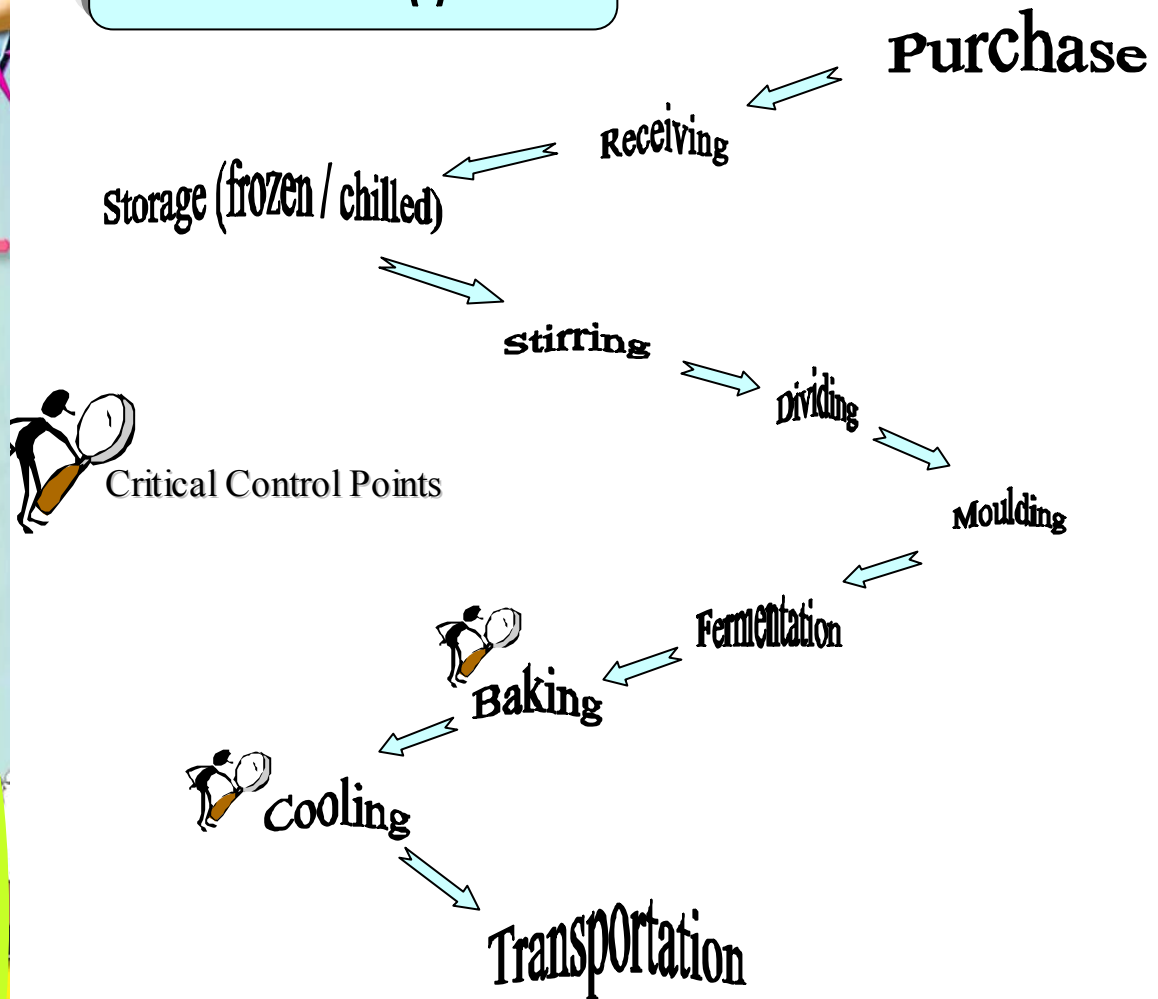
Based on the two major causes of food poisoning, we can identify the potential food safety problems during production and develop measures to prevent them from arising.

Two major causes:

- Cross-contamination
- Survival and growth of pathogens

In general, there are three different processes of making bakery products. The ir respective critical control points and preventive measures are identified and analysed as follows.

FLOW DIAGRAM (1) - BREAD



The following measures are for reference only. Preventive measures should be designed according to actual circumstances.

Procedures	Preventive Measures
Purchase	<ul style="list-style-type: none"> ➤ Buy only from approved, reputable and reliable suppliers. ➤ Specify temperature of products in transport (e.g. 4 or below for chilled foods). ➤ Use safe raw materials (e.g. pasteurized milk and cream).

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Receiving	<ul style="list-style-type: none"> ➤ Inspect hygiene conditions of delivery vehicles. ➤ Check conditions of raw materials. ➤ Check intactness of packaging. ➤ Check durability of raw materials, i. e. the “Use by” or “Best before” date. ➤ Check temperature of raw materials on arrival: 4 or below for chilled foods and entirely frozen for frozen foods. ➤ Store chilled food at 4 / frozen foods at -18 immediately (e.g. within 10 minutes).
Storage (Frozen / Chilled)	<ul style="list-style-type: none"> ➤ Store bakery products and raw materials separately. ➤ Cover / wrap raw materials well. ➤ Ensure packaging is intact. ➤ Avoid prolonged storage of raw materials (by adopting the “first-in-first-out” (FIFO) rotation method of storage). ➤ Monitor the temperature of freezer / chiller. ➤ Keep storage area for raw materials clean / hygienic.
Stirring, Dividing and Moulding	<ul style="list-style-type: none"> ➤ Wash hands thoroughly. ➤ Cleanse utensils thoroughly.
Transport	<ul style="list-style-type: none"> ➤ Cover / Wrap foods well. ➤ Clean delivery vehicles.



Critical

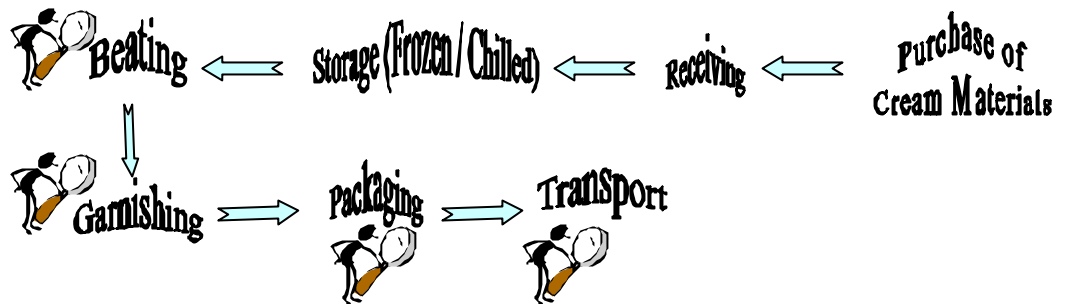
Control

Points

➤ Preventive Measures

Baking (Temperature and Time)	<ul style="list-style-type: none"> ➤ Bake bread thoroughly. (Normal temperature ranges between 190 and 230 and baking time is about 20 to 35 minutes.)
Cooling	<ul style="list-style-type: none"> ➤ Cool down products as soon as possible. ➤ Clean utensils to prevent cross-contamination. ➤ Pack products only when products are below 33 .

FLOW DIAGRAM (2) - FRESH CREAM CAKE OR TIRAMISU



Procedures	Preventive Measures
Purchase, Receiving, Storage	Measures for cakes are same as those for bread in Flow Diagram (1)



Critical Control Points

Preventive Measures

Whipping	<ul style="list-style-type: none"> ➤ Use cleaned and disinfected utensils. ➤ Observe good personal hygiene practices (wearing clean protective clothing) and remember to wash hands thoroughly. ➤ Beat the required amount of fresh cream only when needed. ➤ Cover and keep the beaten fresh cream in refrigerator and store separately from raw materials (raw foods). ➤ Beat fresh cream in a cool dry place.
	<p>Tiramisu</p> <ul style="list-style-type: none"> ➤ Use pasteurized egg products to make tiramisu (do not use raw eggs).

Bakery - Food Safety Information

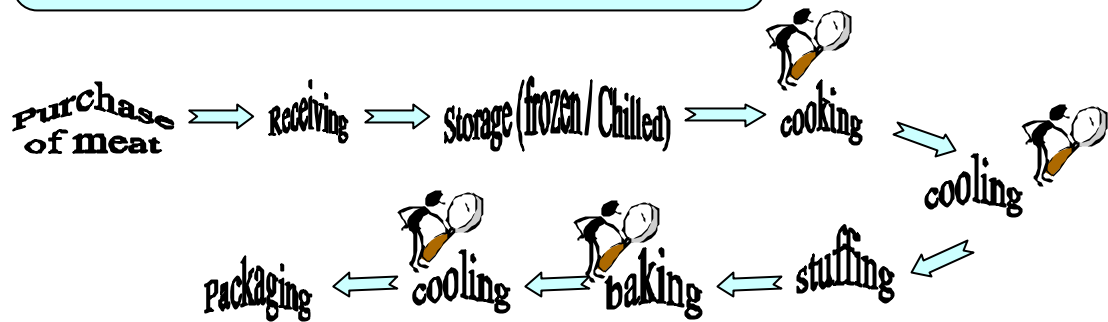


Piping	<ul style="list-style-type: none"> ➤ Observe personal hygiene (please refer to the preventive measures for whipping). ➤ Use disposable savoy bags. ➤ Put the rest of the fresh cream back into refrigerator after filling the savoy bag. ➤ Cover the fresh cream well and store separately from raw materials (raw foods). ➤ Change the savoy bag every 2 hours if piping takes a long time to finish.
Packaging	<ul style="list-style-type: none"> ➤ Pack products as soon as possible to avoid prolonged storage at room temperature. ➤ Use clean packaging tools and materials. ➤ Use only materials suitable for packaging bakery products. ➤ Store the packaged products in refrigerator immediately.
Transport	<ul style="list-style-type: none"> ➤ Cover / wrap the foods. ➤ Clean delivery vehicles. ➤ Use vehicles with chilling facilities to deliver cream pastry.



Pasteurized egg products

FLOW DIAGRAM (3) - MEAT PIE



Procedures	Preventive Measures
Purchase, Receiving, Storage	Measures for meat pie are same as those for bread in Flow Diagram (1).
Stuffing	<ul style="list-style-type: none"> ➤ Observe good personal hygiene practices (wearing clean protective clothing) and remember to wash hands thoroughly. ➤ Use cleaned and disinfected utensils.

Critical Control Points

Preventive Measures

Cooking	Cook the filling thoroughly. (Core temperature of filling should reach 75 or above).
Cooling, Cold Storage	<ul style="list-style-type: none"> ➤ Put the filling in a shallow container for cooling and the container must be clean. ➤ Cool the filling for 1 to 2 hours and then cover the filling before storing it in refrigerator. ➤ Store cooked stuffing separately from uncooked raw materials.
Baking (temperature and time)	➤ Meat pie must be baked thoroughly. (Core temperature of meat stuffing should reach 75 or above).
Cooling	<ul style="list-style-type: none"> ➤ Cool the product as soon as possible. ➤ Clean utensils to prevent cross-contamination. ➤ Pack product only when products are below 33 .

HOW TO WASH OUR HANDS

(Staff Training Materials)

“Frequent handwashing is one of the best ways to prevent the spread of infectious diseases”

Centers for Disease Control and Prevention

Why Wash Our Hands?

Good personal hygiene is very important for reducing the chances of food contamination during production. Cleaning hands seem very easy, but there are in fact many points worthy of our attention. Let's take a look at the following suggestions:

How to clean our hands?



Wet hands with warm running water.



Apply liquid soap.



Rub hands for 20 seconds.

(Wash all surfaces thoroughly, including forearms, wrists, palms, back of hands, fingers and finger nails).

If necessary, use a nail brush to clean nails. However, the brush must be kept clean and sanitary.



Rinse hands thoroughly.



Dry hands with paper towel.

(The paper towel can then be used to turn off the tap.)



Turn off the tap with the paper towel.

Comparison of Handwashing Facilities and Equipment

Warm water supply	Although there is no big difference in washing our hands with warm or cold water in terms of removing bacteria, we still suggest washing hands with warm water. The reason is very simple – it makes you comfortable when washing hands . Who wants to wash their hands with cold water in winter? In addition, warm water helps partially remove greasy stains . The appropriate temperature of water should be around 40 °C.
Sterilizing soap and ordinary soap	It is not important whether we use sterilizing soap or ordinary soap. What is the most important is when and how to wash our hands thoroughly.
Washing hands for 20 seconds	The longer the time we wash our hands, the better the result will be in removing bacteria (friction is the most essential). We therefore suggest that food handlers wash their hands for 20 seconds. How long is 20 seconds? It takes almost 20 seconds to sing the “Happy Birthday” song twice. Let’s give it a try!
Using nail brush	Nail brush helps clean finger nails during handwashing. However, the nail brush must be kept clean and sanitary.
Comparison of paper towel and electric hand dryer	Both are equally acceptable, but paper towel is more convenient and preferable because: (1) We can quickly dry our hands thoroughly on a paper towel; (2) The friction caused by wiping further removes the bacteria from our hands; (3) The paper towel can be used afterwards to turn off the water tap and push down the door handle to avoid contamination of cleaned hands. (Note: Hands which are wiped dry provide fewer chances of spreading diseases.)