Hygiene Guidelines on Time and Temperature Control

Objective:

In the production and operation of potentially hazardous foods, failure to properly control the temperature and time of the food during storage, handling, display, or transportation will increase the risk of food contamination by microorganisms. This guideline is intended to remind the food industry of the precautions for temperature and time control during the production and operation of potentially hazardous foods.

Scope:

The Guidelines applies to establishments engaged in production and operation of potentially hazardous foods, including premises for takeaway and dining-in, and buffet-style restaurants.

Definitions:

1. Potentially hazardous foods: Natural or synthetic foods with high protein or carbohydrate content that require temperature control, water activity above 0.85, and pH above 4.6 at 24°C, excluding food that is difficult for pathogenic microorganisms to grow and multiply quickly, such as unopened canned food, flour, unwashed eggs with intact shells, etc. (See Table 1 for examples of potentially hazardous foods.)
2. Temperature danger zone: the temperature range between 5°C and 60°C.

Content:

1. <u>Temperature control</u>
    1) To prevent the growth, multiplication and toxin production of pathogenic microorganisms that may exist in potentially hazardous foods, the potentially hazardous foods should be stored in a safe temperature range below 5°C or above 60°C during the production and operation process;
        - Keep potentially hazardous foods cold
            - Keep potentially hazardous foods in a refrigerated (below 5 ºC) or freezer (-18 ºC or below) cabinet according to their

characteristics;

- ➢ Appropriate space should be reserved to facilitate the circulation of cold air among food items stored in the refrigerated or freezer cabinet, and the food should not be stacked or squeezed for storage.

- Keep potentially hazardous foods hot (i.e. cooked food)
  - ➢ Cooked food that is not served immediately should be stored in insulated cabinet or water bath above 60ºC.

2) The storage temperature, cooling temperature, and thawing temperature of food should be properly controlled in the production and operation process to avoid storage, display and transportation in the temperature danger zone. (For details, please refer to Guidelines on Cooling and Reheating Food and Guidelines on Defrosting Food).

2. Time control

1) Appropriate temperature control measures can effectively reduce the risk of potentially hazardous foods being contaminated by microorganisms during the production and operation process. However, if it is unavoidable to expose potentially hazardous foods to dangerous temperatures during their preparation, mixing, plating, display, packaging or transportation in actual operation, the processing time of potentially hazardous foods at the temperature danger zone should be properly controlled to ensure safe consumption;

2) When handling potentially hazardous foods at the temperature danger zone, the 2-hour/4-hour rule should be followed* (see Table 2 for time control example):

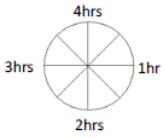
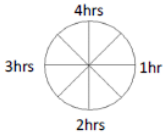
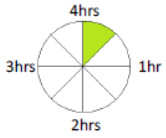
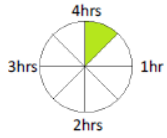
- Potentially hazardous foods stored at the temperature danger zone for less than 2 hours can be stored in the refrigerator or used immediately;
- Potentially hazardous foods stored at the temperature danger zone for 2 to 4 hours should be used immediately;
- Potentially hazardous foods stored at the temperature danger zone for more than 4 hours should be discarded.

** The time referred to in the 2-hour/4-hour rule is the total time that the potentially hazardous foods are exposed to the temperature danger zone without temperature control.*

Table 1 – Potentially hazardous foods include but are not limited to the following categories and examples:

Categories of potentially hazardous foods	**Examples**
Raw or cooked poultry and meat, and their semi-finished products	Chilled pork, barbecued pork, drunken chicken
Raw or cooked aquatic products (excluding live aquatic products)	Thai-style shrimp sashimi, raw oysters, boiled shrimps, sashimi
Cut fruits and vegetables	Cucumber in sauce, fruit platter, freshly squeezed fruit juice
Cooked rice and pasta	Sushi rice, spaghetti with tomato sauce
Dairy products and food containing dairy products	Milk, ice cream, fresh cream, mozzarella cheese
Foods containing eggs, beans, nuts or other protein-rich processed food	Fresh liquid egg, egg pudding, tofu, soy milk
Mixed dishes (including ready-to-eat foods that are served raw, cooked or partially cooked)	Sandwiches, Caesar salad, mango glutinous rice dumpling

Table 2 An example of time control in the process of making and selling sandwiches (the following example focuses on time control only and does not specify the production process of related products):

	Production time period	**Production process**	**Accumulated time in temperature danger zone**	
Cooking	7:00-7:30	Take the raw chicken out of the refrigerator and cook it thoroughly		0 hour
Cooling	7:31—8:00	* Cool the cooked chicken from 75ºC to 20ºC within half an hour		0 hour
Preparation	8:01—8:30	Slice the chicken and assemble sandwiches at room temperature		0.5 hour
Storage	8:31—10:00	Store the sandwiches in a refrigerator below 5ºC		0.5 hour
Serving	10:01:-13:30	Sell the sandwiches at room temperature		4 hours
Disposal	After 13:30	The sandwiches have been stored at room temperature for more than 4 hours and should be discarded	More than 4 hours	

* *A correct cooling process is an appropriate temperature control measure, so the time used for the process is not included in the time exposed to the temperature danger zone.*