NOVA SCOTIA

NOVA SCOTIA FOOD RETAIL & FOOD SERVICES CODE

Environment and Climate Change

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Nova Scotia Food Retail and Food Services Code

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1.1 Introduction

Millions of Canadians get sick every year from foodborne illnesses. Foodborne illness can affect us all but it can be very serious and even life-threatening to some consumers, especially pre-school children, older adults, pregnant women and their unborn child and those with impaired immune systems.

Food and beverage establishments can be the source of a foodborne illness in many ways. For example, they may not store foods at the right temperature or cook them properly, or the equipment they use may be contaminated. The people who handle the food can also pass along a foodborne illness if they do not practise good personal hygiene, like washing their hands.

Foodborne illness linked to a food establishment may lead to more than sick customers. It can also result in the establishment losing sales, getting a bad reputation, having to recall entire lines of product, being sued, and more.

That is why food establishments in Nova Scotia must follow the Health Protection Act and the Nova Scotia Food Safety Regulations.

Certified Public Health Inspectors will work with food establishments to help them understand what they are required to do under the act and regulations. These inspectors also visit food establishments to ensure they are operating in the safest way possible.

Food establishments can avoid being sources of foodborne illness by investing the time and money to give their employees proper food safety training, equipment, and facilities, and by following the act, regulations, and the Nova Scotia Food Retail and Food Services Code.

1.2 Purpose

Every food establishment in Nova Scotia must follow the Nova Scotia Food Safety Regulations. This includes establishments that

- sell food
- distribute food (for free or for a charge)
- package food
- prepare food
- serve food
- manufacture or process food

The regulations define the level of food-safety performance the food industry must meet. The Nova Scotia Food Retail and Food Services Code is a companion document to the regulations that provides the details of how to meet those requirements.

Together, the regulations and the code provide food safety standards that are based on science and are recognized by government, the food industry, and consumers.

1.3 Application

As stated above, the regulations set the standard for food safety in Nova Scotia, and the code is the detailed road map of how to reach those standards.

The code covers everything from how a facility should be constructed and designed, to toilets and handwashing stations, proper temperatures for foods, details about packaging, employee training, and much more.

The code is based on the best and latest information that was available at the time it was developed. New technology, equipment, or food processing methods may become available in the future that are not covered by this version of the code. If an operator wishes to use a new technology or process, and can provide sound, scientific evidence that it meets the regulations, it may be allowed.

1.4 Scope

a. The code applies to the following retail and food establishments:

i. full service restaurants;
ii. quick service restaurants;
iii. food service operations in institutions, including hospitals and schools;
iv. bakeshops, butchers, and delicatessens;
v. grocery and convenience stores;
vi. other food establishments, such as markets, mobile food service units and temporary food events, and vending operations.

Some retail and food establishments do not have to follow the code. These are listed in the Nova Scotia Food Safety Regulations.

b. The code includes information and guidelines to help operators in the food service and food retail industries safely operate their establishments.

c. The definitions found in this code are the same as those found in the Nova Scotia Food Safety Regulations and other applicable regulations. (Refer to Section 1.7 of this code.)

1.5 Guiding Principles

a. Everyone in Nova Scotia shares the responsibility for keeping the food that is produced and sold in our province safe. This includes operators of food establishments and their workers, as well as consumers and government.

b. i. The retail and food service industries have the primary responsibility of ensuring the food they produce is safe. This includes giving consumers enough product information so they can decide if a food is right for them. (For example, the product information may state if a food has an ingredient to which many people are allergic, such as peanuts. Or whether a food is kosher, halal, or vegan, etc.)

ii. Consumers have a right to know how their food was produced and what is in it. Once they have that information, they are responsible for choosing foods that are right for them. They are also responsible for handling their food safely.

iii. Government is responsible for

- setting and enforcing standards for food health and safety that are based on sound scientific principles,
- ensuring that the industry provides accurate food product information, and
- providing health and food safety information to consumers and to industry.

1.6 Objectives

The code's overall objective is to ensure that the foods produced, served, and sold by food retail and food service sectors are safe.

The code contains these other objectives, as well, that will be achieved when everyone follows it:

a. Members of the food industry and consumers will have a better understanding of how to safely handle food.

b. Members of the food industry will understand the regulations and know how to apply them.

c. Food retail and food service industries will all meet the minimum for food health and safety practices.

d. Members of the food industry and government will be able to communicate clearly with each other about food safety and will commit to working together to reduce risks.

e. Information about best practices will improve and will be added to existing inspection, auditing, and education programs.

1.7 Definitions

Definitions of common terms contained in the *Nova Scotia Food Retail and Food Services Code* are listed below.

Act:	The Nova Scotia Health Protection Act unless otherwise stated.
Adulteration:	The addition of any foreign or inferior substances to a food or food ingredient that makes it corrupt, debased, or impure.
Applicant:	One who applies for a permit or licence.
Clean:	To render free from food residues and other foreign material.
Code:	The *Nova Scotia Food Retail and Food Services Code*.
Communicable Disease:	A disease, due to a specific infectious agent or its toxic products, that arises through the transmission of that agent or its toxic products (i) directly or indirectly from an infected person or animal, or (ii) directly or indirectly through the agency of a disease vector, an inanimate object or the environment.
Contamination:	An exposure of food to conditions that permit or may permit the introduction or the occurrence of any of the following: 1. a disease-causing micro-organism or parasite, 2. any biological or chemical agent, 3. foreign matter, residue, drugs or any other substance that may compromise food safety.
Corrective Actions:	Procedures to be followed when a deviation occurs from the Critical Limits, i.e., a violation or deviation at any of the Critical Control Points.
Critical Control Point:	A point, step or procedure at which control can be applied and a food safety hazard can be prevented, eliminated, or reduced to acceptable levels.

Critical Limit:	A criterion that must be met for each preventive measure associated with a Critical Control Point.
Equipment:	Includes items that are used in the operation of a food establishment. This includes (but is not limited to) dispensing units, stoves, ovens, deep fryers, ventilation systems, slicers, grinders, mixers, scales, cutting surfaces, tables, shelving, refrigerators, freezers, sinks, ice makers, trolleys, vending machines, dishwashing machines, and lighting systems.
Food:	Any raw, or processed substance, ice, beverage, milk or milk product, used or intended to be used for human consumption and an ingredient that may be mixed with food for human consumption.
Food Bank:	A not-for-profit organization that accepts donated food and operates with the exclusive intent of feeding the hungry, and receives, holds, packages, repackages or distributes food to be consumed off the premises, but does not process or serve food.
Foodborne Illness:	Sickness caused by the ingestion of food containing microbiological, chemical, or physical hazards.
Food Contact Surface:	The surface of equipment or utensils with which food normally comes into contact.
Food Grade:	In the case of packaging, any material that does not violate the provisions of Division 23 of the *Food and Drugs Regulations*. The document states (in part) that no person "shall sell any food in a package that may yield to its contents any substance that may be injurious to the health of a consumer of the food."
Food Handler:	Individual working with food, food equipment, utensils, or food contact surfaces.

Food Establishment:	Any premises, including a mobile, stationary, temporary or permanent facility or location and the surroundings under control of the same person, in which food is processed, manufactured, prepared, labelled, served, sold, offered for sale or distributed free of charge, dispensed, displayed, stored or distributed, but does not include a dwelling except a dwelling used for commercial food preparation Some examples include food processing and food service establishments, food retail, hospitals, long-term care homes, child-care facilities, and recreational facilities.
Food Recall:	The removal from further sale or use, or removal to correct, a marketed food product that poses a risk and/or contravenes legislation.
Game Animal:	An animal, the products of which are food that is not classified as cattle, poultry, sheep, swine, or goat. This includes reindeer, elk, deer, antelope, water buffalo, bison, rabbit, aquatic and non-aquatic birds, non-aquatic reptiles, and aquatic mammals or "wildlife" as defined in the *Wildlife Act R.S.N.S., C 504,S.2*.
Good Manufacturing Practices:	Activities within a food premises allowing for conditions that are favourable to the production of safe food (e.g., proper personal hygiene, sanitation and food handler training).
HACCP:	An acronym for Hazard Analysis Critical Control Point, which is a system that identifies, evaluates, and controls hazards that are significant for food safety.
HACCP Plan:	The document that defines the procedures to be followed to ensure the control of product safety for a specific process, raw ingredient, or recipe category.
Handwashing Station:	A hand basin provided with 1. hot and cold running water from a potable water supply, 2. soap in a dispenser, 3. a method of hand drying that uses single service products, such as sufficient single service towels in a dispenser, or other drying apparatus that is approved by the regulatory authority, and 4. a sign that explains proper handwashing procedures.

Health Hazard:	Means 1. a condition of premises; 2. a substance, thing, plant, animal or organism other than a human; 3. a solid, liquid or gas; 4. radiation, noise, vibration or heat; 5. an activity; or combination of any of them, that presents or may present a threat to the public health.
Mobile Food Service Unit:	A self-contained mobile unit, such as a vehicle or cart, from which food intended for public consumption is prepared/processed and/or served to the public with or without charge.
Operator:	A person who holds a permit to operate a food establishment.
Pathogen:	A disease-causing organism.
Permit:	A permit issued pursuant to Part II of the Health Protection Act.
pH:	The symbol for the negative logarithm of hydrogen ion concentration, which is a measure of the degree of acidity or alkalinity of a solution. Values between 0 and 7 indicate acidity and values between 7 and 14 indicate alkalinity. The value for pure distilled water is 7, which is considered neutral.
Potable:	Water that is safe to drink and meets the requirements of the Guidelines for Canadian Drinking Water Quality published by Health Canada.
Potentially Hazardous Food:	Food that has the potential to support the growth of pathogenic micro-organisms or the production of toxins. This includes any food that consists in whole or in part of milk or milk products, eggs, meat, poultry, fish, shellfish (edible mollusca and crustacea), or any other ingredients, in a form capable of supporting growth of infectious and/or toxigenic micro-organisms. This does not include foods that have a pH level of 4.6 or below and foods that have a water activity of 0.85 or less.

Process:	To substantially change or alter the appearance or nature of a food, to combine with an ingredient or additive, or to make foods ready-to-eat. Examples include (but are not limited to) washing, rinsing, thawing, heating, cutting, cooking, smoking, salting, canning, freezing, pasteurizing, and reprocessing of previously processed food.
Public Market:	A venue where organized groups of vendors gather on a regular basis in a common location to market food and other items for which they are responsible, under the direction of a public market organizer.
Ready-to-Eat Foods:	A food which is normally consumed without washing, cooking, or other preparation, or has been prepared into a form in which it is consumed without further processing.
Sanitize:	To reduce the number of micro-organisms to a level that does not compromise food safety by means of a chemical agent or physical method.
Service Dog:	A service dog that is in accordance with the Service Dog Act.
Shelf Stable:	Foods that can be safely stored at room temperature for a period of time. Generally, non-perishable products that do not require refrigeration until after opening. Generally food products with a water activity of 0.85 or less, and/or a pH of 4.6 or less are considered shelf stable.
Single Service:	An item that is designed and constructed for one-time, one-person use, after which it is intended to be discarded (e.g. tableware, carry-out utensils, stirrers, straws).
Solid Waste:	Garbage, refuse, debris, litter, and other discarded materials resulting from residential, commercial, and institutional activities.
Temporary Event Food Services:	A booth or structure erected to provide a food service in conjunction with a single event that operates for a period of 14 days or less within a 60-day period per location.

Utensil:	Includes kitchenware, tableware, glasses, cutlery or other similar items used in the handling, preparation, processing, packaging, displaying, serving, dispensing, storing, containing, or consuming of food.
Vending Machine:	A self-service device that dispenses servings of food in bulk or in packages without the necessity of replenishing the device between each vending operation.
Water Activity (Aw):	The ratio of water vapour pressure of a food product to the vapour pressure of pure water at the same temperature and pressure.

2.0 Construction, Design, and Facilities

2.1Site and Location

Sites for food establishments must be chosen that are free from conditions that might interfere with their sanitary operation:

a. Sites should have no land use conflicts or potential conflicts with adjacent sites.

b. Sites should be set reasonably apart from waste disposal facilities, incompatible processing facilities, and any offensive trades. Generally, a minimum setback of 30 m is recommended from potential sources of contamination. However, a greater or lesser distance could be accepted depending on specific site conditions.

Rationale
Surrounding facilities must not contaminate food. Conditions which might lead to contamination include excessive dust, foul odours, smoke, pest infestations, airborne microbial and chemical contaminants, and other similar conditions.

2.2 General Premises Design and Construction Specifications

2.2.1 Premises Design and Layout

a. Food establishments are to be designed such that food flow is in one direction (for example, from receiving, to storage, to preparation, to packaging/serving).

b. Incompatible areas or processes, particularly cleanup and chemical storage areas, must be reasonably separated from food preparations/processing areas.

Rationale
Unnecessary movement of food and personnel within the food establishment increases the likelihood of contamination and should be controlled as much as possible. If unsanitary operations are conducted in close proximity to sanitary operations, the likelihood of contamination is similarly increased. A properly designed and operated food establishment will minimize the opportunity for food to be contaminated.

2.2.2 Construction Plans and Specifications

a. Construction plans and specifications respecting the location, design, and construction of the facility are to be approved by Public Health Officers (PHOs) within the *Department of Environment and Climate Change* (ECC) before construction begins. The operator must contact any other applicable agencies for their approval.

b. With regard to alterations to existing facilities, if the alterations are major or involve items or equipment that are specified in the Food Code, the plans and specifications regarding the alterations are to be submitted to and approved by the PHO. Plans for minor alterations, such as the installation of shelves in a storeroom, do not have to be submitted for approval.

c. The term "alteration," and the context in which it is used in (b) above, means those alterations that normally require a building permit from the municipality, and involve the relocation, removal, or installation of equipment and facilities. If unsure, check with ECC PHOs.

d. "Restaurants," as defined in Nova Scotia Food Safety Regulations, must follow requirements for accessibility of entranceways, walkways, and washrooms.

2.3 Walls and Ceilings

a. Walls and ceilings in food preparation, processing, and storage areas must be

i. constructed of finishes such as tile, plaster, stainless steel, or other equivalent materials, that are smooth, impermeable, washable, and light coloured;
ii. kept in good repair;
iii. kept in a clean and sanitary manner;
iv. free from flaking materials; and
v. free of pitting and cracks.

b. Inserts for false ceilings must have a non-porous (smooth), washable, impervious finish in areas where food is prepared or stored.

Rationale
Properly finished walls and ceiling are easier to clean and, as such, are more likely to be kept clean. A light-coloured finish aids in the even distribution of light and the detection of unclean conditions, which can then be corrected.

2.4 Floors

Floors must be constructed of impervious materials, and, where applicable, sloped to allow for draining.

Rationale
Properly constructed floors facilitate cleaning and sanitizing. Impervious materials do not absorb water or organic matter, and sloping helps avoid pooling of liquids, which can lead to unsanitary conditions.

2.4.1 Dry Areas

a. In operating areas where the floor is not normally subject to moisture, the floor must be durable, impervious and easily cleanable, and non-slip.

b. The floor-to-wall joints should be coved. Generally, a gap of no larger than 1 mm is recommended.

2.4.2 Wet Areas

a. In areas where the floor is subject to moisture (such as food preparation or processing areas, walk-in coolers, washrooms, and areas subject to flushing or spray cleaning), the floor must be

i. durable, easily cleanable, and non-slip;

ii. constructed of an impervious material that is able to withstand regular wet washing, such as tile or epoxy resin;

iii. coved at the wall-to-floor joints, and sealed;

iv. smooth so as not to allow for pooling of liquids; and

v. sufficiently sloped for liquids to drain to adequately sized and constructed floor drains. (See Section 2.5 below). A minimum slope of 2 per cent or more is recommended.

b. All floors must be kept clean and in good repair.

c. Rubber or plastic mats, excluding carpet or other similar floor coverings applied to the floor, must be designed for easy removal, cleaning, and sanitizing, and made of a non- absorbent material.

d. Absorbent material (e.g., sawdust, cardboard, newspaper) use on floors is not acceptable.

2.4.3 Carpeting

Carpeting or similar material must not be installed as a floor covering in food preparation areas, walk-in coolers/freezers, storage rooms, janitorial/waste rooms, washrooms, change rooms, or other areas subject to moisture or wet cleaning. Where carpet is used in an operation, it shall be installed only in the dining or public areas.

Rationale
Sanitary food operation areas will minimize the risk of contamination of the food from environmental sources.

2.5 Floor Drains

a. Floor drains must meet all the plumbing codes, and must

i. effectively prevent accumulation of liquids;
ii. be cleaned out on a regular basis;
iii. be located so they are easily accessible, and equipped with removable covers that are flush to the floor; and
iv. be equipped with backflow preventers.

b. Drain lines must be sloped, individually trapped, and properly vented to outside air.

c. The drainage system must be constructed such that there is no cross-connection between the drains or drain lines, and

i. the water supply; or
ii. the food product lines or equipment.

Rationale
The accumulation of liquids on the floor of a food establishment can lead to unsanitary conditions, increasing the likelihood of contamination of food. Properly designed drains and drain lines can eliminate the accumulation of liquids.

Trapping and venting of plumbing, as well as other mechanisms preventing backflow, will prevent sewer gases and pests from entering the food establishment. The provision for the separation of floor drains from sewage drains is to prevent the contamination of the floor drains with human wastes, which can contain pathogenic bacteria. Fecal contamination of the floor drains increases the likelihood of contamination of the food establishment.

2.6 Stairs, Catwalks, and Mezzanines

Stairways must be

i. located so as to minimize the risk of food contamination; and
ii. constructed of materials that are impervious and easily cleanable.

Catwalks or mezzanines must

i. not be located over food preparation areas, or where splashing or dripping could pose a contamination risk;
ii. be constructed of solid masonry or metal construction; and
iii. be equipped, where appropriate, with raised edges of a height sufficient to prevent contamination from falling onto surfaces below.

Rationale
Stairs, catwalks, and mezzanines, whether over work areas of exposed food or near these areas, can act as a source of contamination.

2. 7 Lighting

a. Lighting and lighting fixtures must be designed to prevent accumulation of dirt and be easily cleanable.

b. Food establishments must be supplied with sufficient artificial light to ensure the safe and sanitary production of food and to facilitate cleaning of the premises. Unless otherwise specified, the minimum lighting intensities shall be

i. 110 lux (at a distance of 89 cm [3 ft.] above the floor) in walk-in coolers, dry food storage areas, and in all other areas and rooms during periods of cleaning;

ii. 220 lux (at a distance of 89 cm [3 ft.] above the floor) in areas where fresh produce or packaged foods are sold or offered for consumption; areas used for handwashing, ware washing, and equipment and utensil storage; and in toilet rooms; and

iii. 540 lux at the surface where a food handler is working with unpackaged potentially hazardous food or with food utensils and equipment such as knives, slicers, grinders, or saws where employee/worker safety is a factor.

c. Except as otherwise specified, lighting fixtures must be shielded with shatter-proof coverings in areas where there is exposed food, equipment, utensils, linens, or unwrapped single-service and single-use articles. Shielded lighting is not necessary in areas used only for storing food in unopened packages if

i. the integrity of the food packages cannot be affected by broken glass falling onto them; and

ii. the food packages are capable of being cleaned of debris from broken glass before the packages are opened.

d. Infrared or other heat lamps must be protected against breakage by a shield surrounding and extending beyond the bulb so that only the face of the bulb is exposed.

Rationale
Adequate lighting promotes cleanliness by facilitating the identification of unclean areas. Shielding of lights to prevent the contamination of food from glass fragments in the event of breakage is an essential public health protection measure.

2.8 Ventilation

a. Food establishments must be provided with adequate natural or mechanical ventilation to keep rooms free of excessive heat, steam, condensation, vapours, odours, smoke, and fumes.

b. Where mechanical ventilation systems are used, they must be designed and installed such that

i. they are sufficient in number and capacity to prevent grease or condensation from collecting on the walls and ceiling;

ii. the filters or other grease-extracting equipment are easily removable for cleaning and replacement if not designed to be cleaned in place;

iii. the exhaust ventilation hood systems include components such as hoods, fans, guards, and ducting which will prevent grease or condensation from draining or dripping onto food, food contact equipment or surfaces, utensils and linens, or single-service and single-use articles; and

iv. they are equipped with make-up air systems, installed in accordance with the National Building Code.

c. Mechanical ventilation systems shall be cleaned in accordance with frequencies stipulated in local fire or building codes, or as necessary as determined by a PHO.

d. The design and installation of mechanical ventilation systems must be approved by the local authority having jurisdiction.

Rationale
The air supplied to the food establishment must be of sufficient quality so as not to contaminate the equipment or the food. Unclean air, excessive dust, odours, or buildup of condensation or grease are all potential sources of food contamination. Buildup of various constituents in equipment, such as range hoods, also pose a fire hazard.

2.9 Storage Areas

Stored items must be protected from contamination such as water leakage, pest infestation, or any other unsanitary condition.

a. Food establishments require adequate storage facilities for all items required for operation, including food, food ingredients, equipment, and non-food materials such as utensils, linens, single-service and single-use articles, packaging, and chemical agents. Foods are to be stored in an area separate from all other items.

b. The following criteria must be applied to all storage areas:

i. Adequate shelving must be supplied in order that all materials may be stored off the floor. All food and food items must be maintained a minimum of 15 cm (6 in.) off the floor on racks, shelves, or pallets. Shelving must be at least 5 cm (2 in.) from the walls to allow for access, and permit easier visual inspection.

ii. Areas must be located in a dry, pest-free location.

iii. They must be constructed of materials that are durable and easily cleaned. Unsealed wood is not an acceptable finish for shelves, ceilings, and walls.

Note: Subsection 2.9(b) does not apply to storage of foods in chest-type freezers or upright refrigerators and coolers where it is impractical to provide a vertical space from the floor of the chest freezer or cooler. Likewise, pressurized beverage containers, cased food in waterproof containers such as bottles or cans, and milk containers in plastic crates may be stored on a floor that is clean and not exposed to floor moisture.

c. The facilities used for the storage of food, food ingredients, equipment and non-food materials such as utensils, linens, single-service and single-use utensils, and packaging must be designed and constructed so that they

i. are cleanable;
ii. are located in a clean and dry location;
iii. restrict pest access and harbourage;
iv. provide an environment that minimizes the deterioration of stored materials; and
v. protect food from contamination during storage.

d. These facilities may not be located

i. in areas used for the storage of soiled linens;
ii. in locker rooms;
iii. in toilet rooms;
iv. in garbage rooms;
v. in mechanical rooms;
vi. under sewer lines that are not shielded to intercept potential drips; or
vii. in the same room/vicinity as chemicals/pesticides.

e. Non-food agents such as cleaners, sanitizers, detergents, pesticides, and other similar products must be stored in an area that prevents the potential for cross-contamination with food, food ingredients, food contact surfaces, and non-food materials such as utensils, linens, single-service and single-use utensils, and packaging materials. Personal belongings of employees must be stored separately from food storage and food preparation areas.

f. Recyclables such as bottles and cans need to be stored in a sanitary manner that prevents the harbourage of pests.

g. Other materials that may be stored on the premises can also include items not directly related to the operation of the premises. This can include items such as landscaping tools, pesticides for use outside, and marketing materials (signs, posters, etc.). These items must be stored in a separate, designated area that prevents the potential for cross-contamination with food, food ingredients, food contact surfaces, and non-food materials such as utensils, linens, single-service and single-use utensils, and packaging materials and prevents the harbourage of pests.

Rationale
Contamination of food, food ingredients, equipment, and non-food materials can occur when improper storage facilities are used.

Separation of food and equipment from toxic and soiled materials ensures that the opportunity for cross-contamination is minimized. Additional information on the storage of chemicals and other poisonous materials can be found in ***Workplace Hazardous Materials Information System (WHMIS) guidelines****.*

A number of other environmental conditions can lead to contamination or food spoilage. For example, refrigeration condensers located in dry food storage areas can produce heat that may damage foods, including canned goods. Unhygienic practices, including poor employee hygiene, can cause contamination.

2.10 Water and Steam Supply

a. Water supplies must only be from an approved source, such as one of the following:

i. a public water system

ii. a private water system that is constructed, maintained, and operated to meet health requirements, and is approved by the provincial/regulatory agency as outlined in the *Water and Wastewater Facilities and Public Drinking Water Supplies Regulations* N.S. Reg. 166/2019

iii. a source registered with ECC where applicable

b. Hot and cold water, under adequate pressure and in sufficient quantities, must be provided to meet the peak demands throughout the food establishment. Hot water must be of sufficient temperature to effectively clean and sanitize. The minimum requirement for hot water in food establishments is 45 °C (113 °F).

c. Premises that are equipped with their own private water supply must have a written water sampling plan and protocol. Samples of the water must be tested for bacterial and chemical quality at an accredited laboratory at a frequency deemed necessary by the PHO.

Test results for potable water must meet or exceed the minimum health requirements as prescribed in the current publication of the *Guidelines for Canadian Drinking Water Quality*, published by Health Canada. A copy of all sample results for the past 12 months shall be maintained onsite for review by PHOs.

d. The use of non-potable water in a food establishment is prohibited.

e. Water and boiler treatment chemicals approved for use are listed in the *Reference Listing of Accepted Construction Materials, Packaging Materials and Non-Food Chemical Products* published by the Canadian Food Inspection Agency (CFIA) or must have a Letter of No Objection (LONO) issued by Health Canada.

f. In-line water treatment units (e.g, chlorinators, UV lights, mineral removal filters), where approved, must be maintained at all times to provide a potable water supply.

Rationale
An adequate water supply, in quantities that encourage cleaning and rinsing, is necessary to ensure effective cleaning and safe food processing operations. The water supply used in cleaning and other culinary operations must be of a safe and sanitary quality in order to avoid contamination of food equipment or food.

A properly constructed, maintained, and operated water distribution system is necessary to ensure the water supply delivered to the food establishment is not contaminated.

ECC must be contacted to determine if a water supply requires registration as outlined in the NS Water and Wastewater Facilities and Public Drinking Water Supplies Regulations.

2.11 Sewage and Solid Waste Disposal

a. Sewage disposal systems must meet all local or provincial requirements.

b. Disposal of sewage and solid wastes must be done in a sanitary manner that does not expose the food establishment or food products to potential contamination.

c. Requirements for the separation of various solid waste streams as outlined by municipal regulations and bylaws must be followed. Solid waste containers within the premises must be

i. sufficient in number and accessible;
ii. designed to minimize both the attraction of pests, and the potential for airborne contamination;
iii. identified as to their contents; and
iv. emptied when full or at least daily.

d. Solid waste/compost storage rooms and containers must be emptied, cleaned, and sanitized as often as necessary.

e. Solid waste/compost containers located outside the premises must be

i. equipped with covers and closed when not in use;
ii. maintained in a manner that does not attract pests; and
iii. cleaned regularly and emptied when full or at least two times per week; and preferably stored in a vermin-proof structure.

Rationale
The proper disposal of sewage and solid waste is critical in preventing the spread of pathogens in the food establishment. In addition, the sanitary disposal of both sewage and solid wastes and the maintenance of waste containers and facilities will minimize the presence of pests inside and outside the premises.

2.12 Plumbing System

a. The plumbing system conveying water and waste requires the approval of local or provincial building authorities.

b. Where water-conditioning devices such as water filters or screens are installed on water lines, they must be of a type that is approved by the regulatory authority and designed and installed according to the manufacturer's instructions. They must permit easy disassembly to facilitate periodic servicing and cleaning.

c. In order to prevent backflows through cross-connections, backflow prevention devices (e.g., air gaps, vacuum breakers) must be installed wherever required and in compliance with local plumbing/building codes.

Rationale
Cross-connections and backflows can contaminate the potable water supply.

2.13 Overhead Utility Lines

a. Utility lines, such as gas, electrical, sewage, and water lines, as well as heating ducts, must be suspended away from work areas or areas of exposed food to minimize the potential for contamination.

b. They shall exhibit no sign of flaking rust or paint.

c. Lines carrying contaminated or hazardous materials, such as sewer or floor drain lines, must be located sufficiently distant from any food product or food product contact surfaces to prevent any risk of contamination.

d. Lines must be

i. insulated, where appropriate, to prevent condensation;
ii. constructed and covered with a suitable material to minimize the buildup of soil;
iii. easily cleanable; and
iv. labelled or colour-coded.

Rationale
Conditions such as dripping condensation or excessive dust from overhead utility lines can be a source of contamination when the lines are suspended over work areas or areas of exposed food. The consequences of contamination due to leakage are significantly greater with lines carrying sewage, hazardous chemicals, or highly contaminated materials.

2.14 Handwash Stations

a. At least one handwash station must be provided in each food preparation area. Additional handwash stations may be required by PHOs within ECC. The station must comply with the provisions of the National Building Code.

b. Handwash facilities must

i. be located to allow convenient use by food handlers in the food preparation area, food dispensing and utensil washing areas, and constructed in such a way that avoids splashing of water into food or food contact surfaces;
ii. be accessible for the use of workers at all times;
iii. not be used for purposes other than handwashing;
iv. be provided with single-use soap dispensers (e.g., liquid soap) and single-use hand drying devices (such as paper towel in a dispenser), or other drying apparatus that is approved by a PHO;
v. be equipped to provide hot and cold, or pre-mixed warm running water set at a temperature of at least 38°C through a mixing valve or combination faucet;
vi. provide an adequate flow of water: if a self-closing faucet is installed, it must flow for at least 20 seconds without the need to reactivate the faucet;
vii. be equipped with a sign that explains the proper handwashing procedures; and
viii. be easily cleanable and maintained in a clean and sanitary condition.

c. If approved by a PHO within ECC, when food handling or food exposure is limited, alternative handwashing facilities may be provided.

Rationale
Proper use of handwashing facilities is essential for personal cleanliness and to reduce the likelihood of food contamination. It has been documented that improper handwashing is a major contributing factor in outbreaks of foodborne illness.

2.15 Toilet Facilities and Dressing Areas

a. i. At least one toilet must be provided for the **use of staff** in each food establishment. The facilities must comply with the provisions of the Nova Scotia Building Code.

ii. Washroom facilities may be required **for the public**. The number and construction of washrooms shall be determined in accordance with the Nova Scotia Building Code.

iii. Food establishments having a building footprint that does not exceed 93 m^2 (1,000 sq ft or less), and offer customer seating, may use the same washroom for staff and public. Those food establishments that exceed 93 m^2 (1,000 sq ft or more) must have a separate washroom for staff and at least one for public.

b. Toilet rooms for **staff** must

i. be completely enclosed and provided with a tight-fitting and self-closing door, with the exception of those washrooms that are designed for use by persons with disabilities (in all cases doors must be closed at all times);

ii. be equipped with a handwash station, including a liquid soap and paper towel dispenser;

iii. have handwashing notices prominently displayed;

iv. be located to allow convenient use to workers during all hours of operation;

v. provide hooks outside the facility to hang aprons, white coats, etc.; and

vi. be easily cleanable, well ventilated, and well lit.

c. Toilet rooms for the **public** must

i. be completely enclosed and provided with a tight-fitting and self-closing door, with the exception of those washrooms that are designed for use by persons with disabilities (in all cases doors must be closed at all times);

ii. be equipped with a handwash station, including liquid soap and paper towels in a dispenser or other drying apparatus that is approved by the regulatory authority;

iii. have handwashing notices prominently displayed;

iv. be located to allow convenient use to patrons during all hours of operation; and
v. be easily cleanable, well ventilated, and well lit.

d. Toilet rooms must not open directly into a food preparation or food storage area, and where toilet facilities are provided for the public, access to the washroom must not be through the food preparation areas or food storage areas.

e. Dressing areas must be provided if workers routinely change their clothes in the food establishment. Dressing areas must be

i. easily cleanable;
ii. well ventilated and well lit;
iii. provided with lockers or other suitable facilities for the storage of workers' possessions; and
iv. completely enclosed.

f. All plumbing must meet the applicable provisions of the provincial or local plumbing codes.

Rationale
Properly located and equipped toilet facilities are necessary to protect the equipment, facility and food from fecal contamination, which may be carried by insects, hands, or clothing. Toilet facilities that are kept clean and in good repair minimize the opportunities for the spread of contamination.

2.16 Janitorial Facilities

a. To provide for the cleaning requirements of the operation, every food establishment must be equipped with cleaning materials, equipment, and facilities, located away from food handling areas.

b. The service sink or curbed cleaning facility, equipped with a floor drain, must be conveniently located for the cleaning of mops or similar wet floor cleaning tools, and for the disposal of mop water and similar liquid waste.

c. Adequate storage facilities must be provided as necessary to store brooms, mops, pails, and cleaning compounds when not in use.

Rationale
Liquid wastes from wet floor cleaning methods are contaminated with micro-organisms and filth. A service sink or curbed cleaning facility with a drain allows for the sanitary disposal of this wastewater in a manner that will not contaminate the food and food handling areas. Designated

storage areas for brooms, mops, pails, etc., will assist in the sanitary operation of the premises during periods when they are not in use.

2.17 Exterior Openings

a. Exterior openings must be protected against the entry of pests. Examples include the following:

i. filling or closing holes and other gaps along the floor, walls and ceiling
ii. solid, self-closing, tight-fitting doors
iii. screen doors that open outward and are self-closing

b. If windows or doors are kept open for ventilation or other purposes, the exterior openings must be protected against the entry of pests by means such as the following:

i. screens (a screen size of 16 mesh to 25 mm [1 in.] is generally recommended)
ii. properly designed and installed air curtains
iii. other effective means to restrict the entry of pests

These provisions may not apply if pests are absent due to the location of the food establishment, weather conditions, or other limiting conditions.

Rationale
Pests may carry pathogenic organisms on and within their bodies. As the pests move about the operation, these pathogens can spread through the food establishment. Eliminating pests reduces the likelihood of contamination of both equipment and food.

2.18 Private Homes, Living or Sleeping Quarters

a. A private kitchen or living quarters is not suitable for use as a commercial food establishment. An administrator may exempt certain facilities as stated in Section 3(1) of *the Nova Scotia Food Safety Regulations*.

b. Living or sleeping quarters located adjacent to a food establishment must be separated from rooms and areas used for food preparation or storage by complete partitioning and solid self-closing doors.

Rationale
Private facilities are not generally built to meet commercial requirements for the preparation of food, or for the protection of food from contamination. Many municipalities have strict bylaws concerning commercial food preparation/storage within a private residence.

2.19 Temporary Event Food Service, Public Markets, and Mobile Food Service Units

For a variety of reasons, temporary event food service, public markets, and mobile food service units present some different challenges when it comes to design and equipment. ECC provides for more flexible requirements when it comes to these operations, while continuing to ensure that risks from health hazards are minimized.

2.19.1 Temporary Event Food Service

A temporary event food service is a booth or structure erected to provide a food service in conjunction with a single event that operates for a period of 14 days or less within a 60-day period per location. Events may include exhibitions, fairs, community festivals, seasonal holiday events, or similar organized community activities.

Specific requirements related to ensuring food safety must be met and a permit to operate a temporary event food service may be required.

Food Safety Guidelines Temporary Events are found in Appendix E and additional information may be obtained by contacting any ECC district office.

2.19.2 Public Markets

A public market is a venue where organized groups of vendors gather on a regular basis in a common location to market food and other items for which they are responsible, under the direction of a Public Market Organizer. This includes food sales at any market setting.

Food Safety Guidelines Public Markets are found in Appendix E and additional information may be obtained by contacting any ECC district office.

2.19.3 Mobile Food Service Units

A mobile food service unit is a self-contained mobile unit, such as a vehicle or cart, from which food intended for public consumption is prepared/processed and/or served to the public with or without charge.

Food Safety Guidelines for Mobile Food Service are found in Appendix E and additional information may be obtained by contacting any ECC district office.

2.20 Vending Machines

Vending machines, although technically regarded as "food establishments," often do not require the same level of construction and equipment as full-fledged food establishments. They do have some specific requirements to ensure the safe storage and dispensing of food and the prevention of health hazards.

2.20.1 Liquid Foods and Ice

In equipment that dispenses or vends liquid food or ice in unpackaged form, the delivery tube, chute, and orifice must be designed such that

a. splashes and drips (including drips from condensation) are diverted away from the container receiving the food (by means of barriers, baffles, or drip aprons);

b. tubes, chutes, and orifices are protected from manual contact (i.e., by being recessed);

c. where the item is dispensed, the equipment is provided with means to prevent back siphonage; and

d. delivery tubes, chutes, and orifices are protected from dust, insects, rodents, and other contamination by a self-closing door if the equipment is

i. located outdoors and is not protected from precipitation, wind-blown debris, pests, and other contaminants present in the environment; or

ii. available for self-service of food during hours when it is not under the full-time supervision of a food employee.

Rationale
For vending machines that dispense liquid food or ice, it is important to prevent the entry of condensate or splash, which may be contaminated, into the food product. Food contact surfaces that divert liquid food into the receiving container need to be protected from contact by customers/ people to prevent contamination of the food product. A self-closing door on outdoor machines or unsupervised machines further protects against accidental or malicious contamination.

2.20.2 Self-Service Beverages

a. Self-service beverage dispensing equipment must be designed to prevent contact between the lip-contact surface of glasses or cups that are refilled and

i. the dispensing equipment actuating lever or mechanism; and

ii. the filling device.

b. Beverage equipment that utilizes carbonation equipment (CO2) shall incorporate a back-flow, back-siphonage prevention device (i.e., check valves) to prevent the migration of the carbonated beverage into copper water supply lines.

Rationale
Through proper design of the dispensing equipment, contamination of the lip-contact surfaces of the refillable containers can be avoided, and the risk of cross-contamination reduced. As well, back-flow into water supply lines has resulted in incidents of copper poisoning after consumption of the dispensed beverage.

2.20.3 Beverages in Paper-Based Packaging

Vending machines designed to store beverages that are packaged in containers made from paper products shall be equipped with diversion devices and retention pans or drains for container leakage.

2.20.4 Low-Risk Foods

Vending machines that dispense pre-packaged foods that are not potentially hazardous (e.g., chips, pretzels, etc.) should be equipped with a self-closing door if the machine is

i. located outdoors and not protected from precipitation, wind-blown debris, pests, and other contaminants present in the environment; or

ii. available for self-service of food during hours when it is not under the full-time supervision of an employee.

Rationale
A self-closing door is required on vending machines that are unsupervised or located outdoors to protect food inside the machine from sources of contamination.

2.20.5 Potentially Hazardous Foods

A machine vending potentially hazardous food must have an automatic control that prevents the machine from vending food if there is a power failure, mechanical failure, or other condition that results in an internal temperature that cannot maintain the food temperature required in Section 3.3 of this code.

NOTE: The automatic control must prevent the machine from dispensing food until it is restocked and can maintain food at required temperatures.

Rationale
Vending machines require a "fail-safe" device that would prevent the dispensing of potentially hazardous foods in the event of mechanical or power failures which could subject them to temperature abuse.

2.20.6 Can Openers/Stirring Mechanisms

Cutting and piercing parts of can openers on vending machines must be protected from manual contact, dust, pests, and other contamination. Both openers and stirring mechanisms must be cleaned on a regular schedule.

Rationale
Cutting and piercing parts of can openers on vending machines come in direct contact with the canned food product and, if not protected, may contaminate the vended food product.

3.0 Control of Food Hazards

3.1 Control Measures

3.1.1 Supervision

a. The operator of a food establishment shall provide effective supervision in implementing safe food practices, addressing potential food risks, and, where necessary, taking appropriate corrective action.

b. Trained supervisory personnel shall be accessible onsite at all times during food service operations. Refer to Section 6.0: Training and Education.

Rationale
The effectiveness of any management system is only as beneficial as an organization's capacity to implement it. It is essential that knowledgeable supervisory staff are available and accessible during all hours of operation to respond to various food hazard concerns and to apply corrective actions.

3.1.2 Management Systems

The objective of a food safety management system is to ensure control of the potential hazards in the food establishment.

a. An operator of a food establishment shall ensure that a food safety management system is in place and practised so that the potential for contamination of foods (whether by chemical, physical, or biological agents, or by allergens) during critical phases of food processing operations is effectively controlled and minimized.

b. Operators must prioritize their resources to ensure higher-risk procedures, including improper cooling, advance preparation, contamination by infected workers, inadequate reheating for hot holding, improper hot holding, cross-contamination, and improper cooking, are addressed by the food safety management system described below.

c. The food safety management system should

i. identify all possible health hazards related to food;

ii. identify critical control points in the production and processing of food products with potentially hazardous ingredients (including raw ingredients) that could contaminate other food;

iii. establish critical limits for each critical control point;

iv. identify procedures to regularly monitor critical control points on the critical limits;

v. include corrective actions and procedures to follow when deviations from critical limits occur;

vi. record all exceptions to the procedures/specifications that impact food safety; and

vii. establish verification processes, as appropriate.

Rationale
In food establishments, it is necessary to outline specific procedures for product safety. Each food product has its own specific risk characteristic that is based upon scientific data.

The potential for biological, chemical, and physical hazards may vary considerably from one food product to another. Specific hazards, as well as allergens (see Appendix C), have the potential to cause an adverse health effect and need to be identified, as do the preventive measures for their control.

The principles listed above are elements of an HACCP program and are an effective means of controlling health hazards. In those premises where the risk of foodborne disease outbreak is lower, and the cost and resources necessary to implement the management system outweigh the benefits, the operator may wish to institute an alternative management system. By doing so, the operator needs to understand and recognize the operations that represent the most important and immediate health risks and know how to manage them.

3.1.3 Control Principles

a. The principles listed in Section 3.1.2 regarding hazard analysis and the identification of critical control points are an effective means of controlling food hazards, particularly in a food processing organization. However, the operations of a food establishment are very different from that of a food processor. For example, a food establishment can process a large number of food items simultaneously while a food processor generally processes one or two items at a time. The application of this type of management system may need to be modified in a food establishment.

The requirement for the application of this type of management system in a food establishment should be balanced by a number of factors including the following:

i. Is the food establishment capable of instituting this type of management system for foods being served? This will be dependent on a number of factors including the level of technical expertise of the operator, the number and variety of menu items served, and the type of processes used.

ii. What is the public health risk of the foods being served in the food establishment? There are several factors that will determine the level of risk including the following:

- Who are the predominant customers or clientele of the food establishment?

° Consumers who are considered high risk include the elderly, young children, and immunocompromised individuals. These consumers will have a lower resistance to foodborne illness and may have more severe outcomes from illness.

° Does the type of operation increase the level of risk? Types of operations that can be considered high risk include

- large-volume operations
- full-service kitchens
- food establishments with a large menu item list
- food establishments that prepare foods with complicated or multi-step recipes
- catering operations

° What is the level of food safety knowledge of the operator and the food handlers? Individuals with little or no knowledge can increase the level of risk at the food establishment.

° Does the food establishment have adequate equipment for the types of processes or volumes of food being processed (e.g., cooling capacity, cold storage capacity, hot holding capacity, etc.)?

° Are the processes that are being used those that are known to contribute to foodborne illness (e.g., bulk cooling, preparation of menu items well in advance of serving, bulk cooking, simultaneous preparation of raw and cooked foods, etc.)?

Food establishments that are determined to be high risk would benefit from the management system described in Section 3.1.2

b. In those food establishments where the risk of foodborne disease outbreak is lower, or the cost and resources necessary to implement the management system outweigh the benefits, the operator may wish to institute one of the alternative management systems described below:

- **For small operations with a limited number of menu items and simple processes** (e.g., cook/serve), the operator should have a good knowledge of the hazards and the critical control points of the process, and implement some monitoring of the critical control points.
- **For larger operations with several menu items**, the operator should prioritize the menu items based upon low, medium, and high risk of causing a foodborne illness. The operator should then concentrate available time and resources into monitoring critical control points on the high-risk items.
- **For larger operations with several menu items and processes**, the operator should concentrate on high-risk processes (e.g., cooling and cooking) rather than identifying high-hazard activities for individual foods. By controlling and monitoring a process, such as cooling, all foods that are prepared using the process will be handled safely.

The above alternatives are only examples of management systems that can be considered. There may be others that are appropriate. Not all food establishments can adhere to one particular management system. The objective of the management system that is used is to ensure control of the potential hazards in the food establishment.

Rationale
Operators need to determine the steps in each operation that require effective controls to eliminate hazards, or to minimize the probability of those hazards arising. For high-risk, potentially hazardous products, this includes establishing critical limits and a monitoring system, including record keeping, to ensure control, as well as a corrective action plan to be taken when deviations occur.

Risk-based management systems are widely accepted as an effective means of controlling food-related risks and minimizing the potential of foodborne illness outbreaks.

3.1.4 Record Keeping

a. Records required pursuant to Section 3.1.2 (c)(vi) must be maintained and available for review for at least a three-month period.

b. Records relating to the implementation of corrective actions in managing an incident involving a potential risk to food safety or a departure from a critical control point must be retained for a period determined by ECC.

3.2 Incoming Material

3.2.1 Sources

3.2.1.1 Approved Sources

a. Food and food ingredients received at a food establishment must be obtained from sources that are approved by the regulatory authority having jurisdiction.

b. Section a) above applies to

i. potentially hazardous food and food ingredients such as meat, poultry, fish, egg and milk, and other foods capable of supporting the growth of pathogenic micro-organisms or the production of toxins;

ii. food in hermetically sealed containers; and

iii. game animals from commercial game farms that raise, slaughter, and process the animals as per ECC or other regulatory authority having jurisdiction.

3.2.1.2 Unapproved Sources

a. All food prepared in a private home or any other place that is not approved by ECC or other regulatory agency having jurisdiction shall not be used or offered for human consumption in a food establishment.

b. Wild game that has not been inspected and approved by ECC or other regulatory authority having jurisdiction shall not be used or offered for human consumption in a food establishment.

Rationale
Safe food starts with reliable suppliers who meet inspection standards of the jurisdiction's regulatory authority. These suppliers operate in a manner that prevents and controls contamination of food.

3.2.2 Inspection

3.2.2.1 Receiving

a. Food products received at a food establishment must be

i. from an approved source;
ii. of acceptable temperature;
iii. inspected for appearance, odour, colour, and condition of the packaging;
iv. in the case of canned foods, closely inspected for imperfections or damage, such as punctures, bulging seam defects, or stained labels; and
v. in the case of potentially hazardous foods, monitored and documented for its temperature.

b. Food products that are deemed acceptable shall be quickly moved into appropriate storage.

Rationale
Damaged or incorrectly applied packaging may allow the entry of foreign matter or other contaminants into the food.

3.2.2.2 Package Identification

a. All food products received at a food establishment must be properly packaged and labelled, according to requirements outlined in the Food and Drugs Act and Regulations and the Safe Food for Canadians Act and Regulations.

b. Best before dates are required on foods that will keep fresh for 90 days or less. “Best before” dates refer to the quality and shelf life of an unopened food product, not safety.

c. Shipping containers must be labelled with the common name, net quantity, name and address of the responsible party, and a list of ingredients. Labels of shipping containers such as those for commercial, industrial, or institutional use, (i.e., not for sale to consumers), are not required to be bilingual. Additional information that must be declared depends upon the type of food.

d. Invoices, receipts, and lot coding information must be retained to allow tracking of unlabelled products (such as carcasses, produce, or bakery products) or split lots.

e. All meat products must be labelled indicating the plant number(s) where meats have been slaughtered and processed. Pre-packaged meats must have labels on the package. Products packaged on site must have the label on the bulk package.

f. Seafood tags must be retained for a minimum of 90 days after use.

Rationale
Lot coding is essential, as it facilitates tracing products in the event of a recall. Invoices or receipts should be retained, since lots are often split and original labels removed, and since some food may arrive without labels (e.g., beef carcasses, produce, and bakery products).

Seafood tags hold important information, such as the harvester’s and dealer’s names, the date of harvesting, and their location, that would help for tracking in an event of a recall or foodborne illness outbreak. Some diseases such as hepatitis A and Vibrio vulnificus or parahaemolyticus that could come from contaminated seafood can take a month or longer for symptoms to develop, be diagnosed, and reported, which is why tags must be retained for 90 days. By saving the tags, the food establishment can also show that they obtained the seafood from a reliable source.

3.2.2.3 Disposition

a. Food products that have been inspected and found unclean, temperature abused, contaminated, damaged, or in any way unsafe, shall be rejected or segregated and shall not be available for consumption.

b. This would include (but is not limited to) the following:

i. packaging or food with signs of pest or rodent infestation
ii. shell eggs that are cracked
iii. badly dented canned foods
iv. leaking or broken product containers
v. food containers with torn or removed tamper-evident seals

3.3 Temperature Control

All temperatures are internal product temperatures, as measured by an appropriate food temperature measuring device, unless the product is frozen.

3.3.1 Frozen Foods

Frozen foods must be maintained at a temperature of 0°C (32°F) or less. To maintain their quality, a temperature of -18°C (0°F) or less is required.

3.3.2 Thawing

a. Potentially hazardous foods must be thawed quickly or in a manner that will prevent the rapid growth of foodborne pathogens.

b. Food may be thawed under the following conditions:

i. under refrigeration at 4°C (40°F) or less

ii. completely submerged with its original sealed packaging or in a hermetically sealed container in cold potable water which should be changed every 30 minutes, or under running cold tap water

iii. as part of the cooking process (but only when thawing is taken into consideration in determining cooking time)

iv. by microwaving and immediately transferring to conventional cooking equipment with no interruption in the process

c. When thawing foods using methods where the thawed portions of the potentially hazardous foods are above 4°C (40°F), the time period above 4°C (40°F), including the time for cooking preparation, or the time required to cool the potentially hazardous foods to below 4°C (40°F), shall not exceed four hours.

d. The only exception to the above procedures and temperature requirement is the thawing of frozen ready-to-eat seafood, which shall be maintained at 3.3°C (38°F) or less during thawing.

Rationale
Freezing prevents microbial growth in foods but will not destroy all micro-organisms. Improper thawing provides an opportunity for surviving bacteria to grow to harmful numbers and/or produce toxins. In seafood, the lower maintenance temperature of 3.3°C (38°F) prevents the growth and toxin production of C. botulinum.

3.3.3 Refrigerated Storage

All potentially hazardous food shall be stored at a temperature of 4°C (40°F) or less. This includes foods that have been prepared and cooled to be served cold.

3.3.4 Cooking Raw Foods of Animal Origin

a. Raw foods of animal origin and food mixtures containing raw foods of animal origin shall be cooked to heat all parts of the food to the minimum temperatures and for the minimum times outlined for different foods in Appendix B. Other times and temperatures may be acceptable if they are considered to be equivalent by ECC.

b. Raw foods of animal origin and food mixtures containing raw foods of animal origin should be stirred, to ensure that all parts of the food are heated to the minimum temperatures and for the minimum times outlined in Appendix B.

c. Where foods are allowed to be served raw or lightly cooked (such as raw oysters, steak tartare, carpaccio, shakes, or salad dressings made from raw eggs), the public must be notified of the increased health risk. A statement must be added to the menu to advise customers that consuming these high-risk foods may increase their risk of foodborne illness so they can make an informed decision.

Rationale
To kill micro-organisms, food must be held at required temperatures for specified times as outlined in Appendix B. Different species of micro-organisms have varying susceptibilities to heat. As well, food characteristics affect the lethality of cooking temperatures. Heat penetrates into different foods at different rates. High fat content in food reduces the effective lethality of heat. High humidity within the cooking vessel, and the moisture content of food, aid in thermal destruction. Heating a large piece of meat/poultry too quickly with a high oven temperature may char or dry the outside, creating a layer of insulation that could shield the inside from efficient heat penetration. To kill all pathogens in food, cooking shall bring all parts of the food up to the required temperatures for the correct length of time.

3.3.5 Hot Holding

Potentially hazardous foods that have been prepared, cooked, and are to be served hot, shall be held at a temperature of at least 60°C (140°F).

3.3.6 Cooling after Cooking

Potentially hazardous foods that have been cooked and are intended to be kept under refrigerated storage prior to serving are to be cooled from 60°C (140°F) to 20°C (68°F) or less within two hours and then from 20°C (68°F) to 4°C (40°F) or less within four hours (total six hours) as outlined in the parameters of Appendix B.

Rationale
Proper cooling requires removing heat from food quickly enough to prevent microbial growth. Excessive time for cooling of potentially hazardous foods has been consistently identified as one of the leading contributing factors to foodborne illness. During extended cooling, potentially hazardous foods are subject to the growth of a variety of pathogenic micro-organisms or production of microbial toxins which may cause illness.

If the cooking step prior to cooling is adequate and no recontamination occurs, all but spore-forming organisms such as Clostridium perfringens should be killed or inactivated. However, under poorly monitored conditions, other pathogens may be re-introduced. Thus, cooling requirements have been based on growth characteristics of organisms that grow rapidly under temperature abuse conditions.

Large food items, such as roasts, turkeys, and large containers of rice, take longer to cool because of the mass and volume from which heat must be removed. By reducing the volume of the food in an individual container, the rate of cooling is dramatically increased and opportunity for pathogen growth and toxin production is minimized. Commercial refrigeration equipment is designed to hold cold food temperatures, not cool large masses of food.

3.3.7 Cooling from Room Temperature

When potentially hazardous foods are prepared at room temperature and intended to be kept under refrigerated storage prior to serving, they shall be cooled from 20°C (68°F) to 4°C (40°F) or less within four hours as outlined in Appendix B. This includes those foods with ingredients that were canned or made from reconstituted foods.

3.3.8 Room Temperature Holding

a. Potentially hazardous foods that are intended for immediate consumption may be displayed or held for service above 4°C and below 60°C for no more than two hours, before which time they must be used, refrigerated, or frozen.

b. Potentially hazardous foods intended for immediate consumption and displayed or held for service at room temperature for more than two hours must be consumed within four hours from the time they were removed from temperature control or discarded.

c. Potentially hazardous foods that are intended for immediate consumption may be displayed or held for service above 4°C and below 60°C for no more than four hours, after which they must be discarded.

d. The foods referred to in subsections (a) and (b) above must be marked with the time at which they were removed from temperature control.

e. Subsection (b) above does not apply to foods that are processed to be consumed raw such as raw beef intended for steak tartare, raw fish and shellfish intended for sushi, and raw eggs or raw eggs preparations such as dressings.

f. If required by the regulatory authority, the operator shall notify them if time is used as a public health control.

Rationale
Potentially hazardous food (PHF) may be held without temperature control for short time periods because there will be no significant growth or toxin production possible in that limited time.

Food kept at room temperature for more than four hours must be discarded. Based on current practices in other countries where they have similar guidelines, as well as on a review of the relevant scientific literature and predictive modelling, it was determined that there is no significant increase in levels of pathogenic micro-organisms during a holding period of four hours at room temperature when prepared under sanitary conditions.

However, using time only as a public health control can only be achieved if the following criteria are met:

- Foods are clearly marked with the time at which they were removed from temperature control and with the time at which they must be discarded.
- Cooking and cooling processes must meet recommendations in the code.
- Foods that have been cooked are cooled safely, in accordance with Section 3.3.6.
- Foods are at 4°C or less, or at 60°C or above, at the starting time.
- Sanitary conditions in the premises are maintained to adequately protect food from contamination.
- A written food safety plan for each type of operation that addresses the use of time as control is in place and available to the regulatory authority for review upon request.

If an operator wishes to use the four hour/two hour rule for PHF that they have not cooked themselves or otherwise processed to ensure its safety, the business will need to know the temperature history of the food. If the food has been held, for any time, at room temperature before the establishment receives the food, this time must be deducted from the four hour/two hour rule.

The local regulatory authority may reject the use of time as a public health control if any of the requirements in these guidelines are not being met or if it is deemed that the operator's ability to maintain food safety on the premises is compromised.

3.3.9 Reheating Potentially Hazardous Foods for Hot Holding

a. Potentially hazardous foods that have been cooked, then cooled to 4°C (40°F) and are intended to be served hot must be reheated to 74°C (165°F) or higher in a manner that they will pass through the danger zone (4°C to 60°C [40°F to 140°F]) as quickly as possible. This time must not exceed two hours.

Rationale
Proper reheating provides a major degree of assurance that pathogens will be eliminated. It is especially effective in reducing the numbers of Clostridium perfringens that may grow in meat, poultry or gravy if these products were improperly held. The generation time for C. perfringens is very short at temperatures just below adequate hot holding. The potential for growth of pathogenic bacteria is greater in reheated foods than in raw foods. This is because spoilage bacteria, which inhibit the growth of pathogens by competition on raw products, are killed during cooking. Subsequent recontamination will allow pathogens to grow without competition if temperature abuse occurs.

3.3.10 Reheating Potentially Hazardous Food for Immediate Service

a. Potentially hazardous foods that have been cooked and then cooled to 4°C (40°F) once, can be served, if for immediate service, at any temperature, provided the time the food spends between 4°C and 60°C (40°F and 140°F) does not exceed four hours, after which time it must be discarded.

b. Potentially hazardous foods that have been cooked, cooled to 4°C (40°F), reheated and then recooled to 4°C (40°F) must be served, if for immediate service, after being reheated to 74°C (165°F) or higher. Liquids such as soup or gravy must be brought to a rolling boil.

Rationale
Many foods are at risk during preparation and service. As foods are thawed, cooked, held, served, cooled, and reheated, they pass several times through the "temperature danger zone," between 4°C and 60°C (40°F and 140°F). The amount of time that potentially hazardous foods are in the danger zone will have an impact on the shelf life of the product.

3.3.11 Use of Microwave for Cooking or Reheating

a. Potentially hazardous foods, cooked or reheated in a microwave, shall be rotated or stirred throughout or midway during cooking to compensate for uneven distribution of heat so that all parts of the food reach a temperature of at least 74°C (165°F). The food should then be allowed to stand covered for a minimum of two minutes after cooking to obtain temperature equilibrium.

Rationale
The rapid increase in food temperature resulting from microwave heating does not provide the same cumulative time and temperature relationship necessary for the destruction of micro-organisms as do conventional cooking methods.

Since cold spots may exist in food cooking in a microwave oven, it is critical to measure the food temperature at multiple sites when the food is removed from the oven, and then allow the food to stand covered to allow thermal equalization and exposure.

3.3.12 Freezing for Parasite Destruction

a. Fish that is intended to be consumed raw, including raw-marinated and partially cooked fish, shall either be

i. frozen by the supplier in the manner described below, and obtained from the supplier in a frozen state; or

ii. frozen within the food establishment, as described below.

b. The fish described in a) above must be frozen either

i. to a temperature of -20°C (-4°F) or below for seven days; or

ii. to a temperature of -35°C (-31°F) or below for 15 hours in a blast freezer.

Rationale
Foods of animal origin may contain foodborne disease micro-organisms including parasites. Because these foods are intended to be eaten in a raw state and not subject to cooking temperatures, they must be treated in a manner that will provide assurance that some disease-causing organisms, such as parasites, are effectively destroyed. Subjecting these foods to cold temperatures, as described above, is an acceptable method for parasitic destruction.

However, some species of tuna such as yellowfin tuna, bluefin tuna, and bigeye tuna, or farm-raised fish, such as salmon, that are raised in net-pens, or raised in land-based operations such as ponds or tanks, and are fed formulated feed that is free from live infective parasites are not subject to the freezing schedule requirements described under 3.3.12(b).

3.4 Water

3.4.1 Water in Contact with Food

Only potable water in either form of liquid, steam, or ice shall come in direct or indirect contact with food during food handling, processing, and cleaning. Potable water must conform to the standards outlined in Health Canada's *Guidelines for Canadian Drinking Water Quality*.

3.4.2 Steam

Non-potable water used for the production of steam must not come in contact with food or food contact surfaces.

3.4.3 Ice as an Ingredient

Ice added as an ingredient to any food must be made from potable water. Ice used for cooling exterior surfaces of food containers shall not be used as a food or food ingredient.

3.5 Preventing Contamination

3.5.1 Microbial Contamination

a. Access to food preparation areas must be restricted, as much as practically possible, to designated food handlers.

b. Where the public has access to food other than raw, unprocessed fruit and vegetables, or food specifically served to a customer by a worker of the food establishment, the food shall be protected from public handling and contamination by the use of packaging, display cases, or salad bar sneeze guards (food guards), and be provided with suitable utensils or effective dispensing methods.

c. Food handlers should avoid contact with exposed areas of ready-to-eat foods with their bare hands, and use, as much as practically possible, clean and sanitized utensils such as tongs, spatulas, disposable gloves, or other food dispensing apparatus.

d. Food shall be protected from cross-contamination by separating raw foods during storage, processing, preparation, holding, and display from ready-to-eat foods.

i. Ready-to-eat foods and raw fruits and vegetables under refrigerated storage must not be stored below raw meat, poultry, and fish products.

ii. Raw or unprocessed food shall be prepared in a way that does not promote contamination of ready-to-eat foods. This could include using colour-coded cutting surfaces or cleaning and sanitizing surfaces before reuse.

e. Raw fruits and vegetables shall be thoroughly washed in potable water to remove soil and other contaminants before being cut, combined with other ingredients, cooked, served, or offered for human consumption in ready-to-eat form. This does not apply to whole raw fruits and vegetables that are intended for washing by the consumer following point of sale.

f. Cleaning and sanitizing of food contact surfaces between uses shall be carried out as described in Section 4 of this code.

g. Food shall not come into contact with surfaces of utensils and equipment that have not been cleaned and sanitized in accordance with procedures described in Section 4 of this code.

h. When workers must taste the food, only cleaned and sanitized utensils shall be used, and the utensils shall be immediately cleaned and sanitized after tasting and prior to tasting another food or the same food.

i. Foods that have been previously purchased and returned to the retailer or food service operation may not be re-offered for sale to another consumer, unless those foods are low risk and are in their unopened original package (e.g., crackers, condiments).

Rationale
The food industry faces the threat that the food it serves may endanger workers or customers. Microbes are everywhere. Pathogenic micro-organisms pose the greatest danger by causing foodborne illnesses. Good policies and procedures for preventing microbial contamination serve as barriers to these disease-causing organisms.

3.5.2 Physical and Chemical Contamination, and Allergens

a. The operator of a food establishment shall ensure that food is stored, displayed, prepared, and served in a manner that prevents the food from becoming contaminated.

b. Non-food items must be stored in designated areas away from any food, food equipment, or food contact surfaces.

c. Food operators should be familiar with common food allergens that can be life threatening to some customers. If consumers have inquiries in regard to the presence of allergens in a food, it is suggested that they be provided with a list of ingredients (i.e., from the recipe, from the master package, and/ or from all packages used) and referred to their physician. Appendix C provides information regarding typical food allergies.

d. Foods may not contain unapproved food additives or food additives in excess of the amounts listed in Canada's Food and Drugs Act.

3.6 Packaging

3.6.1 Protection of Food Content

Food packages must be in good condition and protect the integrity of the contents so the food within is not exposed to adulteration, damage, or potentially harmful contaminants.

3.6.2 Food Grade Packaging

Packaging materials or atmospheric packaging gases, where used

i. must not cause harm to people exposed to them;

ii. must not pose a threat to the safety and suitability of food under the specified conditions of storage and use; and

iii. must be approved for use according to the CFIA's *Reference Listing of Accepted Construction Materials, Packaging Materials and Non-Food Chemical Products*, or a LONO issued by Health Canada.

3.6.3 Food Containers

a. The operator of a food establishment must ensure that only food-grade containers are used.

b. High-acid foods (pH below 4.6) must not be stored or cooked in containers coated with, made of, or containing the following:

i. lead or lead-based products, including lead-glazed ceramics, china, crystal, or pewter
ii. zinc, such as galvanized containers
iii. enamelware, which may chip and expose the underlying metal
iv. copper and copper alloys such as brass
v. cast iron

c. Cast iron may be used **only** under the following conditions:

i. as a surface for cooking

ii. in utensils for serving food, if the utensils are used only as part of an un-interrupted process from cooking through service

3.6.4 Reusable Packaging

Reusable packaging must be food grade, durable, clean, and, if required, able to withstand sanitizing.

3.6.5 Storage of Packaging Supplies

Packaging supplies shall be stored so as to be free of contact with hazardous materials.

3.6.6 Returnables, Cleaning-for-Refilling

a. Except as specified in (b) below, returned empty containers intended for cleaning, sanitizing, and refilling with food shall be cleaned, sanitized, and refilled only in an approved food establishment.

b. Food-specific containers for beverages may only be refilled in a food establishment if

i. the beverage is not a potentially hazardous food;

ii. the design of the container, the rinsing described in (iii) below, and the nature of the beverage, when considered together, allow for effective cleaning at home or in the food establishment;

iii. facilities for rinsing the containers with un-recirculated hot water under pressure are part of the dispensing system;

iv. the consumer-owned container returned to the food establishment for refilling is refilled only for the same consumer; and

v. re-usable containers are sanitized prior to re-use (e.g., commercially bottled water).

Rationale
Separating food from non-food items by creating designated storage areas will ensure that accidental contamination from foreign matter (dirt, broken glass and crockery, and other objects) and toxic chemicals (cleaning agents, sanitizers, detergents, pesticides) will be minimized.

Chemical contamination can occur during cooking or storage when certain metals contact high-acid foods. Potentially toxic metals include lead, copper, brass, zinc, antimony, and cadmium. Some foods that have been involved in metal poisoning are sauerkraut, tomatoes, fruit gelatin, lemonade, fruit punches, and carbonated beverages.

Damaged or incorrectly applied packaging may allow the entry of foreign matter or other contaminants into the food. Canned foods shall be closely inspected for imperfections or damage, such as punctures, bulging, or seam defects.

3.7 Transportation, Storage, and Distribution of Food Products

During all phases of transportation, storage, and distribution of food products, foods must be maintained in a sanitary condition.

3.7.1 Verification

Foods shall be routinely verified during transportation, storage, and distribution to ensure that

a. foods are protected from all possible forms of contamination;

b. foods are protected from all types of damage that may render the food unfit for human consumption;

c. a protective environment is provided to effectively control the growth of pathogenic or spoilage micro-organisms, such as safe holding temperatures of 4°C (40°F) or colder, or 60°C (140°F) or hotter; and

d. all temperature control equipment is suitable and maintained for the purposes intended.

3.7.2 Food Transportation, Storage, and Distribution Units

a. Food transportation, storage, and distribution units must be designed, constructed, maintained, and used in a manner that protects food products from being contaminated.

b. Food transportation, storage, or distribution units should be inspected to ensure they are free of possible contaminants and are suitable for the purposes intended.

c. Food transportation equipment that is intended to be in direct contact with food products must be constructed with non-toxic materials that are easy to maintain and clean. Examples include stainless steel and food-grade plastic containers. (See Section 4 of this code.)

d. Where both food and non-food products are transported, stored, and distributed together, procedures shall be in place to ensure that food products are not exposed to potential contamination from non-food products.

Rationale
Even if the food establishment does not directly transport or distribute food, stock received by a supplier may have been subject to contamination or temperature abuse while being delivered. The food establishment operator shall make every reasonable attempt to verify that the food supplies have been protected from contamination and temperature abuse. Off-site caterers and food establishments involved in the preparation and distribution of foods from centralized kitchens need to verify the food transportation, storage, and distribution units that they utilize, and in particular the temperature control systems of these units.

3.7.3 Handling and Transfer of Foods

a. Inspection of foods is required to ensure that any signs of contamination, deterioration of foods, or their container systems are observed.

b. Potentially hazardous foods must be monitored to ensure that proper temperatures are maintained during their transportation, storage, and distribution. Temperature recording devices, which produce a graphic temperature history of the food product and/or storage environment, should be used. Products should be checked upon being received and recorded if found to be in variance to required temperatures.

c. Food must not be handled or transferred in any way that may cause damage, contamination, or adulteration of the food. Food handlers responsible for filling display coolers shall be familiar with capacity levels and restrictions to loading such units, including volume limits, air flow, and temperature range variances, in order to maintain the minimum/maximum temperature needs of the products being placed therein.

d. In transferring potentially hazardous foods, foods must be quickly moved into temperature controlled storage to minimize the time in which they are in the danger zone.

e. Contaminated or adulterated foods must be discarded or disposed of. Damaged food container systems must be thoroughly examined and if the food is contaminated or adulterated, it must be discarded or effectively segregated until returned to the supplier or disposed of.

Rationale
The careful inspection of transported food will help to minimize the potential of contamination or deterioration of the food product. The prompt handling of foods being transported, stored, or distributed serves to minimize the amount of time that perishable foods are in the danger zone for growth of pathogenic organisms. Minimizing the amount of handling also minimizes the chance of contamination.

Adequate and properly functioning temperature control systems are essential. The routine use of temperature monitoring devices is necessary to confirm that potentially hazardous foods have been kept out of the danger zone for bacterial growth and toxin production.

3.7.4 Storage Procedures

a. Rotation of food stocks in storage areas must occur frequently to ensure that the “first-in-first-out” rule is followed. Food products removed from storage should always be the oldest food stocks present.

b. Refrigerated ready-to-eat potentially hazardous foods, prepared and held for more than

24 hours, shall be marked with the date of preparation or the “consume by” date. In general, refrigerated ready-to-eat potentially hazardous foods shall be discarded if not consumed within seven days from the date of preparation.

c. In transportation, storage, and distribution units, food should be stored off the floor and away from walls.

d. Upon receipt of food products, foods that require refrigeration should be stored first, frozen products second, and dry goods last.

Rationale
Proper rotation of food stocks limits spoilage and potential infestation/contamination by pests. Spills and spoilage can contribute to insect and rodent problems. Defective stock and/or their containers can be identified to the suppliers for appropriate replacement and followup.

3.7.5 Temperature Controls

a. All potentially hazardous foods requiring temperature controlled environments to extend their shelf lives or limit microbial growth shall be transported, stored, or distributed in equipment that consistently maintains those temperature controls.

b. Equipment units must have accurate and reliable temperature control and monitoring. All such units and devices must be calibrated and verified for accuracy.

c. Temperature control units must be maintained at temperatures that are consistent with Section 3.3 of this code.

Rationale
Temperature control is an effective way to prevent microbial growth, toxin production, and product deterioration. Temperature abuse during transportation, storage, or distribution increases the potential for foodborne illness.

4.0 Maintenance and Sanitation

A food establishment shall have effective systems in place to

i. ensure adequate and appropriate maintenance and cleaning of the facilities and equipment;
ii. control pests;
iii. remove wastes; and
iv. monitor and record the effectiveness of maintenance and sanitation procedures.

Rationale
Buildings, materials, utensils, and all equipment in a food establishment, including wastewater and refuse collection systems, all present a potential source of contamination of food and food products. These areas must be kept clean, free of pests, and maintained in good order.

Equipment, materials, and utensils that come into contact with foods, especially raw products (fish, meat, vegetables, and poultry) are generally considered to be contaminated by micro-organisms. These micro-organisms could contaminate other products. For this reason, it is necessary to have well-established programs in place to ensure that physical structures, including equipment and utensils, are maintained in a clean and sanitary condition. In order to achieve thorough sanitation, equipment may require frequent dismantling, cleaning, and sanitizing to prevent microbiological proliferation.

4.1 Equipment

4.1.1 Location

a. Equipment used in a food establishment must be located so that it

i. is not exposed to any sources of contamination unrelated to the normal operations of the food establishment;
ii. may be maintained, cleaned, and sanitized;
iii. may be inspected;
iv. may be properly vented when required; and
v. functions in accordance with its intended use.

b. Equipment used in processing, handling, and storage of foods (including single-service and single-use articles) must not be located in staff locker rooms, toilet rooms, garbage storage rooms, mechanical rooms, under sewer or water lines not shielded to intercept leakage/ condensate, under open stairwells, or any area where the equipment may become contaminated.

Rationale
Equipment used in a food establishment must be kept in a clean and sanitary condition to minimize the risk of contamination of food by equipment surfaces. When considering the location of equipment, several factors should be taken into account, including ease of cleaning, the intended use of equipment, and contamination prevention of equipment. Special care should be taken in the placement of food equipment that will be used to process, handle, or store food. Such equipment must not be located in areas where it may become contaminated, since the surfaces of the equipment will be coming in direct contact with food.

4.1.2 Fixed Equipment

Equipment that is fixed (i.e., not easily moved) must be either

a. sealed to adjoining walls, floors, and equipment; or

b. spaced in such a manner to allow for cleaning under and around equipment.

4.1.3 Design

a. Equipment and utensils must be designed and constructed to be durable and to retain their characteristic qualities under normal use and conditions.

b. If applicable, food service equipment and utensils must comply with international sanitation standards such as those administered by third parties such as NSF International, Underwriters Laboratories of Canada, Canadian Standards Association, and the American National Standards Institute.

Rationale
The food contact surfaces on equipment must be maintained in a clean and sanitary condition to prevent contamination of food. Therefore, these surfaces must be designed so they are smooth, non-absorbent and easily cleanable to eliminate harbourage for micro-organisms and other contaminants.

4.1.4 Food Contact Surfaces

Food contact surfaces of equipment must be

a. made of materials that are corrosion resistant;

b. made of materials that do not pass on colours, odours, or tastes to food and do not allow migration of unsafe substances into food;

c. smooth and non-absorbent;

d. free from breaks, cracks, open seams, chips, pits, and similar imperfections, should these be shown to impede effective cleaning and sanitizing;

e. free from sharp internal angles, corners, and crevices;

f. finished to have smooth welds and joints; and

g. accessible for cleaning, sanitizing, and inspection (by disassembly, if necessary).

Rationale
Furthermore, food contact surfaces must not introduce substances into food that are harmful or change food characteristics. Examples of surfaces that can be of concern include copper (due to copper migration into acidic foods or beverages), cast iron (due to heavy metals migration into the food), lead-glazed utensils, and galvanized metal.

4.1.5 Use of Wooden Food Contact Surfaces

a. Wood is not recommended for cutting, especially meat and poultry.

b. Wood is not normally acceptable as a food contact surface, except that hard maple or an equivalently hard, close-grained wood may be used for

i. cutting boards, cutting blocks, bakers' tables, and utensils such as rolling pins, doughnut dowels, salad bowls, and chopsticks; and,

ii. wooden paddles, which are used in confectionery operations for pressure scraping kettles when manually preparing confections at a temperature of 110°C (230° F) or above.

Only food grade sealants must be used as a preservative for wooden food contact surfaces.

c. Whole, uncut, raw fruit and vegetables and nuts in the shell may be kept in the wooden shipping containers in which they were received until these foods are used.

Rationale
The limited acceptance of wood as a food contact surface is determined by the nature of the food and the type of wood used. Moist foods may cause the wood surface to deteriorate, and the surface may become difficult to clean. In addition, wood that is treated with preservatives may lead to illness due to the migration of the preservative chemicals in the wood into the food. Therefore, only specific preservatives are allowed.

4.1.6 Non-Food Contact Surfaces

In order to minimize the likelihood of food contamination, non-food contact surfaces of food equipment must be

a. free from unnecessary ledges, projections, and crevices; and

b. designed and constructed to allow easy cleaning and to facilitate maintenance.

4.1.7 Clean In Place Equipment (CIP)

Equipment that is intended to be cleaned in place (CIP) must be designed and constructed so that

a. cleaning and sanitizing solutions circulate through a fixed system and contact all interior food contact surfaces;

b. the system is self-draining or capable of being completely drained of cleaning and sanitizing solutions; and

c. there are inspection access points to ensure all interior food contact surfaces throughout the fixed system are being effectively cleaned.

Rationale
The interior food contact surfaces of CIP equipment must be cleaned and sanitized to prevent contamination of food passing through the equipment. The equipment design should allow for interior surfaces to be inspected verifying that these surfaces are clean.

4.1.8 Filters and Grease Extraction Equipment

a. Filters or other grease extracting equipment must be

i. designed to be readily removable for cleaning and replacement if not designed to be cleaned in place; and

ii. cleaned regularly.

b. Exhaust ventilation hood systems in food preparation and ware washing areas, including components such as hoods, fans, guards, and ducting, must be designed to prevent grease or condensation from draining or dripping onto food, food contact surfaces, equipment, utensils, linens, single-service, and single-use articles.

c. Ventilation hood systems and devices must be sufficient in number and capacity to prevent grease or condensation from collecting on walls and ceilings.

d. Equipment that produces grease or steam must be properly located under exhaust ventilation hood systems.

e. If deemed necessary by the regulatory agency having authority (e.g., fire marshal, building inspector), exhaust ventilation hood systems must be equipped with fire suppression devices.

Rationale
Dripping grease can contaminate food being prepared on the cooking surface below. Grease buildup in food preparation areas can lead to pest infestation and contamination. Both the National Building Code and the National Fire Prevention Act 96 deal with ventilation and grease extraction in commercial premises.

4.1.9 Maintenance

Equipment shall be maintained in good repair, so that it functions in accordance with its intended use.

4.1.10 Maintenance of Cutting Surfaces

Surfaces such as cutting blocks and boards that are subject to scratching and scoring must be resurfaced if they can no longer be effectively cleaned and sanitized, or discarded if they are not capable of being resurfaced.

Rationale
Inadequately maintained equipment (e.g., chipped or cracked food contact surfaces) could result in food becoming contaminated.

4.1.11 Heating and Cooling Equipment

a. Equipment used to cook, heat treat, cool, store, or freeze potentially hazardous food must be designed and operated to achieve the required food temperatures as described in Section 3.3 of this code.

b. Equipment in the food establishment must be sufficient in capacity to maintain all potentially hazardous food at the temperatures specified in Section 3.3 of this code.

c. Heating and cooling equipment that impacts on food safety must be equipped with devices to monitor and control temperatures.

d. Temperature measuring devices shall be easily readable and accurate to 1°C (2°F) in the operating range and calibrated on a regular basis to ensure correct functioning. Calibration logs must be maintained for each piece of equipment, and records of corrective action taken as required.

Rationale
Maintaining all potentially hazardous foods at the required temperatures is an essential component of keeping food free from spoilage and disease-causing micro-organisms. Equipment used to store potentially hazardous foods at safe temperatures should have the capacity to raise or lower the temperature of the food to safe levels as rapidly as possible.

4.1.12 Food Temperature Monitoring Equipment

Food temperature measuring devices must be suitable for their intended purpose and for the food being monitored. They must not have sensors or stems constructed of glass unless they are encased in a shatterproof sleeve.

Temperature measuring devices must be easily readable and accurate to +/- 1.0°C (+/- 2.0°F) in the operating range and calibrated on a regular basis to ensure correct functioning.

Rationale
Temperature measuring equipment that has a glass stem should be encased in a shatterproof sleeve to prevent the contamination of food in the event the device breaks.

4.1.13 Containers for Waste and Inedible Substances

Containers for waste, byproducts, and inedible substances must be

a. specifically and properly labelled to identify the contents;

b. leak-proof;

c. constructed of an impervious material that is easy to clean or disposable; and

d. covered and securely closable, if appropriate.

Storage sheds or bins located outside must be vermin and insect proof and be located as to not cause a nuisance.

Rationale
To prevent foods from becoming contaminated, wastes, byproducts and inedible substances should be stored in containers clearly identified to prevent these substances from being mistakenly used as food. The container should be easy to clean to prevent the buildup of contaminants and should be covered and capable of being securely closed (if appropriate) to minimize objectionable odours and discourage pests such as insects, rodents, and birds.

4.2 Cleaning and Sanitation

4.2.1 Written Sanitation Program

Food establishments shall have a written sanitation program in place to monitor and control all elements in Section 4.0 of this code, which generally must

a. outline the parameters to be controlled in the food establishments to ensure safety of the food product;

b. include sanitation procedures for equipment, utensils, or refrigeration units that impact on food safety, which must specify the following:

i. areas, items of equipment, and utensils to be cleaned
ii. the designated food handler(s) responsible for the cleaning and sanitizing
iii. the chemicals and/or cleaning products (including concentrations) and process to be used
iv. the procedures used
v. the frequency of cleaning and sanitizing
vi. inspection and monitoring records

c. document that the sanitation program is monitored and its effectiveness verified; and

d. reflect the level of risk of the food products as determined by the management plan required in Section 3.0 of this code.

Rationale
The requirement for a written sanitation program is very similar to the requirement in Section 3.1.2 of this code for management principles to control food hazards. The objective of the sanitation program is to provide reasonable assurance that the food establishment is being cleaned and sanitized effectively and consistently.

While the detailed program described above may do this, the costs of such a detailed program in necessary time and resources should be balanced by the benefits. Particularly in smaller food establishments with simple operations, the cleaning and sanitation may be made up of only a few relatively simple steps. The complexity of the required written sanitation program should reflect the complexity of the cleaning and sanitizing of the operation.

4.2.2 Cleaning Frequency: Non-Food Contact Surfaces

Non-food contact surfaces of equipment must be cleaned at a frequency that will prevent the accumulation of dust, dirt, food residue, and other debris.

4.2.3 Cleaning Frequency: Food Contact Surfaces

a. Food contact surfaces of cooking equipment must be cleaned and sanitized at a frequency that prevents the accumulation of grease deposits and other residues.

i. Some types of equipment, which do not pose a public health risk (e.g., pizza pans, baking dishes), need not be cleaned at the frequency outlined in (a).

b. Equipment that is used continuously at room temperature for the handling of potentially hazardous foods (e.g., deli meat slicers) must be cleaned and sanitized at least every four hours and at the end of operation.

4.2.4 Cleaning of Food Contact Surfaces

Cleaning processes for all food contact surfaces in the food establishment must effectively remove food residues and dirt from the item.

Cleaning must involve

i. removing gross debris from surfaces;

ii. applying a detergent solution to loosen soil and bacterial film and hold them in solution and suspension;

iii. rinsing with water to remove loosened soil and residues of detergent;

iv. sanitizing (see Section 4.2.5 of this code); or

v. alternative methods of cleaning that effectively remove residues and debris.

Rationale
Food contact surfaces must be effectively cleaned to remove gross debris, soil, and bacterial film to prevent the contamination of food that may come into contact with the surfaces.

4.2.5 Sanitizing of Food Contact Surfaces

a. Once cleaned in the manner described above, the food contact surfaces shall then be sanitized by heat or chemical means.

i. Surfaces are effectively sanitized when, after application of a sanitizer on a cleaned surface, a 5-log reduction of disease-causing micro-organisms is achieved.

ii. The standard sanitizing methods contained in this code (see sections 4.2.6, 4.2.7, and 4.2.8) have been shown to attain this standard; alternative methods will be evaluated against achievement of this standard.

b. The food contact surfaces must be handled in a sanitary manner after sanitizing and then air-dried.

c. If applicable, they must be stored in a place and manner that prevents contamination.

d. Wiping cloths used for wiping food spills on food contact surfaces

i. shall not be used for other purposes, such as for wiping raw animal foods; and

ii. shall be routinely cleaned and, when not in use, kept in separate sanitizing solution which is maintained at a concentration as specified in Section 4.2.6.

Rationale
Food contact surfaces should be allowed to air dry after sanitizing; towel-drying or storage on a dirty surface or where splashing may occur may lead to re-contamination of the cleaned and sanitized surface.

4.2.6 Mechanical Dishwashing: Chemical Sanitizing Methods

Mechanical dishwashing machines employing chemical agents to sanitize tableware, utensils, and equipment shall apply the sanitizing solution as specified below:

a. A chlorine solution must have a minimum temperature based on the concentration and pH of the solution as listed in Table 1.

Table 1 :
Allowable minimum chlorine concentrations and temperature combinations for mechanical dishwashing:

Minimum Concentration mg/l (ppm)	Minimum Temperature pH 8 to 10	Minimum Temperature pH 8 or less
25	49°C (120°F)	49°C (120°F)
50	38°C (100°F)	38°C (100°F)
100	13°C (55°F)	13°C (55°F)

b. An iodine solution used as a sanitizing agent must have

i. a minimum temperature of 20°C (68°F);
ii. a pH of 5.0 or less, unless the manufacturer's specifications state otherwise; and
iii. a concentration between 12.5 mg/L and 25 mg/L.

c. A quaternary ammonium compound solution used as a sanitizing agent must

i. have a minimum temperature of 24°C (75°F);
ii. have a concentration of 200 mg/L or as indicated in the manufacturer's specifications; and
iii. be used only in water with a hardness concentration of less than 500 mg/L.

d. Other chemical solutions may be used as sanitizers if the regulatory authority is satisfied that such chemicals can safely achieve the desired results.

e. The operator shall check the temperatures of the water and the sanitizer concentration frequently to ensure that effective results are occurring. Sanitizer test kits/ strips should be obtained from the sanitizer/detergent supplier and stored for convenient use near the dishwasher.

f. Operators shall keep records of sanitizer concentrations and temperatures.

Rationale
The sanitizer concentrations, pH levels, and temperatures referenced here are contained in the US FDA Food Code and have been evaluated for effective results against the standard swab test referenced in Section 4.2.5 of this code.

4.2.7 Mechanical Dishwashing: Hot Water Sanitizing Methods

a. The temperature of the wash solution in spray type ware washers that use hot water to sanitize may not be less than the following:

i. for a stationary rack, single temperature machine, 74°C (165°F)
ii. for a stationary rack, dual temperature machine, 66°C (151°F)
iii. for a single tank, conveyor, dual temperature machine, 71°C (160°F)
iv. for multi-tank, conveyor, multi-temperature machine, 66°C (151°F)

b. Mechanical dishwashing machines employing water temperature as a means of sanitizing tableware, utensils, and equipment must ensure that dishware is exposed to clean rinse water for at least 10 seconds, at a temperature (measured at the manifold) of

i. 74°C (165°F) for single tank, stationary rack, single temperature machines; or
ii. 82°C (179°F) for all other machines.

c. Other water temperatures and contact times may be acceptable ***to achieve the necessary reduction in bacterial levels***. Surfaces are effectively sanitized when, after application on a cleaned surface, a 5-log reduction of disease-causing micro-organisms is achieved. Methods other than those described in (a) and (b) above must be approved by ECC.

Rationale
The temperatures referenced here are contained in the US FDA Food Code and have been evaluated for effective results against the standard swab test referenced in Section 4.2.5 of this code.

4.2.8 Manual Dishwashing

a. Where manual dishwashing procedures are used for cleaning and sanitizing, the manual dishwashing equipment must include the following:

i. a three-compartment sink of non-corrodible metal of sufficient size to permit complete immersion of the utensils to be sanitized, or as determined by the regulatory authority
ii. draining boards (if they are to be provided) of non-corrodible and non- absorbent material
iii. a thermometer capable of measuring temperatures between 0°C and 100°C (32°F and 212°F)
iv. testing equipment to determine the strength of any chemical used as the sanitizing agent

b. When relying on the manual method for washing and sanitizing, the operator shall use the following procedure. Dishes must be

i. thoroughly scraped clean of gross foreign materials and food scraps;

ii. washed in the first compartment sink in detergent solution capable of removing grease and food particles, and that is maintained at a temperature of not less than 45°C (113°F);

iii. rinsed in the second compartment sink in clean potable water maintained at a temperature of not less than 45°C (113° F);

iv. sanitized in the third compartment sink by immersion in one of the following methods:

- for at least two minutes in water at a temperature of at least 77°C (171°F)
- for at least two minutes in a chlorine solution of 100 to 200 mg/L available chlorine at a temperature of not less than 45°C (113°F)
- for at least two minutes in a solution containing a quaternary ammonium compound having a strength of not higher than 200 mg/L consistent with efficacy at a temperature of not less than 45°C (113°F)
- for at least two minutes in a solution containing not higher than 25 mg/L iodine at a temperature of not less than 45°C (113°F)
- in accordance with any other method that has been scientifically proven to produce results equivalent to those achieved by use of any of the methods in this sub-clause (iv)
- NOTE: The solutions used for the methods outlined in (iv) should be completely changed often enough to prevent utensils from becoming soiled and to maintain the bactericidal effect of the solution.

v. air-dried, if possible.

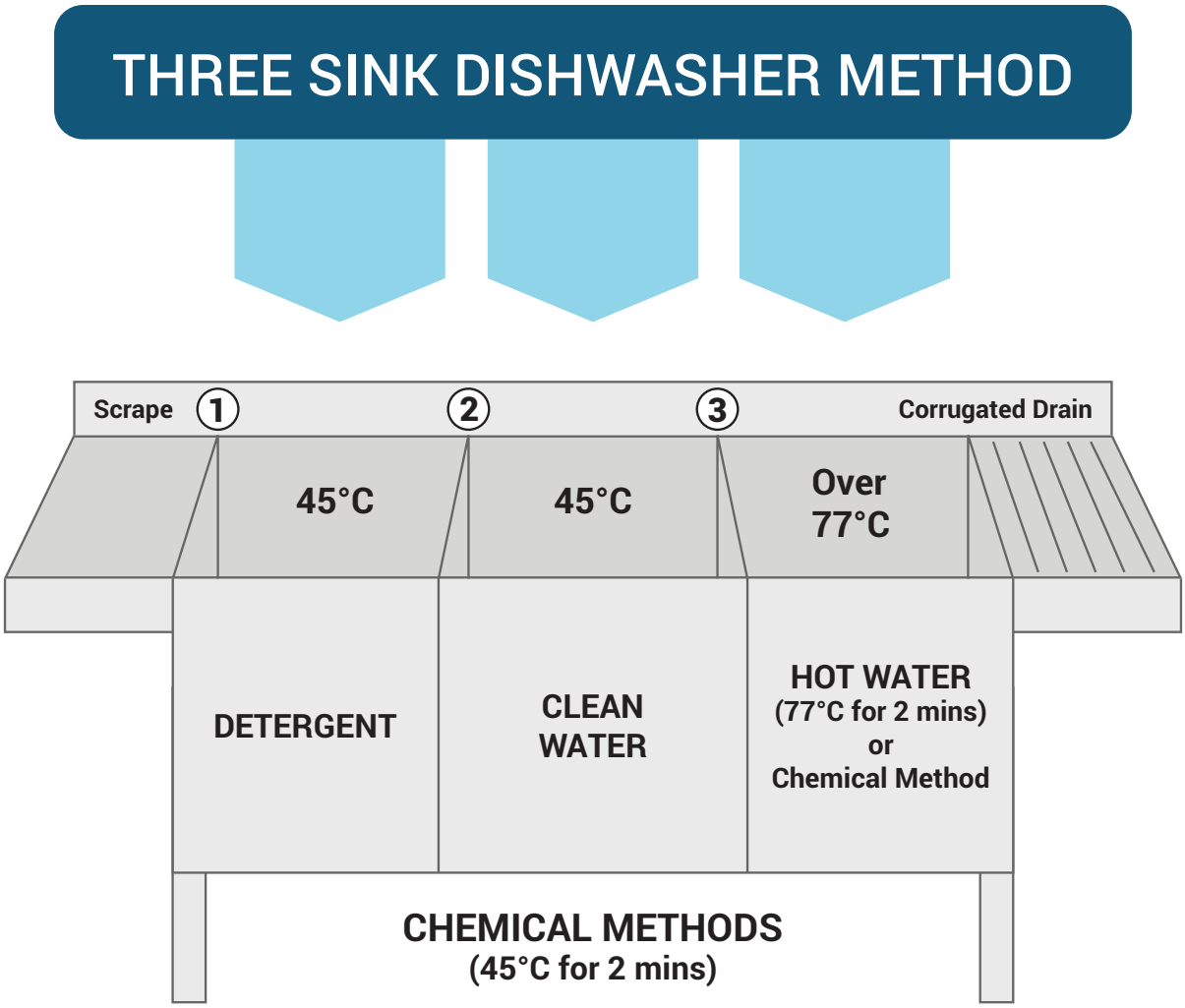
c. The operator must test the temperatures of the water and the sanitizer concentration frequently to ensure that effective sanitizing is occurring.

Rationale

Once food equipment has been cleaned, food contact surfaces and utensils must be sanitized through mechanical or manual methods to reduce the risk of food becoming contaminated with micro-organisms when coming in contact with the utensil or surface. The approved sanitizing method or agent should be applied at the proper concentration and/or temperature and for the appropriate length of time to achieve the necessary reduction in bacterial levels.

Regular monitoring of temperatures and/or sanitizer concentrations is necessary to ensure effective results since sanitizer effectiveness decreases with time and temperature. Sanitizers should not be used at concentrations well above the recommended levels. While using the manual method, it is extremely important that the food equipment be properly rinsed after the wash step but before the sanitize step takes place. Unless soap residue and food particles are removed the sanitizer will not be effective.

To assist food workers using chemical methods of sanitizing, a posted sign can be useful. A sample is printed below.



Chlorine Solution - 100 ppm
Dilution of 5% Bleach (Chlorine) approximately
one tb sp. per gallon of water
1/2 ounce per gallon of water
1/2 tsp. per litre of water
2 ml per litre of water

Quaternary Ammonium Solution (Quats) = 200 ppm
Dilution of Quats
Follow manufactures instructions

4.3 Pest Management

4.3.1 Pest Management Requirements

Every operator of a food establishment must ensure that the premises is

a. free of pests;

b. free of conditions that lead to the harbouring or breeding of pests; and

c. protected against the entrance of pests.

4.3.2 Controlling Pests

The presence of pests shall be controlled by

a. routinely inspecting incoming shipments of food and supplies;

b. routinely inspecting the premises and its surroundings for evidence of pests;

c. treating with chemical, physical, or biological agents undertaken by a qualified pest control operator or under direct supervision of personnel who have thorough understanding of the potential hazards to health; and

d. eliminating harbourage conditions.

4.3.3. Immediate Corrective Action

a. The presence of birds, rodents, or insects must be treated immediately by inspecting and discarding any adulterated food.

b. Inspection must be followed by

i. eliminating pest access points;
ii. removing dirt, soil, or filth if present;
iii. verifying cleaning procedures;
iv. cleaning and sanitizing surfaces contaminated by pests;
v. destroying and sealing off nests and breeding places; and
vi. protecting the food establishment against the entrance of pests.

Rationale
A pest infestation in a food establishment can result in food becoming contaminated by foreign matter (e.g., insect parts, rodent hair, etc.), pest urine/feces, and/or pathogenic microbes carried by pests. Food establishments that have become infested must be thoroughly cleaned to eliminate pest harbourage. Surfaces contaminated by pests must be cleaned and sanitized to destroy microbial pathogens that might be present, and which might contaminate foods.

4.3.4 Eradication of Pests: Methods

a. Pest control devices must be designed and located to effectively control the presence of pests in a food establishment.

b. Insect control devices that are used to electrocute flying insects must be located at least 2 m (6 ft) away from any food handling area. They should be equipped with an escape resistant trap, and they must be emptied and cleaned regularly.

c. Insect control devices designed to trap insects by adhesive or devices that may expel the insects or insect fragments must be installed so that the dead insects or insect fragments cannot fall onto exposed food or equipment. To be effective, insect traps (sticky tapes or similar devices) must be changed regularly or when loaded with insects.

d. Eradication of uncontrolled pests must be carried out by a certified pest control operator utilizing approved chemicals and methods. Integrated pest management approaches utilizing the minimal amount of chemical control possible are highly encouraged.

Rationale
The presence of pests increases the likelihood of contamination of food. Properly designed and installed pest control devices can be used as a means of eliminating pests. Food establishment operators should rely on certified pest control services and emphasize integrated pest management practices that minimize the reliance on chemical controls in order to minimize the risk of contamination of food products by pesticides.

4.3.5 Use of Rodenticides/Insecticides

Rodenticides and insecticides used in a food establishment must be used in such a manner as to prevent the contamination of food. It is preferable that they are not applied while food production and preparation are taking place. Where, due to the nature of the food operation (e.g., 24-hour restaurants) this cannot be adhered to, reliance on traps and non-spray solutions should be emphasized and open food must be protected from contamination.

Rationale
All products used in a food establishment must be identified on Health Canada's Pesticide Product Information Database which confirms that these may be used in a commercial food establishment.

4.3.6 Documentation

Pest control measures shall be documented. Owners/operators should take note of information the pest control technician may require for followup.

Documentation should include

a. the name of the pest control operator responsible

b. the chemicals used for pest control (with the concentrations applied)

c. the procedures and methods used

d. the frequency of application

e. records of inspection and monitoring

Rationale
To ensure that pests are properly, effectively, and safely eradicated, pest control measures requiring the application of chemicals in food establishments must be carried out only by individuals certified in pest control operations. Since chemicals used to eradicate pests may also be toxic to humans, food must be adequately protected while these substances are being applied in the food establishment. To verify that appropriate pest control measures have been undertaken, all aspects of pest control operations must be documented and monitored.

4.4 Use of Chemicals and Toxic Substances

a. Chemicals, cleaning and disinfecting compounds, and other toxic substances kept in a food establishment must be

i. used in compliance with the manufacturer's labelling, directions, or specifications; and

ii. used only in such a manner and under such conditions that the substances do not contaminate food, food equipment and food contact surfaces, or cause a health hazard.

b. The chemicals, cleaning and disinfecting compounds, and other toxic substances must be stored

i. in a compartment separate from food, food contact surfaces, and utensils; and

ii. in clearly labelled, non-food containers, which are (where appropriate) lockable.

Rationale
Special care should be taken when handling dangerous or toxic substances in food establishments. They should be used according to manufacturer's specifications, not only to ensure they function as intended, but also to ensure worker safety.

To prevent the adulteration of food products, dangerous or toxic chemicals must be kept in containers that are clearly labelled to identify the contents, and stored in areas separate from food and food equipment. Locked containers or storage facilities can prevent malicious or accidental contamination of food.

4.5 Waste Management

4.5.1 Waste, Solid Waste, and Recyclable Materials

Waste, solid waste, and recyclable materials must be removed from the food establishment at a frequency that will minimize the development of objectionable odours and other conditions that attract or harbour insects and rodents. Generally, these materials should be removed daily.

a. Requirements for the separation of various solid waste streams as outlined by municipal regulations and bylaws must be followed.

b. Degraded oils from deep fat fryers or other similar equipment must be stored and disposed of in an acceptable manner. Disposing of used oils in municipal or private sewage disposal systems is prohibited.

4.5.2 Sewage and Other Liquid Waste

Sewage waste systems and other non-sewage liquid conveyance and disposal systems must be flushed clean on a periodic basis or as required by approval documents.

4.6 General Maintenance Schedules

Surfaces, such as floors, walls, and ceilings, must be cleaned at a frequency that will prevent the accumulation of dust, dirt, food residue, and other debris.

5.0 Hygiene and Communicable Diseases

All operators and personnel of food establishments are responsible for ensuring that food products are handled (throughout storage, preparation, display, service, and presentation) in a manner that prevents contamination.

5.1 Handwashing

a. Food handlers shall thoroughly wash their hands before commencing work. Food handlers shall wash their hands each time after using the washroom, when returning from a break, after snacking or eating, after handling raw food products, or after any other activity or instance where hands may become contaminated.

b. A thorough handwashing includes vigorously rubbing together the surfaces of the hands and exposed arms with soap for at least 20 seconds followed by a thorough rinsing with warm potable running water. Also, particular attention should be given to the tips of the fingers and between all fingers.

5.2 Fingernails

a. A nail brush and soap may be used to clean underneath the nails, followed by a thorough rinsing with warm potable running water.

b. Fingernail polish, resin, or artificial fingernails must not be worn by employees working with exposed food.

Rationale
Fingernail brushes, if used properly, have been found to be effective tools in decontaminating this area of the hand. It has been shown that the use of fingernail brushes can achieve up to a 5-log reduction in micro-organisms on the hands.

It is recommended that single-use fingernail brushes, or designated individual fingernail brushes for each employee, should be used during the handwashing procedure. However, multi-use nail brushes should be cleaned and sanitized following each use.

5.3 Clothing

All personnel in food preparation areas shall wear clean outer garments. If food preparation causes the clothing to become soiled, the clothing must be changed as necessary.

5.4 Aprons

Food handlers that change work stations from raw food preparation activities to ready-to-eat activities must remove any soiled clothing, such as aprons.

5.5 Hair

Personnel involved in food preparation and any person entering a food preparation or storage area must wear hair restraints such as clean hats or hair nets. Where required, beards must be completely covered with beard nets.

5.6 Personal Habits

a. Food handlers who engage in activities that may result in the transfer of bacteria (e.g., sneezing, touching hair/eyes/mouth/nose, etc.), must wash their hands before resuming food service activities and food handling.

b. Food handlers shall not smoke while handling food, utensils, or food surfaces.

c. Smoking within food establishments is prohibited except in designated areas and under conditions as noted in the Nova Scotia Smoke-free Places Act and Regulations 2002.

5.7 Personal Effects and Jewelry

Food handlers shall remove their watches, rings, and jewelry before working with food. Loose fitting jewelry (e.g., earrings) which could become detached and contaminate food shall not be worn while engaging in food handling activities.

5.8 Illness and Disease

a. The operator of a food establishment shall ensure that all personnel who come into contact with food are free from any symptomatic signs of illness or communicable disease that is transmissible through food.

i. If a food handler is suffering from an illness or communicable disease, operators are responsible for ensuring appropriate action is taken, which may include excluding that individual from activities that involve the handling of food or food contact surfaces

b. Generally, a person is considered to be suffering from a communicable disease in the following situations:

i. They have one or more of the symptoms associated with an acute gastro-intestinal illness, such as diarrhea, fever, vomiting, jaundice, and/or sore throat with fever.

ii. They are suspected of causing or being exposed to a confirmed communicable disease outbreak.

iii. They live in the same household as a person who is diagnosed with a communicable disease.

c. Personnel suffering from a communicable disease have a responsibility to advise management.

d. When returning to work after medical leave or illness, food handlers should have written clearance from the treating physician, particularly in the case of diagnosed, reportable communicable diseases.

Rationale
Several types of communicable diseases can be transmitted through the ingestion of food. The role of the food handler is critical in eliminating the opportunity for pathogenic micro-organisms to be transferred to the food.

Food handlers can carry communicable diseases, especially if they themselves have been infected or are in contact with persons or objects that may carry the harmful microbes of those diseases. Consequently, food handlers may spread these diseases throughout the food establishment if they do not maintain an appropriate level of personal hygiene and avoid habits that may contaminate food. In cases where a physician was not consulted for a diagnosis, the food handler should not return to work until at least 48 hours after being asymptomatic.

5.9 Injuries

a. Personnel with open wounds shall not participate in food handling activities. This applies to persons who have a lesion containing pus that is open and draining, and is

i. on the hands or wrists, unless an impermeable cover protects the lesion, and a single-use glove is worn over the affected area;

ii. on the arms, unless the lesion is protected by an impermeable cover; or

iii. on other parts of the body, unless the lesion is covered with a dry, tight-fitting bandage.

b. Personnel with cuts and/or bandages must wear vinyl gloves or refrain from handling food entirely. Vinyl gloves must also be worn over finger cots.

5.10 Visitors

Any visitor to a food preparation area must observe the same hygiene and dress code as food handlers, including handwashing and hair restraint policies. They must refrain from coming into proximity or contact with food and food equipment, and from any activities that could contaminate food.

5.11 Live Animals

An operator must not allow any live animal to be in a food establishment. The only exceptions are a service dog, if permitting the service dog to enter does not pose a risk of contaminating the food, and edible fish, crustaceans, shellfish or live fish in an aquarium.

6.0 Education and Training

6.1 Educational Programs

Those persons engaged in food operations who come directly into contact with food must be trained in food hygiene to a level appropriate to the operations they are to perform.

6.2 Mandatory Food Hygiene Programs

a. Mandatory food hygiene programs are required for operators of food establishments, or a designated person in their absence.

b. The programs should be based on the level of food safety risk in the food establishment. The criteria to measure the level of risk can include items such as

i. the number of meals served daily;

ii. the type of clientele (i.e., higher risk populations); and

iii. the type of menu items or the complexity of the processes used (e.g., prepared-from-scratch menu items versus preparation or reheating of pre-packaged, ready-to-eat foods).

Rationale
Food safety is dependent on many factors. Safety depends not only on the environment but also on the ways in which food is handled by employees. Training is fundamentally important as food handlers are constantly making decisions and taking actions that could affect food safety.

One of the best assurances that an operator of a food establishment can have that the food will be safe, is the employment of personnel who have the necessary knowledge and skills to process and handle products in a safe and sanitary manner. Moreover, all personnel should be familiar with their role and responsibility in protecting food from contamination.

6.3 Food Hygiene Training Programs

6.3.1 Responsibility

a. ECC will only recognize food hygiene programs that have been authorized by a national food safety training certification group or otherwise deemed acceptable by the Department.

b. The training of operators or food handlers can be undertaken by a third party.

Rationale
In Nova Scotia, food handler education programs are mandatory as outlined in Section 6.2 of the code.

6.3.2 Continuing Educational Training

Every food establishment should promote food safety education through ongoing training, which may include additional classroom instruction, on-the-job training, food safety certification from a recognized program of instruction, seminars, and employee meetings.

Rationale
Studies have demonstrated that the quality of food handling techniques improves for the six months following a formalized training program. However, after that period, food handling practices can deteriorate to pre-education levels.

It is recognized that inspections by a regulatory authority or by an internal inspecting body can help alleviate this problem by re-emphasizing the principles of good food handling practices. Food safety is too important to rely solely upon monitoring and auditing conducted by the regulatory authority. The food industry should take responsibility for adequately preparing food handlers to fulfill their job requirements and to significantly contribute to a safe food industry.

6.3.3 Time Expiration of Training Programs

Certification resulting from training courses must be valid for five years after completion of the course. After five years, operators or food handlers are required to participate in a refresher or updating course.

6.3.4 Program Content

The program content of food safety educational programs may be generic to all aspects of food safety. Given the diversity of the food industry and the influx of new technologies and food science discoveries, consideration should be given to educational courses that are tailor made to address specific food venues or operations such as those developed by food service chain operations.

Rationale
When course content is specific, both educators and trainers can ensure that the principles taught are relevant to the people in attendance and the work they do. This approach increases knowledge retention and program success rates.

6.3.5 Program Selection

Educational programs may originate from institutions, industry, or regulatory authorities, provided these programs are recognized and approved by ECC.

Rationale
While a wide variety of training programs are appropriate, the objective is to harmonize standards so that training and certification are applicable across jurisdictions.

6.3.6 Operators

Operators must ensure control of hygiene and food safety in food establishments. Further, the operator is responsible for supporting food handlers in the adherence to the approved rules of hygiene and food safety. Operators must maintain records indicating which employees have taken courses, the dates, and any relevant additional information.

Rationale
All personnel should be familiar with their role and responsibility in protecting food from contamination and have the necessary knowledge and skills to process and handle products in a safe and sanitary manner.

Appendicies

Appendix A: Potentially Hazardous Foods

Appendix B: Time/Temperature Control – Raw Animal Foods

Appendix C: Typical Food Allergies

Appendix D: Selected Information Sources

Appendix E: Donair or Similar Products

Appendix F: Sushi Rice

Appendix A: Potentially Hazardous Foods

While many foods can be hazardous under specific circumstances, this review is provided to supply background information about the factors involved in those foods that have the greatest potential to be hazardous.

Potentially hazardous foods are generally defined as foods in a form or state that are capable of supporting the rapid and progressive growth of infectious and/or toxigenic micro-organisms. Such foods include, but are not limited to, milk or milk products, eggs, meat, poultry, fish, shellfish (edible mollusca and crustaceans), and tofu products and sprouts.

Other foods that fall into the "potentially hazardous" category include certain baked goods (e.g., cream-filled products), cooked vegetables, and cut/sliced fruit and vegetables. Not included are foods that have a pH level of 4.6 or below and foods that have a water activity of 0.85 or less.

1. What are potentially hazardous foods?

The term "potentially hazardous" is used in a microbiological, not a chemical or toxicological, sense.

It should be understood that the term "potentially hazardous" refers largely to foods that are prone to temperature abuse (i.e., that is, they may be kept in the "danger zone" at temperatures greater than 4°C (40°F) when they are supposed to be refrigerated, or kept at temperatures below 60°C (140°F) when they are supposed to be kept hot).

Exposure to temperature abuse could occur due to inadvertent delays during preparation by the food processor (or food service operator), during transportation, marketing, or handling by the consumer.

2. What is pH and water activity?

The pH of a food product is a scale by which the acidity and/or alkalinity of a product is measured. By definition it denotes the hydrogen ion concentration or, more simply, the acidity level of the product. The lower the pH number, the more acid is in the product. pH values range from 0 to 14. Potentially hazardous foods have a pH greater than 4.6 which favours growth of food poisoning organisms.

The term "water activity," denoted by the symbol Aw, refers to the amount of water in the food product that is available to the growing micro-organism. Water activity has been defined as the ratio of the water vapour pressure of the food and the vapour pressure of pure water at the same temperature. For this reason, water activity values range from 0 to 1 but never exceed 1. Potentially hazardous foods have water activity values favouring growth of food poisoning organisms (i.e., greater than 0.85).

3. What are the general characteristics of these potentially hazardous food products?

Potentially hazardous foods are low-acid (pH > 4.6) and high water activity (Aw > 0.85) foods, and include those products marketed as ready-to-eat refrigerated foods. Such products generally do not receive sufficient heat to kill spore-forming micro-organisms (e.g., *Clostridium botulinum* and others) which may be present in the raw ingredients.

Typical packaging may include loose wrapping on supporting paperboard or Styrofoam trays, hermetically sealed containers such as glass jars, metal cans, plastic containers, plastic pouches or paperboard containers. The shelf-life of some of these products may have been extended by vacuum or modified atmosphere-packaging. Typically, these products are retailed in the refrigerated dairy, meat, or delicatessen sections of food stores.

4. Are all raw foods potentially hazardous?

No. Raw foods are considered potentially hazardous if they support the growth of food poisoning organisms. Foodborne illness is generally caused by infectious and/or toxigenic micro-organisms.

Raw meats, raw fish, raw eggs, and unpasteurized milk must be cooked, pasteurized, or otherwise prepared in order to kill any food poisoning and spoilage bacteria they may carry.

5. What kinds of foods are excluded from the potentially hazardous foods category?

Foods that **do not** fall into the potentially hazardous category include the following:

a. Frozen foods that remain frozen up to the time of cooking

b. Commercially canned, shelf-stable foods that are safely stored in their original intact containers at normal room temperatures (e.g., canned pâté, canned corned beef or canned vegetables). Once the container has been opened, these foods are potentially hazardous because all contaminating bacteria can grow rapidly in the absence of competing microflora.

c. Acidified foods (pH < 4.6) such as sauerkraut, pickles, etc., and/or low-moisture (Aw < 0.85) foods such as peanuts and cereals

6. Why are bean sprouts and raw mushrooms considered potentially hazardous?

On several occasions, bean sprouts have been responsible for food poisoning, as a result of contamination with and subsequent growth of *Salmonella, Bacillus cereus or Klebsiella. Clostridium botulinum* spores occur frequently in cultivated mushrooms. In laboratory experiments, it has been shown that *Clostridium botulinum*, if present, will grow and produce toxin in raw mushrooms that have been tightly wrapped and stored at room temperatures. It has therefore been recommended

that raw mushrooms be refrigerated, and that packaging allow free exchange of air.

7. What are the concerns about extending the shelf-life of modified atmosphere- packaged or vacuum-packaged and sous-vide type foods?

The concerns are that pathogens such as *Clostridium botulinum* and *Listeria monocytogenes*, if present, may grow during the extended shelf-life of these refrigerated products. These and other micro-organisms are capable of growth and/or toxin production under the conditions created by the new technologies without any obvious signs of spoilage in the food itself.

Several measures can be taken to minimize these concerns. The items must not be used after the date (shelf-life code) provided by the manufacturer; they must be continually stored at 3.3°C or less before being used, and any items remaining in a partially used container should be treated like any other potentially hazardous food (i.e., generally the products should be used within seven days after opening).

8. What factors in general control the growth of food poisoning organisms in food?

Factors controlling the growth of disease-causing micro-organisms include water activity (Aw), acidity (pH), temperature, time, the surrounding atmosphere, and other factors. An understanding of these factors is important in food processing as this knowledge can be used to assure food safety.

Potentially hazardous foods require careful monitoring of temperatures. In many cases, adherence to proper temperature control – either refrigeration at 4°C (40°F) or less, or heating above 60°C (140°F) – is the sole means of preventing, or at least limiting, the growth of food poisoning micro-organisms.

9. Why is the water activity of a food product so important?

Water activity is important in foods because it is a major factor in determining whether a micro-organism will or will not grow and reproduce. Different micro-organisms have characteristic minimum, optimum, and maximum water activity values permitting growth. One can prevent growth of pathogens by adjusting the water activity of a given food to a value below the minimum water activity permitting growth.

Supplementary Note

High-risk foods *are non-acidic or slightly acidic, moist, and protein-rich foods. These food products require a number of complex control steps to ensure product safety (e.g., proper temperature requirements at various stages of preparation). These foods include meat and meat products, milk and milk products, eggs, poultry, fish and shellfish, as well as gravies, puddings, custards, cream-filled baked goods, potato and other starch-based salads, cream-based soups, and sauces.*

Medium-risk foods *are food products that require a certain step to minimize potential health risk (e.g., proper cold holding techniques). These foods include packaged vegetables; cooked cereals; soft cheeses; fresh, uncooked meat; and meat sandwich spreads.*

Low-risk foods are food products that do not pose significant health hazards by themselves. These products include ready-to-eat foods, peanut butter, bread, crackers, butter, dry cereals, and all foods in cans and flexible pouches until the cans or pouches are opened.

Appendix B: Time/Temperature Control – Raw Animal Foods

Pathogen reduction involves a time-temperature relationship. The following minimum guidelines should be adhered to. Other time-temperature regimens might be suitable, if it can be demonstrated, with scientific data, that the regimen results in a safe food.

NOTE: To kill micro-organisms, food should be held at a sufficient temperature for a sufficient time. Cooking is a scheduled process in which each of a series of continuous temperature combinations can be equally effective. For example, in cooking a beef roast, the microbial lethality achieved at 121 minutes after it has reached 54°C (130°F) is the same lethality attained as if it were cooked for 3 minutes after it has reached 63°C (145°F).

Critical Step	Temperature Requirement
Refrigeration	4°C (40°F) or less
Freezing:	minus 18°C (0°F) or less
Parasite Reduction: Raw fish	minus 20°C (minus 4°F) for 7 days or, minus 35°C (minus 31°F) in a blast freezer for 15 hours
Cooking: Food mixtures containing poultry, eggs, meat, fish, or other potentially hazardous foods	Internal temperature of 74°C (165°F) for at least 10 minutes
Meat, poultry, eggs, and fish	
Rare roast beef	Internal temperature of 63°C (145°F) for 3 minutes
Pork (for example, ham, pork loin, ribs) (pieces and whole cuts)	71°C (160°F)
Mechanically tenderized beef (turn steak over at least twice during cooking)	63°C (145°F)
Ground meat[1]	71°C (160°F) for 15 seconds
Ground poultry (for example, chicken, turkey)	74°C (165°F)

Poultry (for example, chicken, turkey, duck)	
Pieces	74°C (165°F)
Whole	82°C (180°F) for 15 seconds
Egg dishes[2]	74°C (165°F)
Seafood[3,4]	
Fish	70°C (158°F)
Shellfish (for example, shrimp, lobster, crab, scallops, clams, mussels and oysters) *(Since it is difficult to use a food thermometer to check the temperature of shellfish, discard any that do not open when cooked)*	74°C (165°F)
Others	
Others (for example, hot dogs, stuffing, leftovers)	74°C (165°F)
Wild game	
Chops, steaks and roasts (deer, elk, moose, caribou/reindeer, antelope and pronghorn)	
Well done	74°C (165°F)
Ground meat	
Ground meat and meat mixtures	74°C (165°F)
Ground venison and sausage	74°C (165°F)
Large game	
Bear, bison, musk-ox, walrus, etc.	74°C (165°F)

Small game	
Rabbit, muskrat, beaver, etc.	74°C (165°F)
Game birds/waterfowl (for example, wild turkey, duck, goose, partridge, and pheasant)	
Whole	82°C (180°F)
Breasts and roasts	74°C (165°F)
Thighs, wings	74°C (165°F)
Stuffing (cooked alone or in bird)	74°C (165°F)
Reheating	74°C (165°F)
Holding Hot Foods	60°C (140°F)
Cooling	60°C (140°F) to 20°C (68°F) within 2 hours and 20°C (68°F) to 4°C (40°F) within 4 hours

1. This includes chopped, ground, flaked or minced beef, pork, or fish.

2. Customers requiring a runny yolk egg must recognize that pathogens are not destroyed until yolk has completely coagulated.

3. Customers wishing raw marinated fish and raw molluscan shellfish should be aware that it should be cooked to assure safety.

4. Cook oysters at 90°C for 90 seconds (kill step for viruses, like norovirus).

Appendix C: Typical Food Allergies

Numerous incidents of allergic and sensitivity reactions to both domestic and imported foods are being reported to CFIA. It is important to be aware of the potentially serious consequences of such adverse reactions and to develop strategies to prevent their occurrence.

Labelling of Foods Causing Allergies and Sensitivities

Labelling rules apply to the list of priority allergens that have been identified as most likely to cause serious allergic reactions for Canadians. They will help Canadians who suffer from food allergies to make more informed choices about the food they buy.

A variety of foods contain ingredients that can cause adverse reactions in hypersensitive individuals. Most adverse food reactions are caused by the following priority allergens and their derivatives:

- peanuts
- tree nuts (almonds, Brazil nuts, cashews, hazelnuts [filberts], macadamia nuts, pecans, pine nuts, pistachios, walnuts)
- sesame seeds
- milk
- eggs
- fish, crustaceans (e.g. crab, crayfish, lobster, shrimp) and shellfish (e.g. clams, mussels, oysters, scallops)
- soy
- wheat
- sulphite
- mustard

If these foods or their derivatives are not labelled or are incorrectly labelled, or if inadvertent carry-over occurs during manufacturing, the results can be **serious and sometimes fatal**.

Although this list represents the foods causing the most common and serious reactions, a wide variety of other foods have been reported to cause adverse reactions in certain individuals.

The Canadian Food and Drug Regulations require almost all prepackaged foods to have a complete list of ingredients and components (ingredients of ingredients). It is your responsibility to ensure that the foods you manufacture, import, sell, or distribute are safe and meet the labelling requirements of this legislation. Therefore, the CFIA urges you to ensure that the above foods are included in the ingredient list on your labels when present as ingredients or components. To further assist consumers in making safe food choices, the CFIA encourages you to identify the plant source

of ingredients, such as hydrolyzed plant proteins, starches, modified starches and lecithin (e.g., hydrolyzed soy protein, wheat starch, modified wheat starch, soy lecithin).

The CFIA recognizes the efforts by many members of the food industry to improve the accuracy of ingredient declarations and to implement controls to reduce carry-over of ingredients. As food safety is paramount to consumers, the food industry, and government, the CFIA also urges you to develop strategies, such as an allergen prevention plan, to manage the risks associated with those foods known to cause severe adverse reactions. Part of your strategy should include a thorough evaluation of your manufacturing and ingredient control procedures. It is also your responsibility to ensure that all pre-packaged foods you import are fully and correctly labelled, and preferably are sourced from suppliers having an allergy prevention plan in place.

Undeclared ingredients may occur in foods as a result of the following:

- **carry-over** of product through incomplete cleaning of food contact surfaces and utensils, sometimes because of poor equipment design
- **inappropriate use of rework** containing allergenic ingredients
- **ingredient changes**, substitutions or additions not reflected on the label
- **incorrect labels** put onto products
- **incorrect or incomplete** list of ingredients
- **unknown ingredients in raw materials**
- **misrepresentation of common names** to describe products/ingredients (e.g. mandelonas for reformed, reflavoured peanut)
- **labelling exemptions** under the Food and Drug Regulations

Information about labelling can be found here:
Food labelling for industry - Canadian Food Inspection Agency (canada.ca)

Prevention Notes for Consumers and Restaurant Staff

Should consumers who have food allergies and/or who are the parents of children who have food allergies wish to purchase products that are not supplier packaged and/or do not carry an ingredient list, it is suggested that they request a copy of the ingredient list or recipe. Should they have any doubts, it is recommended that they review the ingredient list or recipe with their physician prior to purchasing such a product.

Food Allergy Canada
Tel: (416) 785-5666
Website: Food Allergy Canada - Food Allergy Canada

Restaurants Canada
Tel: (416) 923-8416
Fax: (613) 923-1450
Tollfree: (800) 387-5649
Website: https://www.restaurantscanada.org/

Appendix D: Selected Information Sources

Provincial Documents

1. Health Protection Act
https://nslegislature.ca/sites/default/files/legc/statutes/health%20protection.pdf

2. Food Safety Regulations
https://novascotia.ca/just/regulations/regs/hpafood.htm

3. Food Safety Guidelines-Temporary Events
https://novascotia.ca/nse/food-protection/docs/Food-Safety-Guidelines-Temporary-Events.pdf

4. Guidelines for Mobile Food Service
https://novascotia.ca/nse/food-protection/docs/mobilepolicy_public.pdf

5. Guidelines for Public Markets
https://novascotia.ca/nse/food-protection/docs/publicmarketguide.pdf

6. Overview of the New Public Drinking Water Supply Program
https://novascotia.ca/nse/water/publicwateroverview.asp

Federal Documents

1. Compositional Standards for Meat Products

The Meat Inspection Regulations of the Canada Meat Inspection Act contain precise information concerning compositional standards for meat products ranging from ground meat and sausage to stews, dinners and shortening – see Schedule 1.

Canadian Food Inspection Agency 1400 Merivale Road
Ottawa, Ontario K1A 0Y9 Tel: (613) 225-2342
Fax: (613) 228-6601
Tollfree: (800) 442-2342
Website: https://inspection.canada.ca/en

The Food Safety Enhancement Program approach to a preventive control plan
Canadian Food Inspection Agency 1400 Merivale Road
Ottawa, Ontario K1A 0Y9 Tel: (613) 225-2342
Fax: (613) 228-6601
Tollfree: (800) 442-2342
Website: https://inspection.canada.ca/preventive-controls/preventive-control-plans/the-food-safety-enhancement-program/eng/1525869691902/1525869759693

2. Preventive Controls for Food: Meat Products

These documents provide information on select preventive control practices for operators to mitigate food safety risks associated with the preparation of processed meat products.

https://inspection.canada.ca/preventive-controls/meat/eng/1526651317935/1526651318169

3. CFIA Reference Listing of Accepted Construction Materials, Packaging Materials and Non-Food Chemical Products

This is a list of materials and non-food chemicals that have been found by the CFIA to be acceptable for use in establishments operating under the authority of the agency.

Although the reference listing is still posted on the CFIA website, it is no longer maintained or updated by the agency. So, any new material intended to be used in food premises are subjected to an assessment performed by the Bureau of Chemical Safety from Health Canada which may issue a LONO.

The reference listing will continue to be available on the CFIA website as a reference only.

https://food-nutrition.canada.ca/food-safety/referencelist/index-en.php

4. Consumer Packaging and Labelling Act and Regulations

Act: http://laws-lois.justice.gc.ca/PDF/C-38.pdf

Regulations: http://lois-laws.justice.gc.ca/PDF/C.R.C._c._417.pdf

5. Food and Drugs Act and Regulations

Act: http://laws-lois.justice.gc.ca/PDF/F-27.pdf

Regulations: http://laws-lois.justice.gc.ca/PDF/C.R.C._c._870.pdf

6. Guidelines for Canadian Drinking Water Quality

The Guidelines for Canadian Drinking Water Quality are established by the Federal-Provincial-Territorial Committee on Drinking Water and published by Health Canada.

https://www.canada.ca/en/health-canada/services/environmental-workplace-health/water-quality/drinking-water/canadian-drinking-water-guidelines.html

7. Hard-Surface Disinfectants and Hand Sanitizers (COVID-19): List of disinfectants with evidence for use against COVID-19

https://www.canada.ca/en/health-canada/services/drugs-health-products/disinfectants/covid-19/list.html

8. NSF International Standards

NSF International maintains a comprehensive listing of standards for food equipment, from food carts to dispensing freezers, dinnerware to dishwashers. Publications are for sale on their website.

NSF International
P.O. Box 130140
Ann Arbor, MI 48113-0140
Tel: (734) 769-8010
Tollfree: (888) NSF-9000
Fax: (734) 669-0196
Email: info@nsf.org
Website: https://www.nsf.org/

9. **Recall Procedure**
A guide for food businesses - Canadian Food Inspection Agency (canada.ca)

Appendix E: Donair or Similar Products

Donairs and other similar products, such as gyros, kebabs, and shawarmas, meet the definition of potentially hazardous food in the code and are, therefore, subject to the requirements for potentially hazardous food within other sections of the code. The requirements outlined in this appendix address food safety issues which may be specific, but are not limited to, these types of food products.

Rationale
The specific requirements in the code for donairs and other similar products, such as gyros, kebabs, and shawarmas, have been taken from the final recommendations of the Federal/Provincial/ Territorial Donair Working Group, June 2008. The working group reported to the Federal/Provincial/ Territorial Food Safety Committee, which is a government committee that provides leadership, advice, and recommendations on food safety policy in Canada.

Donair Cone Size

a. Food establishments must make or purchase donair and shawarma cones based on the limiting specifications of their cooking unit (i.e., no larger than the maximum size and/or dimensions recommended by the broiler manufacturer).

b. If the operator is consistently left with large amounts of product at the end of the day, they should reduce the size of cone being used.

Rationale
Countertop broilers in food establishments may vary significantly in relation to their dimensions, number of heating elements, and burner power. There is also a significant range of cone sizes produced by manufacturers and food service operators. Matching the size of cone to the cooking capacity of the broiler being used should help to optimize cooking performance. Food establishments should also identify the appropriate size of cone to use in order to avoid excessive amounts of leftover food and, therefore, reduce reliance on cooling and storage procedures at the end of the day/ shift.

Secondary Cook Step

a. Portions sliced from a donair or shawarma cone shall undergo a secondary cooking step designed to achieve a temperature of 71°C (160°F) in the case of beef-, lamb-, and pork-containing products, or 74°C (165°F) in the case of chicken-containing products. The food establishment operator shall have a process in place to verify the effectiveness of the secondary cooking step, including the use of a suitable thermometer to ensure that the target temperatures are reached on a consistent basis.

b. This requirement does not apply to donair cones that have been fully cooked by a recognized method before slicing. A recognized method is one that is consistent with guidelines or standards established by ECC and would involve verifying that the required internal temperature at the centre of the cone has been reached.

Rationale
The main risk identified with donair/shawarma cooking and serving is that donair/shawarma cones may be insufficiently cooked prior to consumption (i.e., the cooking process is not adequate to destroy pathogens). The need for precautionary measures, such as internal temperature monitoring, will ensure that only fully cooked donair/shawarma meat is served to the consumer. Though food establishment operators would not knowingly serve undercooked product, they may unknowingly do so (e.g., raw inner meats torn off during slicing, slicing too soon or too deeply into uncooked layers), or serve product that has been contaminated by raw juices that have migrated from the inner (raw) portion of the cone.

Cooling Methods

a. Food establishment operators must demonstrate that the cooling method and equipment being used at their establishments are capable of lowering a leftover, intact cone from a temperature of 60°C to 20°C (140°F to 70°F) within two hours after removal from the heat source (broiler) and then from 20°C to 4°C (70°F to 40°F) within an additional four hours. As the cone has not been fully cooked it must be treated as raw and not stored with ready-to-eat products.

b. If an adequate cooling method for the whole donair/shawarma cone cannot be demonstrated by the establishment, one of the following procedures must be followed:

i. At the end of the day, the cooking and slicing process must continue for the remaining partially cooked cone until the entire cone is sliced. Prior to storage, all portions removed are to undergo a secondary cooking step designed to achieve a temperature of 71°C (160°F) in the case of beef, lamb, and pork-containing donairs, or 74°C (165°F) in the case of chicken-containing donairs.

ii. In some instances an operator may have a large cone remaining at the end of the day which may take a long time to cook and slice. The remaining partially cooked cone must be sliced until the frozen core of the cone is reached. The slices must undergo a secondary cooking step before storage. If the centre of the cone has thawed, the entire cone must be cooked and sliced. The remaining (frozen) core of the cone must be re-frozen immediately for use the following day.

Operators using option (ii) should be aware that partially cooked or raw portions of meat nearer the frozen core of the cone will require longer secondary cooking times than those used for slices taken from the outer surface of a cooking cone.

Operators utilizing this option must take extra care to ensure that the secondary cooking process for these slices consistently achieves 71°C (160°F) for beef, lamb, and pork, and 74°C (165°F) for chicken.

Rationale

It is common for some food establishment operators to have partially cooked donair/shawarma cones remaining on the broiler when the establishment is prepared to close for the day. The practice of overnight freezing or refrigerating whole cones may lead to ineffective cooling and, therefore, unacceptable growth of bacteria. Commercial refrigeration equipment is designed to keep foods cold, rather than cool large masses of hot food. Reducing the volume of each portion of food being cooled speeds up the cooling process. The practice of slicing the cone into smaller pieces before cooling will limit the growth of bacteria during overnight storage.

Appendix F: Sushi Rice

Preparation of White Sushi Rice

Special care must be taken in preparation of rice used in sushi to prevent potential bacterial growth while assuring the rice can still be formed into balls and rolls. Heat during cooking of rice can activate certain bacterial spores that can grow to be toxic unless the rice is preserved or refrigerated.

Acidification of cooked rice with vinegar helps preserve the rice for handling at temperatures above 4°C (40°F) and eliminates the difficulties of forming sushi from cold rice. A proper acidification process for rice reduces food safety risk, the pH must be monitored for each batch.

The work area should include the following:

a. A designated sink and food contact surface (counter/table), cleaned and sanitized prior to the preparation of the sushi rice. The sink and surface should be segregated from other concurrent food handling activities until the sushi rice is fully prepared.

b. Use of single-use non-latex gloves to prevent bare-hand contact.

c. Clean and properly supplied handwashing facilities.

d. A written recipe that specifies the following:

i. The amount of rice and water prior to cooking, and the cook schedule. The cooked rice and vinegar solution is to be thoroughly mixed to acidify the rice to a pH less than 4.2. It is best to acidify the rice when it is warm to assure better mixing and penetration of the acid solution.

ii. The vinegar solution, with salt and sugar. It should be made fresh for use or from a designated container labelled to identify the contents, concentration, and age of the vinegar solution to assure a proper acidifying formulation.

iii. A clean mixing bowl deep enough to allow adequate mixing without clumping, yet shallow enough to allow proper cooling. The depth of the rice must be less than 10 cm (4 in.) for proper cooling and thorough acid distribution.

Rice must be made fresh daily and discarded at the end of the day.

The rice is cooled in shallow containers.

Acidified rice must be stored covered when not in use.

Brown rice is typically not acidified since the harder surface coating on the brown rice is difficult to penetrate with typical acid solutions. In the non-acidified condition, cooked rice is considered

a potentially hazardous food that must be maintained at a temperature greater than 60°C (140°F) or hotter, or at 4°F (40°C) or colder. The cooked brown rice should be chilled immediately after preparation to reduce the chance of foodborne illness.

Measuring and Recording pH of Sushi Rice

Conduct the pH test within 30 minutes after the acidification of the cooked rice and as necessary to assure a pH of less than 4.2.

The most accurate method of checking sushi rice will be to use a pH meter. If you do not have a pH meter, operators should validate the pH by submitting a sample of sushi rice to an accredited laboratory. Validation of the acidity must show an accuracy of the pH test to within ±0.01 pH units.

Check the pH of your sushi recipe (known as a verification step) using either your own pH meter or short-range pH test paper that has an accuracy of ±0.2 to ±0.3 pH units (this is pH paper that measures between pH3 to pH5; one brand is Hydrion MicroFine 2.9 to 5.2).

After the sushi rice is made, transfer a small portion (about a teaspoon) to a clean dish and mash it slightly before checking with the pH paper. If you are using a pH meter, follow the manufacturer's instructions on using this equipment.

a. Make a rice slurry by gathering a ¼ cup sample of the cooked, acidified rice taken from various locations in the batch.

b. Add ¾ cup of distilled water in a clear plastic or metal blend cup. Blend the slurry for approximately 20 seconds to create a thorough mix.

c. Insert the probe of the pH meter into the liquid portion of the slurry. Repeated measurements with a new slurry from the same batch of rice are recommended to assure a proper reading.

d. Keep pH records available for review by the PHO.

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