Food Retail and Food Services Code

Amended September, 2004

Canadian Food Inspection System Implementation Group

CFISIG

Table of Contents

3.0 Control of Food Hazards

4.0 Maintenance and Sanitation

Appendices

1.0 Purpose and Definitions

1.1 Introduction

Canada's food system is ranked amongst the best in the world in providing safe and wholesome food. Our status as a leader in producing safe, quality food is secure as long as we collectively commit ourselves to applying sound principles of food safety -- principles that have been acquired over the past century as a direct result of applied theoretical and scientific knowledge of foodborne diseases. The study of past or emerging diseases and of how food plays a role in the transmission of disease has had a dramatic effect, both in helping us identify key requirements in food safety and in highlighting the need for various regulatory interventions.

Foodborne outbreaks can affect us all. Foodborne illness can be very serious and even life-threatening to some consumers, especially pre-school children, older adults in health care facilities, and those with impaired immune systems. Effective control of foodborne illness is vital, not only to avoid adverse effects on human health, but also to safeguard the Canadian food industry. The potential business repercussions of foodborne illness are many, including loss of earnings; unemployment and litigation; damage to trade and tourism through negative publicity; lower staff morale; and professional embarrassment.

The federal, provincial/territorial and municipal governments are jointly committed to assuring a safe food supply for all Canadians, and have set out a framework in ***A Blueprint for the Canadian Food Inspection System*.** The Canadian Food Inspection System (CFIS) is a collaborative initiative of all levels of government. Its aim is the development of an integrated Canadian food inspection system which is responsive to both consumers and industry. The challenge, in all jurisdictions, is to continually reduce the risks and achieve excellence in food safety, while supporting the ability of the food industry to adapt to new technology and survive in a competitive environment.

1.2 Purpose

Working through CFIS, government and industry have developed a model regulation, the *Food Retail and Food Services Regulation,* as well as this accompanying code of practice for the foodservice and food retail industries. The two documents provide a common set of harmonized food safety standards and operational guidelines which are recognized by government, the food industry and consumers.

Since Canadian legislation governing the food industry is moving away from a prescriptive, narrow definition of requirements, the model *Regulation*, wherever practicable, defines "outcomes" or performance-based expectations. It is complimented by the more comprehensive *Food Retail and Food Services Code*.

The *Code* consists of **model** requirements for safeguarding public health and assuring food safety. It provides practical, user-friendly interpretations and guidance for compliance with legislation.

Both the *Food Retail and Food Services Regulation* and the *Food Retail and Food Services Code* embody sound scientific, risk-based approaches to food safety. This is the overriding principle underlying Canada's food safety practices.

1.3 Application

Since the *Code* is an **interpretative guideline** that explains how to meet the objectives identified in the *Food Regulation*, it is not intended to be used as a rigid, inflexible document. The *Code* is not intended to stand alone, but rather is to be used in conjunction with companion provincial/territorial regulations, relevant statutes, research, and other resource materials. Taken together, these materials provide an extensive information base to assist in the safe operation of the foodservice and food retail industries.

As new technology becomes available, operational procedures and equipment standards in a foodservice premises may vary from that described in the *Code*.

Materials and/or methods other than those specified in the *Code* may be used by food retail and foodservice operators, if the operators can provide sound, scientific evidence that clearly demonstrates compliance with the regulatory objectives.

1.4 Scope

a) The *Code* has, as its primary focus, a broad range of retail and food service premises that include, but are not limited to, the following:
   i) full service restaurants,
   ii) quick service restaurants,
   iii) foodservice operations in institutions, including hospitals and schools,
   iv) bakeshops, butchers and delicatessens,
   v) grocery and convenience stores,
   vi) food commissaries and food outlets on common carriers, and
   vii) other food premises such as markets, food banks and vending operations.

The *Code* does not apply to certain premises specified in the *Food Retail and Food Services Regulation* (Refer to *Food Regulation 2.)*

b) The *Code* includes general information and guidelines to assist operators in the foodservice and food retail industries in the operation of their food premises. It also establishes universal learning outcomes that will help standardize food handler educational courses and evaluation criteria.

c) Definitions found in this *Code* are in keeping with those found in the *Common Regulatory Base for Food Retail and Food Services Premises* and other applicable regulations. (Refer to Section 1.7 of this *Code*.)

1.5 Guiding Principles

a) The safety of foods produced and sold through the food retail and food service sectors is a shared responsibility among many stakeholders including: the operators of food premises, food workers, regulatory agencies and consumers.

b) The *Code* has been developed on the basis of the following guiding principles:
   i) the retail and foodservice industries have the primary responsibility of ensuring the safety of their foods and, where applicable, of providing a reasonable level of descriptive product information to permit consumers to make informed decisions;
   ii) consumers have a right to be informed, and are also responsible for safe food handling;
   iii) government has a responsibility to:
      – set and enforce standards for health and safety based on sound scientific risk assessment and management principles,

      – work to ensure that food product information provided by industry

is sufficient and accurate,
- provide health and food safety information to consumers and to industry.

1.6 Outcomes

The primary objective of the *Code* is the safety of foods produced, served and sold by the food retail and food service sectors. In addition, there are a number of other expected outcomes:

i) better knowledge of safe food handling practices by all stakeholders;
ii) improved consistency in the interpretation and application of food industry regulations by all stakeholders;
iii) the establishment of minimum health and food safety practises for the food retail and food service industries;
iv) better communication among all sectors of the industry and government, concerning critical requirements in food safety, and a greater commitment to finding cooperative approaches to handling risks; and
v) improved information concerning best practices, to compliment industry-driven inspection, auditing and educational programs.

1.7 Definitions

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

Act:	the applicable provincial/territorial health act.
Adulterant:	any undeclared ingredient in a food product which diminishes the economic or nutritional value of a food product or which may render the food product injurious to health.
Applicant:	one who applies for a permit or licence.
Clean:	to render free from food residues and other foreign material.
Code:	the *Food Retail and Foodservices Code.*
Comminuted:	to reduce to minute particles.
Communicable Disease:	an illness in humans caused by an organism or microorganism or its toxic products, and transmitted directly or indirectly from an infected person or animal, or the environment.
Container:	includes a food grade receptacle or covering used to package, wrap, contain or cover food.
Contamination:	exposure of food to conditions which permit or may permit: a) the introduction of foreign matter including filth, a poisonous substance or pests, or b) the introduction or multiplication of disease-causing microorganisms or parasites, or c) the introduction or production of toxins.
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 premises. 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, dish washing machines and lighting systems.
Fish:	fin fish and molluscan and crustacean shellfish.
Food:	any raw, cooked or processed substance. This includes (but is not limited to) ice, beverages or ingredients used or intended for use, in whole or in part, for human consumption.
Food Bank:	a non-profit organization that: a) operates with the exclusive intent of feeding the hungry, and b) receives, holds, packages, repackages, or distributes food to be consumed off the premises, but does not process 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 Drug 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 unpackaged food, food equipment, utensils or food contact surfaces.
Food Premises:	any place where food that is intended for public consumption is sold, offered for sale, supplied, handled, prepared, processed, packaged, displayed, served, dispensed, stored or transported.
Food Recall:	a process in which foods or food products are effectively withdrawn from the market place.
Food Transportation Unit:	vehicles, aircraft, railcars, ships, containers, boxes, bulk tanks, trailers and any other transportation unit used to transport food.

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.
Good Operating Practices:	universal steps or procedures that control the operational conditions within a food premises allowing for conditions that are favourable to the production of safe food (i.e., proper personal hygiene, sanitation and food handler training).
HACCP:	an acronym for Hazard Analysis Critical Control Point which is a systematic approach to be used in food production as a risk-based means to ensure food safety.
HACCP Plan:	the document which 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: a) hot and cold running water from a potable water supply, b) soap in a dispenser, c) 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 d) a sign which explains proper handwashing procedures.
Health Hazard:	any condition that is or might become injurious or dangerous to the public health or that might hinder in any manner the prevention or suppression of disease.
Mobile Vending:	a cart, stand or kiosk that is operated either from a fixed location or on an established daily route; is stored, cleaned and maintained at a storage or service area; and from which food is served or provided to the public with or without charge.
Operator:	a holder of a permit, an owner, lessor or manager of the food premises.
Pathogen:	a disease-causing organism.
Permit:	a document issued by the regulatory authority that authorizes a person to operate a food premises.

Permit Holder:	the person who is legally responsible for the operation of a food premises, such as the owner or the owner's agent, and who possesses a valid permit to operate the food premises.
Pest:	any animal or arthropod that is destructive to the operation of a food premises, or that may contaminate a food or food contact surface. This includes rats, mice, cockroaches and flies.
pH:	the symbol for the negative logarithm of hydrogen in 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:	suitable for drinking/ingestion.
Potentially Hazardous Food:	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 microorganisms. This does not include foods which have a pH level of 4.6 or below and foods which have a water activity of 0.85 or less.
Poultry:	any domesticated bird (chickens, turkeys, ducks, geese or guineas), whether live or dead.
Process:	to make foods ready to eat. This includes (but is not limited to) washing, rinsing, thawing, heating, cutting, cooking, smoking, salting, canning, freezing, pasteurizing and reprocessing of previously processed food.
Raw Ingredient:	any food that enters into the composition of a mixture in a natural, crude, uncooked state.
Ready-to-Eat Foods:	foods that do not require any further preparation before being consumed, except perhaps washing, thawing or moderate reheating.
Refuse:	solid waste not carried by water through the sewage system.
Regulatory Authority:	the municipal, provincial, territorial or federal enforcement body having jurisdiction over the food premises for the purposes of the appropriate Act and regulation, or any agency or authorized representatives of any of them.

Retail:	the selling of food to the end-user.
Sanitary:	free from contamination.
Sanitize:	to treat by a process which destroys most microorganisms, including all pathogens. *Sanitation* has a corresponding meaning.
Service Animal:	a service or guide animal specifically trained to provide assistance to persons with disabilities as defined in the applicable provincial/territorial Act pertaining to guide animals.
Shelf Stable:	foods not requiring refrigeration. (See *Water Activity* below.)
Single Service:	designed to be used only once and then discarded.
Tableware:	eating, drinking and serving utensils for table use, such as flatware including forks, knives and spoons, and hollowware including bowls, cups, serving dishes, tumblers and plates.
Toxic Substances:	substances that are not intended for ingestion, such as cleaners, sanitizers, pesticides, insecticides, paint, petroleum, etc.
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.
Voluntary Caterer:	a member of a group, organization or agency who volunteers to prepare food for functions or gatherings.
Water Activity (A_w):	the ratio of water vapour pressure of a food product to the vapour pressure of pure water at the same temperature and pressure. Generally, food products with an A_w of less than 0.85 are considered shelf stable.

2.0 Construction, Design and Facilities

2.1 Site and Location

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

a) No land use conflicts or potential conflicts with adjacent sites.

b) Set reasonably apart from waste disposal facilities, incompatible processing facilities, and any offensive trades. Generally a minimum set back of 30 metres 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 premises should 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 clean-up and chemical storage areas, must be reasonably separated from food preparation/processing areas.

Rationale
Unnecessary movement of food and personnel within the food premises increases the likelihood of contamination, and hence 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 premises 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 the regulatory authority.

b) With regard to alterations to existing facilities, the plans and specifications regarding the alterations are to be submitted to and approved by the regulatory authority only if the alterations involve items or equipment that are specified in the *Code*. Plans for minor alterations such as the installation of shelves in a store room do not have to be submitted to the regulatory authority.

c) The term "alteration" and the context in which it is used in sub-section (b) above, means those alterations that normally require a building permit from the municipality.

2.3 Walls and Ceilings

a) Walls and ceilings in food preparation, processing and storage areas must be:
   i) constructed of finishes such as such as tile, plaster, sealed brick, stainless steel, or other equivalent materials, which 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 that are subject to moisture must be constructed of impervious materials, and 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 a 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.) Generally, a minimum slope of 2% 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) Sawdust floors are 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 room, janitorial/waste rooms, washrooms, change rooms, or other areas subject to moisture or wet cleaning. Where carpet is used in an operation, it should 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 should:
   i) effectively prevent accumulation of liquids;
   ii) be cleaned out on a regular basis;
   iii) be located so that 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 should 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 premises 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 premises. 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. Faecal contamination of the floor drains increases the likelihood of contamination of the food premises.

2.6 Stairs, Catwalks and Mezzanines

a) 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.

b) 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 or 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 premises must be supplied with sufficient artificial light to ensure the safe and sanitary production of food, and facilitate cleaning of the premises. Unless otherwise specified, the minimum lighting intensities should 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, warewashing, 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 should 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 should 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 premises 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:
   a) they are sufficient in number and capacity to prevent grease or condensation from collecting on the walls and ceiling;
   b) the filters or other grease extracting equipment are easily removable for cleaning and replacement if not designed to be cleaned in place;
   c) 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
   d) 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.

Rationale
The air supplied to the food premises must be of sufficient quality so as not to contaminate the equipment or the food. Unclean air, excessive dust, odours, or build-up of condensation or grease are all potential sources of food contamination. Build up of various constituents in equipment such as range hoods also poses 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 premises 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 should be applied to all storage areas:
   i) adequate shelving should 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 which isn't sealed to the floor should have a clear vertical space of at least 20 cm (8 in.) between the bottom shelf and the floor to facilitate cleaning. (Extra-wide shelving will need more space.) Shelving should 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; and
   iii) they must be constructed of materials which 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 to the food container.

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 which 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. As well, 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.

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. As well, 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:
i) a public water system; or

ii) a private water system that is constructed, maintained, and operated to meet health requirements, and is approved by the local or provincial/territorial regulatory agency.

b) Hot and cold water, under adequate pressure and in sufficient quantities, must be provided to meet the peak demands throughout the food premises. Hot water must be of sufficient temperature to effectively clean and sanitize.

c) Premises that are equipped with their own private water supply should have a written water sampling plan and protocol. Samples of the water should be tested at a government or accredited laboratory at a frequency deemed necessary by the regulatory agency. Test results for potable water in most jurisdictions 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.

d) The use of non-potable water in food premises 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.

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 premises is not contaminated.

2.11 Sewage and Solid Waste Disposal

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

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

c) Solid waste containers within the premises should 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) Garbage storage rooms and containers should be emptied, cleaned and sanitized as often as necessary.

e) Solid waste containers located outside the premises should 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.

Rationale
The proper disposal of sewage and solid waste is critical in preventing the spread of pathogens in the food premises. 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/territorial building authorities.

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

c) In order to prevent backflows through cross connections, backflow prevention devices (eg., 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, should be suspended away from work areas or areas of exposed food to minimize the potential for contamination.

b) They should exhibit no sign of flaking rust or paint.

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

d) Lines should be:
   i) insulated, where appropriate, to prevent condensation;
   ii) constructed and covered with a suitable material to minimize the build-up 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. It must comply with the provisions of the National Building Code to the extent deemed necessary by the regulatory authority.

b) Handwash facilities must:
   i) be located to allow convenient use by food handlers in the food preparation area, and in areas where workers are handling cash as well as serving food;
   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 (eg., liquid soap) and single-use hand drying devices such as paper hand towel dispensers, or roll dispensers;
   v) be equipped to provide hot and cold, or pre-mixed warm, running water;
   vi) provide an adequate flow of water. If a self-closing faucet is installed, it should flow for at least 20 seconds, without the need to reactivate the faucet;
   vii) be equipped with a sign which explains the proper handwashing procedures; and
   viii) be easily cleanable, and maintained in a clean and sanitary condition.

c) If approved by the regulatory authority, when food handling or food exposure is limited, alternative handwashing facilities may be provided, (e.g., handwashing

facilities in conjunction with other plumbed services such as dishwashing sinks, and/or alcohol based hand cleansers).

Rationale
Proper use of handwashing facilities is essential to personal cleanliness and to reduce the likelihood of contamination of food. 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) At least one toilet, and more if deemed necessary by the regulatory agency, must be provided for the use of workers in each food premises. The facilities must comply with the provisions of the National Building Code to the extent deemed necessary by the regulatory authority.

b) Toilet rooms should:
   i) be completely enclosed and provided with a tight-fitting and self-closing door, with the exception of those washrooms which are designed for use by handicapped persons;
   ii) be equipped with a handwash station;
   iii) have handwashing notices prominently displayed;
   iv) be conveniently located and accessible 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 should 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 handling or food preparation areas.

d) Dressing areas should be provided if workers routinely change their clothes in the food premises. Dressing areas should 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 and provided with a lockable door, unless separate facilities are provided for each sex.

e) All plumbing must meet the applicable provisions of the provincial/territorial or local plumbing codes.

Rationale
Properly located and equipped toilet facilities are necessary to protect the equipment, facility and food from faecal contamination which may be carried by insects, hands or clothing. Toilet facilities, 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 premises 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, should 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 should 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 microorganisms and filth. A service sink or curbed cleaning facility with a drain allows for the sanitary disposal of this waste water in a manner that will not contaminate the food. 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 Private Homes, Living or Sleeping Quarters

a) A private kitchen, or living quarters is not suitable for use as a commercial food premises.

b) Living or sleeping quarters located adjacent to a food premises 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.

2.18 Temporary Food Premises and Mobile Vendors

For a variety of reasons, temporary food premises, mobile food vending operations and catering trucks present some different challenges when it comes to design and equipment. Most jurisdictions provide for slightly less stringent requirements when it comes to these operations, while continuing to ensure that risks from health hazards are minimized.

2.18.1 Temporary Foodservices

Temporary foodservices are those types of foodservices with a time-limited life (e.g., special events, farmers' markets, concessions at fairs and festivals), normally less than 14 days in duration per year. The following conditions must be met:

a) Facilities must be constructed with a suitable floor and roof to preclude environmental contamination of the food via dust, rain, birds, etc.

b) Mechanical refrigeration of adequate size for the storage of potentially hazardous foods shall be provided which is capable of maintaining the potentially hazardous foods at 4^0C (40^0F) or less, and in the case of frozen food at 0^0C (32^0F) or less. Potentially hazardous foods intended to be sold in their frozen state (e.g., hard ice cream and novelties) may be exempted from the requirement for mechanical refrigeration with temperatures maintained with dry ice.

c) Where potentially hazardous foods are hot held, the hot storage equipment shall be sufficient in number and capacity to maintain the potentially hazardous foods at 60^0C (140^0F) or higher.

d) A two compartment stainless steel sink with hot and cold running water should be supplied. To facilitate washing and sanitizing, each compartment should be large enough to immerse the largest piece of equipment or utensils.

e) A separate handwash sink must be supplied that is equipped with hot and cold running water, soap in a dispenser, and single-use hand towels. However, where the nature of the operation requires only minimal use of utensils/equipment in the preparation and handling of the food (i.e., dispensing tongs), the requirement for a separate hand wash sink may be waived, with one of the two compartment sinks used for this purpose.

f) Hot and cold water must be supplied on a continuous flow basis. As such,

water under pressure, including by gravity flow, is required. Hand pumps are not acceptable for this purpose. Hot water should be supplied at a minimum of 43^0C (110^0F).

g) Thermometers should be provided to measure the food preparation and food storage temperatures.

h) Means shall be provided to protect food from contamination from the elements at all times.

i) A covered garbage receptacle of sufficient size should be provided.

j) Where portable or mobile self-contained water supplies are used, the following requirements must be met:
   i) the potable water tanks must only be used for storing potable water;
   ii) the potable water tanks must be sufficiently sized to ensure an adequate supply of water for handwashing, cleaning of equipment, and similar operations;
   iii) the waste water holding tanks should be sized to accommodate at least 125% of the volume of the potable water supply;
   iv) an approved site for disposal of the waste water shall be specified; and
   v) the potable water tank must be designed to facilitate cleaning and sanitizing as well as sanitary filling and emptying. Generally, design criteria should include the following:
      - the tank is sloped to an outlet that allows for complete drainage,
      - the tank is enclosed from the filling inlet to the discharge outlet,
      - if the tank has an access port, the port cover should be provided with a gasket and device for securing the cover in place. As well, the cover should be flanged to overlap the opening and sloped to drain,
      - if the tank has a vent, it should terminate in a downward direction and be covered with a screen or filter,
      - the tank inlet should be positioned so that it is protected from outside contaminants,
      - when compressed air is used to pressurize the potable water tank, a filter that does not pass oil or oil vapours should be installed in the air supply line between the compressor and the potable water system, and
      - if a hose is used on the tank outlet, the hose should be cleanable and should not be used for any other purpose.

Rationale
Because of the short period of use for mobile and temporary facilities, some of the requirements for foodservice premises, such as permanently plumbed fixtures, permanent washrooms and other specifications, can be varied by the local authority, while maintaining basic food safety.

2.18.2 Mobile Vendors

Mobile food service operations where potentially hazardous food is prepared on-site (e.g., hotdog carts), must comply with those provisions outlined in Section 2.18.1 above, in addition to the provisions outlined below.

a) The waste water holding tanks should be incorporated into the design of the cart or vehicle.

b) The operator of the mobile vending cart must refrain from smoking while operating the cart.

c) The cart should be returned to an approved base of operations where food supplies can be stored in a safe and sanitary manner, including under refrigeration where necessary, and where the cart can be effectively cleaned. Requirements for cleaning equipment at the base of operations are the same as those required for a food premises.

d) The potable water tank should have a minimum capacity of 36 litres.

e) Enclosed mobile vendors must be adequately ventilated to prevent the accumulation of smoke, condensation and odours.

f) Vending carts must be constructed of durable materials, and be designed with smooth impervious surfaces for easy cleaning.

Rationale
Because mobile vendors are used for the preparation or reheating of potentially hazardous foods, they must be equipped to allow for proper handwashing and the cleaning/sanitizing of utensils. A supply of hot and cold water adequate to last the entire day is required.

Food products should be stored at an approved base of operations to protect them from temperature abuse or contamination. The carts should be stored at a base of operations to allow for thorough cleaning of the cart and equipment.

2.18.3 Catering Trucks

Generally, catering trucks are mobile food vendors which move to several

locations throughout the course of a day. Those catering trucks which prepare or serve potentially hazardous foods that are not pre-packaged must meet the provisions for mobile vendors outlined in Section 2.18.2 above. However, those catering trucks which serve only pre-packaged foods (whether or not the foods are potentially hazardous) must meet the provisions outlined below.

a) Means shall be provided to protect the food from contamination from the elements at all times.

b) Where potentially hazardous foods are served, catering trucks shall be equipped with mechanical refrigeration to ensure the potentially hazardous foods are maintained at 4^0C (40^0F) or less.

c) If potable or waste water tanks are provided, they must meet the standards outlined in Section 2.18.1 (j) above.

d) The catering truck should be returned to an approved base of operations as outlined in Section 2.18.2 (d) above.

e) The operator of the catering truck must refrain from smoking while serving the food.

f) That portion of the catering truck where the food is stored and served shall be constructed of durable materials, and be designed with smooth, impervious surfaces for easy cleaning .

Rationale
Because catering trucks serve only pre-packaged foods, the provisions for handwashing requirements can be relaxed. However, since the hazards associated with unrefrigerated, potentially hazardous foods are the same, adequate refrigeration must be ensured.

2.19 Vending Machines

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

2.19.1 Liquid Foods and Ice

In equipment that dispenses or vends liquid food or ice in unpackaged form, the delivery tube, chute and orifice should 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, for example).

b) Tubes, chutes and orifices are protected from manual contact (by being recessed, for example).

c) Where the item is dispensed, the equipment is provided with means to prevent back siphonage.

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 which 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.

NSF International (formerly the National Sanitation Foundation) can be contacted for further information contained in Standard 25 - 1997, Vending Machines for Food and Beverages.
NSF International
P.O. Box 130140, Ann Arbor, Michigan, 48113-0140
Phone: 734-769-8010; Toll free: 888-NSF-9000; Fax: 734-669-0196
Email: info@nsf.org; Website: www.nsf.com

2.19.2 Self-Service Beverages

a) Self-service beverage dispensing equipment should 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 (CO^2) shall incorporate a back-flow, back-syphonage prevention device (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.

2.19.3 Beverages in Paper-Based Packaging

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

2.19.4 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 which are unsupervised or located outdoors to protect food inside the machine from sources of contamination.

2.19.5 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.

2.19.6 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.

2.20 Exterior Openings

a) Exterior openings must be protected against the entry of pests. Examples include:
   i) filling or closing holes and other gaps along the floor, walls and ceiling;
   ii) solid, self-closing, tight-fitting doors; and
   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:
   i) screens (a screen size of 16 mesh to 25 mm (1 in.) is generally recommended);
   ii) properly designed and installed air curtains; oriii) 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 premises, 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 premises.
Freedom from pests reduces the likelihood of contamination of both equipment and food.

3.0 Control of Food Hazards

3.1 Control Measures

3.1.1 Supervision

a) The operator of a food premise should 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 at all times during foodservice operations.

Rationale
The effectiveness of any management system is only as good as an organization's capacity to carry it out. 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

An operator of a food premise shall ensure that a 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 production operations is effectively controlled and minimized.

While procedures can vary between different food service operations, there are a number of procedures which are known to be significant contributors to foodborne illness originating from food service establishments. Some of the more significant contributors to foodborne illness of food from non-approved sources include acquiring food from unapproved sources, improper cooling of cooked foods, advance preparation, contamination of foods by infected workers, inadequate reheating for foods that are to be held hot, improper hot holding of foods, cross-contamination, and improper cooking. As such, it is important that food service operators prioritize their resources to ensure that those higher risk procedures found in their establishments are addressed by the management system described in Section 3.1.3.

Rationale
In food premises, it is necessary to outline specific procedures for product safety. Each product type 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) having the potential to cause an adverse health effect , need to be identified, as do the preventative measures for their control.

3.1.3 Control Principles

a) The management system referred to in Section 3.1.2 should:
   i) identify critical control points in the production and processing of menu items with potentially hazardous ingredients (including raw ingredients) that have the potential to contaminate food;
   ii) include critical limits for each critical control point;
   iii) identify procedures to regularly monitor critical control points on the critical limits;
   iv) include corrective actions and procedures to follow when deviations from critical limits occur; and
   v) record all exceptions to the procedures/specifications that impact food safety.

b) The principles listed above 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 premises are very different from that of a food processor. For example, a food premises 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 premises.

   As such, the requirement for the application of this type of management system in a food premises should be balanced by a number of factors including:
   i) Is the premises 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 premises? There are several factors which will determine the level of risk including:

- Who are the predominant customers or clientele of the premises? Consumers that are considered high risk include the elderly, young children and immune compromised 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 operation that can be considered high risk include:
- large volume operations,
- full service kitchens,
- premises with a large menu item list,
- premises that prepare foods with complicated or multi-step recipes, and
- catering operations.
- What is the level of knowledge of the operator and the food handlers with regard to food safety? Individuals with little or no knowledge can increase the level of risk of the premises.
- Does the premises 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 which 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.)?

Premises which are determined to be high risk may benefit from the management system described in Section 3.1.3 a) above.

c) In those premises 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 an alternative management system. Examples of such alternatives are:

- **For small operations with a limited number of menu items and simple processes** (i.e., 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 (i.e., 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 appropriately.

The above alternatives are only examples of management systems that can be considered. There may be others that are appropriate. Not all food premises 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 premises.

Rationale
Operators need to determine the steps in each operation which 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 3.1.3 (a)(v) should 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 should be retained for a period determined by the regulatory authority.

3.2 Incoming Material

3.2.1 Sources

3.2.1.1 Approved Sources

a) Food and food ingredients received at a food premises 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 others capable of supporting the growth of pathogenic microorganisms 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 the regulatory authority having jurisdiction.

3.2.1.2 Unapproved Sources

a) Food prepared in a private home or any other place which is not approved by the regulatory agency having jurisdiction shall not be used or offered for human consumption in a food premise.

b) Wild game that has not been inspected and approved by the jurisdiction's regulatory authority shall not be used or offered for human consumption in a food premise.

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

3.2.2 Inspection

3.2.2.1 Receiving

Food products received at a food premises should be visually inspected as they are received, and acceptable items shall be quickly moved into storage.

3.2.2.2 Package Identification

a) All food products received at a food premise should be properly packaged and labeled, according to requirements outlined in the *Food and Drugs Act and Regulation* and the *Consumer Packaging and Labelling Act and Regulations*.

b) In regards to the above it is important to note that shipping containers should 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 which should be declared depends upon the type of food.

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

d) Seafood tags should 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. As well, invoices or receipts should be retained, since lots are often split and original labels removed, and since some food arrives without labels (beef carcasses, produce and bakery products, for example).

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; and
   v) food containers with torn or removed tamper evident seals.

3.3 Temperature Control

All temperatures quoted are internal product temperatures.

3.3.1 Frozen Foods

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

3.3.2 Thawing

a) Potentially hazardous foods should be thawed quickly or in a manner that will prevent the rapid growth of pathogenic bacteria.

b) Food may be thawed:
   i) under refrigeration at 4˚C (40^0F) or less;
   ii) completely submerged in cold running water;
   iii) as part of the cooking process (but only when thawing is taken into consideration in determining cooking time); and
   iv) by microwaving.

c) When thawing foods using methods where the thawed portions of the potentially hazardous foods are above 4^0C (40^0F), the time period above 4^0C (40^0F), including the time for cooking preparation or the time required to cool the potentially hazardous foods to below 4^0C (40^0F), should not exceed 4 hours.

d) The only exception to the above procedures and temperature requirement is the thawing of frozen ready-to-eat seafood, which should be maintained at 3.3^0C. (38^0F) or less during thawing.

Rationale
Freezing prevents microbial growth in foods, but will not destroy all microorganisms. Improper thawing provides an opportunity for surviving bacteria to grow to harmful numbers and/or produce toxins. In seafood, the lower maintenance temperature of 3.3^0C. (38^0F) 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 4ºC (40^0F) 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 should 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 the regulatory authority having jurisdiction.

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 above.

c) Where foods are allowed to be served raw or lightly cooked (such as raw oysters, steak tartar, carpaccio, shakes made from raw eggs and so on), the public should be notified of the increased health risk.

Rationale
To kill microorganisms, food should be held at a required temperatures for specified times as outlined in Appendix B. Different species of microorganisms 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 thermal destruction. Heating a large roast too quickly with a high oven temperature may char or dry the outside, creating a layer of insulation that shields the inside from efficient heat penetration. To kill all pathogens in food, cooking should 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 60ºC (140^{0}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 ºC (140ºF) to 20 ºC (68ºF) or less within two hours and then from 20 ºC (68ºF) to 4 ºC (40ºF) or less within 4 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 microorganisms, which may grow to a sufficient number to cause illness.

If the cooking step prior to cooling is adequate and no recontamination occurs, all but the spore-forming organisms such as Clostridium perfringens should be killed or inactivated. However, under poorly monitored conditions, other pathogens such as Salmonella may be reintroduced. 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 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, should be cooled from 20 °C (68°F) to 4°C (40^{0}F) or less within 4 hours as outlined in the parameters of Appendix B. This includes those foods whose ingredients 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 at room temperature (not kept on ice or other equivalent methods) but for no more than 2 hours, after which, they should be discarded.

b) The foods referred to in subsection (a), above, should be marked with the time at which they were removed from temperature control.

Rationale
Potentially hazardous food 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.

3.3.9 Reheating Potentially Hazardous Foods for Hot Holding

a) Potentially hazardous foods that have been cooked, then cooled to 4^0C (40^0F) should be reheated to 60^0C (140^0F) or higher in a manner that they will pass through the Danger Zone (4^0C to 60^0C ($40\ ^0$F to 140^0F) as quickly as possible. Normally, this time should not exceed 2 hours. It is recommended that the food be reheated until it reaches an internal temperature of 74^0C (165^0F).

b) Potentially hazardous foods that have been cooked, cooled to 4^0C (40^0F), reheated and then recooled to 4^0C (40^0F), should be reheated to 74^0C (165^0F) or higher with the total time between 4^0C and 74^0C (40^0F and 165^0F) not to exceed 2 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 (40^0F) once, can be served, if for immediate service, at any temperature, provided the time the food spends between 4˚C and 60˚C (40^0F and 140^0F) does not exceed 2 hours.

b) Potentially hazardous foods that have been cooked, cooled to 4˚C (40^0F), reheated and then recooled to 4˚C (40^0F) should be served, if for immediate service, after being reheated to 74˚C (165^0F) or higher.

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" of between 4 ˚C and 60 ˚C (40^0F and 140^0F). 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

Potentially hazardous foods, cooked or reheated in microwave, should be rotated or stirred throughout or midway during cooking to compensate for uneven distribution of heat, and allowed to stand covered for a minimum of 2 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 microorganisms as do conventional cooking methods. In order to achieve comparable lethality, the food should attain a higher temperature.

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 premises, as described below.

b) The fish described in a) above should be frozen either:
   i) to a temperature of -20˚C (-4^0 F) or below for 7 days; or
   ii) to a temperature of -35˚C ($-31\ ^0$F) or below for 15 hours in a blast freezer.

Rationale
Foods of animal origin may contain food-borne 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 disease organisms including parasites are effectively destroyed. Subjecting these foods to cold temperatures, as described above, is an acceptable method for parasitic destruction.

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 should not be used as a food or food ingredient.

3.5 Preventing Contamination

3.5.1 Microbial Contamination

a) Access to food preparation areas should 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 premises, 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) Raw or unprocessed food shall be kept separate from ready-to-eat foods.

e) Raw fruits and vegetables should 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 should be carried out as described in Section 4 of this *Code.*

g) Food should 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 should be used, and the utensils should 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 or are in their unopened original package (i.e., creamers, crackers, condiments).

j) Prepared foods and raw vegetables under refrigerated storage should not be stored below raw meat and fish products.

Rationale
The food industry faces the threat that the food it serves may endanger workers or customers. Microbes are everywhere. Pathogenic microorganisms 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 premise 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 which 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 (e.g., from the recipe; from the master package; from all packages used) and referred to their physician. Appendix C provides information in regard to 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 that 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) should be approved for use according to the CFIA's *Reference Listing of Accepted Construction Materials, Packaging Materials and Non-Food Chemical Products.*

3.6.3 Food Containers

a) The operator of a food premises should ensure that only food grade containers are used.

b) High-acid foods (pH below 4.6) should not be stored or cooked in containers coated with, made of, or containing:
   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; and
   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 should be 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), returned empty containers intended for cleaning and refilling with food, should be cleaned and refilled only in a regulated food processing plant.

b) Food specific containers for beverages only may be refilled in a food premises, if:
   i) the beverage is not a potentially hazardous food;
   ii) the design of the container, the rinsing described in (iii), and the nature of the beverage, when considered together, allow for effective cleaning at home or in the food premises;
   iii) facilities for rinsing the containers with un-recirculated hot water under pressure are part of the dispensing system; and
   iv) the consumer-owned container returned to the food premises for refilling is refilled only for the same consumer.

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 coating, antimony, and cadmium. Some foods that have been involved in metal poisoning are sauerkraut, tomatoes, fruit gelatins, 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 should 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 should be routinely verified during transportation, storage and distribution to ensure that:

i) foods are protected from all possible forms of contamination;
ii) foods are protected from all types of damage that may render the food unfit for human consumption;
iii) a protective environment is provided to effectively control the growth of pathogenic or spoilage microorganisms, such as safe holding temperatures of $4^{O}C$ ($40^{0}F$) or below, or $60^{O}C$ ($140^{0}F$) or above; and
iv) 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 inpected to ensure they are free of possible contaminants, and that they 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, which 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 premises 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 premise operator shall make every reasonable attempt to verify that the food supplies have been protected from contamination and temperature abuse.

Off-site caterers and premises involved in the preparation and distribution of foods from centralized kitchens need to verify the food transportation, storage and distribution units which 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 should be monitored to ensure that proper temperatures are maintained during their transportation, storage and distribution. Ideally, temperature recording devices, which produce a graphic temperature history of the food product and/or storage environment, should be used. Products should be checked on 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 should be completely familiar with capacity levels and restrictions to loading such units, including volume limits, air flow, temperature range variances, etc., 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, between 4˚C and 60˚C (40^0F and 140^0F)**.**

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 otherwise 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.

3.7.4 Storage Procedures

a) Rotation of food stocks in storage areas should 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, should be marked with the date of preparation or the "consume by" date. In general, refrigerated ready-to-eat potentially hazardous foods should be discarded if not consumed within 10 days from the date of preparation.

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

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 follow-up.

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 should 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 and product deterioration. Temperature abuse during transportation, storage or distribution increases the potential for foodborne illness.

4.0 Maintenance and Sanitation

A food premises 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 premises, including wastewater and refuse collection systems, all present a potential source of contamination of food and food products. These area 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 microorganisms. These microorganisms 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 dismantling, cleaning and sanitizing at the end of each day or more frequently to prevent microbiological proliferation.

4.1 Equipment

4.1.1 Location

a) Equipment used in a food premises must be located so that it:
   i) is not exposed to any sources of contamination unrelated to the normal operations of the food premises;
   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) should 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 premises must be kept in a clean and sanitary condition to minimize the risk of contamination of food by equipment surfaces. Therefore, when considering the location of equipment, several factors should be taken into account, including ease of cleaning, the intended use of equipment, and the prevention of contamination of the equipment. Special care should be taken in the placement of food equipment which 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) should be either:

i) sealed to adjoining walls, floors and equipment; or
ii) spaced in such a manner to allow for cleaning under and around equipment.

4.1.3 Design and Construction

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

b) Ideally, food service equipment and utensils should comply with international food service equipment standards such as those administered by third parties such as the *American National Standards Institute (ANSI), NSF International (NSFI) and Underwriters' Laboratories of Canada (ULC).*

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 that they are smooth, non-absorbent and easily cleanable to eliminate harbourage for microorganisms and other contaminants.

4.1.4 Food Contact Surfaces

Food contact surfaces of equipment must be:

i) made of materials that are corrosion resistant;
ii) made of materials that do not pass on colours, odours or tastes to food and do not allow migration of unsafe substances into food;
iii) smooth and non-absorbent;
iv) free from breaks, cracks, open seams, chips, pits and similar imperfections, should these be shown to impede effective cleaning and sanitizing;

v) free from sharp internal angles, corners and crevices;
vi) finished to have smooth welds and joints; and
vii) accessible for cleaning and inspection (by disassembly, if necessary).

Rationale
Furthermore, food contact surfaces must not introduce substances into food, which are harmful or change food characteristics. Examples of surfaces which 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 110^0C (230^0 F) or above.

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:
i) free from unnecessary ledges, projections and crevices; and
ii) 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 "Clean In Place (CIP)" should 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.

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 to verify 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, and 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.

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 could result in food being held at unsafe temperatures (e.g., malfunctioning refrigeration equipment) or in food becoming contaminated (e.g., chipped or cracked equipment).

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 premises 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 should be easily readable and accurate to $\pm$ 1.0^{0}C ($\pm$ 2.0^{0}F) in the operating range, and calibrated on a regular basis to ensure correct functioning. Calibration logs should 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 microorganisms. 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 Glass Temperature Monitoring Equipment

Food temperature measuring devices should not have sensors or stems constructed of glass unless they are encased in a shatterproof sleeve.

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 that the device breaks.

4.1.13 Containers for Waste and Inedible Substances

Containers for waste, by-products, and inedible substances should be:

i) specifically and properly labelled to identify the contents;
ii) leak-proof;
iii) constructed of an impervious material which is easy to clean or disposable;
iv) covered; and
v) securely closeable, if appropriate.

Rationale
To prevent foods from becoming contaminated, wastes, by-products 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 build-up of contaminants, and should be covered and securely closeable (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 premises 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 premises 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:
   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; and
   vi) inspection and monitoring records.

c) Document that the sanitation program is monitored and its effectiveness verified.

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 3.1.3 of this Code, for management principles to control food hazards. The objective of the sanitation program is to provide reasonable assurance that the food premises 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. As well, particularly in a smaller food premises 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 should be cleaned and sanitized at least every four hours (e.g., deli meat slicers).

4.2.4 Cleaning of Reusable Food Equipment

Cleaning processes for all reusable food equipment and utensils in the food premises must effectively remove food residues and dirt from the item.

Cleaning should 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
Reusable food equipment must be effectively cleaned to remove gross debris, soil and bacterial film to prevent the contamination of food which may come into contact with the equipment.

4.2.5 Sanitizing of Equipment Food Contact Surfaces and Utensils

a) Once cleaned in the manner described above, the food contact surfaces of equipment and utensils should then be sanitized by heat or chemical means.

i) Surfaces are effectively sanitized when, after application on a cleaned surface, a 5 log reduction of disease-causing microorganisms 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 air-dried, if possible.

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) should not be used for other purposes such a for wiping raw animal foods;
ii) should be routinely cleaned and when not in use kept in in separate sanitizing solution which is maintained at a concentration as specified in Section 4.2.6.

Rationale
Utensils 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 should apply the sanitizing solution as specified below:

a) A chlorine solution should 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)	24°C (75°F)
100	13°C (55°F)	13°C (55°F)

b) An iodine solution used as a sanitizing agent should have:
   i) a minimum temperature of 24°C (75°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 should:
   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 should 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 should keep records of sanitizer concentrations and temperatures.

Rationale
***The sanitizer concentrations, pH 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:
   i) for a stationary rack, single temperature machine, 74^0 C (165^0F);
   ii) for a stationary rack, dual temperature machine, 66^0 C (151^0F);
   iii) for a single tank, conveyor, dual temperature machine, 71^0 C (160^0F); and
   iv) for multitank, conveyor, multitemperature machine, 66^0 C (151^0F).

b) Mechanical dishwashing machines employing water temperature as a means of sanitizing tableware, utensils and equipment should ensure that dishware is exposed to clean rinse water for at least 10 seconds, at a temperature (measured at the manifold) of:
   i) 74^0C (165^0F) for single tank, stationary rack, single temperature machines; or
   ii) 82^0C (179^0F) for all other machines.

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 cooking utensils, the manual dishwashing equipment should include:
   i) at least a double sink of non-corrodible metal of sufficient size to permit complete immersion of the utensils to be sanitized;

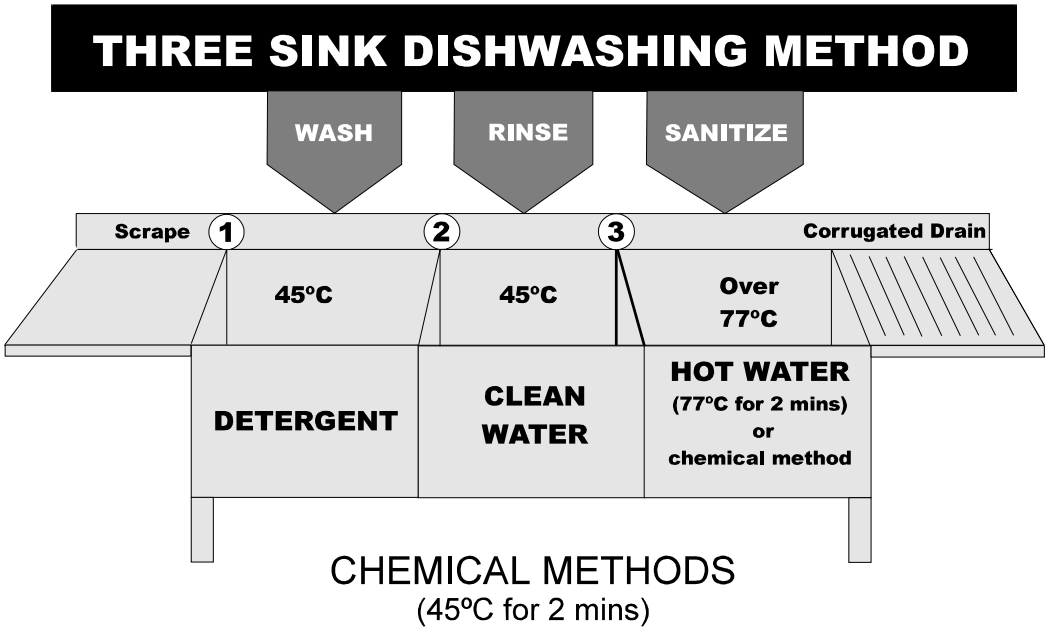
ii) draining boards (if they are to be provided) of non-corrodible and non-absorbent material;
iii) a thermometer capable of measuring temperatures between 0ºC and 100ºC (32^0 F and 212^0 F); and
iv) testing equipment to determine the strength of any chemical used as the sanitizing agent.

b) When relying on the manual method for washing and sanitizing dishware and serving/dining utensils, the operator should use a two or three compartment sink and the following procedure. Dishes should 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 45ºC (113^0 F);
iii) rinsed in the second compartment sink in clean potable water maintained at a temperature of not less than 45ºC (113^0 F); and
iv) sanitized in the third compartment sink by immersion, in one of the following methods:
- for at least 2 minutes in water at a temperature of at least 77ºC (171^0 F);
- for at least 2 minutes in a chlorine solution of 100 - 200 mg/L available chlorine at a temperature of not less than 45ºC (113^0 F);
- for at least 2 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 45ºC (113^0 F);
- for at least 2 minutes in a solution containing not higher than 25 mg/L iodine at a temperature of not less than 45ºC (113^0 F); or
- 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 subclause (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 should test the temperatures of the water and the sanitizer concentration frequently to ensure that effective sanitizing is occurring.



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

Rationale

Once food equipment has been cleaned, food contact surfaces and utensils should be sanitized through mechanical or manual methods, to reduce the risk of food becoming contaminated with microorganisms 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.

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

4.3 Pest Management

4.3.1 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) removing dirt, soil or filth if present;
   ii) verifying cleaning procedures;
   iii) cleaning and sanitizing surfaces contaminated by pests;
   iv) destroying and sealing off nests and breeding places; and
   v) protecting the food premises against the entrance of pests.

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

4.3.2 Eradication of Pests: Methods

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

b) Insect control devices that are used to electrocute flying insects should be located at least 2 metres (6 feet) away from any food handling area. They should be equipped with an escape resistant trap, and they should 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) should be changed regularly or when loaded with insects.

d) Eradication of uncontrolled pests should 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 premises 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.

4.3.3 Use of Rodenticides/Insecticides

a) Rodenticides and insecticides used in a food premises must be used in such a manner as to prevent the contamination of food. It is preferable that they not be applied while food production/preparation is 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.

b) All material used should be identified on a list of approved rodenticides and insecticides which confirms that these may be used in a commercial premises.

4.3.4 Documentation

a) Pest control measures shall be documented. Owners/operators should take note of information the pest control technician may need for follow-up.

b) Documentation should include:
   i) the name of the pest control operator responsible;
   ii) the chemicals used for pest control (with the concentrations applied);
   iii) the procedures and methods used;
   iv) the frequency of application; and
   v) 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 premises should be carried out only by individuals certified in pest control operations. Since chemicals used to eradicate pests may also be toxic to humans, food should be adequately protected while these substances are being applied in the food premises. 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 premises 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 premises. 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 which 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, Refuse and Recyclable Materials

Waste, refuse and recyclable materials should be removed from the food premises 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.

4.5.2 Sewage and Other Liquid Waste

Sewage waste systems and other non-sewage liquid conveyance and disposal systems should be flushed clean on a periodic basis.

4.6 General Maintenance Schedules

Surfaces, such as floors, walls and ceilings, should 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 premises are responsible for ensuring that food products are handled (throughout storage, preparation, display, service and presentation) in a manner which prevents contamination.

5.1 Training

Food handlers should be trained in safe food handling techniques which are appropriate for their level of responsibility. Review sessions should be done on a regular basis.

5.2 Clothing

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

5.3 Aprons

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

5.4 Hair

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

5.5 Personal Habits

a) Food handlers who engage in activities which 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.

5.6 Handwashing

Food handlers are to thoroughly wash their hands before commencing work. In particular, 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 soiled.

a) A thorough hand washing includes vigorously rubbing together the surfaces of the lathered hands and exposed arms for at least 20 seconds followed by a thorough rinsing with warm clean water.

b) In addition to the procedure outlined in (a), it is recommended that a nail brush and soap be used to clean underneath the nails, followed by a thorough rinsing with warm clean water. As well, particular attention should be given to the tips of the fingers and between all fingers. This is particularly important after using the washroom.

5.7 Personal Effects and Jewelry

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

5.8 Illness and Disease

a) The operator of a food premises 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. If a food handler is suffering from an illness or communicable disease, managers are responsible for ensuring appropriate action is taken, that may include excluding that individual from activities that involve the handling of food or food contact surfaces, or authorizing the individual's absence from the work place.

b) Personnel suffering from a communicable disease have a responsibility to advise management. Personnel suffering from a temporary illness must obtain medical leave or, depending on the nature of the illness, be reassigned to work that will not result in contamination of the food.

c) 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.

d) 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; or

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

Rational
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 microorganisms 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 premises if they do not maintain an appropriate level of personal hygiene and avoid habits that may contaminate food.

5.9 Injuries

a) Personnel with open wounds should 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 should wear vinyl gloves or refrain from handling foods entirely.

5.10 Visitors

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

6.0 Education and Training

6.1 Educational Programs

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

6.2 Mandatory Educational Programs

a) Mandatory educational programs must be required in all jurisdictions for managers/supervisors 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 premises. 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 (i.e., prepared-from-scratch menu items versus preparation or reheating of prepackaged, ready-to-eat foods.

c) These programs should be described relative to the expected learning outcomes and certification standards. (See Section 6.5.1 in this *Code.*)

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 which could affect food safety.

One of the best assurances that an operator of a food premises can have that the food or food product will be safe, is the employment of personnel that 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 Training Programs

6.3.1 Responsibility

a) The regulatory authority should only recognize food training programs that have been authorized by a National Food Safety Training Certification Group.

b) The certification of the trainer of food training should be the responsibility of the regulatory authority.

c) The training of operators or food handlers can be undertaken by a third party who is authorized by the regulatory agency.

Rationale
All regulatory authorities provide education programs, since they play an important role in achieving compliance with food safety regulations. Some jurisdictions require mandatory food handler education programs while others prefer voluntary training programs.

6.3.2 Food Handler Training

Every operator of a food establishment should ensure that food handlers have the necessary knowledge and skills to enable them to handle food hygienically.

6.3.3 Continuing Educational Training

Every food premise 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 the problem, by re-emphasizing the principles of good food handling practices.

However, 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 fulfil their job requirements, and to significantly contribute to a safe food industry.

6.3.4 Time Expiration of Training Programs

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

6.4 Components of Food Safety Training Courses

6.4.1 Certification Programs

Courses should meet the learning outcomes described in Section 6.5 of this *Code*, and participants should be able to demonstrate competencies through standard testing recognized by the regulatory authority having jurisdiction.

6.4.2 Course Content

The course content of food safety educational programs may be generic to all aspects of food safety. However, 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 foodservice 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 that they do. This approach increases knowledge retention and program success rates.

6.4.3 Course Selection

Educational programs may originate from institutions, industry or regulatory authorities, provided these programs satisfy the requirements of the learning criteria and are recognized by the regulatory authority.

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.

6.5 Learning Outcomes

6.5.1 Operators

The person in charge shall hold a certificate confirming his/her successful completion of a training program which verifies his/her knowledge of the following aspects of food safety:

a) The relationship between the prevention of food borne disease and the personal hygiene of a food employee.

b) The responsibility of the person in charge for preventing the transmission of foodborne disease by a food employee who has a disease or medical condition that may cause foodborne disease.

c) The importance of time/temperature in maintaining the safety of potentially hazardous food and preventing foodborne illness.

d) The hazards involved in the consumption of raw or undercooked meat, poultry, eggs, fish, fruits and vegetables.

e) The required times/temperatures for safely cooking potentially hazardous food, such as meats, poultry, eggs and fish.

f) The required times/temperatures for safe refrigerated storage, hot holding, cooling, cooking and reheating of potentially hazardous food.

g) The relationship between the prevention of foodborne illness and the management and control of the following:
   i) cross-contamination;
   ii) hand contact with ready-to-eat foods;

iii) handwashing and personal hygiene; and
iv) the importance of maintaining a clean food premises which is in a state of good repair.

h) The relationship between food safety and the provision of equipment that is:
i) sufficient in number and capacity; and
ii) properly designed, constructed, located, installed, operated, maintained and cleaned.

i) Correct procedures for cleaning and sanitizing utensils and food contact surfaces of equipment.

j) Knowledge of the source(s) of water used in the establishment, and measures taken to assure that it remains protected from contamination, such as providing protection from backflow and precluding the creation of cross-connections.

k) The correct handling of poisonous or toxic materials and allergens in the food premises and the procedures necessary to assure that such materials are safely stored, dispensed, used and disposed of according to law.

l) Knowledge of critical control points in the operation, and ability to explain steps taken to assure that the points are controlled in accordance with the requirements of the regulatory authority.

m) The responsibilities, rights, and authorities assigned by local law or the appropriate code to the:
i) food employee;
ii) person in charge; and
iii) regulatory authority.

6.5.2 Food Handlers

a) Educational courses and programs provided to food handlers should be designed to effectively meet or exceed the learning objectives outlined below, including knowledge of:
i) the food handler's role and responsibility in protecting food from contamination and deterioration;
ii) the main properties of common foods;
iii) the main types of microorganisms, their sources, the physical and chemical factors that affect their growth, reproduction, activity and death, and the difference between harmful and harmless

microorganisms;

iv) the common causes of foodborne illnesses, their characteristics, and the procedures and practices that will prevent and control their incidence;

v) the basic elements of HACCP; and

vi) the allergenic properties of certain foods.

b) Operators should maintain records indicating which employees have taken courses, the dates, and any relevant additional information.

Appendices

APPENDIX A: Potentially Hazardous Foods

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

Potentially hazardous foods are generally defined as foods in a form or state which is capable of supporting the rapid and progressive growth of infectious and/or toxigenic microorganisms. Such foods include, but are not limited to, milk or milk products, eggs, meat, poultry, fish, shellfish (edible mollusca and crustaceans), or any other ingredients.

Other foods that fall into the "potentially hazardous" category include certain baked goods (e.g., with cream filling) and some types of vegetables. Not included are foods which have a pH level of 4.6 or below and foods which have a water activity of 0.85 or less**.**

This section is extracted from the *Guidelines for Production, Distribution, Retailing and Use of Refrigerated Prepackaged Foods with Extended Shelf Life. Guideline No. 7, Health Protection Branch, Health Canada, March 1, 1992.*

---

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 (that is, they may be kept at temperatures greater than 4ºC (40^0F) when they are supposed to be refrigerated, or kept at temperatures below 60ºC (140^0F) 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 "A_w", refers to the amount of water in the food product that is available to the growing microorganism.

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 (A_w >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 microorganisms (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. ***(Editor's note:*** *Foodborne illness is generally caused by infectious and/or toxigenic microorganisms.)*

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 which **do not** fall into the potentially hazardous category are:

(a) Frozen foods which remain frozen up to the time of cooking.

(b) Commercially canned, shelf stable foods which are safely stored in their original intact containers at normal room temperatures; (for example, 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 micro flora.

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

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

On a few occasions, bean sprouts have been responsible for food poisoning, probably 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 which 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 unduly extended shelf-life of these refrigerated products. These and other microorganisms 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.

Editor's Note: Several measures can be taken to minimize these concerns. The items should not be used after the date (shelf life code) provided by the manufacturer; they should be continually stored at 4^0C 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 10 days after opening).

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

Factors controlling the growth of disease-causing microorganisms include: water activity

(A_w), acidity (pH), temperature and time, the surrounding atmosphere, the inherent resistance of the food itself 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 (40^0F) or less, or heating above 60°C (140^0F) — is the sole means of preventing, or at least limiting, the growth of food poisoning microorganisms.

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 microorganism will or will not grow. Different microorganisms 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 foods. These food products require a number of complex control steps to ensure product safety (i.e., 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 mayonnaise-based salads, cream-based soups and sauces.*

Medium risk foods *are food products which require a certain step to minimize potential health risk (i.e., 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 which 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 microorganisms, 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	4^0C (40^0F) or less
Freezing:	minus 18^0C (0^0F) or less
Parasite Reduction: Raw Fish	minus 20^0C (minus 4^0F) for 7 days or, minus 35^0C (minus 31^0F) in a blast freezer for 15 hours
Cooking: Food Mixtures containing Poultry, Eggs, Meat, Fish or other potentially hazardous foods	Internal Temperature of 74^0C (165^0F) for at least 10 minutes
Pork, Lamb, Veal, Beef (whole cuts)	Internal temperature of 70^0C (158^0F)
Rare Roast Beef	Internal temperature of 63^0C (145^0F) for 3 minutes
Poultry	Internal temperature of 85^0C (185^0F) for 15 seconds
Stuffing in Poultry	74^0C (165^0F)
Ground Meat[1]	70^0C (158^0F)
Eggs[2]	63^0C (145^0F) for 15 seconds
Fish[3]	70^0C (158^0F)
Reheating	74^0C (165^0F)
Holding Hot Foods	60^0C (140^0F)
Cooling	60^0C (140^0F) to 20^0C (68^0F) within 2 hours 20^0C (68^0F) to 4^0C (40^0F) 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 shell fish should be aware that it should be cooked to assure safety.

APPENDIX C: Typical Food Allergies

I. Strategies to Prevent Adverse Reactions

To help the industry deal with typical food allergies, the Canadian Food Inspection Agency circulated a memo to food manufacturers, importers, distributors and their associations, on **March 31, 1998.** The text of that memo is reprinted, with permission, here.

Labelling of Foods Causing Allergies and Sensitivities

Numerous incidents of allergic and sensitivity reactions to both domestic and imported foods are being reported to the Canadian Food Inspection Agency (CFIA). The purpose of this letter is to inform you of the potentially serious consequences of such adverse reactions and to highlight the importance of developing strategies to prevent their occurrence.

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

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

If these foods, or their derivatives, are not labelled or are incorrectly labelled, or if inadvertent carry-over occurs during manufacture, 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**

hydrolysed plant proteins, starches, modified starches and lecithin (e.g., hydrolysed 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 prepackaged 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:

- **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*.

The CFIA recognizes that despite all possible precautions, the presence of allergenic ingredients cannot always be avoided. In order to assist consumers with food sensitivities, the Canadian government, in consultation with industry and allergy groups, developed a policy on precautionary labelling, e.g., "may contain peanuts". This policy allows the food industry to voluntarily label products which may inadvertently contain substances capable of causing severe adverse reactions. Precautionary labelling, however, must be truthful and must not be used in lieu of adherence to good manufacturing practices.

Accurate and complete labelling of foods will reduce the need for costly food recalls. It will also assist Canadians with severe food sensitivities to make safe choices from a wider variety of foods in the marketplace.

For further information, please contact the Canadian Food Inspection Agency office nearest you.

II. 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.

Restaurants can obtain a *Restaurant Warning Card* which is designed to alert restaurant staff to consumer allergies. It is intended to help to minimize misunderstandings and mistakes. To receive more information about this, please contact:

National Allergy/Asthma Information Association
30 Eglinton Avenue, West, Suite 750
Mississauga, Ontario L5R 3E7
Tel: (905) 712-2242
Fax: (905) 712-2245
Tollfree: (800) 611-7011
Website: www.aaia.national@sympatico.ca

Restaurants Canada (formerly Canadian Restaurant and Food Services Association)
1155 Queen Street West
Toronto, ON M6J 1J4
T: 416-923-8416
Toll-free: 1-800-387-5649
F: 416-923-1450
Website: www.https://restaurantscanada.org/.com

APPENDIX D: Recall Manuals

1. Food Emergency Recall Guidelines
Chapters 1 & 2
The Canadian Food Inspection Agency
59 Camelot Drive
Nepean, Ontario K1A 0Y9
Tel: (613) 225-2342
Fax: (613) 228-6611
Email: cfiamaster@em.agr.ca
Website: www.cfia-acia.agr.ca

2. Product Recall Procedure Guidelines
Food and Consumer Products Manufacturers of Canada
885 Don Mills Road, Suite 301
Don Mills, Ontario M3C 1V9
Tel: (416) 510-8024
Fax: (416) 510-8043
Email: info@fcpmc.com
Website: www.fcpmc.com

3. Guidelines for Product Recall
Grocery Manufacturers of America
1010 Wisconsin Avenue N.W., Suite 800
Washington, D.C. 20007
Tel: (202) 337-9400
Fax: (202) 337-4508
Website: www.gmabrands.com

4. Recall Manual:
Guidelines for evaluation of potential product contamination and procedures for withdrawal and/or recall of food products
Food Marketing Institute
800 Connecticut Avenue N.W.
Washington, D.C. 20006
Tel: (202) 429-8273
Fax: (202) 429-4550
Email: fightbac@mindspring.com
Website: www.fightbac.org

5. Standard Instructions Outline for Product Recall

National Dairy Council of Canada
221 Laurier Avenue East
Ottawa, Ontario K1N 6P1
Tel: (613) 238-4116
Fax: (613) 238-6247
Email: info@ndcc.ca
Website: www.ndcc.ca

APPENDIX E: Selected Information Sources

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.

The Canadian Food Inspection Agency
59 Camelot Drive
Nepean, Ontario K1A 0Y9
Tel: (613) 225-2342
Website: www.cfia-acia.agr.ca/english/actsregs/meatreg/sched1.htm (English)
www.cfia-acia.agr.ca/francasi/actsregs/meatreg/annexe1.html (French)

2. Hazard Analysis Critical Control Point : Aspects of Food Safety

A comprehensive manual, the *HACCP Course Book* (formerly the *HACCP Reference Book*) is offered for sale by the Educational Foundation of the National Restaurant Association.

HACCP Course Book
Educational Foundation of the National Restaurant Association
Tel: (312) 715-1010
Fax: (312) 715-0331
Tollfree: (800) 765-2122; ext.701 — Customer Service
Website: www.edfound.org

3. NSF Standards

NSF International (formerly the National Sanitation Foundation) maintains a comprehensive listing of standards for food equipment, from food carts to dispensing freezers, dinnerware to dishwashers. Publications are for sale.

NSF International
P.O. Box 130140
Ann Arbor, Michigan, 48113-0140
Tel: 734-769-8010
Toll free: 888-NSF-9000
Fax: 734-669-0196
Email: info@nsf.org
Website: www.nsf.com