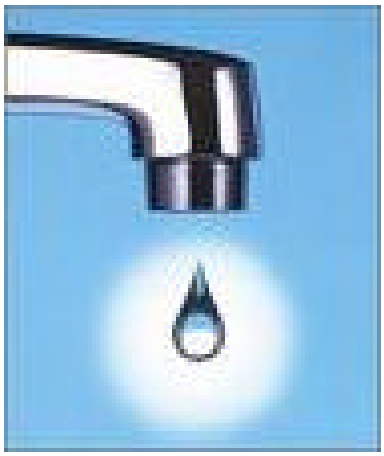
Archived Content

Canadian Guidelines for Food Processing during Adverse Water Events



Federal/Provincial/Territorial Committee on Food Safety Policy

November 20, 2006

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Preamble

Adverse water events can occur in public water supplies or in private water sources that may be used by food processors. This document is intended for food processors as well as water suppliers and government authorities responsible for issuing water advisories and for food safety. It is not intended to supersede other related guidelines or regulatory requirements, such as Hazard Analysis Critical Control Points (HACCP) food safety or water safety programs, but to be used as a complement as appropriate.

1. Background

In May 2004, the Federal/Provincial/Territorial Committee on Food Safety Policy (FPTCFSP) identified a need to develop guidance for food processors during adverse water events. A Working Group of the FPTCFSP determined that a comprehensive document including both pro-active and reactive management of the risks to food safety associated with adverse water events would provide valuable and consistent guidance to food processors and government officials.

The Working Group developed the *Canadian Guidelines for Food Processing during Adverse Water Events* (hereby referred to as "the Guidelines") by building on the experience of individual jurisdictions in these matters. The Guidelines cover background information on water advisories, the roles and responsibilities of government and food processors during adverse water events, recommendations to prepare and react to such conditions and advice on best communication practices within government as well as between government and industry. The Guidelines also provide an annex summarizing federal, provincial, and territorial (FPT) legislation and regulations governing the safe use of water in food processing as well as a procedural checklist for food processors. The Guidelines were endorsed by the FPTCFSP on November 20, 2006.

2. Introduction

Water contamination events in recent years such as the outbreaks of *Escherichia coli* (*E. coli*) O157:H7 in Walkerton, Ontario (May 2000), Cryptosporidum in North Battleford, Saskatchewan, (April 2001), and Kelowna, British Columbia, (July 1996), have highlighted the potential impact of water quality on food safety, the importance of preventing the contamination of water and the need for a pro-active response strategy during adverse water events. Water is particularly important in the manufacture of commercial foods since water is bottled and sold, utilized as an ingredient, and comes into direct contact with food as a result of fluming, cleaning, washing and processing.

Water quality issues exist throughout Canada. The nature of water issues varies between parts of Canada due to a number of factors, including:

- climate and weather conditions;
- seasonal run-off and drought;
- aged infrastructure, insufficient well field protection;
- the need for irrigation;
- the use of storage reservoirs and aqueducts;
- the source of the water;
- surrounding land uses such as agriculture, forestry, and industrial;
- sewage and septic discharge; and
- the type, capacity and maintenance of treatment systems.

Since the Walkerton tragedy, there has been an increasing focus on water and water related concerns at all levels of government. The trend has been toward not only increased monitoring activities, but pro-actively enhancing infra-structure, response systems and communications. Increased monitoring and surveillance activities will inevitably result in a larger number of adverse water advisories issued due to enhanced identification efforts. Consequently, there may be a number of boil water advisories in effect at any one time within various provinces.

Jurisdiction over water quality and food processing within the food manufacturing sector is a complex matrix shared among the FPT government agencies. As such, the impact of water quality on food processing is an issue which benefits from collaboration of FPT governments in sharing knowledge and information.

The shared goal of the food processing industry and of government at all levels is to prevent contamination of food by water, through control of water quality, including water treatment and monitoring, at the manufacturing level. Therefore, the Guidelines take into account the regulatory interests of the FPT government agencies as well as the needs of the food processing sector.

3. Objectives

The primary purpose of the Guidelines is to provide key elements for consideration by industry and governments within Canada in order to maintain food safety during adverse water events, and to minimize the risk to the consumer.

The five objectives of the Guidelines are to:

- provide general considerations about water advisories to food processors;
- promote awareness of the food safety concerns during adverse water events;

- provide an overview of the roles and responsibilities of industry and government with respect to water used in food processing, as well as the role of government in the provision of safe drinking water;
- provide guidance to industry to facilitate the development and implementation of safeguards in order to maintain food safety; and
- promote communication among industry, governments and water suppliers in order to provide an efficient and collaborative response to adverse water events.

It should be noted that, while the primary purpose of the Guidelines is to promote food safety and public health protection, it is hoped that the Guidelines will also assist industry in minimizing the economic impacts of adverse water events.

4. Scope

The Guidelines pertain to the safe use of water in the processing of foods during adverse water events. They apply specifically to water used after primary production, *wherever potable water is normally used in direct or indirect contact with food*. This includes water used in the field, in food processing establishments or during transport, for instance:

- water used for fluming, washing, rinsing, cooking, cooling, thawing, packaging and storing food;
- water used as an ingredient in food;
- water used for ice making;
- water used to wash and sanitize food processing equipment; and
- water used for consumption by employees and for personal hygiene.

The Guidelines are not intended as a tool to assess whether potable water or non-potable water should be used in the range of food processing operations during normal circumstances (e.g. washing and fluming produce in the field). This assessment should be done during the development of food safety programs, as it needs to take into consideration further processing steps designed to reduce or eliminate contamination that may be introduced by the use of non potable water.

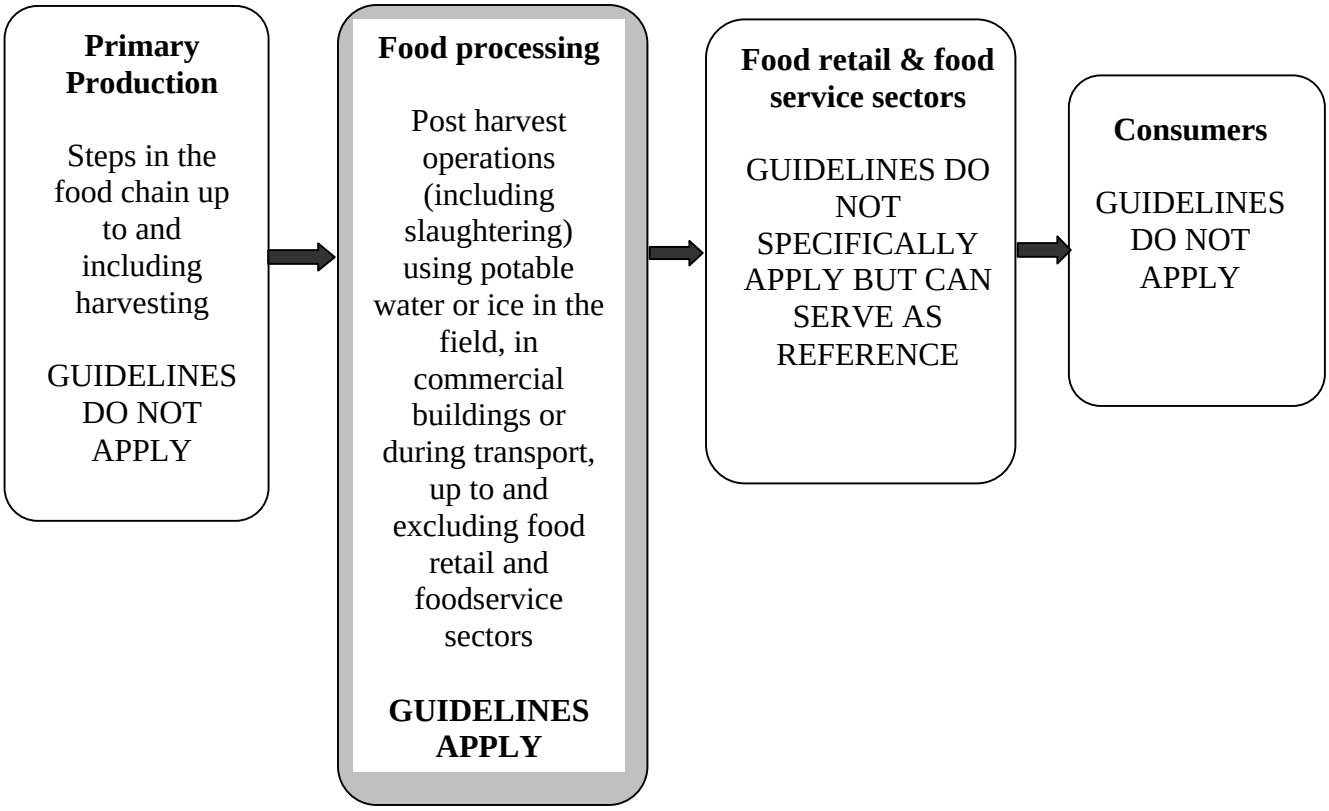
The agricultural use of water prior to harvest is also beyond the scope of the Guidelines. The quality and quantity of water for use at the primary agricultural level is within the mandates of the federal departments of Agriculture, Environment, and Health Canada, and their provincial and territorial counterparts, and is being addressed by these departments through other committees.

The Guidelines are written to address issues faced by food processors during adverse water events, and do not cover additional issues that may be faced by the food retail and food service sectors (e.g. water served to customers or used in beverage dispensers, water mist used in produce display cases, etc.). Therefore the Guidelines do not specifically apply to these sectors but can serve as a

useful reference, especially if no other guidance is available from provincial/territorial government authorities.

Finally, the Guidelines are not intended to provide guidance to consumers on the use of water during adverse water events. This type of information is available from Health Canada[1] and most provincial/territorial governments.

The schematic below illustrates the applicability of the guidelines along the food continuum.



[1] Health Canada guidance to consumers is available at: http://www.hc-sc.gc.ca/ewh-semt/water-eau/drink-potab/index_e.html

5. Limitations

There are differences between jurisdictions regarding drinking water controls and management of food safety during adverse water events. The key differences identified during the development of the Guidelines are summarized below. This document is intended to provide a common reference point for FPT government officials and Canadian food processors in this complex environment.

Differences in legislation, guidelines and protocols

The *Guidelines for Canadian Drinking Water Quality* are developed under the authority of the FPT Deputy Ministers of Health and the Canadian Council of Ministers of the Environment. These guidelines outline the maximum acceptable concentrations and aesthetic objectives for microbiological, chemical, physical and radiological parameters of potable water obtained from all private or municipal water sources. Although Provincial and Territorial officials have sanctioned these guidelines, they have the authority within their own area of jurisdiction to adopt and enforce legislation for drinking water. They may also already have provincial/territorial guidelines and protocols related to food safety and adverse water events.

Differences in definitions of potable water and adverse water events

Definitions of potable water and interpretation of testing results may vary across the country. Likewise, what one jurisdiction identifies as an adverse water event may be different from another, partially due to the inherent characteristics of the geographical area.

6. Water advisories

6.1 General considerations

When health authorities or drinking water treatment plant operators become aware of adverse water conditions that may impact on public health, a boil water advisory or drinking water avoidance advisory may be issued. Boil water advisories usually relate to the microbiological quality of water that can be corrected by boiling for a period of time (usually 1 minute). Drinking water avoidance advisories may be issued when the adverse water event is due to conditions, such as chemical contamination, that cannot be corrected through boiling. Unlike boil water advisories, there is no standard solution to correct the quality of water affected by drinking water avoidance advisories, as the solution would depend on a number of factors as outlined in Section 8.1.

In some cases authorities may decide it is necessary to issue a precautionary advisory based on incomplete results. For example, authorities may issue a precautionary boil water advisory if there is a sudden drop in the levels of residual chlorine within a distribution system or if there is a physical break or a pressure loss in a distribution system. At the same time they will initiate

sampling and analyses for *E. coli* and necessary corrective actions. This proactive approach ensures that the public exposure to any microbiological contamination is minimised.

6.2 When are water advisories issued?

6.2.1. Issuance of boil water advisories

Boil water advisories are usually issued for one or more of the following reasons:

- Where epidemiological evidence indicates that the drinking water is or may be responsible for an outbreak;

- When the microbiological quality indicates that the drinking water has not been adequately disinfected (e.g. confirmed presence of total coliforms in the water leaving the treatment plant) or has been subject to faecal contamination following treatment (e.g. confirmed presence of *E. coli* in the distribution system);

- When drinking water treatment plants are unable to correct significant deteriorations in source water quality or the quality of water leaving the treatment plant is not in accordance with applicable standards respecting microbiological quality, chlorine residuals or requirements of other antimicrobial treatments and turbidity;

  Examples include poor microbiological quality of source water associated with spills of untreated sewage or manure and heavy rainfall or sudden snow melt leading to unacceptable source water turbidity.

- Malfunction of equipment in water treatment plant, leading to inadequate filtration or disinfection or loss of pressure during distribution;

- As a precautionary measure during localised emergency repairs to the distribution system; and

- Situations where operation of the water treatment plant may compromise public health.

  Note: In small towns or villages the operation of the water treatment plant is often the responsibility of one person. If this individual is unable to carry out his/her duties for health reasons for example, public health officials will advise users to boil their water until the individual returns to work or until a replacement can be found.

6.2.2. Issuance of drinking water avoidance advisories

Drinking water avoidance advisories may be issued when there is concern about drinking water safety that is not related to microbiological contamination (e.g. chemical spill into a drinking water source, the inability of existing drinking water treatment processes to treat a particular contaminant, failure of a critical drinking water treatment process to perform its intended function, cross connection or back flow in the distribution system and deliberate contamination of a drinking water supply). Such advisories are intended to warn consumers not to drink the water and to find an alternative source of potable water.

Chemical contamination (e.g., nitrate, copper, cyanobacterial toxins, ethylene glycol) can affect the quality and safety of drinking water and food products. Drinking water avoidance advisories are issued when the contaminant(s) are present at levels considered sufficient to cause acute health effects.

Drinking water avoidance advisories should be issued only when there is convincing evidence of a significant public health risk, and every effort should be made to minimize the risk of adverse effects without unnecessarily disrupting the use of the water supply. Examples of circumstances that could trigger the issuance of drinking water avoidance advisories include[2]:

- significant exceedance of the guideline value for a chemical or radiological contaminant with an acute health effect from short-term exposure;
- the presence of a chemical contaminant with no established guideline, but which may pose a health risk from short-term exposure;
- massive contamination of the drinking water supply by a chemical or radiological contaminant, caused either by accident or by deliberate action; and
- changes in colour, odour or taste that are significant or unexpected or that have no identified source.

6.3 When are water advisories rescinded?

6.3.1 Rescinding of boil water advisories

Boil water advisories are usually rescinded when the route cause of the contamination has been identified and corrected, and

[2] These examples are an excerpt from a draft document regarding the issuing and rescinding of drinking water avoidance advisories during emergency situations, which is being developed by the Federal/Provincial/Territorial Committee on Drinking Water.

- as soon as the microbiological quality, turbidity or disinfection residuals of the treated water has returned to acceptable levels in a given number of consecutive sets of samples collected in a specified timeframe[3], or

- when the treatment or distribution system has been repaired and sufficient water displacement has occurred in the distribution system to eliminate any remaining contaminated water.

In the case of outbreaks, advisories are usually rescinded after the above conditions have been met and when surveillance indicates that the incidence of illness has returned to background levels.

6.3.2. Rescinding of drinking water avoidance advisories

Drinking water avoidance advisories are usually rescinded:

- as soon as the chemical or radiological quality of the treated water has returned to acceptable levels in a given number of consecutive sets of samples collected in a specified timeframe[3] or

- when the event has been corrected and sufficient water displacement has occurred in the distribution system to eliminate any remaining contaminated water.

7. Roles and Responsibilities

Maintaining food safety during adverse water events presents a number of challenges. It is important to minimize costly interruptions in food processing and distribution schedules without jeopardizing food safety and therefore public health. Food processors and government authorities have specific roles and responsibilities in order to mitigate potential food safety risks.

7.1 Food Processors

Food processors are ultimately responsible for the safety of their products. The design and implementation of food safety programs, whether they are mandated or used by industry on a voluntary basis, should address potential food contamination from water usage, and include deviation procedures in case of adverse water events[4]. Food processors must respect water

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[3] Specific number of samples and timeframes are set by provincial/territorial health authorities.

[4] The *General Principles of Food Hygiene – Code of Practice* provides general guidance on this topic. (http://www.cfis.agr.ca/english/regcode/gpfh/gpfhc_e.shtml)

advisories and use safe/potable water in the preparation and processing of food at all times. Specifically food processors should have measures in place to ensure that:

- The water they use does not adversely impact the safety and the quality of the food they process, transform, transport or distribute, even where the water is supplied by another party;

- The quality of the water they use is compliant with all the health related regulatory standards adopted by all levels of government for water used for the preparation of food. Annex 1 provides web links to FPT regulatory standards. When a standard differs between levels of government, the most stringent must be applied;

- There is an appropriate contingency plan in place in the event that a boil water advisory or drinking water avoidance advisory is issued by local health authorities; and

- Information concerning response to an adverse water event is available to any person using water in the production, processing, manufacturing, preparing or otherwise handling of a food or food ingredient that could be contaminated using water that is not potable, whether an advisory has been issued or not.

Food processors should collaborate with food regulatory authorities to identify affected products, confirm potential food safety risks and conduct appropriate risk management strategies (e.g., product detentions, food recalls).

7.2 Governments' role in regulating the use of water in food processing

The role of government agencies is to verify compliance of food processors with food safety regulatory requirements and to take enforcement action where necessary to prevent the sale of unsafe food.

When the Canadian Food Inspection Agency (CFIA) or provincial/territorial authorities are advised by public health authorities of a boil water advisory or drinking water avoidance advisory, action is taken to assess the food safety impact on products processed under their respective jurisdictions. In areas of shared jurisdiction, the CFIA and provincial/territorial authorities work closely together to develop risk management options. The product and the critical control points involved in the processing steps are key elements in determining the degree of risk to consumers. In the development of risk management strategies, the CFIA may request a health risk assessment from Health Canada to assess the impact of contaminated products on public health[5].

[5] Health Canada's risk assessments with regard to microbial contaminants in food are based on the Codex Alimentarius Commission *Principles and Guidelines for the Conduct of Microbiological Risk Assessment* (CAC/GL 30). (http://www.codexalimentarius.net/download/standards/357/CXG_030e.pdf)

In the event that a food recall is required, the CFIA has the legal authority to ensure that companies recall the affected product(s).

The use of water in food processing is regulated under several FPT acts and regulations (Annex 1). This emphasises the necessity of communication and collaboration in interpretation, response, and enforcement activities between municipalities, provincial, territorial and federal authorities.

7.3 Responsibilities of governments in the provision of safe drinking water

The provision of safe drinking water from public water supplies is shared between provincial and municipal governments. Provincial governments ensure that drinking water supplied to the public meets their own legislated requirements based upon the *Guidelines for Canadian Drinking Water Quality*. Municipal/regional governments are responsible for the treatment and distribution of safe drinking water within their jurisdictions.

8. Recommendations for Food Processors

8.1 Development of a contingency plan

Regardless of the source of water used in a food processing facility, the processor should have a contingency plan in place to quickly assess the risk posed by an adverse water event and implement appropriate corrective actions, in consultation with public health officials who have knowledge of the processing operations.

For example, if a boil water advisory was issued because non-disinfected or inadequately disinfected ground water was directed to the distribution system (where disinfection is normally applied) the food processor might choose to either acquire potable water from another source or to chlorinate the water and achieve an adequate chlorine residual and contact time. Alternatively the processor may decide to include a stand-by treatment process consisting of filtration and disinfection that could be immediately brought on-line as required.

However if the boil water advisory was issued in response to the presence of *E. coli*, unacceptable turbidity or an illness outbreak then the processor should use an alternate safe source or install an effective filtration and disinfection system. The system should be operated by qualified personnel. On-site storage of potable water may be a solution. Since a water advisory may be issued some time after the problem occurred, it is important to verify that water stored on site was collected before the occurrence. It is also important to replace the stored water periodically and test its safety prior to use as water safety may deteriorate during storage.

Note: The presence of total coliforms in water distribution systems in the absence of E. coli usually signals bacteria regrowth and may be insufficient justification for issuing boil water advisories.

Nevertheless, the guidance to water suppliers is to raise the dose of chlorine during the chlorination process and flush the system to control the regrowth. The same guidance applies to food processors using their own water source.

As opposed to boil water advisories, the hazards that result in the issuance of drinking water avoidance advisories may be more difficult to address in a food processing plant. Alternatively, some conditions that warrant a drinking water avoidance advisory may pose minimal risk to consumers when water is used in food processing. The response to drinking water avoidance advisories would depend for instance on the contaminating agent (e.g. chemical contaminant) and its concentration in the water system, its persistence and its toxicity. A careful risk assessment would be required to select the most practical interventions. A complete system flush may even be warranted.

Generally, water affected by a water advisory situation is not suitable for food processing. However, food processors may consider options to implement safeguards and use the affected water. **It is imperative that such proposals be discussed with the food regulatory authority and authorized on a case-by-case basis prior to implementation.**

The contingency plan should also take into consideration that in some situations, it may be necessary to suspend operations in a particular food processing facility until the advisory has been rescinded.

Measures to consider for inclusion in a contingency plan include:

- Preventative water treatments including filtration using e.g. slow sand, conventional or membrane filters and/or disinfection with e.g. chlorine-based compounds, UV radiation or ozone
- Alternative source of potable water
- Information on historical water hazard(s) from source of concern and awareness of hazard characteristics
- Preventative water testing (e.g. for historical and regional hazards) even if not so mandated by regulations
- Recall procedures including product traceability
- Potable water storage capacity assessment and alternative storage options
- Information on the nature of the product, hazard elimination steps in product manufacturing, alternatives for hazard elimination with further processing
- Alternative processing sites not affected by the adverse water event
- Communication protocols, contacts of authorities, and subject area expertise

Note: As indicated in section 9.2, food processors should identify themselves to water suppliers and ask to be directly notified when advisories are issued. They should also access the water supplier's website in order to obtain information on monitoring water quality data and historical hazards in their area.

8.2 Procedures during adverse water events

The following procedures apply to adverse water events identified through water advisories as well as when a processor or the food regulatory authority suspects contamination of a private water source. Specific procedures applicable for suspect private water sources are provided in section 8.2.6.

Note: The procedures are general in nature and are not intended to be exhaustive. It is the responsibility of the food processor to add any additional corrective action that may be required depending on the nature of the contamination and specific food processes.
Annex 2 provides a checklist format for all procedures outlined in section 8.2.

8.2.1 Operation/processing

a) Immediately stop all plant processes using the suspect water and protect food from contamination.

b) Hold products that may have been contaminated by the water before or after the advisory was issued or before the water became suspect. Keep products on hold until assurance of their safety has been established through a risk assessment. There may be a requirement to recall products that have entered the market place and pending the result of the risk assessment, products may be released, reworked for further processing or destroyed.

c) If a water advisory was issued, contact the authority who issued it to determine which parameters are not in compliance and the date of the last acceptable quality result in order to determine which lots of processed food are affected, if any.

d) Assess the potential risk for each type of product that was made with the water or came into contact with it, taking into account the existing critical control points[6] to reduce or eliminate the contaminant.

e) If disinfection equipment is used as part of normal operations (e.g. chill tanks in poultry processing plants) or as an additional critical control point, it should be monitored carefully based on the type of disinfection used (e.g., antimicrobial agent, water) and the conditions of use (e.g. temperature, time of exposure). The monitoring should be done to:

- verify the disinfection process (e.g., monitoring the concentration/temperature of the

[6] Critical control points refer to control measures implemented at specific points in a process to prevent, reduce or eliminate potential biological, chemical and physical food safety hazards.

antimicrobial agent or water over the time of exposure);

- verify that the conditions are acceptable before returning to normal operations (e.g., monitoring the concentration of the antimicrobial agent remaining in the system to ensure that it is within the food contact standards prescribed by Health Canada; monitoring the temperature to ensure that it is adequate for the intended process).

f) Consult the food regulatory authority to confirm the risk assessment and selected corrective actions.

g) If necessary, utilize an alternative source of potable water until appropriate corrective action can be taken as per the contingency plan or until the water advisory is rescinded.

h) Use an alternate source of potable water in all processing steps that normally use potable water or that incorporate water as a food ingredient.

i) If ice is made in the processing facility, clean and sanitize the ice machine(s) prior to use. If ice used in the facility is from a commercial ice supplier, verify with the latter that the ice was made with water not affected by a water advisory prior to use. Discard the ice if confirmation cannot be provided.

j) For a long-term boil water advisory, the installation of a treatment system consisting of filtration and disinfection should be considered. If such a system is installed, an appropriate plan for the continuous monitoring of the disinfection effectiveness should be developed and implemented. The system should be installed and operated by qualified personnel.

8.2.2 Drinking water for employees

a) Post signs advising not to drink the tap water at all sinks. If possible, drinking fountains should be rendered inoperable by removing the handles.

b) Provide an alternate supply of potable water (e.g. bottled water) to employees.

8.2.3 Employee hygiene and potential illnesses

a) Emphasize frequent, thorough hand washing to all employees and post signs advising of the appropriate hand washing technique at all sinks, if not already in place.

b) If a boil water advisory was issued because of an illness outbreak, water used for hand washing must be effectively disinfected prior to use. The food regulatory authority should

be contacted for further guidance on approved methods in the jurisdiction in question.

c) Make fresh chlorine solutions for disinfecting hands on a daily basis.

8.2.4 Dishwashing

a) Dishes may be sanitized in a commercial dishwasher using the proper detergent with an adequate concentration of sanitizer, or in a high temperature dishwasher.

b) Use hot water and soap followed by a rinse in boiled water and a sanitizer of adequate concentration for the recommended contact time period. Air dry washed dishes.

c) Make fresh chlorine solutions for sanitizing utensils and other equipment on a daily basis.

8.2.5 Sanitation

a) Clean and disinfect all plant rooms, equipment and utensils that may have been in contact with contaminated water with a strong chlorine solution or another approved sanitizing solution.

8.2.6 Specific procedures for private water sources

If a private source is used in the food processing plant and the processor or the food regulatory authority suspects that the source may be contaminated, the processor needs to follow these additional procedures:

a) Notify the food regulatory authority of the suspected contamination if not already aware.

b) Immediately monitor the quality of the water at regular and frequent intervals and assess if it is safe to use in the food processing operations. Consult with the food regulatory authority to determine appropriate testing criteria based on the circumstances.

c) Determine the cause of the contamination and establish adequate, efficient and permanent corrective action to prevent the contamination.

d) If not possible to prevent contamination, establish an adequate and efficient treatment of the source or seek an alternative source of potable water.

e) Consult with the food regulatory authority to confirm the risk assessment and selected corrective actions.

8.3 Procedures for resuming normal operations

Once there is sufficient evidence that the adverse water conditions have been eliminated (e.g. water advisory has been rescinded or water sampling results of a private source are satisfactory to the regulatory authority), appropriate action should be taken prior to resuming normal operations, including:

a) If water is from a public water supply, flush all water lines and outlets in the food processing facility, including washrooms and handsinks, with potable water for an appropriate time. Verify the effectiveness of the treatment before resuming normal operations.

b) If water is from a private water source, decontaminate all water lines and outlets in the food processing facility, including washrooms and handsinks, with a strong chlorine solution or another approved sanitizing solution and flush with potable water for an appropriate time. Verify that chemical residues have been removed before resuming normal operations.

c) Decontaminate water treatment devices or replace them if necessary.

d) Drain and decontaminate any reservoirs containing water before refilling with product or an ingredient that contains potable water.

e) If acceptable to the food regulatory authority, disinfect microbiologically contaminated water at the plant with an appropriate treatment system (filtration, chlorination, ultra-violet, ozone etc.). In all cases of surface water and unprotected or shallow ground water, adequate disinfection should be preceded by filtration to remove parasites.

f) Disconnect equipment from the contaminated water distribution system.

g) Ensure that all water used to wash floors, walls, equipment, utensils, etc. contains a disinfecting agent.

h) Clean and sanitize rooms, equipment, utensils etc. that have been contaminated

Note: The food regulatory authority should be consulted to verify if different or additional steps may be required, especially if the water contamination was not microbiological in nature.

9. Communication during adverse water events

This section provides recommendations for communication within government, between government and industry and within industry. All implicated stakeholders need to ensure that they

have communication procedures in place to address adverse water events in a collaborative and effective fashion. The trigger to activate such procedures would depend on which party first becomes aware of the adverse water event and who needs to be contacted, as indicated in the sub-sections below. It is very important that procedures be pre-planned and tested at regular intervals in order to ensure that they will work reliably during crisis situations.

9.1 Communication between government authorities/water suppliers

Within each province and territory, FPT authorities need to have effective communication and mitigation strategies in place to address adverse water events. Communication protocols should clearly define the roles and responsibilities of the various responsible authorities and should contain a corresponding contact list, in order to ensure timely and effective notification of all implicated authorities. It is particularly important to ensure effective communication between the government authorities and water suppliers responsible for issuing water advisories and those responsible for food safety. This communication is essential to enable food safety officials to oversee industry's efforts to prevent product contamination, prevent the distribution of product that may already be contaminated and conduct product recalls where necessary.

9.2 Communication between government authorities/water suppliers and industry

Water suppliers should include food processors on their contact list of critical customers. When government authorities or water suppliers issue a water advisory, they should immediately notify any food processors that may be affected by the advisory. The advisory should provide sufficient information on the nature of the contamination to allow the processors to implement their respective contingency plans.

As indicated in section 8.1, processors should also establish communication protocols as part of their contingency plans, including a contact list for government authorities. Processors are encouraged to be pro-active by identifying themselves to the authorities or water suppliers involved in issuing water advisories and asking to be directly notified. When advisories are issued, processors should communicate with food safety authorities to verify their selected risk management strategy.

In the event that a processor uses a private water source and suspects the safety of the water, he/she should communicate with the appropriate F/P/T food safety authorities to alert them of his/her concerns, assess the potential impact of the event on food products and confirm an appropriate risk management strategy.

Before going back to using the original water supply, processors should communicate with the authority or water supplier who issued the advisory to ensure that the latter has been rescinded.

9.3 Communication within industry

As part of their communication protocols, processors should also establish specific communication strategies to reach key individuals within their processing facilities and throughout their food distribution system. Prompt communication is essential to identify potentially affected products, assess the health risks and implement effective risk management strategies (e.g. product detentions and recalls). A contact list should be developed and maintained to provide the coordinates of these key individuals so that they can be reached at all times.

10. Definitions

Adverse water event:
Any situation during which water, whatever the source may be, becomes contaminated and a risk assessment is required to establish the potential impact on food safety.

Boil water advisories:
Public announcements, issued by the responsible authority, advising the public that they should boil their drinking water prior to consumption. This is generally as a result of a possible or confirmed microbiological contamination. Depending on the jurisdiction, the terminology may vary; the term “boil water order” or "boil water notice" may be used in place of, or in conjunction with, “boil water advisory”.

Drinking water avoidance advisories:
Public announcements, issued by the responsible authority to advise the public that they should avoid using their tap water. In cases where the exposure to the contaminant is only of concern through ingestion, a “do not consume” advisory would be issued. In cases where the exposure to the contaminant of concern in drinking water could also cause skin and/or eye irritation, a “do not use” advisory would be issued. Water avoidance advisories are issued only if there is a significant public health risk associated with the use of water naturally contaminated by chemicals or radionuclides or as a result of accidental or deliberate actions.

Food processor:
A company which conducts post-harvest operations (including slaughtering) using potable water or ice in the field, in commercial buildings or during transport, up to and excluding the food retail and food service sectors.

Food safety:
Refers to food that is intended for human consumption and that does not contain levels of biological, chemical, physical or nutritional hazards which could injure the health of consumers, either in the short term or in the longer term.

Potable water:
Means water that is safe and fit for human consumption and meets the *Guidelines for Canadian Drinking Water Quality* or provincial/territorial regulatory requirements if they differ from the said Guidelines. (Refer to Annex 1 for provincial/territorial regulatory requirements).

Risk assessment:
A scientifically based process consisting of the following steps: (i) hazard identification, (ii) hazard characterization, (iii) exposure assessment, and (iv) risk characterization.[7]

Water supplier:
A person, company, local government or other organisation that provides potable water for a variety of uses including food processing.

11. References

Codex Alimentarius Commission Procedural Manual, Fifth Edition
URL: http://www.codexalimentarius.net/web/procedural_manual.jsp

General information on drinking water
URL: http://www.hc-sc.gc.ca/ewh-semt/water-eau/drink-potab/index_e.html

General Principles of Food Hygiene – Code of Practice
URL: http://www.cfis.agr.ca/english/regcode/gpfh/gpfhc_e.shtml

Guidelines for Canadian Drinking Water Quality
URL: http://hc-sc.gc.ca/ewh-semt/water-eau/drink-potab/guide/index_e.html

Health Canada Guidance for Issuing and Rescinding Boil Water Advisories
URL: http://hc-sc.gc.ca/ewh-semt/pubs/water-eau/doc_sup-appui/boil_water-eau_ebullition/index_e.html

Principles and Guidelines for the Conduct of Microbiological Risk Assessment (CAC/GL 30)
URL: http://www.codexalimentarius.net/download/standards/357/CXG_030e.pdf

WHO Guidelines for Drinking-Water Quality
URL: http://www.who.int/water_sanitation_health/dwq/gdwq3/en/

[7] Source: Codex Alimentarius Commission Procedural Manual, Fifth Edition (http://www.codexalimentarius.net/web/procedural_manual.jsp). This document also defines the four listed steps, as well as other risk analysis terms related to food safety.

12. Working Group Members and Contact

Working Group Members:

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Joan Wakeman, Canadian Food Inspection Agency[8]
Dr. Patricia Pentney, Canadian Food Inspection Agency
Kevin McLeod, Alberta Health and Wellness (Provincial Co-chair)
Doug Everett, Alberta Health and Wellness
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James Drew, Manitoba Health
Fred Ruf, Ontario Ministry of Health and Long-Term Care
Michelle Jansen, Ontario Ministry of Agriculture, Food and Rural Affairs
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[8] Greg Orriss co-chaired the Working Group until he became employed with Alberta Agriculture, Food and Rural Development in August 2006, at which point he was replaced by Joan Wakeman.

[9] Barry Boettger and Will Robertson are both members of the Federal/Provincial/Territorial Committee on Drinking Water.

Annex 1 - Federal/Provincial/Territorial regulatory requirements for water used in food processing

Note: The information contained in this annex reflects the information available at the time of writing. It is the responsibility of the users of this document to contact the responsible authorities to verify that the information is still current and accurate or to verify the information on the relevant websites.

Jurisdiction	**Responsible authority**	**Acts and Regulations pertaining to water used in food processing**		**Guidance Documents**
		Acts	**Regulations**	
British Columbia	Ministry of Health (Enforcement done by Health Authorities)	Drinking Water Protection Act http://www.qp.gov.bc.ca/statreg/stat/D/01009_01.htm Health Act http://www.qp.gov.bc.ca/statreg/stat/H/96179_01.htm Food Safety Act http://www.qp.gov.bc.ca/statreg/stat/F/02028_01.htm	Drinking Water Protection Regulation http://www.qp.gov.bc.ca/statreg/reg/D/200_2003.htm Food Premises Regulations - sec. 4(1)(e) and (f) http://www.qp.gov.bc.ca/statreg/reg/H/Health/210_99.htm Meat Inspection Regulations - sec. 9(1)(e) http://www.qp.gov.bc.ca/statreg/reg/F/349_2004.htm	

British Columbia (cont'd)	Ministry of Agriculture and Lands	Fish Inspection Act http://www.qp.gov.bc.ca/statreg/stat/F/96148_01.htm	Fish Inspection Regulations - Schedule A, Part I, sec. 9 http://www.qp.gov.bc.ca/statreg/reg/F/FishInsp/12_78.htm	
Alberta	Alberta Health and Wellness Alberta Environment (licensing and monitoring of municipal water treatment systems)	Public Health Act Link for this Act and for the regulations in the next column: http://www.canlii.org/ab/laws/sta/p-37/index.html	Food Regulation - sec. 17(1)(f) Nuisances and General Sanitation Regulation Part 2, sec. 11, 12, 13, 14, 15	Environmental Public Health Field manual for Private, Public and Communal Drinking Water Systems in Alberta - 2nd Edition 2004
Saskatchewan	Saskatchewan Health	The Public Health Act, 1994 http://www.qp.gov.sk.ca/documents/English/Statutes/Statutes/P37-1.pdf	Food Safety Regulations under development (anticipated to include a section on potable water for processing)	

Saskatchewan (cont'd)	Saskatchewan Agriculture	The Animal Products Act Link for this Act and for the regulations in the next column: http://www.canlii.org/sk/laws/sta/supp.a-20.2/index.html	Dairy Manufacturing Plant Regulations - sec. 17c)	
Saskatchewan (cont'd)	Saskatchewan Environment			Bacteriological Follow-up Protocol for Waterworks Regulated by Saskatchewan http://www.se.gov.sk.ca/environment/protection/water/BacteriologicalFollow-upProtocol.pdf Removal of Precautionary Drinking Water Advisories/Emergency Boil Water Orders for Health Regulated Public Water Supplies (Technical Guideline No. 553)

Manitoba	Health legislation Programs administered by Health MOHs and Conservation PHIs	The Public Health Act - Sec. 28 (s) http://web2.gov.mb.ca/laws/statutes/ccsm/d010e.php	The Food and Food Handling Establishment Regulations 339/88R - sec. 5, 33(2), 11(1) & 37(h) Water Supplies Regulation 330/88R - sec. 3 http://web2.gov.mb.ca/laws/regs/index.php (Regulations listed under the Public Health Act)	
Manitoba (cont'd)	Water Stewardship Legislation enforced by Drinking Water Officers, Conservation PHIs & Health MOHs	The Drinking Water Safety Act http://web2.gov.mb.ca/laws/statutes/ccsm/d101e.php	Under development	
Manitoba (cont'd)	Manitoba Agriculture, Food & Rural Initiatives	The Dairy Act http://web2.gov.mb.ca/laws/statutes/ccsm/d010e.php	Dairy Regulation 203/87 Part 1, sec. 5 http://web2.gov.mb.ca/laws/statutes/ccsm/d010e.php	

Ontario	Ministry of the Environment	Safe Drinking Water Act, 2002 - sec. 10 http://www.e-laws.gov.on.ca/DBLaws/Statutes/English/02s32_e.htm	Drinking Water Systems (O. Reg. 170/03) http://www.e-laws.gov.on.ca/DBLaws/Regs/English/030170_e.htm Non-Residential and Non-Municipal Seasonal Residential Systems that do not Serve Designated Facilities (O. Reg. 252/05) http://www.e-laws.gov.on.ca/DBLaws/Regs/English/050252_e.htm Ontario Drinking-Water Quality Standards (O. Reg. 169/03) http://www.e-laws.gov.on.ca/DBLaws/Regs/English/030169_e.htm	

Ontario (cont'd)	Ministry of Health and Long Term Care	Health Protection and Promotion Act, 1990 http://www.e-laws.gov.on.ca/DBLaws/Statutes/English/90h07_e.htm	Food Premises (RRO 562/90) - sec. 20(1)(3), 31(1) http://www.e-laws.gov.on.ca/DBLaws/Regs/English/900562_e.htm	
Ontario (cont'd)	Liquor Control Board of Ontario	Liquor Licence Act, 1990 (water referenced in definition of beer and wine) http://www.e-laws.gov.on.ca/DBLaws/Statutes/English/90l19_e.htm		
Ontario (cont'd)	Liquor Control Board of Ontario	Wine Content and Labelling Act, 2000 http://www.e-laws.gov.on.ca/DBLaws/Statutes/English/00w26_e.htm	Content and Labelling of Wine (O. Reg 659/00) - sec. 2(3) http://www.e-laws.gov.on.ca/DBLaws/Regs/English/000659_e.htm	

Ontario (cont'd)	Ministry of Agriculture, Food and Rural Affairs	Food Safety and Quality Act, 2001 http://www.e-laws.gov.on.ca/DBLaws/Statutes/English/01f20_e.htm	Meat (O. Reg. 31/05) - sec. 23(3) - Part V, sec. 32-41, 46(2)(ii), 50(1), 60(6)(b), 99(4)(l) http://www.e-laws.gov.on.ca/DBLaws/Regs/English/050031_e.htm	
		Milk Act, 1990 http://www.e-laws.gov.on.ca/DBLaws/Statutes/English/90m12_e.htm	Milk and Milk Products (RRO 761/90) - sec. 12(2)(m), 42(1)(d) http://www.e-laws.gov.on.ca/DBLaws/Regs/English/900761_e.htm	
		Livestock and Livestock Products Act, 1990 http://www.e-laws.gov.on.ca/DBLaws/Statutes/English/90l20_e.htm	Processed Egg (RRO 726/90) - sec. 12 http://www.e-laws.gov.on.ca/DBLaws/Regs/English/900726_e.htm	

Quebec	*Ministère de l'Algriculture, des Pêcheries et de l'Alimentation du Québec* (MAPAQ) (*Centre québécois d'inspection des aliments et de santé animale*) http://www.mapaq.gouv.qc.ca/Fr/Souventdemande/inspectionaliments/	*Loi sur les produits alimentaires* (L.R.Q. c. P - 29) http://www2.publicationsduquebec.gouv.qc.ca/dynamicSearch/telecharge.php?type=2&file=/P_29/P29.html	*Règlements sur les aliments* (R.R.Q., c. P-29, r. 1) http://www2.publicationsduquebec.gouv.qc.ca/dynamicSearch/telecharge.php?type=3&file=/P_29/P29R1.HTM	Brochure for food establishments: *Que faire lors d'un avis d'ébullition d'eau de consommation* : http://www.mapaq.gouv.qc.ca/NR/rdonlyres/01B48E0A-50F1-4731-8E38-A34A5673CC91/0/depliant_eau.pdf Boil water advisories: http://www.mapaq.gouv.qc.ca/Fr/Restauration/Qualitedesaliments/securitealiments/avisebullition/ *Lignes directrices et normes pour l'interprétation des résultats analytiques en microbiologie alimentaire :* http://www.mapaq.gouv.qc.ca/NR/rdonlyres/6B9A8992-396D-45CD-8841-1EFD19E3D7C8/0/recueil.pdf

Quebec (cont'd)	*Ministère du Développement Durable, de l'Environnement et des Parcs* http://www.mddep.gouv.qc.ca/eau/inter.htm	*Loi sur la qualité de l'environnement* (L.R.Q., c. Q-2) http://www2.publicationsduquebec.gouv.qc.ca/dynamicSearch/telecharge.php?type=2&file=/Q_2/Q2.html	*Règlement sur la qualité de l'eau potable* (R.R.q., c. Q-2, r. 18.1.1) http://www.mddep.gouv.qc.ca/eau/potable/brochure/index.htm *Règlement sur le captage de l'eau souterraine* (R.R.Q., c. Q-2, r. 1.3) http://www.mddep.gouv.qc.ca/eau/souterraines/index.htm	*Avis d'ébullition et avis de non-consommation émis par les exploitants des réseaux d'aqueduc municipaux et transmis au ministère du Développement durable, de l'Environnement et des Parcs :* http://www.mddep.gouv.qc.ca/eau/potable/avisebullition/index.htm *Règlement sur l'eau potable : Guide destiné aux établissements touristiques (restauration, hôtellerie, etc.)* : http://www.mddep.gouv.qc.ca/eau/potable/etab-touris/guide-etabl-tourist.pdf *Installations de production et de distribution d'eau potable :* http://www.mddep.gouv.qc.ca/eau/potable/installation/index.htm

Quebec (cont'd)	*Ministère du Développement Durable, de l'Environnement et des Parcs (cont'd)*			*Procédure d'analyse des technologies de traitement en eau potable :* http://www.mddep.gouv.qc.ca/eau/potable/guide/procedure.htm
New Brunswick	Department of Health and Wellness	Health Act http://www.gnb.ca/0062/regs/h-2reg.htm	Health Regulations 88-200 - sec. 12, 60, 121 http://www.gnb.ca/0062/regs/h-2reg.htm	Guidelines for Canadian Drinking Water Quality
		Fish Inspection Act http://www.gnb.ca/0062/regs/f-18reg.htm	Fish Inspection Regulations 84-24 - sec. 21(1), Schedules A and B - sec. 10(1), Schedule C http://www.gnb.ca/0062/regs/f-18reg.htm	

Nova Scotia	Department of Agriculture	Health Protection Act http://www.gov.ns.ca/legislature/legc/	Food Safety Regulations - sec. 19(2)(a) http://www.gov.ns.ca/just/regulations/regs/hpafdsaf.htm	- NS Food Code Sec 2.10 and 3.4 - Water used during a Boil Water Advisory - Inspections of Food Service Establishments (FSE) / Licensed Daycares (LDC) - Chart 1 for registered facilities & Chart 2 for unregistered facilities - General information: http://www.gov.ns.ca/enla/water/publicwater.asp
Nova Scotia (cont'd)	Department of Agriculture	Meat Inspection Act http://www.gov.ns.ca/legislature/legc/	Meat Inspection Regulations - sec. 11(1), 26, 36(2) http://www.gov.ns.ca/just/regulations/regs/mimeat.htm	
P.E.I.	Department of Environment & Energy	Environmental Protection Act http://www.gov.pe.ca/law/statutes/pdf/e-09.pdf	Drinking Water & Wastewater Facility Operating Regulations http://www.canlii.org/pe/laws/regu/2004r.710/20060115/whole.html	Guidelines for Canadian Drinking Water Quality

P.E.I. (cont'd)	Atlantic Canada Water Works Association			Atlantic Canada Guidelines for Supply, Treatment, Storage, Distribution and Operation of Drinking Water Systems http://www.gov.ns.ca/enla/water/docs/WaterSystemGuidelines.pdf
P.E.I. (cont'd)	Department of Health	Public Health Act - sec. 7 http://www.canlii.org/pe/laws/sta/p-30/20060115/whole.html		Guidelines for Canadian Drinking Water Quality

Newfoundland/ Labrador	Health and Community Services	Food and Drugs Act http://www.hoa.gov.nl.ca/hoa/statutes/f21.htm	Food Premises Regulations - sec. 9 (1) http://www.hoa.gov.nl.ca/hoa/regulations/rc961022.htm#1_	
Yukon[10]	Health & Social Services	Public Health & Safety Act - sec. 2(d), (m), (z) http://www.canlii.org/yk/laws/sta/176/20060728/whole.html	Milk Regulations - sec. 4(2), 10(2), 27(2)c), 28, 29, 31(2), 32, 46(2) http://www.canlii.org/yk/laws/regu/1962r.023/20060728/whole.html	
Yukon (cont'd)	Energy, Mines & Resources	Agricultural Products Act http://www.canlii.org/yk/laws/sta/3/20060728/whole.html	Meat Inspection & Abattoir Regulations - sec. 15(1) http://www.canlii.org/yk/laws/regu/1988r.104/20060728/whole.html	

[10] The information applies to food processors over which the Yukon has regulatory responsibility. All other food processing in the Yukon is regulated by the Canadian Food Inspection Agency (CFIA).

Yukon (cont'd)				Guidelines for Canadian Drinking Water Quality Canadian Ground Water Association's Guidelines for Water Well Construction http://www.cgwa.org/press/guidelines.htm
NWT	Department of Health & Social Services (Stanton Territorial Health Authority)	Public Health Act (PHA) http://www.justice.gov.nt.ca/Legislation/SearchResults.asp?Option=Title&DBTable=Leg&Parameter=P&Page=2	Public Water Supply Regulations (pursuant to PHA) Sec. 1 http://www.iijcan.org/nt/laws/regu/p-23/20060927/whole.html	Guidelines For Canadian Drinking Water Quality Food Retail and Food Services Regulation and Code (CFISIG) http://www.cfis.agr.ca/english/regcode/codes_tbl_e.shtml
Federal	Canadian Food Inspection Agency	Meat Inspection Act Link for act and regulations: http://www.cfia-acia.agr.ca/english/reg/rege.shtml	Meat Inspection Regulations - Sec. 9, 20, 28, 34, 43, 46	Meat Hygiene Manual of Procedures Chapter 3 http://www.inspection.gc.ca/english/anima/meavia/mmopmmhv/mane.shtml

Federal (cont'd)	Canadian Food Inspection Agency	Fish Inspection Act Link for act and regulations: http://www.cfia-acia.agr.ca/english/reg/rege.shtml	Fish Inspection Regulations Schedule 1; Sec. 14.(1), (2), (9) and (11)	
Federal (cont'd)	Canadian Food Inspection Agency	Canada Agricultural Products Act Link for this Act and for the regulations in next column: http://www.cfia-acia.agr.ca/english/reg/rege.shtml	Dairy Products Regulations - sec. 11.1 (1)(k) Egg Regulations - sec. 8 (2)(k) Processed Egg Regulations - sec. 7 (2)(m) Fresh Fruit and Vegetable Regulations - sec. 3.1 (1) Processed Products Regulations - sec. 2, 3.2, 5) Agriculture and Agri-Food Administrative Monetary Penalties Regulations - sec. 3.2 and 3.3	Code of Practice for Minimally Processed Ready-to Eat Vegetables http://www.inspection.gc.ca/english/plaveg/fresh/read-eat_e.shtml

Federal (cont'd)	Health Canada (enforcement by CFIA)	Food and Drugs Act - sec. 2 (definition of "food"), 4 and 7 http://www.cfia-acia.agr.ca/english/reg/rege.shtml		

Annex 2 – Checklist for procedures during adverse water events and for resuming normal operations

This checklist represents the procedures outlined in sections 8.2 and 8.3 and is provided as a tool that can be used by food processors during adverse water events. The procedures are general in nature and are not intended to be exhaustive. **It is the responsibility of the food processor to review the list and add any additional corrective actions that may be required depending on the nature of the contamination and the specific process.**

DATE OF EVENT: _____
(e.g. date of water advisory or date that private source became suspect)

CIRCUMSTANCES:

1. Procedures during adverse water events

<u>Operation/processing</u>

- ❑ Immediately stop all plant processes using the suspect water and protect food from contamination.

- ❑ Hold products that may have been contaminated by the water before or after the advisory was issued or before the water became suspect. Keep products on hold until assurance of their safety has been established through a risk assessment. There may be a requirement to recall products that have entered the market place and pending the result of the risk assessment, products may be released, reworked for further processing or destroyed.

- ❑ If a water advisory was issued, contact the authority who issued it to determine which parameters are not in compliance and the date of the last acceptable quality result in order to determine which lots of processed food are affected, if any.

- ❑ Assess the potential risk for each type of product that was made with the water or came into contact with it, taking into account the existing critical control points to reduce or eliminate the contaminant.

- ❑ If disinfection equipment is used as part of normal operations (e.g. chill tanks in poultry processing plants) or as an additional critical control point, it should be monitored carefully based on the type of disinfection used (e.g., antimicrobial agent, water) and the conditions of use (e.g. temperature, time of exposure). The monitoring should be done to:

    - verify the disinfection process (e.g., monitoring the concentration/temperature of the antimicrobial agent or water over the time of exposure);

    - verify that the conditions are acceptable before returning to normal operations (e.g., monitoring the concentration of the antimicrobial agent remaining in the system to ensure that it is within the food contact standards prescribed by Health Canada; monitoring the temperature to ensure that it is adequate for the intended process).

- ❑ Consult the food regulatory authority to confirm the risk assessment and selected corrective actions.

- ❑ If necessary, utilize an alternative source of potable water until appropriate corrective action can be taken as per the contingency plan or until the water advisory is rescinded.

- ❑ Use an alternate source of potable water in all processing steps that normally use potable water or that incorporate water as a food ingredient.

- ❑ If ice is made in the processing facility, clean and sanitize the ice machine(s) prior to use. If ice used in the facility is from a commercial ice supplier, verify with the latter that the ice was made with water not affected by a water advisory prior to use. Discard the ice if confirmation cannot be provided.

- ❑ For a long-term boil water advisory, the installation of a treatment system consisting of filtration and disinfection should be considered. If such a system is installed, an appropriate plan for the continuous monitoring of the disinfection effectiveness should be developed and implemented. The system should be installed and operated by qualified personnel.

Drinking water for employees

- ❑ Post signs advising not to drink the tap water at all sinks. If possible, drinking fountains should be rendered inoperable by removing the handles.

- ❑ Provide an alternate supply of potable water (e.g. bottled water) to employees.

Employee hygiene and potential illnesses

- ❑ Emphasize frequent, thorough hand washing to all employees and post signs advising of the appropriate hand washing technique at all sinks, if not already in place.

- ❑ If a boil water advisory was issued because of an illness outbreak, water used for hand washing must be effectively disinfected prior to use. The food regulatory authority should be contacted for further guidance on approved methods in the jurisdiction in question.

- ❑ Make fresh chlorine solutions for disinfecting hands on a daily basis.

Dishwashing

- ❑ Dishes may be sanitized in a commercial dishwasher using the proper detergent with an adequate concentration of sanitizer, or in a high temperature dishwasher.

- ❑ Use hot water and soap followed by a rinse in boiled water and a sanitizer of adequate concentration for the recommended contact time period. Air dry washed dishes.

- ❑ Make fresh chlorine solutions for sanitizing utensils and other equipment on a daily basis.

Sanitation

- ❑ Clean and disinfect all plant rooms, equipment and utensils that may have been in contact with contaminated water with a strong chlorine solution or another approved sanitizing solution.

Specific procedures for private water sources

If a private source is used in the food processing plant and the processor or the food regulatory authority suspects that the source may be contaminated, the processor needs to follow these additional procedures:

- ❑ Notify the food regulatory authority of the suspected contamination if not already aware.

- ❑ Immediately monitor the quality of the water at regular and frequent intervals and assess if it is safe to use in the food processing operations. Consult with the food regulatory authority to determine appropriate testing criteria based on the circumstances.

- ❑ Determine the cause of the contamination and establish adequate, efficient and permanent corrective action to prevent the contamination.

- ❑ If not possible to prevent contamination, establish an adequate and efficient treatment of the source or seek an alternative source of potable water.

- ❑ Consult with the food regulatory authority to confirm the risk assessment and selected corrective actions.

2. Procedures for resuming normal operations

Once there is sufficient evidence that the adverse water conditions have been eliminated (e.g. water advisory has been rescinded or water sampling results of a private source are satisfactory to the regulatory authority), appropriate action should be taken prior to resuming normal operations, including:

- ❑ If using water is from a public water supply, flush all water lines and outlets in the food processing facility, including washrooms and handsinks, with potable water for an appropriate time. Verify the effectiveness of the treatment before resuming normal operations.

- ❑ If using water from a private water source, decontaminate all water lines and outlets in the food processing facility, including washrooms and handsinks, with a strong chlorine solution or another approved sanitizing solution and flush with potable water for an appropriate time. Verify that chemical residues have been removed before resuming normal operations.

- ❑ Decontaminate water treatment devices or replace them if necessary.

- ❑ Drain and decontaminate any reservoirs containing water before refilling with product or an ingredient that contains potable water.

- ❑ If acceptable to the food regulatory authority, disinfect microbiologically contaminated water at the plant with an appropriate treatment system (filtration, chlorination, ultra-violet, ozone etc.). In all cases of surface water and unprotected or shallow ground water, adequate disinfection should be preceded by filtration to remove parasites.

- ❑ Disconnect equipment from the contaminated water distribution system.

- ❑ Ensure that all water used to wash floors, walls, equipment, utensils, etc. contains a disinfecting agent.

- ❑ Clean and sanitize rooms, equipment, utensils etc. that have been contaminated

Note: The food regulatory authority should be consulted to verify if different or additional steps may be required, especially if the water contamination was not microbiological in nature.