FOOD SAFETY MANUAL FOR POTATO PRODUCTION (Section 15 for Fresh Market Potatoes)

Based on the CanadaGAP Fruit and Vegetable Manual Version 10.0

Prepared by the Keystone Potato Producers Association

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15. Water (for Fluming and Cleaning)

Forms Required	A, F

RATIONALE:

Water may be used in an operation for a number of different reasons, using a variety of practices. It is important to assess the quality of the water as it may be a source of biological or chemical contamination. When warm products (e.g., apples, tomatoes) are submerged in cold water, water can be drawn inside the product. Water quality and temperature are important to maintain any time products such as tomatoes or apples are submerged in water because contamination inside the product cannot be washed off.

- ❍ Water is used for post-harvest applications of agricultural chemicals
- ❍ Water is used for cleaning equipment, containers, buildings, etc.
- ❍ Water is used in personal hygiene facilities for hand washing

*If **ANY** of the above circles has been checked off, proceed below.*
If not, proceed to Section 16: Ice.

IMPORTANT NOTE	**It is assumed throughout the manual that EACH of the requirements (along with their procedures) are to be considered in terms of food safety. The risks are from those hazards that are in "direct contact with product" OR that may have an "impact on food safety through cross contamination".**

15.1Water Assessment

REQUIREMENT	*Water source must be identified and potential hazards assessed. The required preventative measures must also be determined and implemented to prevent biological contamination (pathogenic bacteria, parasites, viruses) and chemical contamination.*

PROCEDURES:

- The person responsible never uses:
  - ❒ Untreated sewage water
  - ❒ Tertiary water

❒ The person responsible ensures that any system that supplies potable water is not cross-connected with any other water system, unless measures are taken to eliminate any risk of contamination to the product as a result of the cross-connection

❒ If an abnormal event occurs to cause contamination of water (e.g., chemical leakage, leaching of well by overland flooding, municipal boil water advisory), the person responsible does not use the water until remediation is possible to eliminate the contaminant or testing [if possible i.e. contaminant (e.g. agricultural chemical) is known and tests are available] indicates the water is safe to use

! ● Annually – By completing or updating Form (F) Water (for Fluming and Cleaning) Assessment OR _____, the person responsible:

  - ! ❒ Identifies the water sources
  - ! ❒ Describes the intended use of each water source
  - ! ❒ Describes the method of application
  - ! ❒ Assesses the potential hazards for each source considering its use

! ❒ Determines the appropriate action or preventative measures needed to control the hazards

To assist with the assessment, the following MUST be adhered to:

***Note**: Composite Samples may be an option for water testing. Refer to Appendix G: Water testing 4. Composite Water Samples for further information.*

***Note: Potable water**: Water that meets the parameters under the Canadian Water Quality Guidelines for Drinking Water Quality (biological parameters are 0 Total Coliforms and 0* E. coli*).*

Private Well Water *(If not applicable, proceed to the next sub-section: Municipal Water)*

! ● At least twice annually (after your operation's start date) – If water is from a private well, the person responsible tests the well water for Total Coliforms and *E. coli* using an accredited lab that uses appropriate sampling and testing methods to perform analyses in accordance with the applicable requirements of ISO/IEC 17025, to ensure that the well water is potable (File under Tab: Test Results) *Refer to Appendix G: Water Testing*
  - ! ❒ Once prior to use
  - ! ❒ At least once more during the season to ensure water potability is being maintained

❒ The person responsible ensures the water sample is taken from the appropriate location (e.g., equipment, tap, storage cistern/tank/container, etc.)

Municipal Water *(If not applicable, proceed to the next sub-section: Surface Water)*

***Note**: Municipal water is assumed to be potable; therefore, it does not need to be tested UNLESS it is stored (Section 15.2), treated (Section 15.3), recycled/recirculated or a test is required from the equipment. Testing may not be required even under those circumstances; therefore, carefully read Section 15 in its entirety.*

❒ If water is provided by the municipality, the person responsible receives notification if the supply becomes contaminated along with the appropriate treatment method(s)

Surface Water *(If not applicable, proceed to the next sub-section: Water for Hydro-cooling, Cooling, Fluming and Washing Product)*

! ● If water is from a surface water source, the person responsible:
  - ! ❒ Follows a water treatment program to make it potable as per Section 15.3: Treatment below
  - ! ● At least twice annually (after your operation's start date) - tests the treated water for Total Coliforms and *E. coli* using an accredited lab that uses appropriate sampling and testing methods to perform analyses in accordance with the applicable requirements of ISO/IEC 17025, to ensure that the treated water is potable (File under Tab: Test Results) *Refer to Appendix G: Water Testing*
    - ! ❒ Once prior to use
    - ! ❒ At least once more during the season to ensure water potability is being maintained

FOR FRESH MARKET POTATOES *(N/A for Processing Potatoes)* *(If not applicable, proceed to the next sub-section: Final Rinse Water)*

Water for Post-Harvest Applications of Agricultural Chemicals

! ❒ Water for post-harvest applications of agricultural chemicals (e.g. during packing, before, during or after storage, before holding, etc.) is from a **potable source**

❒ Water used for post-harvest applications of agricultural chemicals is **kept potable** if this is the final water in contact with product (i.e., there is no final rinse) *(check only if applicable)*

- At least twice annually (after your operation's start date) – If providing a post-harvest agricultural chemical application, the person responsible tests the water (even if it is from a municipal source) for Total Coliforms and *E. coli* using an accredited lab where analyses are performed to standards equivalent to ISO 17025,to ensure that the water is potable (File under Tab: Test Results) *Refer to Appendix G -- Water Testing*
  - ❒ Once prior to use
  - ❒ At least once more during the season to ensure water potability is being maintained

❒ The person responsible ensures the water sample is taken directly from the application equipment when testing for potability

Note: *See Section 6 Agricultural Chemicals for requirements for agricultural chemicals.*

Water for Humidity/Misting, etc. *(**N/A For Both** Fresh Market and Processing Potatoes, proceed to the next sub-section: Water for Cleaning)*

Water for Cleaning (equipment, buildings, containers, water storages, etc. and hand washing in personal hygiene facilities) *(If not applicable, proceed to the Section: 15.2 Storage)*

- The person responsible uses **potable water**:
  - ❒ For cleaning buildings, building equipment, containers, etc. (N/A FOR PROCESSING POTATOES)
  - ❒ For cleaning production site equipment (N/A FOR PROCESSING POTATOES)
  - ❒ In personal hygiene facilities for hand washing

- At least twice annually (after your operation's start date) – The person responsible tests the water for Total Coliforms and *E. coli* using an accredited lab that uses appropriate sampling and testing methods to perform analyses in accordance with the applicable requirements of ISO/IEC 17025, to ensure that the water is potable (File under Tab: Test Results) *Refer to Appendix G: Water Testing*
  - ❒ Once prior to use
  - ❒ At least once more during the season to ensure water potability is being maintained

❒ The person responsible ensures the water sample is taken from the appropriate location (e.g., equipment, tap, storage cistern/tank/container, etc.).

15.2 Storage

❍ Water for fluming and cleaning is stored, *proceed below.*
If not, proceed to Section 15.3: Treatment.

REQUIREMENT	*Cisterns, tanks, or containers used to store water may be a source of contamination. Water must be stored in clean cisterns, tanks, and/or containers.*

PROCEDURES:

Note: *Hand washing water stored in permanent tanks (e.g., within portable washrooms or as standalone facilities) is not considered potable UNLESS:*
- the water is tested from the tank each time the tank is filled to confirm potability, OR
- the water is treated and tested to confirm potability is being maintained with treatment as per procedures in Section 15.3 Treatment*, OR*
- the cleanliness of the tank is maintained, filling procedures are followed and the water is tested to confirm potability as per procedures in Section 15.2 Storage

***Note**: If stored water is being treated according to the procedures outlined in 15.3 Treatment, then the requirements under 15.2 Storage are not applicable (e.g., cleaning and filling procedures are no longer necessary as proper water treatment occurs AFTER these activities have been completed, which mitigates any risks they may have posed).*

❒ Annually – The person responsible records location of water storage tank/container/cistern on Form (A) Buildings Sketch and Agricultural Chemical Storage Checklist OR _____

_____

! ● Annually (prior to use) and monthly (during use) - The person responsible ensures that the water storage tank/cistern/container is clean by:

Cleaning Procedure*:*

Washing with (choose at least one of the following options):

- ❑ Water with friction (e.g. pressure wash, wiping, scrubbing)
- ❑ Water and a sanitizer (e.g., chlorine, quaternary ammonium)
- ❑ Water and soap

❒ Describe your step-by-step cleaning instructions [include any soaps or sanitizers, concentrations and equipment used (*refer to Appendix B: Chlorination of Water for Fluming and Cleaning Fresh Fruits and Vegetables and Cleaning Equipment – An Example for examples of chlorine solutions for equipment cleaning, Appendix H: Cleaning and Treating Cisterns – An Example and Appendix N: Sanitation Standard Operating Procedures (SSOP) – An Example),]*:

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

[Filling in the above description completes your Sanitation Standard Operating Procedure (SSOP) for cleaning your water storage tank/container/cistern.]

! ❒ Annually (prior to use) and monthly (during use) – The person responsible records cleaning of water storage on Form (I) Equipment Cleaning, Maintenance and Calibration OR _____

_____

● Each time the tank/cistern/container is filled – The person responsible ensures that:

❒ A description of the step-by-step filling instructions is given for each water source used:

Identify your water source: _____

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

[Filling in the above description completes your Standard Operating Procedure (SOP) for filling your water storage tank/container/cistern. ***Complete a different SOP for each water source, type of tank/container/cistern or filling mechanism***.]

- The person responsible ensures that:
  - ❒ Filling mechanism (e.g. hose) is not a source of contamination
  - ❒ Employees filling tank/cistern/containers are not a source of contamination

- During Filling:
  - ❒ Contamination does not occur from outside sources (e.g., dirty hose, tank opening or lid not clean etc.)
  - ❒ Tank/cistern/container must be closed immediately after filling
  - ❒ The part of the tank/cistern/container where the water is emptied from (e.g., spigot, tap, opening, etc.) is kept free from contamination.

! - Regardless of water source (e.g., rain, municipal, private well water) - At least twice annually (after your operation's start date) and after abnormal events – The person responsible tests water from the cistern/tank/container for Total Coliforms and *E. coli* using an accredited lab that uses appropriate sampling and testing methods to perform analyses in accordance with the applicable requirements of ISO/IEC 17025, to ensure that the water is potable (File under Tab: Test Results). *Refer to Appendix G: Water Testing*
  - ! ❒ After cleaning, but prior to use
  - ! ❒ At least once more during the season to ensure water potability is being maintained
  - ! ❒ After abnormal events

❒ The person responsible ensures the water sample is taken directly from the cistern/tank/container when testing for potability

❒ The person responsible ensures the water storage tank, container or cistern has a lid, is free from rust, is closed when not in use and is protected from chemical contamination when not in use

15.3Treatment

REQUIREMENT	*The treatment of water (for fluming and cleaning) with chlorine or other methods must be controlled and monitored to ensure appropriate chemical concentrations or functioning of equipment and to prevent both the biological and chemical contamination of product.*

PROCEDURES:

❍ Water is treated, *proceed below.*
If not, proceed to Section 16: Ice.

- When treating water the person responsible *(choose those that are applicable)*:

! ❒ Follows instructions in *Appendix A: Shock Chlorination of Well Water – An Example* OR ____

_____

! ❒ Follows instructions in *Appendix B: Chlorination of Water for Fluming and Cleaning Fresh Fruits and Vegetables and Cleaning Equipment – An Example* OR _____

_____

! ❒ Follows instructions in *Appendix H: Cleaning and Treating Cisterns – An Example* OR _____

_____

! ❒ Other instructions *(specify or describe)*: _____

_____

_____

! ❒ Uses an alternative method to chlorination (e.g., hydrogen peroxide, ozone, ultra violet light, reverse osmosis) as per manufacturer's instructions (*describe method):* _____

_____

_____

_____

! ❒ Records the control and monitoring of alternative water treatment on (*indicate name and location of form*): _____

(File under Tab:_____)

Note: *Seek expert or professional advice for proper setup and monitoring of alternative water treatment systems.*

! ❒ If adding water treatment aids (i.e. chlorine) manually and monitoring treatment with chlorine/pH strips or ORP, the person responsible establishes a standard operating procedure following instructions in *Appendix B*: *Chlorination of Water for Fluming and Cleaning Fresh Fruits and Vegetables and Cleaning Equipment – An Example OR:*___ _____
AND fills out the right hand column of the chart below

Volume of water in wash tank or system:	_____
Water treatment used (e.g. 5.25% household bleach):	_____
Initial amount of treatment chemical added and target concentration (ppm) (e.g., ¾ cups of chlorine per 50 gallons to reach 50 ppm):	_____
What are you using to monitor levels (e.g., chlorine strips/pH strips, ORP)?	_____
How often do you check treatment levels (e.g., every hour during use)?	_____

How often is water changed (e.g., daily, weekly)? _____

What is the target level (for ORP/chlorine/pH)? _____
ORP =700 or greater; pH=6-0-7.5;
free chlorine = between 2-7 ppm
Other:

Actions taken if:

ORP is between 650-700 (e.g. add ¾ cups of chlorine per 50 gallons)
Add: _____
Recheck ORP/free chlorine/pH and record on form N1 or _____

ORP is below 650 or free chlorine is below 2ppm (e.g. add 2 cups of chlorine)
Add: _____
Discard or rewash any product that has come in contact with contaminated water

! ❒ Daily (for chlorination) – The person responsible controls and monitors (as applicable) chlorine/pH or Oxidation-Reduction Potential (ORP) levels in water and records this on Form (N1) Water Treatment Control and Monitoring OR _____

! ❒ Daily (for alternative water treatment methods) – The person responsible monitors the equipment for proper functioning and records this on (*indicate name and location of form*): _____ (File under Tab: _____)

! ● At least twice annually (after your operation's start date) – The person responsible tests the treated water for Total Coliforms and *E. coli* using an accredited lab that uses appropriate sampling and testing methods to perform analyses in accordance with the applicable requirements of ISO/IEC 17025, to ensure that the water is potable (File under Tab: Test Results). *Refer to Appendix G: Water Testing and Appendix B: Chlorination of Water for Fluming and Cleaning Fresh Fruits and Vegetables and Cleaning Equipment – An Example.*

  ! ❒ Once prior to use
  ! ❒ Once more during the season to ensure water potability is being maintained

❒ The person responsible ensures the water sample is taken directly from the equipment when testing treated water for potability

Confirmation/Update Log:

Date						
Initials						