

# BACKFLOW PREVENTION PROGRAM GUIDELINE

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## INTRODUCTION

The City of Sarnia delivers safe and clean drinking water to Sarnia residents through a system of water mains, known as the Municipal Drinking Water System. The Safe Drinking Water Act and the regulations of the Ontario Ministry of the Environment and Climate Change (MOECC) require the City of Sarnia to provide safe drinking water to all its residents, otherwise known as the Standard of Care. In order to keep the drinking water safe and protect public health, the City is working on a proactive plan towards preventing contamination of the drinking water system from incidences of backflow. This plan includes creating a Backflow Prevention Program and passing a Backflow Prevention By-law to enforce the program.

Water normally flows in one direction, from the Municipal Drinking Water System through a home's cold or hot water plumbing to a sink tap or other plumbing fixture. Under certain conditions, water can flow in the opposite direction. This is known as backflow. Backflow occurs when back siphonage or a back pressure condition is created in a water line.

**Back siphonage** can cause backflow if there is a drop in pressure or a negative pressure in the water line.

**Back Pressure** can cause backflow when a source of pressure, such as a pump, creates a pressure greater than the one supplied by the municipal water system.

Backflow can occur where cross-connections on the water system are created. A cross-connection is defined as *"any actual or potential connection between a potable water system and any source of pollution or contamination"* (CSA, 2011). Cross-connections are present in every water supply system and cannot be completely eliminated, but they can be controlled. Any cross-connections that are not protected against backflow are potentially a dangerous source of contamination. When cross-connections are not controlled and backflow occurs, pollutants or contaminants can enter the municipal water system. Consequently, these

connections can result in health hazards. Therefore, it is important for the municipality to have an effective Backflow Prevention Program in place.

The program applies to all Industrial, Commercial, Institutional (ICI), Agricultural and specific residential water customers. These properties have the potential to pose the most significant risk to the drinking water system. Applicable properties that meet certain criteria shall follow requirements set out in the Backflow Prevention By-law. The City will initially focus the program towards Premises Isolation. Premises Isolation ensures protection of the water system by isolating potential hazards from the Municipal Drinking Water System. This is done by installing a device on the water service, after the meter, and before any other connections on the property. The device shall be selected and installed, replaced, maintained and tested by a Certified Tester in accordance with the Backflow Prevention By-law, the Ontario Building Code Act, 1992 and the CSA B64 Series Standards.

In order to ensure our drinking water continues to be protected from backflow, all backflow preventers shall be tested at least annually as per CSA B64 10.1 and as required in the by-law. Installation and testing will be the responsibility of the property owners, at their expense. The City will monitor properties to ensure compliance is being met. All backflow prevention data will be collected and maintained to ensure compliance for each property.

Occasionally, backflow preventers fail and shall be flushed, repaired, or replaced. The by-law requires that the property owner maintain the required device in proper working order at all times.

## **IMPLEMENTATION OF THE PROGRAM**

### **BACKFLOW PREVENTION SURVEYS**

Property owners will receive notification by mail of the upcoming changes in regards to the Backflow Prevention By-law. Following the initial notification, they will receive a notice of their requirements to complete the Backflow Prevention Survey on all of their water service connections, as required in the by-law. The notice will include all the information needed to help comply with the by-law.

Once the property owner has been notified of their requirements, they should contact one of the Certified Testers who have registered with the City

of Sarnia. A list of Certified Testers within Sarnia and the surrounding area will be provided. The City's list of approved Certified Testers will insure quality control. The by-law will identify functions related to installation and maintenance of devices and the capabilities of the Testers performing these functions; otherwise known as the 'Authorized Functions List', Schedule 'B' in the by-law. The Tester shall complete the Backflow Prevention Survey of all water service connections on site. The survey involves an inspection and details of the water service and property. The survey should include findings of the inspections, including appropriate recommendations/changes for compliance. Each property will be given a hazard classification level based on the "Classification Guide to Degree of Hazards", attached as Schedule 'A' in the by-law. When the type of property is not identified in the Guide, or the property is labeled with more than one degree of classification, the City Engineer shall determine the hazard classification on a case by case basis. Properties will be expected to complete the Backflow Prevention Survey and return it to the City within 30 days of the date requested. All property owners that submit an initial Backflow Prevention Survey will then do so every 5 years thereafter or as required under the by-law. Initial test reports without a survey are insufficient.

### **Existing Device Installed**

If a backflow prevention device already exists on the water service connection, the Tester shall ensure the device is installed in accordance with the by-law and the device is an appropriate device for that property based on the hazard classification level. All properties with an existing device must complete a Backflow Prevention Survey to ensure compliance with by-law. The Tester must complete the survey and once the survey is approved by the City, the Tester shall test the existing device and ensure that it is in good working order. Tests shall be completed using the Test Report form provided by the City and shall be submitted to the City in the format prescribed. All devices thereafter shall be tested annually or as required in accordance with the City's by-law.

### **Installing Device**

If a property is required to install a backflow prevention device in accordance with the by-law, they shall hire a Certified Tester, to complete the installation and testing. A Backflow Prevention Survey shall be completed and submitted to the City, along with the plumbing permit application. Backflow devices can only be installed and tested once the Backflow

Prevention Survey and the plumbing permit are approved. All devices thereafter shall be tested annually or as required in accordance with the by-law.

### **Compliance Notice**

Once the Backflow Prevention Survey is submitted and reviewed by the City, the property owners will receive a Compliance Notice, that may support recommendations/changes suggested in the Backflow Prevention Survey and/or may include additional or alternative requirements. With the Compliance Notice, the property owner will also receive a Corrective Actions Form.

### **Corrective Actions Form**

Once the property owner completes all necessary requirements as indicated in the Compliance Notice, they shall complete and submit a Corrective Actions Form along with test report(s).

### **Successful Completion Notice**

A Successful Completion Notice will be sent to the property owner stating that the facility has met all requirements of the Backflow Prevention Program/By-law. The notification will remind the property owner of their future compliance requirements and future inspections that will be carried out by the City.

## **SUMMARY OF PROCEEDINGS**

The following are the proceedings that take place following the completion of the Backflow Prevention Survey:

- Once the survey report has been reviewed, a Compliance Notice will be sent to the property owner that identifies what remains to be done in order to comply with the by-law.
- All work required under the by-law shall be completed by an Authorized Person from the Authorized Functions List, who is registered with the City.
- Please note that new device installations require a plumbing permit.
- The plumbing permit number is required on all test reports.
- Tests Reports are provided by the City, as well as test tags for a small fee (to be placed on the device after it passes testing requirements).

- Test Reports shall be delivered to the City within 14 days of the test; submission format to be decided.
- Once the property owner completes all necessary requirements as indicated in the Compliance Notice, they shall complete and submit a Corrective Actions Form.
- If the City is satisfied with the Corrective Actions, a Successful Completion Notification will be sent to the property owner stating that the facility has met all requirements of the Backflow Prevention By-law/Program, with a reminder of future requirements.

## **OWNERSHIP**

Consistently throughout Ontario, the consumer is the owner of the backflow prevention device. The rationale is that the cross-connection was created by the consumer and therefore they should be responsible to provide the protection from the hazards they possess on their property. They are also responsible for the maintenance and testing requirements of the device.

## **CONCLUDING**

With an effective Backflow Prevention Program, the City of Sarnia will increase the protection of our drinking water, reduce risks to public health, reduce liability and demonstrate due diligence.