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### **Prevent contamination of drinking water by protecting cross-connections**

Municipalities are making great efforts every day to produce quality drinking water. However, once distributed, this water is exposed to a risk of contamination. Municipalities can implement concrete means to protect themselves against it such as the implementation of a cross-connection control program and the application of clear regulations.

The presence of unprotected cross-connections in a building's plumbing system can result in pollutants coming into direct contact with the drinking water. Contamination may be limited to the building concerned, but it could also, in the worst-case scenario, join the water supply network and spread to neighboring buildings. The consequences of contamination on public health depend on the nature of the contaminant. The risk is very real and that is why, in Quebec, we must follow strict regulations.



## **Protect cross-connections**

One of the main causes of contamination is backflow which is a reversal of the direction of water flow. This phenomenon occurs mainly because of large fluctuations in pressure in the plumbing network. Some buildings are at a higher risk of experiencing these fluctuations. They include high-rise buildings and those that require a large supply of water to operate certain applications.

The applications that generate cross-connections are numerous and present a level of risk ranging from low to high. For example, irrigation, fire protection and glycol heating systems are common applications that must be adequately protected. Another example of an application that can be contaminated is a chemical dispenser connected to a building's drinking water system.

When not protected, cross-connections are more vulnerable in the event of backflow. The installation of a backflow prevention device at strategic locations on the plumbing system is an effective protection against contamination.

## **What the Quebec law says**

Cross-connection protection is mandatory across Canada. In the other Canadian provinces, each municipality is responsible for adopting its own regulations. In Quebec, the Régie du bâtiment (RBQ) applies the Building Act: composed of the Construction Code and the Safety Code, this act regulates both new and existing constructions.

Chapter III (Plumbing) of the Construction Code, which applies to new constructions, imposes rules on plumbing contractors to prevent any form of contamination of the drinking water system. For their part, owners of existing buildings will find information relating to the protection of cross-connections in the Safety Code (Chapter I, section 7).

Only existing buildings that are entirely residential with fewer than nine units or less than three floors are not subjected to the Safety Code. All other buildings such as industrial, commercial, or institutional (ICI) buildings are affected.

The Building Act is based on two CSA standards: B64.10-17 (Selection and installation of backflow prevention devices) and B64.10.1-17 (Maintenance and testing of backflow prevention devices).

RBQ inspectors are roaming across Quebec. If an owner or contractor is found to be in default, he or she will have to demonstrate that he or she is taking the necessary steps to correct the situation



within a reasonable time. However, the inspectors are not enough to do the job. That is why the involvement of municipalities is essential.

## **The role of municipalities**

It is desirable that each city adopt its own legislation to encourage building owners affected by the Act to comply with it. Of course, municipal buildings must also be rigorously protected to set an example.

Some municipalities in Western Canada that are ahead of Quebec in this area, have adopted clear regulations on the subject. Despite this, inspectors still encounter negligent owners. Yet, when public health is compromised, the best protection would certainly be to close the drinking water supply to a building, while it is brought up to standard... Obviously, a huge step is to be taken before we come to applying such a coercive measure!

We must, therefore, give priority to collaboration between a city and the owners of the buildings located within its territory. Rewarding owners whose buildings are compliant and who implement a cross-connection control program can have a positive impact, depending on the incentives put in place.

Both cities and building owners can benefit from a cross-connection control program, the aim of which is to secure connections at risk. Although the implementation of such a program may seem a colossal task, depending on the complexity of the building, it nevertheless provides a tangible guarantee against possible contamination of drinking water.

Cities have a huge responsibility to their inhabitants, as do the owners of buildings subject to the Act. In the presence of such a risk, however, minimal it may be, prevention comes at a much lower cost!

