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June 15, 2009

Mr. Wesley Johnston
Director of Policy and Research
Canadian Solar Industries Association/L'Association des Industries Solaires du Canada
2378 Holly Lane, Suite 208
Ottawa, Ontario K1V 7P1

RE: Backflow Prevention Requirements for Solar Domestic Hot Water System

Dear Mr. Johnston:

This is in response to your inquiry regarding the Building Code's backflow prevention requirements for solar domestic hot water (SDHW) systems.

The Building Code regulates where a backflow preventer is required. Articles 7.6.2.1. and 7.6.2.2. of Division B of the Building Code require protection of potable water systems against contamination due to reversal of the normal direction of flow between a potable water system and any other system containing non-potable water or substances, where there is a direct connection between the two systems.

Consequently, a backflow prevention device is required in a solar water heating system where there is a direct connection between the building's potable water make-up supply and the solar heat transfer loop containing non-potable fluids. Where there is no direct connection between the building potable water make-up supply and the solar heat transfer non-potable fluid loop, a backflow preventer is not required.

Where a non-potable heat transfer loop is charged with potable water through a charging port that is not permanently connected to a potable water system, the temporary connection to the potable water system shall be made via a backflow preventer or an air gap.

Equipment forming part of a packaged system for solar heating of potable water must conform to the CAN/CSA-F379.1, "Solar Domestic Hot Water Systems (Liquid to Liquid Heat Transfer)" standard. The installation of packaged systems for solar heating of potable water in residential occupancies must be in conformance with the CAN/CSA-F383, "Installation Code for Solar Domestic Hot Water Systems" standard. All other systems have to be installed in accordance with good engineering practice and are expected to comply, where applicable, with the same practices required for package systems.

According to Clauses 7.4.3.1. and 7.4.3.2. of the CAN/CSA-F379.1 standard, a SDHW system that utilizes a single-wall heat exchanger is required to have a relatively harmless heat transfer fluid (which may present minor to moderate hazard) and be properly labelled. In this case, a permanent backflow prevention device would be required on the charging line between the potable water system and the heat transfer loop only if there is a permanent direct connection between the heat transfer loop and the potable water system. Otherwise, the Building Code does not require backflow prevention devices on the domestic hot or cold potable water lines. In case of a conflict between the provisions of the Building Code and the standard, the provisions of the Building Code govern.

Similarly, where a SDHW system has a double-wall heat exchanger and there is a permanent direct connection between the heat transfer loop and the potable water system, the selection of the required backflow preventer would be determined in accordance with Sentence 7.6.2.4.(5) of Division B of the Building Code, based on the type of heat transfer fluid used and other risks.

The requirement for premise isolation would be determined based on the use and the occupancy of the entire building. In most cases, the installation of a domestic solar hot water system that has a direct connection to a potable water system, alone, would not require the premise isolation referenced in Sentence 7.6.2.4.(9) of Division B of the Building Code.

Under the Building Code Act, the local municipality is the authority having jurisdiction for enforcing the Act and its Regulations and you are encouraged to contact the appropriate local official with respect to any specific proposal.

Thank you for bringing this matter to our attention.

Regards,

A handwritten signature in blue ink that reads "Alek Antoniuk". The signature is fluid and cursive, with the first name "Alek" and last name "Antoniuk" clearly distinguishable.

Alek Antoniuk, OAA
Manager, Code Development and Advisory Unit