
Residential water treatment devices are classified as a low backflow hazard.

An air gap is safe and cost-effective backflow protection for residential water treatment devices.

Learn more

- Section II, Ion Exchange, in *Installer's Home Study Course*, published by WQA in 2001.
- USEPA Cross Connection Control Manual, published by USEPA, <http://www.epa.gov/ogwdw/pdfs/cross-connection/crossconnection.pdf>
- WQA Educational Kit, Vol V. Published by WQA, 2012.

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A not-for-profit organization

Backflow Protection – Air Gap

*Water Treatment
Industry Toolkit*



*Courtesy of The Water Quality Association
A not-for-profit organization*

Air Gaps and Residential Water Treatment Devices: Effectively Protecting Homeowners

There is no more critical responsibility for policymakers than to ensure the basic health of the public. In our homes, this starts with clean, safe water – the most basic human need after clean air.

The residential water treatment industry – and its not-for-profit trade association, Water Quality Association – are built on this objective. Providing quality water is their life's work.

That is why we join with the USEPA and one of the most respected associations dedicated to quality water through public water systems (the AWWA) in supporting the policy that **residential water treatment devices are classified as a low backflow hazard**. And the main installation requirement for health protection is an air gap to prevent device contamination from potential direct contact with drain water. (**Note** – this is neither appropriate for devices with continuous regeneration nor necessary for devices that do not have a waste stream, such as cartridge filters or in-line microfiltration).

An **air gap**, as its name suggests, is a space between a device that opens to a plumbing system or a place where water can collect or pool.

Most plumbing codes also follow this same mindset. However, inadvertent misinterpretation of the codes can lead to requirements to install costly equipment or devices beyond what is necessary to protect the water supply from backflow problems. This has been demonstrated to be an unnecessary burden to homeowners, one that directs their income away from more practical uses. Misinterpretations can be avoided with appropriate understanding.

The problem of backflow

In every home, there is both potable drinking water and non-potable waste waterflow in the combined plumbing/wastewater system. One of the key functions of a properly designed plumbing system is to keep these separated. The consequences of potentially allowing wastewater to come through a kitchen faucet, for example, are obviously dangerous.

One way this hazardous mixing takes place is through **backflow**. This is possible when wastewater from a drain line runs backward, entering into a potable drinking water system. Backpressure takes place when the force downstream increases to a level that is stronger than the incoming water supply pressure. A boiler, for instance, might create high pressure and push water back into the pipe that would normally provide intake.

There are numerous ways to prevent backflow. Prevention assemblies may be used, such as a check valve. Usually, these assemblies include test cocks and shut-off valves. In that case, plumbing codes require that these be tested when they are installed, relocated, or repaired and, in many cases, they need to be tested every year after installation.

To require a costly backflow prevention device where in reality an air gap is sufficient protection, is an unnecessary burden to all involved.

Water treatment devices and backflow

Many plumbing codes recognize that water treatment devices do not require further backflow prevention and that contamination of the unit can be prevented with a simple air gap as effectively as when applied for dishwashers and common faucets.

The USEPA maintains a list of “high hazard” devices and systems within the EPA “Cross Connection Control Manual.” These are deemed to be at greater risk for backflow problems. Significantly, water softeners or other water treatment devices are not listed by the EPA as high hazard devices indicating that it is not a potential health risk that would require more backflow prevention than an air gap.

The American Water Works Association (AWWA)

is an international non-profit professional organization founded in 1881 to promote quality water. Its membership of more than 55,000 worldwide includes water utilities, treatment plant operators and managers, scientists, environmentalists, manufacturers, academics, regulators, and many others.

In its manual, “Recommended Process for Backflow Prevention and Cross-Connection Control,” AWWA supports the position that only an air gap is required to prevent water treatment filters from being contaminated from drain contaminants. It states, “An air gap separation or a reduced pressure principle backflow-

prevention assembly is recommended at the service connection when the auxiliary water supply is or may be contaminated to a degree that would constitute a high hazard.” Because a water treatment device is only being protected from contamination coming in (as opposed to being a potential source of contamination itself), an air gap would suffice without the need for additional backflow prevention.

The Canadian Standards Association (CSA)

similarly asserts that water softeners are only a minor hazard for backflow problems, which is defined as “any type of cross-connection or potential cross-connection that involves a substance that constitutes only a nuisance and that results in a reduction in only the aesthetic qualities of the water.” CSA is a respected not-for-profit agency that provides testing and a registered mark to show a product has been independently certified as meeting recognized standards for safety or performance.

The WQA adds to these references that to sufficiently safeguard homeowners and not add unnecessary burdens, WQA strongly supports updating plumbing codes with clear wording to avoid misinterpretations and educating plumbing professionals that an air gap is safe and cost-effective backflow protection for residential water treatment devices. It is sound public policy, efficient, and sensible. (**Note** – this is neither appropriate for devices with continuous regeneration nor necessary for devices that do not have a waste stream, such as cartridge filters or in-line microfiltration).

More about The Water Quality Association

WQA is a not-for-profit international trade organization representing the residential, commercial, and industrial water treatment industry. Its membership consists of both manufacturers and dealers/distributors of equipment. WQA is a resource and information source, a voice for the industry, an educator of professionals, a laboratory for product testing, and a communicator with the public. To learn more about WQA and its professional certification programs, visit wqa.org

The Water Quality Association Water Treatment Industry Toolkit

The Water Quality Association provides these fact sheets and resource guides as a service to its members, policymakers, and the general public. They are designed to promote discussion on key issues through facts and data.