Point-of-Use Reverse Osmosis Installations

CROSS CONNECTION CONTROL

Any connection between a drinking water supply and a potential source of contamination is called a cross-connection. Preventing contamination from entering the drinking water supply is cross-connection control. Point-of-use (POU) reverse osmosis (RO) systems must include an air gap or air gap device for cross-connection control. The drawings starting on the next page show examples of correct and incorrect installations of under-sink RO systems using air gaps and air gap devices.

You must include an air gap or air gap device when installing a RO system.

RO systems have waste lines, also called concentrate lines, containing the contaminants removed from the water. The waste line from a reverse osmosis unit must enter the sewer plumbing through an approved air gap or air gap device. The air gap is a method of cross-connection control and prevents contamination of the drinking water supply.

If the RO waste line is connected to the trap under a sink, the air gap (or air gap device) must be above the flood level rim of the sink. Another option is to discharge the waste line into a floor drain using an air gap. Be aware that the installation manual for the RO system may not describe a proper installation meeting the Minnesota Plumbing Code (Minnesota Rules, Chapter 4714).

What does a POU RO system look like?

Pictured on the right, a POU RO system will typically contain the following components, along with some method of sending wastewater into the sewer.

- [A] Carbon and/or sediment pre-filters
- [B] Membrane filter
- [C] Post-filter (optional)
- [D] Pneumatic bladder/storage tank (typically downstream of membrane)
Figure 1: Air Gap Device Installation Example for Waste Connection to Sink Trap
**Other Air Gap Arrangements**

- If discharging to a separate sewer collection, an air gap must still be provided above the flood level rim of the collector.
- For discharge tubing under ½-inch in diameter, a minimum of 1-inch air gap must be provided (MN Rules 603.3.1).

**Figure 2: Air Gap Installation Example for Separate Waste Connection**
Figure 3: Incorrect Installation with Direct Connection to Sewer

Check Valves, Under-sink Air Breaks
- Are not approved methods of backflow prevention, and poses a health risk by directly connecting to the sewer system.
- These devices may be referred to as a “backflow preventer” or “air gap adaptor”
- An air gap must be provided above the sink if the waste line is connected to trap under the sink (MN Rules 4714.603.4.4).