



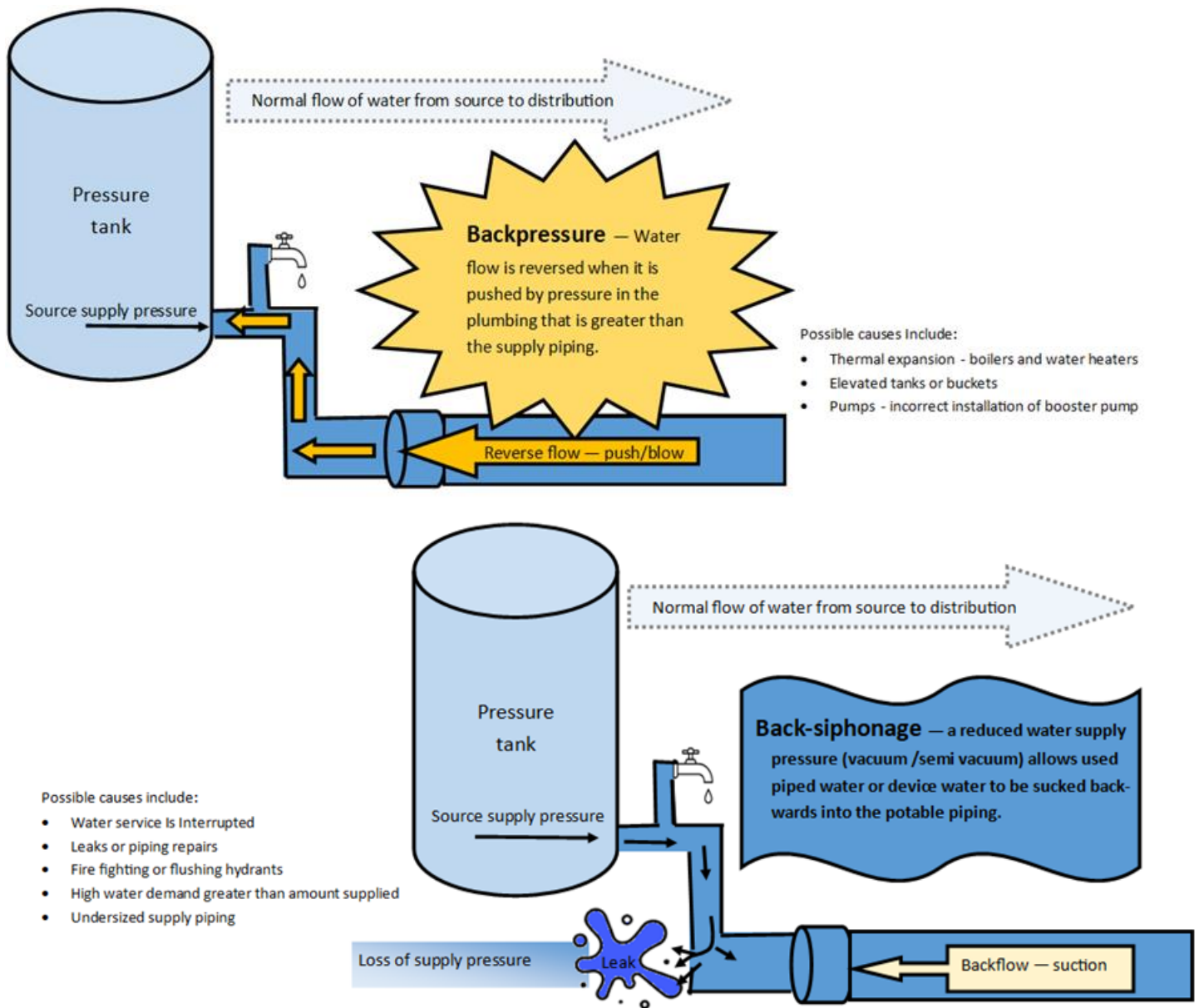
Common cross connections:

## Water System Cross Connection Control Options

A cross connection is a physical connection between a possible source of contamination and the public drinking water system piping. This connection, if not properly protected, can allow contaminants into the drinking water system. Contamination can occur due to backflow.

### WHAT IS BACKFLOW?

Backflow is the unwanted reverse flow (upstream) of water or substances into the distribution piping of a potable water supply. Backflow – is caused by back-pressure (blow/push forces) and back-siphonage (suction).

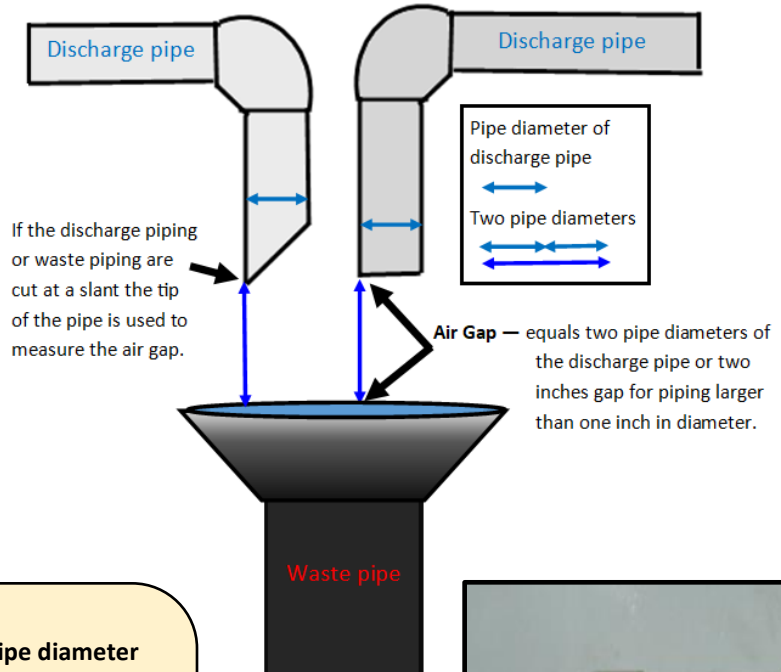
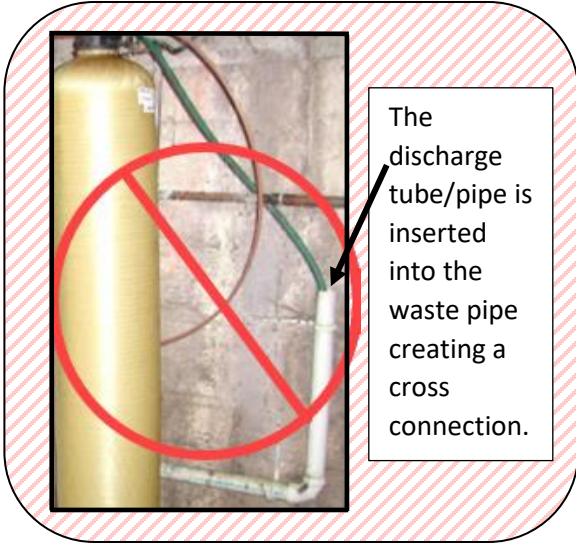


All backflow prevention devices protect against back-siphonage. However, air gaps and some mechanical devices are not acceptable for the protection against back-pressure.

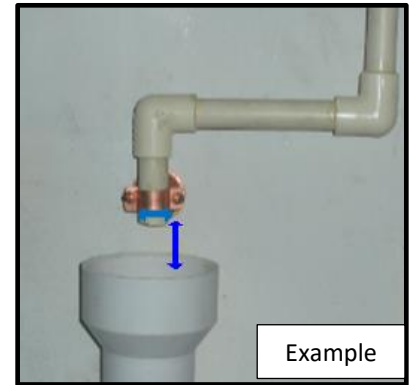


## AIR GAPS

**PHYSICAL AIR GAP** - a physical separation of air space between the potable and non-potable piping.  
 - SPS 382.33(7), ASME A112.1.2

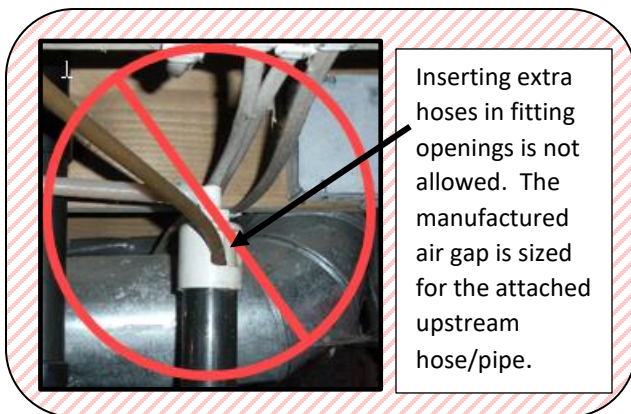


1. Most air gaps must be twice the discharge pipe diameter
2. For discharge piping greater than one inch in diameter the code compliant separation (air gap) is two inches
3. Splashing may occur if the discharge piping is not anchored
4. Overspray may occur if the waste pipe receptor is not fitted with a funnel or large enough pipe to collect water
5. Best backflow protection option is the air gap has no mechanical parts that could fail



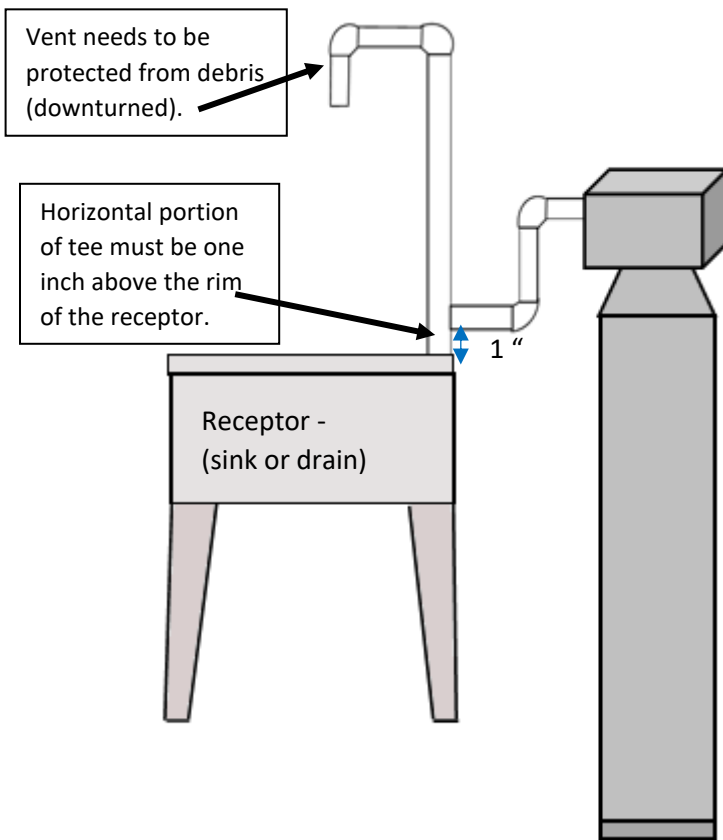
## AIR GAP FITTING - ASME A112.1.3

Back-siphonage



An air gap fitting installs on waste piping and has glue in or threaded fittings for the discharge piping.



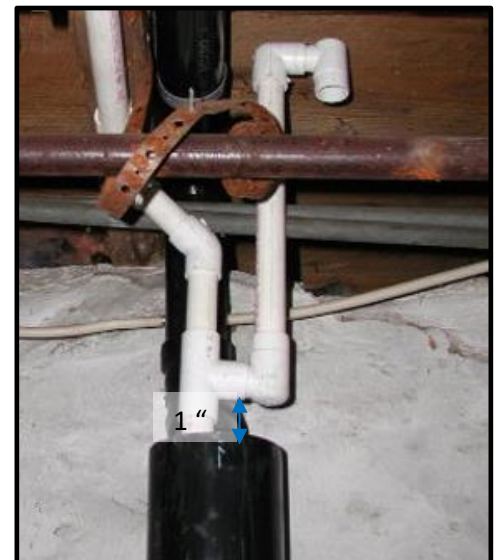


Vacuum breaker tees shall be assembled such that:

1. Bottom of the horizontal portion of the tee is installed at least one inch above the flood level rim of the receptor
2. Inside diameter of the tee is equal to or greater than the inside diameter of the drain piping from the water treatment device
3. Tee is installed in such a position that the discharge will not create a nuisance
4. Piping upstream of the tee is of a type suitable for water distribution in accordance with SPS 384.30(4)(e)
5. Vent portion of the tee is equal to or greater than the inside diameter of the drain piping from the water treatment device; and
6. Vent port of the tee is:
  - a. Positioned away from areas where toxic gases and fumes may accumulate; and
  - b. Constructed to protect the port from falling debris



Examples





## Transient Non-Community Public Drinking Water

These sheets do not include all available cross connection options. For a Wisconsin Department of Safety and Professional Services listing of current accepted cross connection control methods, devices and assemblies for specific applications go to:

[https://docs.legis.wisconsin.gov/code/admin\\_code/sps/safety\\_and\\_buildings\\_and\\_environment/380\\_387/384.pdf](https://docs.legis.wisconsin.gov/code/admin_code/sps/safety_and_buildings_and_environment/380_387/384.pdf)

For additional information on plumbing backflow protection contact the [Department of Safety and Professional Services consultant](#) Email: [DspsSbPlbgTech@wi.gov](mailto:DspsSbPlbgTech@wi.gov)

