

Cross Connections

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. Cross Connections

Introduction

- What is a cross connection
- Types of cross connections
- A view of common cross connections

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. In this section we will discuss what a cross connection is, the different types of cross connections, and view some common cross connections in relation to pools.

CROSS CONNECTION means any physical arrangement whereby a public water supply is connected, directly or indirectly, with any other water supply system, sewer, drain, pool, storage reservoir, plumbing fixture, or other device which contains or may contain contaminated water, sewage or other waste, or liquid of unknown or unsafe quality which may be capable of imparting contamination to the the public water supply as the result of backflow.

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A cross connection is any physical arrangement where a public water supply is connected, directly or indirectly, with any other water supply system, like a sewer, drain, pool, storage reservoir or plumbing fixture, or any other device which contains or may contain contaminated water, sewage or other waste, or liquid of unknown or unsafe quality which may be capable of imparting contamination to the public water supply as the result of backflow.

Types of Backflow

- Back pressure back flow refers to the flow of contaminated water toward a potable supply when the contaminated water's pressure is greater than the potable water's pressure.
- Backsiphonage back flow results from negative pressure (a Vacuum) in the distribution pipes of a potable water supply. Contaminated water is sucked up toward the potable supply.

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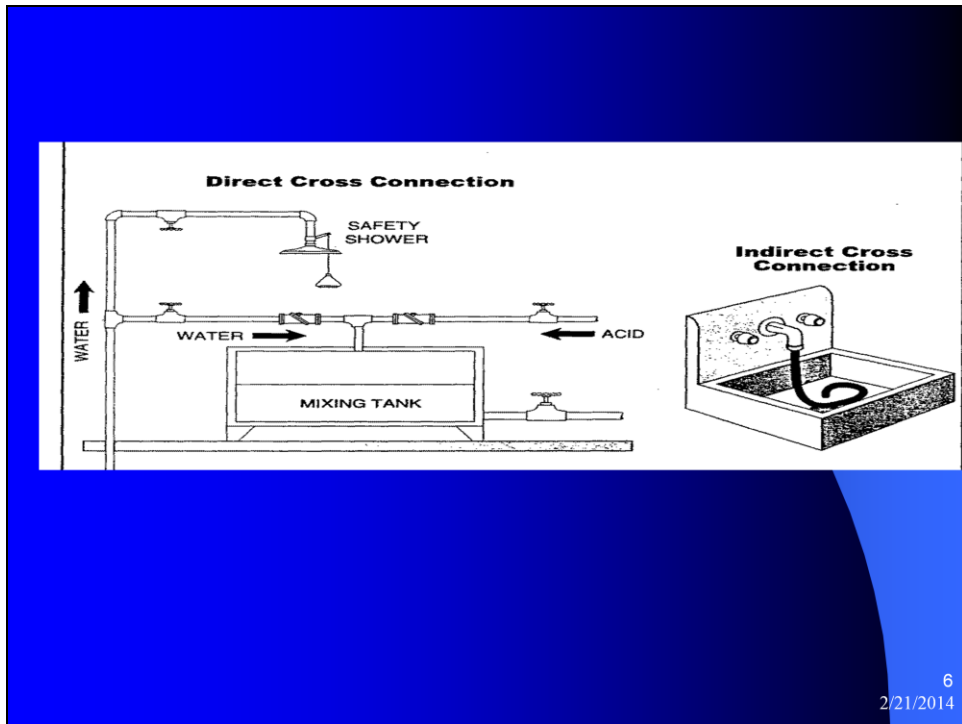
There are different types of back flow in cross connections. Back pressure back flow is the flow of contaminated water toward a potable supply when the contaminated water's pressure is greater than the potable water's pressure. Back siphonage back flow results from negative pressure, like a vacuum, in the distribution pipes of a potable water supply. Contaminated water is sucked up toward the potable supply.

Cross Connections result from:

- Pipe to pipe connection
- Pipe to water connection (outlet submerged in contaminated water)

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Cross connections can result from pipe to pipe connection, or from pipe to water connection, where the water outlet is submerged in contaminated water....like leaving a hose in dirty water.



. This picture shows the difference between a direct cross connection and an indirect cross connection. In the direct connection picture, you can see water and acid are collecting from different directions to a mixing tank. Without proper cross connection, the acid may travel back through the water line and into the shower head that the water line is also feeding. The indirect connection picture of a hose attached to a faucet sitting in a sink would have the potential to cross contaminate the faucet if dirty water from the sink was pushed back into the hose line and there was no vacuum breaker installed.

Potential Cross Connections

- Wells
- Submerged Inlets

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Potential cross connections can also be from wells, in instances where the well head becomes submerged, or from submerged inlets, again like the hose in dirty water.

Summary

POTENTIAL HAZARDS

- Collector tanks, Pools, Sewer Systems,
- Chemicals Containers, Garden Hoses,
- Autofill Devices

PROVIDE VACUUM BREAKERS ON ALL
HOSE BIBBS:



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Cross connection hazards can be from collector tanks, pools, sewer systems, chemical containers, hoses and autofill devices. All hose bibs should have vacuum breaker devices installed.

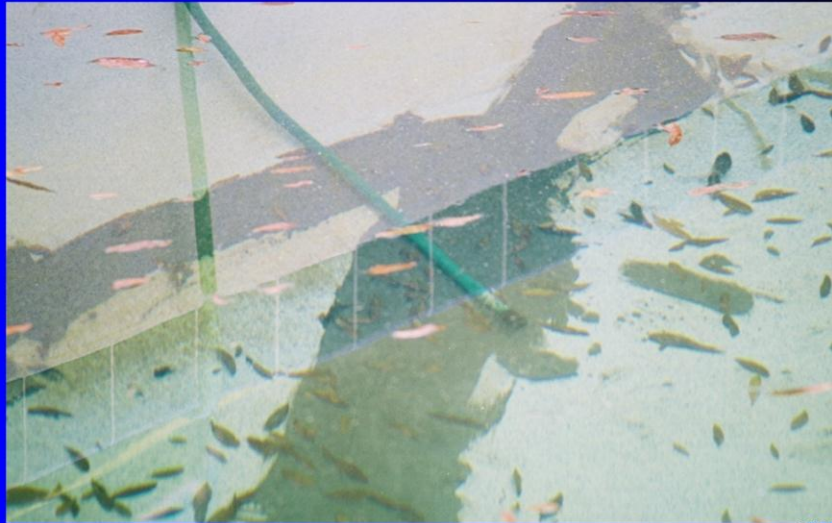


PROVIDE AIR
GAPS ON
AUTOFILL
DISCHARGE
AND WASTE
LINES

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An air gap is the one of the most effective way to prevent cross connection and backflow. Provide air gaps on autofill discharge and waste lines to keep any potentially contaminated water from going back up into the system.

A HOSE IN A POOL IS A CROSS CONNECTION



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. A hose left in a pool is considered a cross connection because of the potential for the pool water to travel back up the hose, especially if there is no vacuum breaker on the hose bib. Vacuum breakers are easy to install, cheap, and are another very effective way to prevent backflow. Don't leave hoses in the pool!

Case Studies



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Now we will discuss some case studies to help you understand how cross connections can happen. The first case study came from a paint factory in Florida. The factory was using propylene glycol in their paint, and a valve at the factory malfunctioned causing the chemical to flow into the factory's potable water system, and from there into the city's system. About 5,700 residents of the city were affected, and the city ordered the paint factory to install a double check valve assembly at their water service connection. The next case study was from Arkansas at a poultry farm. Residents near the farm began complaining of discolored water. Upon investigation it was found the contamination was coming from the poultry farm. The farm's chicken house had a public water system and an auxiliary water well system that supplied the chicken house. The public water supply had two single check valves in place for backflow prevention, but there was nothing on the auxiliary supply, which was being used to administer antibiotics to the chickens. The water from the auxiliary supply was pushed back into the public water supply with chicken antibiotics in it, and this is what was showing up in the residents' taps. A proper backflow preventer was later installed. Our final case study occurred in North Carolina, where a clinic was complaining of a strange and bitter taste in their water, as well as a strong chemical odor. An investigation found the clinic was using a chemical mixer for x-ray development, where water is added to the chemical. Someone had taken a garden hose and connected it to a hose bib with no vacuum breaker and left the hose in the mix, creating an indirect cross

connection. A new vacuum breaker was installed to fix this issue.



Questions?



Please call our office at
(941) 861-6675.

If you have any questions about anything that was discussed,
please give us a call.