



Cross Connections Can Create Health Hazards

KANSAS DEPARTMENT OF HEALTH & ENVIRONMENT

Cross Connection

What is a cross-connection?

A cross-connection is any arrangement of pipes, hoses, or other means which could allow undesirable water, sewage or chemical solutions to enter your drinking (potable) water system as a result of back-flow.

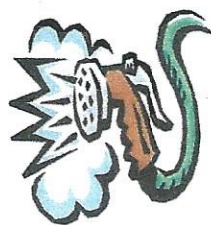
What is backflow?

Backflow is the reversal of normal flow in a system due to backsiphonage or back-pressure.

Backsiphonage backflow occurs when a vacuum is induced on a piping system, just like drinking from a glass with a drinking straw. A garden hose or hose connected to a laundry tub can act as a "drinking straw" allowing undesirable liquids to be drawn through it by backsiphonage. Some typical situations which cause backsiphonage action include:

- water main breaks or repairs occurring in the system at a point of lower elevation than the service point;
- high water flow rates exerted on a water main due to fire fighting, hydrant flushing, large system demands on major piping breaks;
- booster pumps taking direct suction from potable water supply piping; or
- undersized piping.

What is the most common cross-connection?



The everyday garden hose! It's portability and ease of connection to the potable system and potentially dangerous situations require special attention and public education emphasis.

Garden hoses are left:

- submerged in swimming pools,
- stock watering tanks,
- assorted wastewater tanks,

- laying on the ground (which may be contaminated with fertilizers, pesticides, stock wastes, and surfacing septic tank effluent.)
- submerged in sinks and bath tubs.

Possibly the most dangerous household threat is the application of herbicides and insecticides with an aspirator-type applicator from an unprotected hose bibb or hydrant.

The protection afforded by a properly installed and functioning hose bibb vacuum breaker is often breached by keeping the discharge end of the hose above the elevation of hose bibb connection. False security is often worse than no security. For example, a hose bibb vacuum breaker provides no protection if the discharge end of the hose is submerged in a herbicide tank three feet (or any distance) above the hydrant. On a large scale, careless filling of commercial fertilizer and pesticide vehicles at unprotected bulk loading stations or fire hydrants presents a very real danger to public water supplies.

What are some examples of documented cross connection cases?

Because no one was harmed some cases sound amusing. For example, gold fish from a garden fish pond were backsiphoned through a submerged garden hose into a home's bathtub when a negative pressure was caused by opening the bathtub faucet. Or consider the time when the pressure caused by the fermentation process caused sparkling Burgundy wine to be forced into a city's water main. Contrast these amusing occurrences to examples of more serious cases like when several nurses in a hospital complained of red water at a drinking fountain outside of the hospital morgue. Or when a home gardener who was using an aspirator-type sprayer to apply a herbicide containing arsenic. The gentleman disconnected the sprayer to get a drink of water from the hose not knowing a pressure reduction had caused the arsenic to be drawn back into the hose. He died.

KANSAS DEPARTMENT OF HEALTH & ENVIRONMENT
800 W. 24th Street, Lawrence, KS 66046
Phone: 785-842-4600 FAX: 785-842-3537
You can find KDHE on the web at: www.kdheks.gov/

