Why Backflow Prevention Assemblies Require Installation and Regular Testing

BY: MIKE LUECK

- "Foamy" water was reported at a concrete plant in Oregon
- Lab tests of water samples showed the presence of a foaming agent which was not used at the concrete plant.
- Officials suspected a nearby dairy because a foaming agent backflowed from the dairy a number of years earlier, after which 2 RP Assemblies were installed.
- Both assemblies failed testing, one completely.
- After both were repaired the contamination of the public water system stopped.

Why Ongoing Assembly Testing is Necessary

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Rock

Unknown Crud

LEVEL!
Why Ongoing Assembly Testing is Necessary

Chinese Take Out Box!!!

This stops backflow

This allows backflow

Why Ongoing Assembly Testing is Necessary

Parts Break

- A fast food chain in Virginia complained that all their fountain drinks were rejected for tasting salty. Adjacent customers had the same issue.
- No cross-connections found.
- A neighboring shipyard made the same complaint. (served by the same water main.)
- The shipyard had a high pressure fire protection system supplied by seawater.
- The high pressure pumps were primed with potable water.
- The backflow prevention assembly on the priming line froze and was replaced with a spool piece.
- The high pressure pumps backflowed seawater into the city’s public water through the priming line.
- The potable priming line was removed and a containment RP was installed.

Why Ongoing Assembly Testing is Necessary

Parts Break

Corrosion
Are Backflow Prevention Assemblies Altered After Install?

Chemical injector added altering the hazard level

Owner tapped the vent hole and installed a screw to lock the relief valve closed.

Did the owner also remove the check valves?

Bypass
Are Backflow Prevention Assemblies Altered After Install?

Mother Nature can alter backflow prevention assemblies too!!!

How long since this assembly was tested?

Can you find the backflow prevention assembly in this picture????

“Bootleg” Repair Parts- Not to Factory Tolerances
Why Ongoing Assembly Testing is Necessary

- Two home owners in Southgate MI find parasitic worms, nematodes in their water.
- One found them swimming around in his bathtub when filling to bathe his child.
- A water main break caused a vacuum in the public water system.
- The air inlet valve on the vacuum breaker was stuck not breaking the vacuum and the parasites were back syphoned into homes and public water system.
- Crews flushed all water mains in a 3 square block area until no worms or detectable coliform bacteria were present in water samples.

It can and does happen!
What Other Animals Might We Find?

- Spiders
- Earwigs

Not just insects!

Lizard

When was this last tested?

More Horror Stories

- E-Coli found in Corpus Christie Water
- Source was a failed backflow prevention assembly
- Failure rates when tested annually - 20%
- Failure rates when tested every 3 years - 30 - 40%
- Are your customers exposed to risks and potential health problems if you don’t require regular testing?
More Horror Stories

A failed backflow preventer allowed irrigation water to contaminate 380 homes in Idaho.

Dozens of people became ill.

Four residents were confirmed to have Campylobacter.

Campylobacter is an infectious disease from bacteria.

Symptoms include bloody diarrhea, fever, abdominal cramps, nausea and vomiting.

It can be threatening to people with compromised immune systems.

More Horror Stories

Water is commonly used to clean propane tanks prior to being repaired.

Propane has been documented backflowing into public water systems in Connecticut and Arkansas where pressure in the tanks was greater than city water pressure.

People were injured in explosions after flushing toilets.

Houses and businesses were damaged or destroyed by fires.

In the Connecticut incident, 200,000 gallons of propane backflowed to fill one mile of an 8" diameter water main.

More Horror Stories

Waste water for a meat packing plant poisoned potable water at a meat packing plant in Maryland.

Millions and 200 jobs were lost due to millions of dollars in business losses.

Herbicide Paraquat backflowed in the public water supply in Iowa.

Are Backflow Prevention Assemblies Installed Improperly?
An 8 block area was contaminated with “Soapy”, “Muddy”, “Grey-Green Slippery” recycled wash/rinse water that backflowed from a carwash in Washington.

Sodium Hydroxide from a chemical plant backflowed into the municipal water supply in Alabama during a watermain break sending people to the hospital with burns and blisters in the mouth, throat and skin.

Blood from a hospital’s autopsy table backflowed into the potable water supply in Michigan from a boiler backflowed into a school in Colorado sending 9 students to the hospital.

Ethylene Glycol water supply into a hospital.

Pesticides Heptachlor, Chlordane and Dursban backsyoned into the public water supply in New Jersey contaminating businesses costing $21,000,000.

There are dangerous fluids directly and indirectly connected to the potable water supply.

Scheduled and unplanned events like hydrant flushing, water main breaks and fire fighting create the hydraulics for backflow.

Backflow prevention assemblies are mechanical.

Backflow prevention assemblies fail, are removed, are modified improperly.

Regular testing will keep the dangerous cross connections protected with properly functioning assemblies.

Are traffic signals not maintained at busy intersections because there has not been a fatal accident?

Are speed limits near schools raised because a child has not been run over?

Do you replace worn tires on your automobile?

Are fire drills at schools suspended because there has not been a fire?

Regular testing will keep the dangerous cross connections protected with properly functioning assemblies & public health will be protected.
Sources

- TREEO Center – University of Florida
- American Backflow Prevention Association
- Jim Purzycki – BAVCO
- Paul Schwartz – FCCC & HR-USC
- Les O’Brien – Retired TREEO Center – University of Florida
- Steve Miller – Blue Water Backflow Services
- Matt Kapcia – City of Troy; The Backflow School
- Henry Chang – FCCC & HR-USC
- Kevin Roby – City of Novi – Cross Connection Specialist

Questions?

If you would like a copy of this presentation to help support or justify your Cross Connection Control Program contact me at mlueck@midwestinstrument.com

Thank You!