2016 MWEA/AWWA Joint Expo
Backflow Prevention at Waste Water Facilities and ASSE Certification Requirements

Presented by:
Paul Patterson
I DON'T ALWAYS SAY SOMETHING STUPID

BUT WHEN I DO, I KEEP TALKING AND MAKE IT WORSE
Is this a cross connection?
Cross Connection Control Methods At Waste Water Treatment Facilities

1. **Containment**, or service line protection
2. **Isolation**, or “point of use” fixture protection
3. **Zone Isolation**, - protecting multiple uses with a single backflow prevention method
Containment

Means of preventing backflow into the public water system from a consumer’s premises by installing an appropriate backflow preventer at the service connection. Containment assemblies or devices are normally located at the meter prior to the first tap.
Containment - Benefits

– Assures water of questionable quality does not enter PWS by preventing/controlling backflow at a single connection point
– Containment should be required at all high hazard facilities including waste water plants
– Containment *does not* protect the workers inside the facility
Isolation

Installation of a backflow preventer on the water supply line to a point of water use, or water fixture. This is intended to isolate that fixture from other fixtures within a building.
Isolation

• Benefits of Isolation
  – Ensures all points of water use are protected, thereby protecting both the Private Potable Water System AND the Public Potable Water System
Zone Isolation

Installation of a single backflow prevention assembly in supply to multiple fixtures/uses inside a facility. NOTE: All piping downstream of a Zone Isolation Backflow Preventer should be considered NON-POTABLE.
Zone Isolation

- Benefits of Zone Isolation
  - Multiple Non-Potable uses can be protected with a single backflow prevention method. When used in conjunction with Isolation ensures all points of domestic water use are protected, thereby protecting both the Private Potable Water System AND the Public Potable Water System.
Waste Water Plants

• Highly recommend Containment to protect the distribution system and Zone Isolation for internal hazards.
Containment
Containment – Parallel Installations

- Service line containment – may have bypass
- Allows maintenance on one assembly while maintaining water to facility
- Bypass must have equal or greater protection
Containment – Bypass
Zone Isolation
Zone Isolation

Air Gap as Backflow Prevention
Isolation Hazards

Is This An Approved Air Gap?
D.I. Tanks
Fume Hoods
Fume Hood

AVB in supply to fume hood must be outside of unit, not exposed to toxic fumes inside, and 6” above all downstream uses
Lab Faucets

Lab faucets require AVB protection, or LFVB protection
Wash Down Hoses
Hose End Dropped Into Tank
Pumps

Sludge Pump water seal supplied from service water – this is the preferred method
Eyewash/Emergency Showers

When surveying the plant it is important to ensure all emergency eyewashes and showers are supplied with Potable Water – We have found many that are fed from service/non-potable water lines.
Labeling/Color Coding

• Extremely Important to color code piping when more than one piping system is in a facility
• Color Coding Index should be posted in a conspicuous area
• Labeling AND Color Coding should be considered
Color Coding – Disney Style
Labeling

Any outlets that could be confused for Potable Water should have a sign posted at the outlet.
Cross Connection Control Inspections!

Don’t Assume… walk every line in the plant and ask questions!!
Who can legally perform Cross Connection Surveys in MI?
Answer: Anyone!
However......

• Not Everyone can **TEST** a backflow prevention assembly
• Part 14 of Public Act 399 States:
  – Beginning January 1, 2018, test results of backflow preventers are valid only if testing was performed by individuals holding an active ASSE 5110 certification.
ASSE

Founded in 1906 - Non-Profit Organization

Standards & Certifications

“Prevention Rather Than Cure”
The Series 5000 standard, was first issued by ASSE's Board of Directors in 1990 and was approved by the American National Standard Institute (ANSI®) on November 14, 1991
ASSE SERIES 5000 Certification

5110 - Backflow Prevention Tester

5130 - Backflow Prevention Repair

5120 - Cross Connection Control Surveyors

5150 - Administrator/Specialist

5140 - Fire Sprinkler Systems
Over 10,000 ASSE Certified Testers

80+ ASSE Training Schools in North America
Cross connection control backflow preventers must be **APPROVED** for use *(meet code requirements)*

Cross connection control backflow preventers must be **APPROPRIATE** for application *(correct type)*

Is this a proper installation?
Anyone Providing 5-years Experience in Plumbing, or a Related Industry Field

The Course is 40-Hour Long

Classroom - Backflow Hydraulics, Degree of Hazard, Proper Applications

Wet Lab – Test the Four Different Types of Backflow Assemblies Using 5-Valve Test Gauge Procedures

ASSE 5110 Standard
ASSE 5110 EXAM

- 100 Question Exam
- Practical Exam – Test the 4 Assemblies (Pass/Fail)
- 3-Hour Time Period
- ASSE Certification is Valid/recognized in most states, for a period of 3-years
ASSE 5120 Surveyors

Classroom – Read Blueprints, Identify Cross-Connections, Recognize General Requirements of the Plumbing Code
ASSE 5120 Exam

• Composed of a 50 Question Written Exam

• 70% or Higher is Needed to Pass

• ASSE Certification Valid for 3-years
ASSE 5130 Repair

- Pre-Requisite – 5110 Testers Certification
- Course is 20 Hours Long
- Classroom – Trouble Shooting, Cavitation, FDA Lubricants, Spring Containment, Parts Breakdown, Special Tool Requirements
- Wet Lab – Test, Disassemble and Assemble Parts for Backflow Assemblies
ASSE 5130 Exam

3-Hour Time Period

Question Exam

70% or Higher is Needed to Pass

ASSE Certification That is Valid for a Period of 3-years
Course designed for Utility Personnel

Course is 32 Hours Long

Classroom - Program Development, Plan/Manual, Surveys, Testing and Documentation
ASSE 5150 EXAM

3-Hour Time Period
50 Question Exam
25 Question Practical Exam
70% or Higher is Needed to Pass
ASSE Certification Valid for 3-years
Other Changes to P.A. 399, Part 14

• Rule 1402. A connection with a public water supply system shall comply with existing laws, ordinances, codes, and rules including:
  • (a) All sections of the Michigan plumbing code or the Michigan residential code pertaining to backflow and cross connection control. The codes allow for existing plumbing systems to stay as currently installed, providing they were installed properly according to the code in effect at the time of installation and they do not currently present a safety hazard.
  • (b) Local ordinances or rules providing acceptable protection against cross connections.
Changes, cont.

- Rule 1403.
- (1) A temporary or permanent unprotected cross connection between a public water supply system and any source, piping, or system that may contain non-potable water or other substances is prohibited.
- (2) Subrule (1) of this rule applies to all customer types, such as, industrial, commercial, institutional, governmental, and single and multi-unit residential.
- (3) Piping configurations creating the potential for water from a public distribution system to flow through a private water main or customer site piping and back into the public system are prohibited. Areas of private water main served by two or more service connections, where flow through the private system can re-enter the public system shall have cross connection control protection installed at each connection point to the public system.
Backflow and Cross-Connection Control

This AWWA Resource Page is intended to keep the water community “in the know” about tools, issues, and developments in the areas of backflow and cross-connection control. If you have any questions about this material or updates to share on these topics, please contact AWWA.
Questions...
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