# *Backflow Prevention: Michigan's Program for Protecting Drinking Water*

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**Outline**

- Why the rules are necessary
- Basic concepts
- Brief history backflow prevention regulations
- Who the rules apply to
- Program basics
- Useful references

**What do these things have in common?**

- Lawn sprinkling system
- Air conditioning system
- Metal plating factory
- Home water purification system

All have caused **illness or death** by accidently contaminating a public water supply!

**Why are these rules necessary?**

- To protect public health

**What is a Cross-Connection?**

- "A connection or arrangement of piping or appurtenances through which a backflow could occur."
- "Any piping arrangement which allows a potable water system to be connected to a non-potable system."

**Backflow**

- The undesirable reversal of flow of water or other substances into the potable water distribution supply.
- It can be caused by:
  - Backsiphonage
  - Backpressure

**History of Michigan's Drinking Water Regulations**

The Waterworks and Sewerage Systems, Act 98, P.A. 1913

- Promulgated August 15, 1913
- Department of Health authority
- Included water supply

**First Cross Connection Rules**

- December 1938: x-conn regulations adopted by the Advisory Council of Health
- No connection shall be installed or maintained between a potable public supply and pipes, pumps, or tanks supplied or possible of being supplied, from any non-potable source
- December 1938: first x-conn regulations adopted by the Advisory Council of Health
- April 1972: x-conn rules were promulgated into Act 98
- Very similar to today's rules
- Definitions, cross connections prohibited, required local programs, protective devices, annual reporting, piping identification, etc.
- 1974: Federal Safe Drinking Water Act
- 1976: Michigan Safe Drinking Water Act (Act 399) became effective Jan 4, 1977
- 1978: 1972 x-conn rules adopted by reference into Act 399
- Part 14 – Cross Connections

**Cross Connection Rules Manual**

- 1st Edition was published in March 1977 to supplement the 1972 x-conn rules
- 2nd Edition – October 1982
- 3rd Edition – April 1999
- 4th Edition – October 2008

**Michigan Plumbing Code**

- Regulates design and installation of plumbing systems
- Intended to protect public health, safety, and welfare
- Adopts the International Plumbing Code
- Chapter 6 – Water Supply

**Who do the Rules Apply to?**

Directly → Public Water Supplies

- Municipalities
- Condominium Associations
- Apartments

**How it Works**

1. DEQ requires the utility to have a formal program
   - Sanitary surveys
   - Surveillance visits
   - Approval of written program
   - Annual report form
2. Local utility requires customers to comply
   - Cross connection inspections
   - Public education
   - Testing/Inspection notices
3. Code inspector requires new construction to conform

**How it is enforced**

- Act 399: State can impose fines, public notification, escalated enforcement on water suppliers
- Local water ordinance: Water utility can impose fines and ultimately terminate water service
- Michigan Plumbing Code: Local inspector can deny approval of new plumbing work

**Common Inspection Findings**

- No Air Gap
- Improperly Installed Backflow Preventer
- Wrong Backflow Preventer for Application
- Missing Backflow Preventer
- Unapproved Backflow Preventer
- Illegal Bypass
- Unapproved Device
- Soap Dispensers

**Approved Backflow Preventers**

- Must meet ASSE or SA Standards
- Required by Plumbing Code
- Required Standards are listed in Cross Connection Rules Manual and MI Plumbing Code

**Cross Connection Control Program Basics**

Water Utility Duties:

- Inspect water customers for cross connections
- Inform customers of testing requirements
- Review and track testing results
- Enforce non-compliance
- Maintain records
- Report efforts to DEQ

**Commonly Asked Questions**

1. When must a backflow preventer be tested?
   - At installation

- Following repairs
- Following relocation
- In accordance to the local program

2. Who can test a backflow preventer?
   - A tester with a valid ASSE 5110 certification

*Note: Must be a licensed plumber to install and repair*

**Common Goal - Work Collaboratively**

Hints for success

- Knowledgeable local inspectors
- Transparency – share information
- Promote consistency
- Challenge questionable testing practices

**Common Misconceptions**

- Utilities profit from enforcing requirements
- These rules aren't required in other communities
- Backflow doesn't really occur
- These rules have never been required before
- Safe drinking water is the utility's responsibility not an employer's.

**Containment Example**

- Protects the water supply, but not the building occupants

**Isolation Example**

- Protects the building occupants & the water supply

**Isolation vs. Containment**

- ISOLATION
  - Preferred because in plant personnel are protected.
  - Smaller size devices or no devices required
  - Often cheaper
  - Educational for plant personnel, managers, & owners
- CONTAINMENT
  - Facility is contained (separated from public system)
  - Frequent plumbing changes
  - Untraceable or hidden plumbing
  - Confusing plumbing
  - Access to facility is refused or prohibited by owner
  - Facility employees may not be protected

**Future Challenges**

- Limited resources
- Maintaining expertise
- Controlling residential cross connections
- Increased public/media scrutiny of tap water
- Mitigating liability
- Regressive legislation

**Resources**

Google search the following:

- "MDEQ Community Drinking Water"
- "State of Michigan Plumbing Division"
- "American Backflow Prevention Association"
- "EPA Cross Connection Manual"
- "AWWA Manual M14"
- "ASSE Plumbing"
- "MPMCA"

**Questions?**