WATER SOLUTIONS UNLIMITED

CROSS CONNECTION REGULATION BREAKDOWN

The Indiana Department of Environmental Management (IDEM) requires all public water systems (PWS) to implement a cross connection control program. The regulations regarding the program requirements can be found under 327 IAC 8-10. Within this rule, there are several examples of cross connections common to many systems along with the required backflow protection for each of the cross connections. These requirements are summarized in the left-hand column below. It is impossible for the rule to cover in detail every possible cross connection scenario. Enforcing backflow protection only on cross connections clearly defined in this rule leaves your system vulnerable to contamination. The middle column of the chart below provides suggestion for additional measures that would reduce your risk of contamination due to backflow and the right-hand column explains how these measures would benefit and protect your system. This document is intended to provide a brief overview of the regulations and examples of items to consider as you develop your cross connection control policy.

IDEM REGULATION	ADDITIONAL SUGGESTED MEASURES	BENEFITS OF ADDIONAL MEASURES
327 IAC 8-10-4 Cross Connection Hazards: Section (c): List 17 types of commercial and industrial facilities required to install high hazard protection on their service line due to the nature of business conducted at the facility. Section (d): Allows IDEM to designate additional facilities as cross connection hazards.	• Review customer list and identify additional hazardous customers that are not specified in IDEM's list and include these types of facilities in your policy. • Include language in your policy that allows you to designate additional customers as cross connection hazards after inspection of the facility and notice to the customer.	Commercial and industrial customer base igrows and changes. You may have existing or future customers not covered in this list. Including language that allows you to evaluate the new customers for hazards reduces your risk and liability. Additionally, it gives you the authority to enforce protection without having to involve IDEM.
327 IAC 8-10-6 Land Irrigation: Requires customers to install protection on land irrigation systems connected to the public water supply. **Exemption:** No protection required for irrigation with sprinkler outlets six inches or greater above grade and constructed before July 19, 1985.	Include language in your policy that voids the exemption and requires all irrigation to have appropriate backflow protection.	Animal feces, fertilizer, pesticides, herbicides, etc. on lawn have potential to backflow into your system through irrigation systems. Voiding this exemption allows you to remain consistent with all customers and ensures your distribution is protected.

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327 IAC 8-10-5 (b) Fire Sprinkler Systems: Requires high hazard protection for fire sprinkler systems with chemical additives and low hazard protection for sprinkler systems without chemical additives. **Exemption:** Customers facilities designated as hazards under 327 IAC 8-10-4 that have a dedicated fire line with an audible alarm that sounds when flow is detected, do NOT require any backflow protection on their dedicated fire line. (*dedicated fire line is a direct connection to the PWS main and has no connection or use other than the fire suppression system)*	Include language in policy that voids the exemption by requiring all fire suppression systems to have backflow protection.	The exemption does not require the 17 hazard customers to install backflow protection on their dedicated fire lines. These facilities typically have intricate plumbing making it very difficult to confirm that this line is solely used for fire suppression. Additionally, these customers could be using a chemical additive in their fire system and would not be required to install protection under the IDEM rule. Requiring backflow protection on all fire suppression systems would eliminate this potential risk to your system.
IAC 8-10-5 Secondary Sources of Supply: Requires low or high-Level protection on: • tanks used to store water from PWS for fire suppression that are constructed to meet state drinking water standards. • wells or other sources of supply that produce water, with or without treatment, that meets the state drinking water standards. High-level protection required on: • tanks used to store water from PWS for fire suppression that are not constructed to maintain water to state drinking water standards. No other secondary sources are allowed to connect to the public water supply, even with a backflow prevention device.	Only allow tanks for fire suppression as a secondary source and require all tanks to have high-level protection.	This section of the rule allows some secondary sources that meet the state drinking water standards to connect to your system with a low hazard protection device. This would require you and the customer to test and monitor these sources to ensure they meet the same standards to which your public water supply is held. Most residential wells are not constructed or maintained to IDEM's standards and therefore would not be allowed to connect under this rule anyway. Excluding private wells from your policy will avoid confusion and reduce the workload in monitoring these secondary systems. Additionally, only excepting high-level protection of fire suppression tanks reduce both your and the customer's workload in monitoring the bacteriological quality of the water in the tank.

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327 IAC 8-10-3 Booster Pump Connections: • Requires booster pumps for fire suppression to install controls that throttle flow to maintain a minimum of 10 psi suction pressure. • Requires all other booster pumps to install controls to maintain a minimum of 20 psi suction pressure or at a higher pressure as designated by the public water system.	• Evaluate pressure zones to determine if a suction pressure greater than 20 psi must be maintained and include these zones and pressures in your policy. • Discuss this requirement with local fire department and include language in policy that requires fire department or customers with fire suppression booster pumps to contact you if the suction pressure drops below 20 psi. • Stipulate in your policy that that fire line booster pump suction pressure can only drop to 10 psi when fighting a fire. Pumps in use for non-emergencies must maintain suction pressure at 20 psi (or minimum pressure for that zone).	IDEM requires public water systems issue a boil order if the distribution pressure drops below 20 psi. Additionally, reduced system pressure can cause backflow from unprotected cross connections. Booster pumps can pull your system pressure below 20 psi if not properly controlled. Clearly stating the pressure requirements in your policy allows you to require a suction pressure greater than 20 psi, giving you more of a cushion. Allowing the fire department to drop your system pressure below 20 psi does put your distribution at risk for backflow but it can also save lives from fire. It is important to distinguish requirements for emergency and non-emergency use in your policy.
327 IAC 8-10-1 Definitions and 327 IAC 8-10-2 Cross Connection prohibited: • Defines a cross connection as any connection to any substance of unknown or unsafe quality and includes backflow devices not in working order. • Defines a cross connection hazard to include customers that use and store materials on premises that are a potential danger to human health. • Prohibits unprotected cross connections to a public water supply.	Include language in policy defining protection requirements for common cross connections that are not explicitly covered in the IDEM rule but meet the IDEM definition of a cross connection, including but not limited to: • Water loading stations • Chemical dispensers • Carbonated beverage machines • Boilers and cooling towers • Meter rentals for hydrant use	It is impossible for IDEM to clearly define protection requirements for every possible cross connection so they have included these definitions to cover most scenarios. Some of the suggested cross connections to be included in your policy are covered under plumbing code. The plumbing code is only enforced while the plumbing permit is open and allows for the use of devices that are not testable. All of the backflow devices approved under IDEM's rule are testable devices. All mechanical devices fail at some point. If you cannot test the device, there is no way to know if it is in working order. Adding specific language in your policy allows you to enforce protection on these known risks to your system and reduces liability should a backflow event occur.
Garden Hoses: No Idem regulation names this as a cross connection nor does the rule stipulate the required protection for a garden hose. However, this type of connection does meet the IDEM definition of a cross connection.	Include language in your policy requiring customers to install a hose bibb vacuum breaker on any outside spigot.	The garden hose is the most common cross connection in any public water system. It would be very difficult to track and enforce this but making it part of your policy and properly educating the customers will reduce the number of unprotected hose connections in your system and put some of the liability on the customers.

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327 IAC 8-10-10 Retention of reports: Requires public water systems to retain copies of last three test reports for each device in system. IDEM can request copies these re-ports at any time. -	• Require testers to use your system's Backflow report form. • Include photos of devices installed at hazard customer facilities (or all). • Use a data tracking system to keep records organized.	Requiring testers to use a specific form ensures that you will have all the information for each device that is required by the state. Additionally, it reduces the work load for your staff in finding information on various forms or tracking down missing information. Certified testers are required to fail any device that is not properly installed but this does not always happen. Photos of installed devices for your high hazard customers can help to eliminate this issue.
327 IAC 8-10-8 Inspection of devices: Sections (a) and (b): Requires the customer to install and maintain backflow devices and ensure the device is in working order by having it inspected annually by a certified Indiana Backflow Inspector. Section (c): Gives IDEM the right of entry to customer facilities to inspect plumbing and backflow devices.	• Include language in your policy that gives you the right of entry *(if not already included in your by-laws).* • Charge customer a late fee for testing or installation that is overdue. *(Only include this in your policy if you plan to send out reminder letters).*	If the "right of entry" for your staff is not clearly stated in your by-laws, you may want to make that clear in your cross connection control policy. Charging a late fee for overdue tests is similar to a late fee on an overdue bill. Overdue test reports create more work for your staff as they must send out additional notices to the customer that equates to paper, time and money.
327 IAC 8-10-9 Inspectors: Requires backflow device inspectors to install a tag on the backflow device after each inspection and submit the completed backflow test report to both the customer and public water system within 30 days of the inspection.	• Require testers to submit reports of failed devices within 10 (or less) days of inspection. • Charge a late fee for testers that submit reports more than 30 days after inspection.	The IDEM rule does not require failed test reports to be submitted sooner than 30 days. It can take some time to get these devices repaired or replaces. The sooner you are made aware of the issue, the sooner you can start working with the customer towards a resolution and the less time your distribution is exposed to an unprotected cross connection. Charging testers a late fee helps to hold them accountable. Often customers will have their device tested on time, but the tester fails to submit the report. The customer should not be penalized for this nor should you with the extra workload of tracking down inspectors and/or reports.
327 IAC 8-10-1 Noncompliance: Gives IDEM the authority to require the public water system to shut off water to customers that will not install or test backflow device.	Define time frames for notification, reminders and compliance: • Notice to install: 45 days to comply • Notice test is due in 60 days. • Notice test or installation is overdue: 15 days to comply • Final Notice to test or install: 10 days to comply or water service will be disconnected and charged a fee	Your by-laws should give you the authority to enforce shut-off if it comes to that. Including the time frame for notification and compliance makes it clear to customer what is expected and helps you to be consistent from customer to customer. Locking off a customer's water takes time and resources. Customers should be charged an additional fee before being allowed to reconnect.