Frequently Asked Questions

Backflow Prevention and Cross Connection Control

For questions or feedback on this FAQ document, email cdphe_wqcd_fss_questions@state.co.us

General Information

1. What are some important Key Cross-Connection Terms and Definitions?

Regulation 11: Colorado Primary Drinking Water Regulations No. 11 is the regulation that assures the safety of public drinking water supplies and enables the state of Colorado to assume responsibility for enforcing the standards established by the federal Safe Drinking Water Act. Testing Edits

Policy 7: Backflow Prevention and Cross-connection Rule Implementation Policy is the Safe Drinking Water Program Policy that is meant to clarify Regulation 11 and Colorado Department of Public Health and Environment's (CDPHE) interpretation of Article 1-114 and Article 1-114.1 of Title 25 of the Colorado Revised Statutes. Policy 7 also identifies the appropriate method for an identified contaminant in section 4.3a and defines the abbreviations for various assembly and method types.

Plumbing Codes: International Plumbing Code (IPC), International Residential Code (IRC), Colorado Plumbing Code (CPC) *Colorado uses the IPC*, Uniform Plumbing Code (UPC)

BPCCC: Backflow Protection and Cross-Connection Control is an acronym commonly used when describing programs, annual reports, ordinances, templates, etc.

Cross-connection: is any connection actual or potential between the public water supply and a source of contamination or pollution.

Backflow: Unwanted flow of liquid, mixtures, substances or contaminants in the reverse direction. In regards to a public water supply it is when the flow of water reverses direction and mixes back with the potable water.

Backpressure: Backflow that occurs when the pressure in a downstream piping system exceeds the pressure in the supply piping.

Backsiphonage: Backflow that is caused by negative pressure creating a partial vacuum. The effect is similar to drinking from a straw.

2. Why are cross connections illegal?

Contamination of water supply systems via cross connection has led to the spread of disease and waterborne disease outbreaks. Control of cross connections is essential to ensure protection of water supply systems and public water distribution systems from potential contamination. Title 25-1-114 of the Colorado Revised Statutes (C.R.S.) specifically prohibits cross connections in the state of Colorado to any water supply system which supplies water to the public. This includes a public water system's distribution system and buildings within the distribution system that have a potable water supply system.

Regulation 11 is intended to protect the public water systems from cross connections, while the Colorado Plumbing Code is intended to protect building's water supply systems from cross connections. Cross connections have been prohibited in Colorado since the 1960's. Public water systems have been required to identify cross connections and control cross connections since the 1980's in Colorado.

3. What are the backflow protection requirements outlined in Regulation 84 - Reuse water?

Section 84.11.D (5)

An approved cross connection control device or method shall be provided at all potable water service connections to reclaimed water use areas.

Section 84.11.D (7)

Supplementing reclaimed water with potable water by a user shall not be allowed except through an approved cross connection control device or method. Where an approved cross connection control device or method is used it must be tested on an annual basis by a Certified Cross-Connection Control Technician, unless there is a physical separation (e.g., removal of the connecting pipe, etc.) between the potable water and reuse distribution systems. When potable water is used to supplement reclaimed water, the potable water provider must be notified.

Section 84.11.D (9)

Supplementing reclaimed water with other non-potable supplies is not allowed except through an approved cross connection control device or method. An approved cross connection device or method shall be provided at all service connections between reclaimed water and other non-potable water sources including but not limited to water from irrigation wells, industrial wells, or greywater.

If testers become aware that a backflow assembly has been removed (potable or non-potable) the tester should contact the jurisdiction having authority (JHA). This would be the case for a public water system that has assemblies connected to a potable system and for non-potable water systems when purple pipe assemblies are used to treat reclaimed water systems.

4. When is control of a cross connection required?

Any discovered cross connection must be controlled appropriately in accordance with Regulation 11, Policy 7, and the Colorado Plumbing Code if applicable.

5. What is appropriate control?

Regulation 11 mandates that control must be appropriate for the identified contaminant. Policy 7 further specifies appropriate control practices for public water suppliers to follow. Control can be carried out either through containment or isolation approaches as defined below.

6. What is the difference between containment and containment by isolation?

CONTAINMENT: means the installation of a backflow prevention assembly or a backflow prevention method at any connection to the public water system that supplies an auxiliary water system, location, facility, or area such that backflow from a cross connection into the public water system is prevented.

CONTAINMENT BY ISOLATION: means the installation of backflow prevention assemblies or backflow prevention methods at all cross connections identified within a customer's water system such that backflow from a cross connection into the public water system is prevented.

Additional information can be found in the departments BPCCC guidance

7. Are all commercial, agricultural, industrial or multi-family connections required to be controlled?

No. In accordance with Regulation 11, public water suppliers are required to survey all non-single-family-residential (NON-SINGLE FAMILY RESIDENTIAL) service connections. Just because a survey is required does not mean that control of the connection is required. Control is only required if a cross connection is identified. Suppliers can choose to control the service connection by containment or by containment by isolation. In lieu of having to survey (evaluate) NON-SINGLE FAMILY RESIDENTIAL service connections, suppliers also have the option to control such service connections with a reduced pressure zone assembly or air gap.

8. Are there any recent backflow contamination events in Colorado?

There have been several reported backflow contamination events over the years. A few recent examples include a boiler system within an office building failing and contaminating the buildings water supply and another where a raw water irrigation system contaminated a water theme park's water supply system. In both of these cases the public water supplier's distribution systems were protected from potential backflow contamination at the service connections via appropriately installed, maintained and tested backflow prevention assemblies.

Survey

9. What is a survey?

A survey is considered an evaluation of usage from the public water system to a specific connection. The intent of the survey is to identify any non-potable uses, if connected, that create a cross connection and a health risk to the public via the water system.

Surveys can be performed onsite by a qualified professional, water system staff or through a written, web-based, and/or verbal questionnaire. Written, web-based and/or verbal questionnaire must:

- Provide examples of common cross connections to the customer who completes the survey.
- Have property-owners indicate that the information is accurate to the best of their knowledge.

If the supplier does not receive a response to a questionnaire or the results are inconclusive, the supplier is required to perform an onsite survey for cross connections or control the connection with the most protective backflow prevention assembly or method.

10. Can suppliers require control of a connection instead of performing a survey?

Yes. A supplier can choose to control a connection with a Reduced Pressure Zone Backflow Prevention Assembly or air gap which is the most protective assembly and method in lieu of performing a survey. However, the connection must be reported as surveyed (evaluated for cross connections) in the backflow prevention cross connection control (BPCCC) annual report. What types of connections must be surveyed (evaluated for cross connections)?

All non-single-family (NSF) connections and waterworks must be surveyed (evaluated for cross connections). This includes all commercial, industrial, multi-family, agricultural facilities, as well as treatment plants, storage tanks and pump stations. Control is only required if a cross connection is identified.

11. Are storage tanks considered waterworks that require a survey?

Yes. The department is aware that cross connections, such as irrigation systems, can exist at a storage tank. The storage tank site requires a survey and any identified cross connection must be controlled appropriately.

12. Do consecutive connections from a public water system to a regulated public water system require a survey or control?

No. Consecutive connections are potable to potable connections that do not require survey or control, however, a system may choose to control a consecutive connection in which case it would be surveyed (evaluated for cross connections). CDPHE will evaluate backflow prevention and cross connection control implementation practices at each public water system, usually during a sanitary survey, to ensure that public health is being protected.

13. Are pump stations considered waterworks that require a survey?

Yes. The department is aware that cross connections, such as irrigation systems, fire suppression systems and chemical feed systems can exist at pump stations. The pump station waterworks require a survey and any identified cross connections must be controlled appropriately.

14. Are drinking water treatment plants considered waterworks that require a survey?

Yes. The department is aware that cross connections, such as chemical feed systems, treatment waste, clean in place systems, irrigation systems, and fire suppression systems can exist at drinking water treatment plants. The

treatment plants are waterworks that require a survey and any identified cross connections must be controlled appropriately.

15. Are pressure reducing valves (PRVs) considered waterworks which require a survey?

PRVs, air relief valves and other such appurtenances are not waterworks or connections and therefore do not require BPCCC survey. The intent of the survey requirement from Regulation 11 is to survey waterworks where there are potential cross connections, such as treatment facilities, storage tanks, pump stations and the non-single-family-residential survey requirements for the distribution system.

16. Are wastewater plant connections waterworks that require a survey?

Yes. Wastewater treatment plants connected to public water systems are considered non-single-family-residential connections which require a survey and may require control. The department is aware that cross connections, such as chemical feed systems, treatment waste, clean in place systems, irrigation systems, and fire suppression systems can exist at drinking water treatment plants.

Single vs Non-Single-Family-Residential Connection

17. What is a single-family-residential connection?

The department defines single-family-residential as:

- A single living unit that is supplied by its own separate service line. An example of this would be a single family home.
- Multiple living units where each individual living unit is supplied by a separate service line. An example of this would be a row of townhouse units where each unit has its own separate service line.
- Two separate single living units supplied by a common service line. An example would be a duplex that shares a service line between the two units.

18. What is the difference between a single-family-residential connection and a non-single-family-residential connection?

The main difference between a single-family-residential (SFR) connection and a non-single-family-residential (NSFR) connection is the level of risk that the connection presents to the public water systems distribution system.

Single-family-residential connections pose a relatively low risk to the distribution system based on the volume of water contained in the plumbing system. Local plumbing codes, which are enforced by the local jurisdiction having authority over plumbing within residential structures, are in place to protect private residences from typical residential cross connections. If the local jurisdiction having authority requires that a backflow prevention assembly or backflow prevention method be installed, it is generally the responsibility of the homeowner to maintain the assembly or method. The department is aware that in some instances cross connections at SFR may pose an

unacceptable risk to the public. If the supplier is aware of certain types of cross connections at SFR connections, then Regulation 11 requires control of the connection.

Generally, due to the volume, the size of buildings and the activities associated with NSFR connections, such connections may pose an unacceptable level of risk to the public via contamination from cross connections. With regards to multi-family service connections, the department requires that any service connection which serves three or more single family dwelling units be surveyed (evaluated for cross connections). Due to their nature and size, high-risk cross connections such as fire suppression systems, irrigation systems and HVAC are more common and pose a greater risk to the distribution system.

19. Are there survey exemptions for non-single-family-residential connections?

Regulation 11 requires that all non-single-family-residential service connections be surveyed (evaluated for cross connections) for potential cross connections. However, suppliers have the option to control a non-single-family-residential service connection with a reduced pressure zone assembly or air gap in lieu of a survey.

20. Do all non-single-family-residential-connections require control?

No. If a survey is performed and no cross connections have been identified there is no control requirement for the specific NON-SINGLE FAMILY RESIDENTIAL connection. For all NON-SINGLE FAMILY RESIDENTIAL connections which are not controlled with an RPZ the department expects that there may be potential requirements to resurvey in the future based on potential triggers such as: plumbing permits, change in customers, changes in business, etc. The resurvey requirements are expected to be implemented as part of an adequate BPCCC program.

For certain types of multi-family service connections, the supplier may develop a site-specific-deviation and allow the use of an alternative backflow prevention assembly or method or exempt the testing requirements or inspection requirements if the cross connection meets certain conditions. See section 4.5 of Safe Drinking Water Program Policy 7.

21. When do single-family-residential connections require control?

If the supplier is aware of certain types of cross connections that pose a potential risk at single-family-residential connections the department expects that the supplier controls the connections and includes the cross connections as part of its BPCCC program and annual report. There are types of cross connections at single-family-residential connections that may pose a greater risk than those addressed by local plumbing codes enforced by the local jurisdiction authority. These include but are not limited to:

- Dedicated irrigation lines from the water main;
- Dedicated fire suppression system lines and chemically enhanced fire suppression systems; Multi-purpose fire suppression systems are NOT required to be controlled where each branch of the suppression system terminates at a regularly used fixture;
- Auxiliary water sources (e.g. wells, ponds, lagoons, irrigation ditches), hot tubs or swimming pools piped with permanent plumbing, reclaimed water systems, grey water systems, or onsite water storage tanks with permanent plumbing;

- Connections to a home's potable water supply system from home businesses and hobbies including but not limited to agricultural commerce and hydroponic systems, doctor's offices, photo laboratories, hide tanning operations, and metal plating operations.

22. Do multi-family-connections require a survey?

Yes, all non-single-family-residential-connections to public water systems are required to be surveyed (evaluated for cross connections) as part of Regulation 11. There are no exemptions in Regulation 11 or Policy 7 with regards to cross connections to water supply systems that provide water to the public. Suppliers do have the option to control a multi-family service connection with a reduced pressure zone assembly or air gap in lieu of a survey.

23. What type of contamination risks do multi-family-residential connections present?

Multi-family-residential connections may present an unacceptable health risk to the public via cross connections associated with uses such as:

- Fire suppression systems;
- Irrigation systems including dedicated irrigation lines connected directly to the water main;
- Chemical process systems, including chemicals connected for temporary maintenance;
- Hydronic heating and cooling systems, industrial boilers, chillers, cooling towers, double wall heat exchangers and solar panels; and
- Auxiliary water sources, display fountains, hot tubs, pools, reclaimed water systems, greywater systems and onsite storage tanks.

24. Are duplex connections considered multi-family-residential connections?

No. Duplex connections are considered single-family-residential connections and do not require survey.

This change was made effective on June 30, 2018. - Duplexes are considered single family residential connections and a survey is not required. If the supplier is aware of cross connections at single family residential connections that pose an unacceptable risk to the public (further specified in Policy 7) the department expects control, whether or not the cross connection is at a duplex or individual home.

Assemblies

25. What is the difference between a double check and a dual check?

It is very common to hear the term double check used interchangeably with the term dual check. While they may appear to be the same they are actually referring to two separate backflow preventers. A double check backflow prevention assembly is an inline testable assembly with a test port, while a dual check backflow preventer is not. Generally speaking, unless specifically allowed by the plumbing code, dual checks are not appropriate control for cross connections. The Colorado Plumbing Code provides additional information on the topic.

26. What are the active date requirements for non-tested assemblies and when do they go into effect ?

Beginning January 1, 2021, assemblies not tested during the previous calendar year must be tested no later than 90 days after the active date of the assembly in the following calendar year. The active date is determined by when the assembly is first used during the calendar year, or the first date water runs through the assembly during the calendar year. Beginning January 1, 2021, each assembly that was used but not tested in 2020 must be tested no later than 90 days after the active date of the assembly in 2021.

For assemblies used but not tested in 2020, if an assembly is first used January 1, 2021, the assembly would be required to be tested no later than April 1, 2021. If an irrigation assembly is first used April 15, 2021, the assembly would be required to be tested no later than July 14, 2021. If an assembly is not tested within the required time frame and the supplier has not removed or suspended service to the connection the supplier would be in violation.

27. Are there any requirements for who can install backflow prevention assemblies and methods?

If the backflow prevention assembly or method is being installed as part of a water supply system subject to the plumbing code it is very likely that the installation of the assembly will require a plumbing permit and must be installed by a licensed plumber. The customer will need to contact the local jurisdiction authority to discuss any additional permitting and installation requirements. All assemblies shall be installed in concordance with the manufacture recommendations. If it is discovered during a sanitary survey that an assembly is installed in a manner not consistent with the manufacturer, then this scenario could be considered a significant deficiency as defined by the regulation and would require remediation.

28. Can a reduced pressure zone backflow prevention assembly be installed in a vault?

Reduced pressure zone (RPZ) backflow prevention assemblies CANNOT be installed in vaults that do not have adequate drainage. Installing an RPZ in a vault without adequate drainage creates an additional potential cross connection via the assembly's relief port and the ground and/or the discharged water. During a sanitary survey, this scenario could be considered a significant deficiency as defined by Regulation 11 and would require remediation. There is no Department requirement that backflow assemblies be installed in vaults. An above ground cover around an RPZ is not considered a vault as long as there is adequate drainage. The Colorado Plumbing Code has additional information on this topic. Recently in Colorado, there was a public water system that sampled positive for E Coli and was forced to go on a system-wide Boil Water Order. The cause was a result of contaminated water being introduced via a RPZ discharge port located in a flooded vault.

29. Is thermal expansion a concern when installing a backflow prevention assembly?

Yes. The Colorado Plumbing Code (CPC) addresses thermal expansion requirements and concerns. Currently the CPC utilizes the 2018 International Plumbing Code (IPC) and the 2018 International Residential Code (IRC) to establish plumbing code requirements. When communicating installation requirements to customers, the department recommends that the supplier make its customers aware of additional thermal expansion modification requirements and potential plumbing permit requirements.

Cisterns/Storage Tanks

30. Do air gaps for cisterns and onsite water storage tanks maintained by the operation of dole valves connected to a public water supply system need to be inspected annually?

The department expects that these air gaps be inspected on an annual basis and incorporated as part of the suppliers BPCCC program. However, if the cistern is controlled in accordance with the Colorado Plumbing Code, then the supplier does not need to track the cistern or the air gap. The code states that:

Section 606.5.6 of the CPC requires that potable water inlets to gravity storage tanks be controlled by a fill valve or other automatic supply valve installed so as to prevent the tank from overflowing. The inlet shall be terminated so as to provide an air gap not less than 4 inches above the overflow.

If these code conditions are met, the department will not require any further action. If there is not an adequate air gap, no overflow, or a manual feed then the annual inspection of the air gap is required.

31. What are the control requirements for cisterns and water storage tanks at residential connections and water supply systems owned by the supplier?

Cisterns and water storage tanks at residential connections can pose a similar contaminant risk as fire suppression systems without chemical addition. Water stored in cisterns and tanks could present an acute biological health risk and could compromise the water quality of the public water system and/or a water supply system.

Connections between the potable water supply and a cistern/onsite water storage tank need to be controlled in accordance with Section 11.39 or Regulation 11. Such connections may be controlled via an air gap, a RPZ or a double check assembly.

Section 606.5.4 of the CPC requires that potable water inlets to gravity storage tanks be controlled by a fill valve or other automatic supply valve installed so as to prevent the tank from overflowing. The inlet shall be terminated supposed to provide an air gap not less than 4 inches above the overflow.

Section 608.16.6 of the CPC requires that connections to tanks when subject to backpressure be controlled with an RPZ. The department considers the cross connection to be controlled appropriately with a double check due to the nature of the cross connection being similar to a fire suppression system without chemical addition. In cases where single family residential cisterns and water storage tanks fill from the bottom, the tank is subject to backpressure and therefore the need for a testable assembly is met.

For single family residential cisterns with air gaps less than 4 inches, the department considers a modified air gap (less than 4 inches) combined with a dual check at the service connection adequate protection for the identified risk as long as there are no chemicals being added to the cistern. The supplier would have to inspect one of the methods each year.

If a fill line comes into the bottom of a tank and is subject to backpressure, then the need for a testable assembly is being met. The customer's options are to:

1. Modify the tank to create an air gap (e.g., extend pipe that rises 4 inches above cistern overflow). No further tracking would be required since the single family residence is compliant with the CPC.

2. Install a testable assembly (RPZ or double check) at the service connection or upstream of the tank fill line. (Annual testing would be required for the assembly)

The department could consider a modified air gap (less than 4 inches combined with a dual check at the service connection.) The supplier would have to inspect one of the methods each year.

Agricultural

32. Are agriculture connections to public water systems included in the BPCCC rule?

Yes, agriculture connections are considered non-single-family-residential-connections to public water systems which are required to be surveyed (evaluated for cross connections) as part of Regulation 11. There are no exemptions in the Colorado Revised Statutes with regards to cross connections to water supply systems that provide water to the public.

33. What type of contamination risk do agricultural activities present?

Agricultural connections may present an unacceptable health risk to the public via cross connections associated with the use of certain applications which contain many types of fertilizers, herbicides, and insecticides. Agricultural activities may also employ industrial sources such as cooling systems, plating plants, steam boiler plants, and dye plants which have the potential to introduce a number of toxic chemicals in day-to-day use into the public water system distribution system. There are also bacteriological contaminants that could be introduced into a public water system via onsite storage tanks, animal watering operations, and alternative water sources hard plumbed to the water supply system which is connected to the public water system.

A few examples can be found below:

In June 1983, "yellow gushy stuff" poured from some faucets in the Town of Woodsboro, Maryland. The State placed a ban on drinking the Town's water. Firefighters warned residents not to use the water for drinking, cooking, bathing, or any other purpose except flushing toilets. An investigation revealed that the powerful agricultural herbicide Paraquat had backflow into the Town's water system due to an open gate valve between an agricultural herbicide holding tank and the Town's water system. Coincidentally, water pressure in the Town temporarily decreased due to failure of a pump in the Town's water system. The herbicide Paraquat was backsiphoned into the Town's water system. (U.S. EPA, Cross Connection control Manual 1989)

In 1991, an antibiotic solution used at a commercial chicken house entered an Arkansas public water system as a result of a cross-connection between an auxiliary well connected to the chicken house plumbing. (EPA's Potential Contamination Due to Cross-Connections and Backflow and the Associated Health Risks 08-13-2002)

In 1995, pesticides (paraquat and atrazine) were back siphoned into a distribution system when an accidental water main cut occurred while a Louisiana farmer was diluting herbicides in a tank. Some people reported nausea,

stomach burns and pains, profuse sweating, diarrhea, and shortness of breath. The incident was the subject of a class-action lawsuit. (EPA's Potential Contamination Due to Cross-Connections and Backflow and the Associated Health Risks 08-13-2002)

34. When do single-family-residential connections, where agricultural activities may occur, require a survey?

If the supplier is aware of certain types of cross connections that pose a potential risk at single-family-residential connections where agricultural activities may occur then the department expects that the supplier controls the connections and includes the cross connections as part of its BPCCC program and annual report. Some of the more common agricultural activities that occur at a single-family-residential connection may include; Dedicated irrigation lines from the water main, auxiliary water sources, hydroponic systems, reclaimed water systems, grey water systems, and onsite storage tanks.

Commercial

35. Do commercial connections require a survey?

Yes, commercial connections are non-single-family-residential-connections to public water systems which are required to be surveyed (evaluated for cross connections) as part of Regulation 11. There are no exemptions in the Colorado Revised Statutes with regards to cross connections to water supply systems that provide water to the public. However, suppliers have the option to control a NON-SINGLE FAMILY RESIDENTIAL service connection with a reduced pressure zone assembly or air gap in lieu of a survey.

36. What type of contamination risk do commercial activities present?

Commercial connections may present an unacceptable health risk to the public via cross connections associated with uses such as:

- Fire suppression systems;
- Irrigation systems including dedicated irrigation connected directly to the water main;
- Chemical process systems, including chemicals connected for temporary maintenance;
- Hydronic heating and cooling systems, industrial boilers, chillers, cooling towers, double wall heat exchangers and solar panels; and
- Auxiliary water sources, display fountains, hot tubs, pools, reclaimed water systems, greywater systems and onsite storage tanks.

37. What are the control requirements for a soda machine?

Colorado Plumbing Code Section 608.16.1 Beverage dispensers states the following:

The water supply connection to beverage dispensers shall be protected against backflow by a backflow preventer conforming to ASSE 1022 or by an air gap. The portion of the backflow preventer device downstream from the second check valve and the piping downstream therefrom shall not be affected by carbon dioxide gas.

Industrial

38. Do industrial connections require a survey?

Yes, industrial connections are non-single-family-residential-connections to public water systems which are required to be surveyed (evaluated for cross connections) as part of Regulation 11. There are no exemptions in the Colorado Revised Statutes with regards to cross connections to water supply systems that provide water to the public. However, suppliers have the option to control a NON-SINGLE FAMILY RESIDENTIAL service connection with a reduced pressure zone assembly or air gap in lieu of a survey.

39. What type of contamination risk do industrial activities present?

Industrial connections may present an unacceptable health risk to the public via cross connections associated with uses such as:

- Dry cleaning and laundries;
- Mortuaries;
- Hair salons;
- Laboratories;
- Auto repair shops;
- Car washes;
- Bulk fill water stations;
- Restaurants;
- Hospitals, dental facilities, medical facilities and clinics, and blood banks;
- Veterinary, pet stores, and livestock facilities;
- Manufacturing facilities;
- Green houses and agricultural commerce; and
- Other commercial and industrial service connections.

Fire Suppression

40. What are the control requirements for fire suppression systems without chemical addition?

Connections between the potable water supply and a fire suppression system without chemical addition need to be controlled in accordance with Regulation 11.39. Water stored in fire suppression systems without chemical addition could present acute biological health risks and could compromise the water quality of the public water system

and/or a water supply system. Based on industry standards such connections may be controlled via an air gap, a Reduced Pressure Zone Assembly (RPZ), Reduced Pressure Zone Fire Assembly (RPF), Reduced Pressure Zone Detector Fire Assembly (RPD), Double Check Fire Assembly (DCF), Double Check Detector Fire Assembly (DCD) or a Double Check Assembly (DC).What are the control requirements for fire suppression systems with chemical addition?

Connections between the potable water supply and a fire suppression system with chemical need to be controlled in accordance with Regulation 11.39. Based on industry standards such connections may be controlled via an air gap, a Reduced Pressure Zone Assembly (RPZ), Reduced Pressure Zone Fire Assembly (RPF), or a Reduced Pressure Zone Detector Fire Assembly (RPD).

41. What is required when the department or a supplier discovers a fire suppression system without testable backflow prevention assembly?

When the department and/or supplier identify fire suppression systems that are not controlled with appropriate backflow prevention assemblies, there are additional evaluation requirements that all parties involved need to be aware of. The National Fire Protection Association (NFPA) Code 13 (2002 Edition), Section 8.16.4.6.2, states that when backflow prevention assemblies are to be installed on existing systems, a thorough hydraulic analysis, including revised hydraulic calculations, new fire flow data, and all necessary system modifications to accommodate the additional friction loss, shall be completed as a part of the installation. A certified NICET III - Design & Layout fire suppression specialist or Professional Engineer must perform the hydraulic analysis and make any necessary system modification(s) as part of the backflow prevention assembly installation. The Colorado Division of Fire Prevention and Control's website maintains a list of certified Fire Suppression Contractors

If it is determined through hydraulic analysis that the installation of a backflow prevention assembly would compromise the integrity of the fire suppression system, then the cross connection may be addressed through a site specific deviation. The site specific deviation would be subject to modification by the department and should be evaluated by the department; site specific deviations should be sent to the department at cdphe_wqcd_fss_questions@state.co.us. Generally site specific deviation conditions will include flushing provisions for the fire suppression system, as well as increased water quality monitoring at the site for chlorine residual and bacteriological contaminants. In the event the supplier is unable to complete all of the requirements in a timely manner then they may apply for a 120 day extension and submit it through the portal.

Suppliers

42. Can suppliers require control of a cross connection with a more stringent assembly than Regulation 11 requires.

Yes. Regulation 11 establishes the minimum requirements for control. A supplier can always be more stringent than the department but cannot be less stringent.

BPCCC Report

43. How do suppliers handle single-family-residential cross connections in the annual BPCCC report?

Since single-family-residential connections do not have to be surveyed (evaluated for cross connections), as such, the single-family-residential connection does not have to be included in the survey ratio calculations. If a cross connection is identified as single-family-residential, it would have to be included as in the annual BPCCC report. Suppliers can and most likely will have different non-single-family-residential connection numbers to actual identified cross connections. Single-family-residential cross connections would also need to be included in the annual BPCCC report as part of the number of cross connections controlled by assemblies and number of assemblies tested or methods inspected.

44. Does the department provide guidance for the annual BPCCC report?

The department's BPCCC Website provides annual report guidance. It is titled BPCCC Program Report Guidance, that provides step-by-step guidance on completing the Word version of the department's provided report templates.

45. When is the annual Backflow Prevention and Cross-connection Control report due?

The annual backflow prevention and cross-connection control (BPCCC) report is due May 1 of each year for the previous calendar year. For example, for compliance year 2020, the supplier must develop a written annual BPCCC report by May 1, 2021.

46. Do annual reports need to be submitted to the state?

The supplier does not need to submit the report to the department each year unless a violation has occurred. The department will review the BPCCC annual reports and documentation during sanitary surveys and reserves the right to request a report at any time. If you have questions while completing the report or are unclear if a violation has occurred, please contact the department at cdphe_wqcd_fss_questions@state.co.us.

If a BPCCC violation occurred, Regulation 11.39(7) requires that the violation must be reported to the department no later than 48 hours after the violation occurs. The department requests that the supplier submit a copy of the annual BPCCC report, which should document the identified violations. The annual report should be submitted via the department's drinking water portal found at wqcdcompliance.com/login. Please mark the report to the attention of the Field Services Section.

47. Why does Regulation 11 not require water systems to report non-single-family-residential connections identified after October 31 on their BPCCC report for that calendar year?

The intent is to provide flexibility to suppliers for new service connections. The department is aware that it takes time for a supplier to survey a newly identified non-single-family-residential connection. If the NON-SINGLE FAMILY RESIDENTIAL connection is identified after October 31 of that year the department considers that connection a

NON-SINGLE FAMILY RESIDENTIAL connection for the following year, in order to give the supplier enough time to survey the connection. If the connection is identified before Oct. 31 the department expects that the survey occurs the same calendar year that the connection is identified.

48. What are the recordkeeping requirements for the BPCCC Rule?

The supplier must maintain all backflow prevention assembly and backflow prevention method testing, inspection, and maintenance records, and annual program reports for at least three years for community water systems and at least five years for non-community water systems.The department recommends that the supplier keep survey results indefinitely. The results of surveys should be kept in a manner that allows the supplier to demonstrate that a survey has been performed and if any action was required based on the result of the survey.

49. How does suspension of service get incorporated as a compliance action in the annual BPCCC report?

Suspension of service, removing a meter, or locking out a connection is allowed in Regulation 11.39 as a compliance action for:

- Discovered uncontrolled cross connections in accordance with 11.39(3)(d)(i). (Initial 120 Day Control Requirement)
- Failed assemblies test in accordance with 11.39(3)(e)(i). (60 Day Failed Test Repair Requirement)
- Failed method inspection in accordance with 11.39(3)(f)(i). (60 Day Failed Method Requirement)

In accordance with the definitions above the following scenarios apply:

- If any assembly and/or method is used during any time for the respective calendar year the regulation requires that the assembly be included in the testing and/or inspection compliance ratio calculations.
- If an assembly and/or method was not in use during the respective calendar year, (i.e. was not used to protect public health because it was inactive, removed, suspended, locked out etc.) the assembly or method does not have to be included in the testing and/or inspection compliance ratios.