

SECTION 4-10: SYSTEM INSPECTIONS AND CERTIFICATIONS

4-10-00	Policy
10	Procedures
20	Guidance and Information
30	Reporting Requirements
X4-10-A	Sample: Cross-Connection Control and Backflow Prevention Program Template
X4-10-B	Sample: Cross-Connection Control and Backflow Prevention Awareness Training

4-10-00 POLICY

This section establishes HHS policy and responsibilities for complying with mandatory facility systems and equipment inspections and certifications. Due to the high risk nature of much of the work involved, it is important to integrate it with occupational health and safety policies and regulations. A primary goal of this section is to raise awareness concerning many areas that require special management attention within the facilities management arena. Examples include: Air emissions permits, Boilers, Unfired Pressure Vessels, Weight Handling Equipment (cranes and hoists), Vertical Transportation Equipment (including elevators), Backflow Preventers, Fire extinguishers, Fire Protection systems, and Personal Protective Equipment.

There are a large number of easily forgotten/overlooked periodic inspections and certifications that are required for facilities equipment and associated operations. The primary purpose of these requirements is to protect life safety and health, since there are significant hazards, including serious injury or death, associated with use of certain specialized facility equipment. Requirements for inspections and certifications are included in laws and regulations issued by organizations like the Environmental Protection Agency (EPA), state agencies, the Occupational Safety and Health Administration (OSHA), the Department of Transportation (DOT), and others.

4-10-10 PROCEDURES

For the facilities management staff charged with compliance, the paperwork chase involved in documentation for inspection and certification may seem endless. However, with proper awareness, emphasis, organization and documentation, the requirements will be met.

A. A list of the more common inspections and certifications follows. The list is neither all-inclusive nor do all of the listed items apply to every site. Several of the inspections and certifications described very briefly below are general summaries of requirements established by applicable Federal, state, and local law. This list is not intended to be used as the sole source of information regarding any of the requirements summarized briefly in this section and facilities management staff must ensure that each facility fully complies with all applicable Federal, state, and local laws and regulations. It is incumbent upon facility managers/operators to be aware of and comply with requirements applicable in their unique situation. The list is general in nature, since specific requirements will vary by location. Facilities management staff must determine all of the inspection, testing, certification, and mandatory maintenance requirements applicable to their systems. Appropriate guidelines should be incorporated into activity instructions that are enforced rigidly.

Air permits. Most air permits are issued by state programs with an annual permit fee accompanied by a three-year or five-year permit renewal deadline. It is critical to be aware of permit requirements and renewal dates to maintain them in a current status. Air Emissions Inventory Questionnaires (or equivalent state title) are required upon request by the state permitting agency. These questionnaires are usually annual forms that must be submitted to maintain a valid air permit.

Boilers and Unfired Pressure Vessels (UPVs). Stringent criteria apply to all heating and power boilers and unfired pressure vessels, including portable boilers and portable unfired pressure vessels, liquid propane gas (LPG) storage tanks, mobile boilers, and hyperbaric facility support pressure vessels. The inspection of boilers and pressure vessels is highly specialized work requiring qualified personnel and, in many cases, specialized testing equipment, to ensure their continued safe, reliable, and efficient operation. The frequency and extent of inspection and testing will vary based on equipment operating parameters. Contract employees that perform the inspections, witness the tests, prepare the reports, and issue required certificates must, as a minimum, possess a Certificate of Competency or the equivalent issued by any political subdivision (such as state, province, territory, county, or city) of the United States that is a member of the NBBI. A current and valid certificate must be posted on, or near, the equipment, under a clear protective covering.

Compressed gas cylinders. OSHA inspection requirements incorporate DOT 49 CFR 171-170 and 14 CFR 103 by reference. These regulations pertain primarily to testing, inspection, and marking of the cylinders.

Cranes and hoists. OSHA requires a comprehensive inspection prior to initial use for all new or altered cranes or hoists. The federal statute also stipulates frequent inspections, described as daily to monthly, and periodic inspections at intervals between one and 12 months. The actual frequency of the inspections depends on the usage of the crane. Some states require a more rigorous inspection schedule. See also “Weight Handling Equipment”.

Cross-Connection Control and Backflow Preventers. The goal of a cross-connection control and backflow prevention program is to ensure safe drinking water under all foreseeable circumstances. Requirements pertain to all facilities served by drinking water systems to prevent the entrance of contamination, which may render the water unsafe or undesirable. Therefore, the program should establish policy, procedures, and instructions for installing, inspecting, testing, certifying, and maintaining backflow preventers to prevent contamination of drinking water systems. Improper configuration of potable water piping can create the possibility of backflow, which in turn, could result in the drinking water system becoming a transmitter of pathogenic organisms, toxic materials, or other hazardous substances with adverse affects on public health and welfare. Many federal, state, and local regulatory requirements flow-down from the Safe Drinking Water Act. Even in instances where there may be no regulatory requirement to implement a cross-connection control and backflow prevention program, the primary concern is to ensure that safe drinking water is provided to all users regardless of location. Therefore, all HHS activities shall develop and implement a cross-connection control and backflow prevention program following sound engineering procedures. Exhibit X4-10-A provides a cross-connection control and backflow prevention program template for optional use by HHS activities. Although each Activity will decide who receives training and the amount of training required, it is imperative that personnel responsible for inspecting facilities for cross-connections, certifying BFPs for proper installation and operation, and making recommendations for corrective action be properly certified. Information for general awareness training is provided as Exhibit X4-10-B.

Electrical cords. OSHA standards mandate requirements for an “Assured Grounding Program” which requires periodic inspections.

Emergency Planning and Community Right to Know Act. EPCRA requires annual chemical inventory reporting by facilities with “hazardous chemicals” or “extremely hazardous chemicals” present on site. A hazardous chemical is any chemical for which OSHA requires a Material Safety Data Sheet under the Employee Right to Know Act per 29 CFR 1910.1200 (Hazard Communication Program, or HazCom). The volume of the hazardous chemicals on site determines the trigger for reporting and is usually determined by state requirements. The inventory report of hazardous chemicals is required by federal regulation if the facility stores 10,000 pounds or more of the product.

Equipment modification certifications. A myriad of certifications from equipment manufacturers is required for any modifications to equipment such as forklifts, cranes, aerial lifts, and others.

Fire extinguishers. The construction standard requires a semi-annual inspection for dry chemical extinguishers. A more extensive annual inspection and service is also required. The general industry standard stipulates a more rigorous monthly inspection schedule with an annual maintenance check in addition to a hydrostatic test every 5 or 12 years, depending on the type of extinguisher.

First aid kit. Periodic inspections are required to assure ready availability. The referenced ANSI standard in the construction standards requires a licensed physician to review and sign off on the kit, which OSHA will occasionally cite if no documentation is available.

Fixed extinguishing systems. Fire extinguishing systems require annual inspection by a knowledgeable person (as defined by NFPA). Employee alarm systems also require annual testing for reliability and adequacy.

Periodic/scheduled inspections of Equipment and Tools. OSHA standards require documented inspections by competent persons at varying schedules (from daily to annually) to verify the safety of tools and equipment used in the performance of facility maintenance, repair, and construction (examples include jacks, ladders, wire ropes, personal protective equipment). In some cases, there is also a requirement for a written program. For example, a Respiratory protection program is required whenever respirators are used. For most equipment operators, regulations mandate inspection of their equipment before use on a daily basis. Included are cranes and hoists, rigging equipment, motor vehicles, scaffolds, welding equipment, aerial lifts, vehicle mounted elevating and rotating work platforms, and personal fall arrest systems.

Spill control plans. A written review and evaluation are required every three years or whenever there is a change in the facility that affects the plan. These plans are required for facilities with an aboveground storage of 660 gallons in a single tank or an accumulation of 1,300 gallons or more in aggregate that could reasonably be expected to discharge oil or oil-related substances in harmful quantities. Despite the regulatory language specifying “potential to reach into a navigable waterway,” and “harmful,” liberal courts have interpreted this as any roadside ditch or drainage way since all drainage ways eventually lead into a “navigable waterway.” The states have broadened their definitions by using the term “waters of the State,” which basically means any public waters and water drainage systems. In summary, if it leaves the property, report it.

Stormwater permit. A stormwater pollution prevention plan (SWPPP) is a fundamental requirement associated with stormwater permits. Permit holders must conduct an annual inspection of the facility, which should identify areas contributing to stormwater discharge associated with industrial activity and evaluate whether measures to reduce pollutant loading identified in a SWPPP are adequate and properly implemented in accordance with the terms of the permit, or whether additional control measures are needed.

Vertical Transportation Equipment (VTE) includes but is not limited to: Elevators, Escalators, Dumbwaiters, Moving Walks, Sidewalk Elevators, Special Purpose Personnel Elevators, Automatic Transfer Devices, material Hoists, Personnel Hoists, Manlifts, Inclined Lifts, Automotive Lifts, Mechanized Parking Garage Equipment, Power Platforms for Exterior Building Work, and Levellators. Current certification should be displayed in/on the equipment. In some cases, the certification document can be maintained on file in a central office.

In making routine inspections, or periodic inspections and tests of VTE, the inspector shall determine that the equipment is in a safe operating condition, has not been altered except in conformity to the applicable code or regulations, and performs in accordance with test requirements. The inspector shall also examine the equipment to verify that it is being maintained in accordance with manufacturer's recommendations and make recommendations for needed repairs or modifications.

All personnel performing inspections and tests of vertical transportation systems and equipment shall be qualified as follows: a. Certification to inspect elevators by the licensing authority of a political subdivision (such as state, territory, county, or city) of the United States. b. Satisfactory completion of the Elevator Safety Education Training Course and Certification by the National Association of Elevator Safety Authorities (NAESA). c. Certification by the Building Officials and Code Administrators International Incorporated (BOCA). The inspection itself can be hazardous in that it exposes the inspector to risks of electrocution, crushing, falls, etc.

Waste inventory. State waste regulations usually require an annual waste inventory to be maintained via prescribed forms submitted to the state. Though varying terms and classifications exist for solid wastes (and solid waste subcategories), hazardous waste (and hazard waste categories), industrial wastes, special wastes (scrap metal, lead acid batteries, used oil and filter and others), and garbage, state regulators usually want all types reported annually in one fashion or another.

Wastewater permit. Licensing under the federal National Pollutant Discharge and Elimination System (NPDES) or an equivalent authorized state program is required for any industrial wastewater discharge. The federal permit is issued for a maximum of five years and the renewed permit application must be submitted at least 180 days in advance of expiration.

Weight Handling Equipment (WHE). Weight handling equipment consists of cranes (*e.g.*, portal, hammerhead, mobile, tower, gantry, jib, pedestal mounted, overhead hoists, etc.), rigging gear (*e.g.*, slings, shackles, eyebolts, hoist rings, links, turnbuckles, etc.), and associated equipment (*e.g.*, portable hoists, dynamometers/load indicators, etc.). A crane shall not be used in service without a valid certification. In certain cases, interim recertification may be required. All certifications are: automatically void after 1 year; after exceeding the certified capacity during operation; or after an adjustment, repair, disassembly, replacement, or alteration of a load bearing or load controlling part or operational safety device, which requires a load test for verification of satisfactory work.

An effective WHE management program will ensure the equipment is safe to operate; ensure weight-handling operations are conducted safely and efficiently; and ensure optimum equipment service life. Activities must comply with OSHA requirements for maintenance, inspection, testing, certification, repair, alteration, and operation of covered equipment and certification shall be by an OSHA accredited certification agency in accordance with OSHA regulations. A list of currently accredited agencies may be obtained from the area OSHA office.

Personnel involved in the maintenance, alteration, repair, inspection, testing, and operation of WHE shall be trained and qualified to perform their assigned duties. For contractor operations, it is important that the contract include strict language requiring a certificate of compliance from the contractor that the crane and rigging gear meet applicable OSHA regulations (with the contractor citing which OSHA regulations are applicable. The contractor shall also certify that all of its crane operators are licensed and fully qualified on the equipment they will operate. Proof of current qualification shall be provided on demand.

B. Licensing, Permits, and Personnel Qualifications

Contractor or in-house inspectors and operators shall be licensed by the state in which work is to be performed. As a minimum, all requirements with respect to business licensing, certifications, employee identifications, and actual work performance shall fully comply with state laws and regulations applicable to the state in which the work is performed.

It is the purpose of condition inspections to ensure that the overall structural, mechanical, and electrical components of the equipment have been maintained in a safe and serviceable condition and are functioning properly. It is the purpose of load tests (where applicable) to ensure by controlled operation with prescribed test loads that the equipment is capable of safely lifting and moving the rated load

through all design motions. These inspections and tests shall be performed by technically competent inspection and test personnel.

C. Definitions

The following terms and definitions are compiled from various reference manuals. The wording of definitions may not exactly replicate the wording in reference manuals; however, the technical meaning of the definitions is accurate and is provided to assist in the interpretation and understanding of this material.

Backflow - The reversal of flow of undesirable (nonpotable) liquids, gases, or solids into the distribution piping of the potable water supply. This is created due to the existence of a pressure differential where the pressure on the nonpotable side is greater than the pressure on the potable side. There are two different types of backflow: backsiphonage and backpressure.

Backflow Preventer (BFP) - A "backflow preventer" shall mean any approved device or assembly or piping arrangement (*i.e.*, air gap) used to prevent backflow into a potable water system.

Backsiphonage - Reversed flow of liquid caused by a partial vacuum in the potable water distribution system.

Certification of Personnel - The training and licensing process whereby a person is approved by an applicable regulatory authority to inspect, test, and certify equipment as functioning in accordance with mandatory standards.

Cross-Connection - Any physical arrangement whereby a public water system is connected, directly or indirectly, with any other water supply system, sewer, drain, conduit, pool, storage reservoir, plumbing fixture, or other device which contains, or may contain, contaminated water, sewage, or other waste or liquid of unknown or unsafe quality which may be capable of imparting contamination to the public water system as a result of backflow. Bypass arrangements, jumper connections, removable sections, and swivel or changeover devices through which or because of which, backflow could occur are considered to be cross-connections.

Cross-Connection Control and Backflow Prevention - The use of approved assemblies, devices, air gaps, associated methods and procedures, etc., to prevent contamination or pollution of a potable water supply through cross-connections.

Degree of Hazard - The danger posed by a particular substance or set of circumstances. Degree of hazard is divided into health hazard and non-health hazard.

Health Hazard - A cross-connection or potential cross-connection involving a contaminant in sufficient concentration to spread disease or cause death.

Non-Health Hazard - A cross-connection or potential cross-connection involving any pollutant or contaminant (at low levels) that will not create a health hazard but will create a nuisance, or be aesthetically objectionable, if introduced into the potable water supply.

Purveyor - The supplier and/or distributor of potable water (*i.e.*, the owner of the public water system.)

Weight Handling Equipment (WHE) - Weight handling equipment consists of cranes (*e.g.*, portal cranes, mobile cranes), rigging gear (*e.g.*, slings, shackles), and associated equipment (*e.g.*, portable hoists, dynamometers).

D. Authorities and References

American Backflow Prevention Association (ABPA)

American Society of Mechanical Engineers (ASME), Boiler and Pressure Vessel Code (BPVC).

American Society of Mechanical Engineers (ASME) CSD-1, Controls and Safety Devices for Automatically Fired Boilers

American Water Works Association (AWWA)
Foundation for Cross-Connection Control and Hydraulic Research (FCCCHR)
National Board Inspection Code (NBIC), the National Board of Boiler and Pressure Vessel Inspectors
National Fire Codes. Published by the National Fire Protection Association
Safety Drinking Water Act (SDWA)
Training, Research and Education for Environmental Occupations (TREEO) Center

E. Responsibilities

It may be determined to be more efficient and effective to establish more centralized program management and support in the future. However, at this time, OPDIVs are both responsible for and at liberty to establish specific program procedures.

HHS/OFMP and OPDIV/ STAFFDIV personnel:

- Perform staff assistance visits
- Support HHS activities by interpreting relevant Federal, state, and local regulatory requirements and by uniformly applying HHS policy.
- Conduct special studies with regard to inspection and certification programs to assist in establishing policy or initiating important actions.

All HHS personnel whose duties involve aspects of system inspections and certifications shall carry out the following responsibilities to the extent of their respective span of control and level of organizational authority:

- Establish and maintain policies, programs, and procedures that conform to the requirements specified in this section.
- Cooperate and comply with Federal, state, and local government agencies.
- Achieve, maintain, and monitor compliance with applicable Federal, state, and local statutory and regulatory requirements.
- Coordinate the implementation of programs to achieve, maintain, and monitor compliance with applicable Federal, state, and local statutory and regulatory requirements.
- Exercise oversight and review of applicable programs within assigned area of responsibility.
- Ensure that all system inspections and certifications performed at the facility are properly recorded, and that all records are properly maintained.

4-10-20 GUIDANCE AND INFORMATION

In addition to original Specification Data Sheets, original equipment manufacturers (OEMs) often issue information (*e.g.*, "service bulletins") more current and supplemental to that in the maintenance manual furnished with a particular piece of equipment. Activities shall contact the OEM or authorized distributor for supplemental service information applicable to their equipment, and, if practical, be added to the OEM's distribution list for such information.

4-10-30 REPORTING REQUIREMENTS

Every HHS organization responsible for operations and maintenance of critical systems and equipment installed in HHS owned or leased facilities is responsible for determining and complying with applicable regulatory requirements, including reporting, as it pertains to a particular system or class of equipment. Good records are invaluable in efforts to protect the safety and health of personnel, to avoid unnecessary/duplicated expenses associated with poor documentation, and to ensure compliance with relevant laws and regulations.

There are no mandatory department level reporting requirements associated with the information discussed in this section. However, there are extensive requirements that must be complied with for documentation, records, and submissions within the regulatory framework.

SAMPLE: CROSS-CONNECTION CONTROL AND BACKFLOW PREVENTION PROGRAM TEMPLATE

Table of Contents

1. Policy
2. Applicable Regulations
3. Administration
 - 3.1 Program Director
 - 3.2 Program Coordinator
 - 3.3 Program Manager
 - 3.4 Other Responsible Personnel
4. Procedures
 - 4.1 New Facilities
 - 4.2 Existing Facilities
5. Records
 - 5.1 Locations of Devices and Types
 - 5.2 Testing and Maintenance
6. Notification
 - 6.1 Testing Due
 - 6.2 Test Results
 - 6.3 Violations
 - 6.4 Termination or Denial of Service
7. Reporting
8. Backflow Prevention Device Tester List
9. Approved Devices List
10. Consumer Education Literature

1. Policy

The purpose of this instruction is to establish and enforce (*ACTIVITY/FACILITY NAME*) procedures and responsibilities for a cross-connection control and backflow prevention program for the potable water systems at (*ACTIVITY/FACILITY NAME*). The cross-connection control and backflow prevention program is established for the purpose of detecting and preventing cross-connections that create or have the potential to create an imminent and substantial danger to public health by and from contamination due to cross-connection. The goal of the cross-connection and backflow prevention program is to ensure safe drinking water under all foreseeable circumstances.

2. Applicable Regulations

The following Federal, state, and local regulations apply to (*ACTIVITY/FACILITY NAME*):

- Safe Drinking Water Act (SDWA), Public Law 93-523.
- **Cite Applicable State Drinking Water Regulations.**
- **Cite Applicable Local Cross-Connection Control And Backflow Prevention Ordinances.**

3. Administration

This program has on-site personnel with designated areas of responsibility.

3.1 Program Director

The Program Director is responsible for the overall environmental program and will ensure its implementation.

Name:	Signature:
Title:	Location:
Code:	Phone:

3.2 Program Coordinator

The Program Coordinator is responsible for cross-connection control and backflow prevention policy matters and serves as the point of contact for site visits and inspections.

Name	Signature:
Title:	Location:
Code:	Phone:

3.3 Program Manager

The Program Manager is responsible for the day-to-day implementation of the cross-connection control and backflow prevention program.

Name:	Signature:
Title:	Location:
Code:	Phone:

3.4 Other Responsible Personnel (e.g., Medical Officer, Staff Civil, etc.)

The Activity/Facility will provide the number of signature blocks as necessary.

Name:	Signature:
Title:	Location:
Code:	Phone:

4. Procedures

4.1 New Facilities

New facilities are to be designed without cross-connections. The design must provide adequate backflow protection through the use of approved backflow preventers (BFPs). BFP selection should be based on the Degree of Hazard associated with the cross-connection. Plans and specifications for new facilities must be provided to (PROVIDE CODE AND/OR NAME) for technical review prior to construction.

Design changes to the potable water system (or any system making a direct or indirect connection to the potable water system) must be reviewed by (PROVIDE CODE AND/OR NAME) before being finalized.

All newly installed BFPs will be tested and certified before being placed into service.

4.2 Existing Facilities

A qualified inspector (certified tester) will perform a cross-connection control and backflow prevention survey of the facility. The survey will be performed annually and will include a review of the facility's entire internal water plumbing system, including the various outlets, water-using equipment, etc. From the data collected in the survey, the inspector shall identify:

- location of possible or actual cross-connections
- degree of hazard
- location and adequacy of existing BFPs
- need for installation of additional BFPs.

All existing BFPs will be identified, certified for proper installation and operation, and placed into an inventory database during the initial survey of the facility. A history file for each building will be established during the initial survey. This file will contain results of the building survey, a description and location of each potential cross-connection site, and a list of each nonpotable liquid system and potable water system connections. This file will be updated annually or when changes are made to the system.

BFPs will be certified using test equipment and test procedures conforming to those outlined in the latest edition of the "Cross-Connection Control Manual" published by the Foundation for Cross-Connection Control and Hydraulic Research (FCCCHR) or Manual M14 published by American Water Works Association (AWWA). Only tests performed by certified testers will be considered official tests. BFPs will be tested and certified on an annual basis for BFPs with a low hazard classification and every 6 months for BFPs with a high hazard certification.

When cross-connections are identified, the problem will be eliminated or isolated by installing an approved BFP. Installation of the BFP will comply with the criteria set forth by applicable Federal, state, and local laws codes/regulations and the manufacturer's recommendations. Termination of water service is required in situations where illness or death is attributable to the lack of, or inadequate maintenance of, a BFP.

Recommendations of the inspector will be forwarded to the Program Manager or his/her designee for implementation. When feasible, all newly installed BFPs will be tested and certified prior to being placed into service. If the device to be installed will cause a reduction in water pressure, building occupants will be notified. Any backflow device to be installed will be selected from the most current list of approved cross-connection control devices. A licensed backflow tester will complete testing and certification, as necessary, prior to placing the system back in service. All certificates will be forwarded to the Program Manager. Copies of certificates will be maintained in the history file.

5. Records

5.1 Locations of Devices and Types

Historical files will be maintained for each facility. This file will contain results of the building survey, a description and location of each potential cross-connection site, and a list of each non-potable liquid system and potable water system connections. This file will also include a list of BFP device locations and types. This file will be updated annually or when changes are made to the system.

5.2 Testing and Maintenance

Records of BFP device inspections, tests, repairs, overhauls, or replacements will be maintained by (ACTIVITY/FACILITY NAME) for a period of not less than 10 years. These records will include documentation to verify that BFPs were properly installed, certified, and maintained.

6. Notification

6.1 Testing Due

The certification interval for the BFPs will depend on the degree of hazard. For high hazard BFPs, testing and certification will be performed every 6 months, at a minimum. Low hazard BFPs will be tested and certified every 12 months, at a minimum. The certification schedule will be maintained with the building records. The Building Manager will be informed when testing is to take place.

6.2 Test Results

Test results will be forwarded to the Program Manager, the Building Manager, and (ENTER OTHERS, AS REQUIRED).

6.3 Violations

When violations of codes, regulations, or water standards are detected, the Program Manager and the Building Manager will be notified. If necessary, the water purveyor will be notified of the violation.

6.4 Termination or Denial of Service

If termination of water service is required, a letter will be issued to the building manager of the facility stating the nature of the hazardous condition that threatens the safety of the water system. The building manager will be advised that it is necessary to take steps, including termination of water service, to minimize the danger of contamination and failure to take action could result in illness or death. Water service will not be restored until the deficiency has been corrected or eliminated. Service will be terminated immediately if illness or death can be attributed to a lack of BFPs or a lack of BFP maintenance.

7. Reporting

Following testing and certification all records will be updated and a report will be filed with (PROVIDE CODES AND/OR NAMES). If required, a report will also be filed with the water purveyor.

8. Backflow Prevention Device Tester List

BFPs will be certified using test equipment and test procedures conforming to those outlined in the latest edition of the “Cross-Connection Control Manual” published by the FCCCHR or Manual M14 published by the AWWA.

9. Approved Devices List

All BFPs to be installed will be approved by the state or local agencies.

10. Consumer Education Literature

General consumer education literature can include posters, informational flyers, and articles to be printed in the base newsletter and/or newspaper on a periodic basis.

Annual training in cross-connection control and backflow prevention will be provided to facility occupants at a level commensurate with their assigned duties. Training can be incorporated into general standup training.

SAMPLE: CROSS-CONNECTION CONTROL AND BACKFLOW PREVENTION AWARENESS TRAINING

All personnel employed by the facility should receive minimal awareness training to inform them of the importance of cross-connection control and backflow prevention, their role, and health hazards associated with cross-connections. General awareness training should be modified to reflect circumstances specific to the Activity and personnel involved. At a minimum, the following should be covered:

1. What is a cross-connection?

A cross-connection is any direct (such as with plumbing) or indirect (such as with hydrant hose) connection between a potable (drinking) water source and a nonpotable source of water or wastewater. Drinking water is any part of the Activity potable water system, whether it comes from a water fountain or a fire hydrant.

2. What is a cross-connection control?

Cross-connection control is a system by which the above connections are eliminated or prevented from ever happening.

3. What is backflow?

Backflow is the flow of nonpotable water (contaminated or potentially contaminated water) into the potable water system. It can happen in either of two ways: backpressure or backsiphonage. Backflow from backpressure occurs when the pressure from a system is greater than the potable water system pressure and is forced into the drinking water supply. Backsiphonage occurs when the potable water supply system experiences negative pressure and nonpotable water is drawn or sucked into the potable water system. For either type of backflow to occur there must be either a direct or indirect connection to the potable water system.

4. What is backflow prevention?

Sometimes, a cross-connection must be made/is unavoidable. When this is the case, a mechanical device called a backflow preventer must be used. These devices are used to prevent the flow of nonpotable (contaminated or potentially contaminated) water/wastewater into the potable water system. There are many types of backflow preventers, and the type that is installed in a particular setting is based on the degree of hazard.

5. What is the best way to prevent backflow?

The best way to prevent backflow is to eliminate any connection, direct or indirect, between the potable water system and the nonpotable water system. This means rolling hoses when not in use, not submerging hoses when filling tanks, trailers, and waste boxes, and not connecting any machinery or equipment, including portable (field use) equipment to fire hydrants without installing a temporary backflow prevention device. When this is not possible, the Activity's Cross-Connection Program Coordinator (PROVIDE CODE AND/OR NAME) at (PROVIDE PHONE NUMBER) must be contacted to review the situation. Remember DO NOT connect anything to the potable water system that you would not want to drink.

6. What is an example of a cross-connection?

An exterminating contractor created a cross-connection when diluting highly toxic insecticide, chlordane, by submerging a garden hose into this material. A break in the water pressure resulted in a backsiphonage of the poisonous contents of the drum through the hose service connection and into the water supply. This incident illustrates the danger of cross-connection and indicates the need for the provision of backflow preventers. If you see similar cases, the Activity's Cross-Connection Program Coordinator (PROVIDE CODE AND/OR NAME) at (PROVIDE PHONE NUMBER) must be contacted to review the situation.