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What It Means To Be a Public Water System

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Environmental
Protection Agency

Outline

- Definition of a Public Water System (PWS)
- Types of PWS's
- Responsibilities of PWS's
- Certified Operators
- Source Water Protection
- Sanitary Surveys
- Plan Approval
- Security & Emergency Preparedness
- Backflow Prevention
- eDWR



Environmental
Protection Agency

Definition of a PWS

"Public water system" or "PWS" means a system which provides water for human consumption through pipes or other constructed conveyances, if such system has at least fifteen service connections or regularly serves an average of at least twenty-five individuals daily at least sixty days out of the year. Such term includes any collection, treatment, storage, and distribution facilities under control of the operator of such system and used primarily in connection with such system, any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system, and any water supply system serving an agriculture labor camp, as defined in section 3733.41 of the Revised Code. A public water system is either a "community water system" or a "noncommunity water system."

What does it mean?

If you provide water for human consumption to at least 15 service connections or 25 people (not necessarily the same people) at least 60 days a year, you are a public water system.

"Human consumption" means the ingestion or absorption of water or water vapor as the result of drinking, cooking, dishwashing, hand washing, bathing, showering, or oral hygiene.

Types of PWS's

Community Water Systems

Non-Transient Non- Community

Transient Non- Community

Community Water Systems

"Community water system" or "CWS" means a public water system which serves at least fifteen service connections used by year-round residents or regularly serves at least twenty-five year-round residents.

Examples of Communities

- Cities
- Villages
- Mobile Home Parks
- Prisons
- Nursing Homes
- Home Owner Associations/Subdivisions
- Rural Area Systems

Non-Transient Non-Community

"Nontransient noncommunity water system" or "NTNCWS" means a public water system that is not a community water system and that regularly serves at least twenty-five of the same persons over six months per year.

Examples of NTNC Systems

- Schools
- Businesses
- Day Care Facilities

Transient Non-Community

"Transient noncommunity water system" or "TNCWS" means a noncommunity public water system that does not regularly serve at least twenty-five of the same persons over six months of the year.

Examples of TNC Systems

- Churches
- Golf Courses
- Restaurants
- Bars
- Camp Grounds
- Rest Areas
- Stores
- Gas Stations
- Hotels/Motels/Inns

Responsibilities of PWS's

- Monitoring
- Operation
- Maintenance
- Source Water Protection
- Record Keeping
- License to Operate

Monitoring For CWS and NTNC

- Total Coliform Bacteria
- Lead and Copper
- Inorganic Chemicals (IOC's)
- Synthetic Organic Chemicals (SOC's)
- Volatile Organic Chemicals (VOC's)
- Disinfection ByProducts (DBP's) for CWS and NTNC's that disinfect
- Operational Parameters (chlorine residual, iron, manganese, hardness, plant production, etc.)
- Others as needed

Monitoring is done to detect acute (short-term) and chronic (long-term) risks to the public

Monitoring for TNC Systems

- Total Coliform Bacteria
- Nitrate/Nitrite

Testing is performed to detect acute (short-term) risks to the public

Certified Labs

Sample analysis is required to be completed in an Ohio EPA certified lab. These labs are able to perform accurate testing using scientific methods which have been approved by the United States Environmental Protection Agency. Lists of certified labs can be found at:

www.epa.ohio.gov/ddagw/labs.aspx

Total Coliform Bacteria

Total coliform bacteria are common in the environment and are generally not harmful. Total coliform bacteria is used as an indicator organism because it is a relatively easy, quick and inexpensive test to determine if drinking water may be contaminated with other, potentially harmful organisms. If a sample is TC positive, the lab is required to further analyze the sample for fecal coliform and/or E. coli, which are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects such as diarrhea, cramps, nausea, headaches or other symptoms.

Maximum Contaminant Levels (MCL's)

The maximum permissible level of a contaminant in water which is delivered to any user of a public water system. MCL's are set for both acute and chronic exposures.

Maximum Contaminant Level Goal (MCLG's)

MCLG means the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLG's allow for a margin of safety.

Secondary Maximum Contaminant Levels (SMCL's)

"Secondary maximum contaminant level" means the advisable maximum level of a contaminant in water which is delivered to the free-flowing outlet of the ultimate user of a public water system.

This means substances that could make the water look funny, smell funny, or taste funny, things like iron, manganese, odor, etc.

Operations

PWS day to day operations need to be under the care of an appropriately certified operator. This operator is responsible for ensuring that the PWS is operating properly and that routine testing and maintenance is completed. Based on the classification of the plant, there are associated minimum staffing levels, ranging from an hour/week up to 40 hours/week. These operators are required to maintain a log book for each water treatment plant.

Log Book Requirements

The owner and operator of record of a public water system shall maintain or cause to be maintained operation and maintenance records for each public water system and water treatment plant within a public water system. Some of the formats in which the records may be maintained include, but are not limited to, hard bound books with consecutive page numbering, time cards, separate operation and maintenance records, or well organized computer logs.

Items to Include In Log Book

At a minimum, the following information shall be recorded:

- (a) Identification of the public water system;
- (b) Date and times of arrival and departure for the operator of record and any other operator required by this chapter;
- (c) Specific operation and maintenance activities that affect or have the potential to affect the quality or quantity of water conveyed, water produced;
- (d) Results of tests performed and samples taken, unless documented on a laboratory sheet;
- (e) Performance of preventative maintenance and repairs or requests for repair of the equipment that affect or have the potential to affect the quality or quantity of water conveyed, water produced; and
- (f) Identification of the persons making entries.

Certified Operators

All public water systems, except TNC serving less than 250 people, are required to have an operator of record to oversee the technical operation of the public water system or each water treatment plant and distribution system within the public water system. Each operator of record shall have a valid certification of a class equal to or greater than the classification of the public water system, distribution system or water treatment plant.

How Do you Become A Certified Operator?

To become a certified Class A, I, II, III or IV Water Supply, Water Distribution operator in the State of Ohio, you must apply for and pass the state operator certification exam and document the appropriate level of hands on work experience.

To apply for the exam you must have a high school diploma or the equivalent, and operating experience.

If you do not have the operating experience required to become certified at the Class A, Class I or II level, you may still be approved to take the exam. If you pass the exam, you will be designated as an "operator in training" (OIT) and allowed up to 48 months to fulfill the operating experience requirement. OIT status is not available for Class III or IV certification.

Exam Eligibility

Classification Operating Experience

A*	12 months
I	12 months
II*	36 months
III*	60 months, including 12 months as a Class II operator
IV**	36 months as a Class III, including 24 months management experience at a Class III or IV facility

* Reductions available for education and course completion.
Contact Ohio EPA for details.

** More information on the Class IV exam can be found on the operator certification web site.

Continuing Education

The minimum number of contact hours that shall be completed every two years by operators holding a single certificate as a:

- (a) Class A or a limited class A operator is eight hours of director-approved contact hours;
- (b) Public water system operator I, water distribution operator I, water distribution operator II is twelve hours of director-approved contact hours;
- (c) Public water system operator II, public water system operator III, public water system operator IV, is twenty four hours of director-approved contact hours.

Classification of PWS's

System Type	Design Flow	Classification
GW w/MCL	More than 5.0 MGD	Class III
GW w/MCL	0.5 to 5.0 MGD	Class II
GW w/MCL	Less than 0.5 MGD	Class I
GW w/SMCL	More than 5.0 MGD	Class III
GW w/SMCL	2.5 to 5.0 MGD	Class II
GW w/SMCL	Less than 2.5 MGD	Class I
GW w/o substantial treatment serving more than 250	N/A	Class I

Class A PWS's

A public water system shall be classified as a class A public water system when the public water system meets all of the following criteria:

- (a) Is a community or nontransient noncommunity public water system that serves a population of no more than two hundred fifty, or a transient noncommunity public water system that serves a population greater than two hundred fifty;
- (b) Uses only purchased water or a ground water source;
- (c) Does not provide precipitative softening or treat for a chemical contaminant to meet a maximum contaminant level as defined in rule 3745-81-01 of the Administrative Code; and
- (d) Has no serious public health or environmental hazard associated with the operation of the public water system.

Maintenance

- Preventative/Scheduled Maintenance
- Cleaning/Painting
- Repairs as needed
- Equipment Upgrades

For systems with substantial distribution systems:

- Valve Exercising
- System Flushing
- Backflow Prevention

Source Water Protection

- Maintain an isolation distance between wells and potential sources of contamination
- Provide a secure and intact well cap with a screened vent
- Well casing must extend at least 12 inches above surrounding grade
- Slope soil surface away from well to promote runoff away from well
- Minimum of 25 feet of structurally sound well casing
- Regular inspection of wells for problems
- Protect well from vehicle damage
- Disinfect wells after repairs or modifications

Source Water Protection (cont'd)

- Keep accurate records of any well maintenance
- Hire a professional well driller for any well construction, modification, or abandonment
- Properly abandon unused wells
- Avoid storing, mixing or using pesticides, fertilizers, herbicides, degreasers, fuels and other pollutants near wells
- Do not dispose of wastes in wells
- Have wells cleaned by a well driller every 5 years





Record Keeping

As a public water system, certain records are required to be maintained.

- Microbiological analyses – 5 years
- Chemical analyses – 10 years
- Records of actions taken to correct violations – 3 years
- Copies of any written reports, summaries or communications relating to sanitary surveys – 10 years
- Copies of public notices issued – 3 years

License To Operate

All public water systems, except churches and schools, are required to request and receive a license to operate and to renew it annually.

There are three types of licenses:

1. Green – unconditioned
2. Yellow – conditional
3. Red – Not a license, but rather a sign issued due to the denial of a renewal, suspension or revocation of the license

The color coded license, license renewal or sign must be prominently displayed by the public water system.

Sanitary Surveys

Community water systems must undergo a sanitary survey at least every three years.

Non-community water systems must undergo a sanitary survey at least every five years.

The director shall review the results of each sanitary survey to determine whether the existing monitoring frequency is adequate and what additional measures, if any, the public water system needs to undertake to improve drinking water quality.

Components of A Sanitary Survey

- Source
- Treatment
- Distribution System
- Finished Water Storage
- Pumps
- Pumps Facilities and Controls
- Monitoring, Reporting and Data Verification
- System Management and Operation
- Operator Compliance

Results of a Sanitary Survey

Within 30 days of the last on-site visit, you will receive documentation of the sanitary survey. It will consist of a letter and an inventory of the system denoting any deficiencies. The letter is separated into two sections; requirements and recommendations.

The public water system must respond in writing, within thirty days following receipt of a sanitary survey letter, indicating how and on what schedule they will address the requirements noted in the survey.

Plan Approval

No person shall begin construction or installation of a public water system, or make a substantial change in a public water system, until plans therefor have been approved by the director of environmental protection

Substantial Change

"Substantial change" means any change that affects isolation, capacity, flows, water quality, source, distribution or treatment.

- (a) For distribution systems: new waterlines; replacement waterlines that change in size, alignment or material; new tanks; modification in storage; new booster stations; changes in pump capacity and auxiliary power;
- (b) For water sources: any new source or alteration in source, including connection to another source or distribution system; any alteration in collection facilities or equipment; or
- (c) For treatment facilities: new treatment processes, including facilities, equipment or chemicals; changes in chemical feed capacity, feeder type, application points or sequence; modifications to or removal of treatment processes, equipment or chemicals.

Application for Plan Approval

- A completed copy of the Water Supply Data Sheet
- Three copies of plan drawings
- One copy of specifications
- One copy of supporting information
- A submittal letter from the PWS
- Plan review fee
- Package must be submitted to the appropriate district office

Design Standards

- Recommended Standards for Water Works (Ten States Standards)
- Guidelines for Design of Small Public Water Systems
- Guidelines for Arsenic Removal Treatment for Small Drinking Water Systems
- Planning and Design Criteria for Establishing Approved Capacity

Security & Emergency Preparedness

Planning to respond to an emergency situation can be overwhelming. However, the process can be made easier by focusing on identifying and understanding the features of your system that are critical to produce and distribute safe drinking water to the public.

When planning, keep in mind the common and essential tools necessary for maintaining operations during an emergency, such as *equipment and supplies, essential personnel, a mutual aid plan, a strategy for communicating with first responders, and a policy for practicing and updating the plan.* Each of these tools covers a range of important details that can vary depending on the type of emergency.

Resources

- Ohio WARN (Water/Wastewater Agency Response Network)
- Mutual Aid Assistance
- Coordination with Local Law Enforcement
- Coordination with County EMAs
- Water Contamination Information Tool (WCIT)
- Water Security Handbook
- Drinking Water Security For Small Systems Serving 3,300 or Fewer Persons
- These and more are located at:
www.epa.ohio.gov/ddagw/security.aspx

Contingency Plans

Ohio Administrative Code Section 3745-85-01 requires each of Ohio's community public water systems to prepare a contingency plan.

Contingency plans need to include planning for certain situations including , but not limited to: power outage, main water break, inorganic/organic contamination, bacteriological contamination, suspected tampering, distribution system storage failure, water system depressurization, suspected backflow or cross connection, source failure, and unplanned absence of operator.

Backflow Prevention

What is a cross-connection?

Any physical connection created between a possible source of contamination and any drinking water system piping.

What is backflow?

The flow through a cross-connection from a possible source of contamination back into the drinking water system. It occurs when a cross-connection is created and a pressure reversal, either as backsiphonage or backpressure, occurs in the water supply piping.

What are some common backflow hazards that threaten the homeowner and other consumers?

- Hose connections to chemical solution aspirators to feed lawn and shrub herbicides, pesticides or fertilizers.
- Lawn irrigation systems.
- Chemically treated heating systems.
- Hose connections to a water outlet or laundry tub.
- Swimming pools, hot tubs, spas.
- Private and/or non-potable water supplies located on the property.
- Water-operated sump drain devices.
- Feed lots/livestock holding areas or barnyards fed through pipes or hoses from your water supply plumbing.

What are examples of cross-connection and backflow scenarios?

- Soapy water or other cleaning compounds backsiphon into the water supply plumbing through a faucet or hose submerged in a bucket or laundry basin.
- Pool water backsiphons into the water supply plumbing through a hose submerged in a swimming pool.
- Fertilizers/pesticides backsiphon into the water supply plumbing through a garden hose attached to a fertilizer/pesticide sprayer.

Examples continued

- Chemicals/pesticides and animal feces drawn into the water supply plumbing from a lawn irrigation system with submerged nozzles.
- Bacteria/chemicals/additives in a boiler system backsiphon into the water supply plumbing.
- Unsafe water pumped from a private well applies backpressure and contaminates the public water supply through a connection between the private well discharge and the potable water supply plumbing

Who is responsible?

In Ohio, the responsibility for preventing backflow is divided. In general, state and local plumbing inspectors have authority over plumbing systems within buildings while Ohio EPA and water suppliers regulate protection of the distribution system at each service connection.

Water customers have the ultimate responsibility for properly maintaining their plumbing systems. It is the homeowner's or other customer's responsibility to ensure that cross-connections are not created and that any required backflow prevention devices are tested yearly and are in operable condition.

eDWR

eDWR is the division's program for reporting drinking water data. The system allows for PWS's to report their monthly operational data (MORs) and for laboratories to report their chemical and microbiological sample results over the internet.

This reporting system is entirely web-based and accessible via any internet connection. It is accessible via the [Ohio EPA eBusiness Center](#) which is EPA's secure portal for online business services. This portal is the entry point for the regulated community and consultants to electronically complete and file reports and permit applications and to pay fees. This includes the Division of Drinking and Ground Waters' electronic Drinking Water Reports (eDWR).

<https://ebiz.epa.ohio.gov/>

Financial Assistance

Ohio EPA's Division of Drinking and Ground Waters, in cooperation with the Division of Environmental and Financial Assistance (DEFA) has several programs that offer below market rate loans to eligible public water systems to fund improvements to eliminate public health threats and ensure compliance with federal and state drinking water laws and regulations.

The Drinking Water Assistance Fund (DWAF) includes the Water Supply Revolving Loan Account (WSRLA), [wellhead protection program](#), and technical assistance through the [Rural Community Assistance Program \(RCAP\)](#).

www.epa.ohio.gov/ddagw/swap.aspx

www.epa.ohio.gov/ddagw/capability.aspx

Questions?

Ohio EPA District Offices

