

EFFECTIVE DATE  
NOVEMBER 15, 2003

NEBRASKA HEALTH AND HUMAN SERVICES  
REGULATION AND LICENSURE

179 NAC 2-001

TITLE 179 PUBLIC WATER SYSTEMS

CHAPTER 2 PUBLIC WATER SUPPLY SYSTEMS

SECTION 001 GENERAL

2-001.01 SCOPE AND AUTHORITY: These regulations establish general requirements for public water systems and define terms used in Title 179. The statutory authority is found in Neb. Rev. Stat. §§ 71-5301 to 71-5313.

2-001.02 DEFINITIONS: As used in these regulations, unless the context to be intelligible or prevent absurdity otherwise requires:

Air gap means the unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet supplying water to a tank, plumbing fixture or other device and the flood rim of the receptor.

Backflow means the undesirable reversal of flow in a potable water distribution system as a result of a cross connection.

Backflow preventer means an assembly or means that prohibits the backflow of water into the potable water supply.

Backpressure means a pressure, higher than the supply pressure, caused by a pump, elevated tank, boiler, air/steam pressure, or any other means, which may cause backflow.

Backsiphonage means backflow caused by negative or reduced pressure in the supply piping.

Coagulation means a process using coagulant chemicals and mixing by which colloidal and suspended materials are destabilized and agglomerated into flocs.

Community water system means a public water system that (a) serves at least 15 service connections used by year-round residents of the area served by the system or (b) regularly serves at least 25 year-round residents.

Compliance cycle means the nine-year calendar year cycle during which public water systems must monitor. Each compliance cycle consists of three three-year compliance periods. The first calendar year cycle began January 1, 1993 and ended December 31, 2001; the second began

January 1, 2002 and ends December 31, 2010; the third begins January 1, 2011 and ends December 31, 2019.

Compliance period means a three-year calendar year period within a compliance cycle. Each compliance cycle has three three-year compliance periods. Within the first compliance cycle, the first compliance period ran from January 1, 1993 to December 31, 1995; the second from January 1, 1996 to December 31, 1998; the third from January 1, 1999 to December 31, 2001.

Comprehensive performance evaluation (CPE) means a thorough review and analysis of a treatment plant's performance-based capabilities and associated administrative, operation and maintenance practices. It is conducted to identify factors that may be adversely impacting a plant's capability to achieve compliance and emphasizes approaches that can be implemented without significant capital improvements. For purposes of compliance with 179 NAC 17 and 179 NAC 19, the comprehensive performance evaluation must consist of at least the following components: assessment of plant performance; evaluation of major unit processes; identification and prioritization of performance limiting factors; assessment of the applicability of comprehensive technical assistance; and preparation of a CPE report.

Confluent growth means a continuous bacterial growth covering the entire filtration area of a membrane filter, or a portion thereof, in which bacterial colonies are not discrete.

Contamination means an impairment of a potable water supply by the introduction or admission of any foreign substance that degrades the quality and creates a health hazard.

Conventional filtration treatment means a series of processes including coagulation, flocculation, sedimentation, and filtration resulting in substantial particulate removal.

Cross connection means any physical arrangement whereby a potable water supply is connected, directly or indirectly, with any other water supply system, sewer, drain, conduit, tank, pump, plumbing fixture, heat exchanger, or other mechanical equipment or device which contains, or may contain, contaminated water, sewage or other waste, liquid or gas of unknown or unsafe quality which may be capable of imparting contamination or pollution to the potable water supply as a result of backflow (due to either backpressure or backsiphonage). Bypass arrangements, jumper connections, hose connections, removable spools, swivel or changeover devices, four-way valve connections and other temporary or permanent devices through which, or because of which, backflow (or backsiphonage) could occur are considered to be cross-connections. Protecting a public water system against potential contamination from cross-connections is possible by containment and/or isolation.

Cross connection control means the enforcement of an ordinance or other instrument regarding cross connections.

CT or CT<sub>calc</sub> is the product of "residual disinfectant concentration" (C) in mg per liter determined before or at the first customer, and the corresponding "disinfectant contact time" (T) in minutes, i.e., "C" x "T".

CT<sub>(99.9)</sub> means the CT value required for 99.9% (3-log) inactivation of *Giardia lamblia* cysts. CT<sub>(99.9)</sub> for a variety of disinfectants and conditions appear in Tables 13.1- to 13.8 of 179 NAC 13-007.02C.

Council means the Advisory Council on Public Water Supply.

Diatomaceous earth filtration means a process resulting in substantial particulate removal in which (1) a precoat cake of diatomaceous earth filter media is deposited on a support membrane (septum), and (2) while the water is filtered by passing through the cake on the septum, additional filter media known as body feed is continuously added to the feed water to maintain the permeability of the filter cake.

Direct filtration means a series of processes including coagulation and filtration but excluding sedimentation resulting in substantial particulate removal.

Director means the Director of Regulation and Licensure or his/her authorized representative.

Disinfection means a process which inactivates pathogenic organisms in water by chemical oxidants or equivalent agents.

Disinfection contact time ("T" in CT calculations) means the time in minutes that it takes for water to move from the point of disinfectant application or the previous point of disinfectant residual measurement to a point before or at the point where residual disinfectant concentration ("C") is measured.

Disinfection profile means a summary of *Giardia lamblia* inactivation through the treatment plant. The procedure for developing a disinfection profile is contained in 179 NAC 17-005 (Disinfection profiling and benchmarking) and 179 NAC 19-007.01-19-007.07 (Disinfection profile) in 179 NAC 19.

Domestic or other non-distribution system plumbing problem means a coliform contamination problem in a public water system with more than one service connection, that is limited to the specific service connection from which the coliform-positive sample was taken.

Dose equivalent means the product of the absorbed dose from ionizing radiation and such factors as account for differences in biological effectiveness due to the type of radiation and its distribution in the body as specified by the International Commission on Radiological Units and Measurements (ICRU).

Double check-valve assembly means a backflow prevention device consisting of two independently acting check valves, internally force loaded to a normally closed position between two tightly closing shut-off valves, and with means for testing for tightness.

Drinking water standards means the rules and regulations adopted and promulgated pursuant to Neb. Rev. Stat. § 71-5302, which (a) establish maximum levels for harmful materials which, in the judgment of the Director of Regulation and Licensure, may have an adverse effect on the health of persons and (b) apply only to public water systems.

Effective opening means the minimum cross-sectional area at the point of water supply discharge, measured or expressed in terms of the diameter of a circle, or if the opening is not circular, the diameter of a circle of equivalent cross-sectional area.

Filter profile means a graphical representation of individual filter performance, based on continuous turbidity measurements or total particle counts versus time for an entire filter run, from startup to backwash inclusively, that includes an assessment of filter performance while another filter is being backwashed.

Filtration means a process for removing particulate matter from water by passage through porous media.

Flocculation means a process to enhance agglomeration or collection of smaller floc particles into larger, more easily settleable particles through hydraulic or mechanical means.

Gross alpha particle activity means the total radioactivity due to alpha particle emission as inferred from measurements on a dry sample.

Gross beta particle activity means the total radioactivity due to beta particle emission as inferred from measurements on a dry sample.

Groundwater system means a water system utilizing wells as the source of water.

Ground water under the direct influence of surface water (GWUDI) means any water beneath the surface of the ground with significant occurrence of insects or other macroorganisms, algae, or large-diameter pathogens such as *Giardia lamblia* or *Cryptosporidium*, or significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH which closely correlate to climatological or surface water conditions. Direct influence must be determined for individual sources in accordance with criteria established by the Director. The Director determination of direct influence may be based on site-specific measurements of water quality and/or documentation of well construction characteristics and geology with field evaluation as described in 179 NAC 13 Attachment 2.

Halogen means one of the chemical elements chlorine, bromine, or iodine.

Inactivation ratio means the ratio of CT to  $CT_{(99.9)}$ , i.e., CT divided by  $CT_{(99.9)}$ .

Initial compliance period means the three-year compliance period which ended December 31, 1995 except as follows. For the contaminants listed in 179 NAC 2-002.02A(1), (5), (8), (11), (17); and in 2-002.02B2 (19), (20), (21); and in 2-002.02B3(19) to (33); the initial compliance period means the three-year compliance period which began January 1, 1993 and ended December 31, 1995 for systems with 150 or more service connections, and means the three-year compliance period which began January 1, 1996 and ended December 31, 1998 for systems having fewer than 150 service connections.

Lead free

1. When used with respect to solders and flux, means solders and flux containing not more than 0.2% lead and
2. When used with respect to pipe and pipe fittings, means pipe and pipe fittings containing not more than 8% lead.

Legionella means a genus of bacteria, some species of which have caused a type of pneumonia called Legionnaires Disease.

Major construction, extension, or alteration means those structural changes that affect the source of supply, treatment processes, or transmission of water to service areas, but does not include the extension of service mains within established service areas.

Man-made beta particle and photon emitters means all radionuclides emitting beta particles and/or photons listed in "Maximum Permissible Body Burdens and Maximum Permissible Concentration of Radionuclides in Air or Water for Occupational Exposure", NBS Handbook 69, except the daughter products of Thorium-232, Uranium-235, and Uranium-238.

Maximum contaminant level (MCL) means the maximum permissible level of a contaminant in water which is delivered to any user of a public water system.

Maximum total trihalomethane potential (MTP) means the maximum concentration of total trihalomethanes produced in a given water containing disinfectant residual after seven days at a temperature of 25°C or above.

Near the first service connection means at one of the 20% of all service connections in the entire system that are nearest the water supply treatment facility, as measured by water transport time within the distribution system.

Non-community water system means a public water system that is not a community water system. A non-community water system is either a "transient non-community water system (TWS)" or a "non-transient non-community water system (NTNCWS)."

Non-transient, non-community water system means a public water system that is not a community water system and that regularly serves at least 25 of the same individuals over six months per year.

Operator means the individual or individuals responsible for the continued performance of the water supply system or any part of such system, during assigned duty hours.

Owner means any person owning or operating a public water system.

Person means any individual, firm, partnership, limited liability company, association, company, corporation, political subdivision, or other entity.

Picocurie (pCi) means that quantity of radioactive material producing 2.22 nuclear transformations per minute.

Point of disinfectant application is the point where the disinfectant is applied and water downstream of that point is not subject to recontamination by surface water runoff.

Point-of-entry treatment device (POE) is a treatment device applied to the drinking water entering a house or building for the purpose of reducing contaminants in the drinking water distributed throughout the house or building.

Point-of-use treatment device (POU) is a treatment device applied to a single tap used for the purpose of reducing contaminants in drinking water at that one tap.

Pollution means the presence of any foreign substance in water that tends to degrade its quality so as to constitute a nonhealth hazard or impair the usefulness of the water.

Potable water means water that is safe for human consumption as set forth in 179 NAC 2-002.

Protection by containment (i.e., containing the potential contamination source within the water customer's building, factory, facility, property distribution system, or trailer court, etc.) means the installation of an approved backflow prevention device or method on the water service line(s) serving any premises, location, facility or area.

Protection by isolation means control of cross-connections within a building's plumbing system by the installation of approved backflow prevention devices or methods at or near the potential sources of pollution or contamination.

Public water system means a system for providing the public with water for human consumption through pipes or, after August 5, 1998, other constructed conveyances, if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days per year. Public water system includes (a) any collection, treatment, storage, and distribution facilities under control of the operator of such system and used primarily in connection with such system and (b) any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system. Public water system does not include a special irrigation district. A public water system is either a community water system or a non-community water system.

Service connection does not include a connection to a system that delivers water by a constructed conveyance other than a pipe if (i) the water is used exclusively for purposes other than residential uses, consisting of drinking, bathing, cooking, and other similar uses, (ii) the Department determines that alternative water to achieve the equivalent level of public health protection provided by the Nebraska Safe Drinking Water Act and rules and regulations under the act is provided for residential or similar uses for drinking and cooking, or (iii) the Department determines that the water provided for residential or similar uses for drinking, cooking, and bathing is centrally treated or treated at the point of entry by the provider, a pass-through entity, or the user to achieve the equivalent level of protection provided by the Nebraska Safe Drinking Water Act and the rules and regulations under the Act.

Special irrigation district means an irrigation district in existence prior to May 18, 1994, that provides primarily agricultural service through a piped water system with only incidental residential or similar use if the system or the residential or similar users of the system comply with exclusion provisions of 179 NAC 2-001.02 items (ii) and (iii) of Public Water System definition.

Reduced pressure principle backflow preventer means a backflow prevention device consisting of two independently acting check valves, internally force loaded to a normally closed position and separated by an intermediate chamber (or zone) in which there is an automatic relief means of venting to atmosphere internally loaded to a normally open position between two tightly closing shut-off valves and with means for testing for tightness of the checks and opening of relief means.

Rem means the unit of dose equivalent from ionizing radiation to the total body or any internal organ or organ system. A "millirem" (mrem) is 1/1000 of a rem.

Repeat compliance period means any subsequent compliance period after the initial compliance period.

Residual disinfectant concentration ("C" in CT calculations) means the concentration of disinfectant measured in milligrams per liter in a representative sample of water.

Sanitary survey means an on-site review of the water source, facilities, equipment, operation and maintenance of a public water system for the purpose of evaluating the adequacy of such source, facilities, equipment, operation and maintenance for producing and distributing safe drinking water.

Sedimentation means a process for removal of solids before filtration by gravity or separation.

Service area means the land area which the owner of a public water system has legal franchise or authority to remain the sole distributor of piped drinking water.

Service connection, as used in the definition of public water system, does not include a connection to a system that delivers water by a constructed conveyance other than a pipe if:

1. The water is used exclusively for purposes other than residential uses (consisting of drinking, bathing, and cooking, or other similar uses);
2. The Department determines that alternative water to achieve the equivalent level of public health protection provided by the applicable state drinking water regulation is provided for residential or similar uses for drinking and cooking; or
3. The Department determines that the water provided for residential or similar uses for drinking, cooking, and bathing is centrally treated or treated at the point of entry by the provider, a pass-through entity, or the user to achieve the equivalent level of protection provided by the applicable state primary drinking water regulations.

Slow sand filtration means a process involving passage of raw water through a bed of sand at a low velocity (generally less than 0.4 m/h) resulting in substantial particulate removal by physical and biological mechanisms.

Surface water means all water which is open to the atmosphere and subject to surface runoff.

Surface water system means a water system utilizing surface water as the source of water.

System with a single service connection means a system which supplies drinking water to consumers via a single service line.

Too numerous to count means that the total number of bacterial colonies exceeds 200 on a 47-mm diameter membrane filter used for coliform detection.

Transient non-community water system or TWS means a non-community water system that does not regularly serve at least 25 of the same persons over six months per year.

Treatment technique means the use of aeration, settling, filtration, or other physical process and/or the addition of any chemical or chemicals for the purpose of removing, deactivation, or adjusting the level of one or more contaminants present in the raw water source.

Trihalomethane (THM) means one of a family of organic compounds, named as derivatives of methane, wherein three of the four hydrogen atoms in methane are each substituted by a halogen atom in the molecular structure.

Total trihalomethanes (TTHMs) means the sum of the concentration in milligrams per liter of the trihalomethane compounds [trichloromethane (chloroform), dibromochloromethane, bromodichloromethane, and tribromomethane (bromoform)], rounded to two significant figures.

Uncovered finished water storage facility means a tank, reservoir, or other facility used to store water that will undergo no further treatment except residual disinfection and is open to the atmosphere.

Vacuum breaker, atmospheric type means a vacuum breaker which is not designed to be subject to static line pressure.

Vacuum breaker, pressure type means a vacuum breaker which is designed to be subject to static line pressure.

Virus means a virus of fecal origin which is infectious to humans by waterborne transmission.

Waterborne disease outbreak means the significant occurrence of acute infectious illness, epidemiologically associated with the ingestion of water from a public water system which is deficient in treatment as determined by the Director.

Water supply system means all sources of water and their surroundings under the control of one owner, and includes all structures, conduits, and appurtenances by means of which such water is collected, treated, stored, or delivered, except service pipes between street mains and buildings and the plumbing within or in connection with the buildings served.

**2-001.03 COVERAGE:** Title 179 applies to each public water system, unless the public water system meets all of the following conditions:

1. Consists only of distribution and storage facilities and does not have any collection and treatment facilities;
2. Obtains all of its water from, but is not owned or operated by, a public water system to which such standards apply;
3. Does not sell water to any person; and
4. Is not a carrier which conveys passengers in interstate commerce.

**2-001.04 RESPONSIBILITY:** The owner of each public water system, as defined in Title 179, must designate an individual, or individuals, who will be responsible for contact and communications with the Director in matters relating to system alteration and construction, monitoring and sampling, maintenance, operation, record keeping, and reporting, as required by law and these regulations. The owner of a public water system must promptly report any change in assigned responsibilities or designated individuals to the Director.