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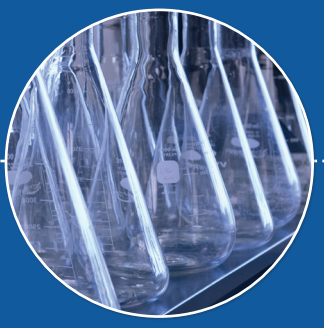
NSF/ANSI 437 - 2021

Glossary of Wastewater Technology Terminology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NSF International Standard /
American National Standard
for Wastewater Technology –

Glossary of Wastewater Technology Terminology

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Foreword[2]

The purpose of this glossary is to provide a single resource containing all of the technical terms used in all NSF Wastewater Technology Standards. With all NSF Wastewater Technology definitions located in one document, and not in the individual Wastewater Technology standards, greater consistency will be achieved, as changes to a given definition will affect all other Wastewater Technology standards simultaneously once adopted in the glossary. In addition, the Glossary of Wastewater Technology Terminology may serve as a reference tool within the industry.

This is the first published edition of the standard.

This standard was developed by the NSF Joint Committee on Wastewater Technology using the consensus process described by the American National Standards Institute.

This standard and the accompanying text are intended for voluntary use by certifying organizations, regulatory agencies, and/or manufacturers as a basis of providing assurances that adequate health protection exists for covered products.

Suggestions for improvement of this Standard are welcome. This Standard is maintained on a continuous maintenance schedule and can be opened for comment at any time. Comments should be sent to: Chair, Joint Committee on Wastewater Technology at standards@nsf.org, or c/o NSF International, Standards Department, PO Box 130140, Ann Arbor, Michigan 48113-0140, USA.

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NSF/ANSI Standard
for Wastewater Technology –

Glossary of Wastewater Technology Terminology

1 General

1.1 Purpose

This standard establishes definitions for wastewater technologies and related components.

1.2 Scope

Definitions covered by this standard consist of terminology related to wastewater technology, including terms describing equipment, materials, design, construction, and performance testing. This standard includes common definitions of terms used throughout NSF Wastewater Technology standards.

1.3 Measurement

Decimal and SI conversions provided parenthetically shall be considered equivalent. Metric conversions have been made according to IEEE/ASTM SI 10.

2 Normative references

The following documents contain requirements that, by reference in this text, constitute requirements of this standard. At the time of publication, the indicated editions were valid. All of the documents are subject to revision and parties are encouraged to investigate the possibility of applying the recent editions of the documents indicated below. The most recent published edition of the document shall be used for undated references.

NSF/ANSI 40, *Residential Wastewater Treatment Systems*

NSF/ANSI 41, *Non-liquid Saturated Treatment Systems*

NSF/ANSI 46, *Evaluation of Components and Devices Used in Wastewater Treatment Systems*

NSF/ANSI 245, *Residential Wastewater Treatment Systems – Nitrogen Reduction*

NSF/ANSI 350, *Onsite Residential and Commercial Water Reuse Treatment Systems*

NSF/ANSI 350-1, *Onsite Residential and Commercial Greywater Treatment Systems for Subsurface Discharge*

NSF/ANSI 360, *Wastewater Treatment Systems – Field Performance Verification*

NSF/ANSI 385, *Disinfection Mechanics*

NSF/ANSI 418, *Effluent Filters - Field Longevity Testing*

3 Definitions

3.1 30-day (30-d) average: The average of daily measurements over a 30-d period, calculated as the sum of all daily measurements taken during a 30-d period divided by the number of daily measurements taken during that 30-d period.

3.2 30-day (30-d) geometric mean (geo mean): A type of average, calculated as the n^{th} root of the product of *n* values (daily measurements) taken over a 30-d period.

3.3 7-day (7-d) average: The average of daily measurements over a 7-d period, calculated as the sum of all daily measurements taken during a 7-d period divided by the number of daily measurements taken during that 7-d period.

3.4 ammonia: The non-ionized form of reduced nitrogen (NH3).

3.5 appurtenances: Machinery, appliances, or auxiliary structures attached to a main structure to enable it to function, but not considered an integral part of it.

3.6 average: The sum of individual measurements taken during a given period divided by the total number of measurements taken during the same period.

3.7 biochemical oxygen demand (BOD_5): The concentration of oxygen (expressed as mg/L) used by microorganisms in the oxidation of organic matter during a 5-d period at a temperature of 20 °C (68 °F).

3.8 blackwater: Portion of the wastewater stream that originates from toilet fixtures, dishwashers, and food preparation sinks.

3.9 carbonaceous 5-day (5-d) biochemical oxygen demand ($CBOD_5$): The concentration of oxygen (expressed as mg/L) used by microorganisms in the non-nitrogenous oxidation of organic matter during a 5-d period at a temperature of 20 °C (68 °F).

3.10 chlorine disinfection: Process used to inactivate microorganisms by the addition of chlorine (such as in the form of sodium hypochlorite).

3.11 chlorine disinfection device: A chlorine dispenser which delivers chlorine into secondary treated wastewater and demonstrates microbiological organism reduction within the treated effluent.

3.12 chlorine dispenser: A device that applies chlorine or chlorine compounds to wastewater for the purpose of disinfecting wastewater.

3.13 chlorine product reservoir: A component of a chlorine dispenser or chlorine disinfection device used to store chlorine products until they are needed for use.

3.14 coliform bacteria: Group of bacteria that constitute most of the intestinal flora of warm-blooded animals (including the genera *Klebsiella* sp., *Enterobacter* sp., *Citrobacter* sp., or *Escherichia* sp.) and are used as water pollution indicator organisms.

3.15 coliform bacteria, fecal: Indicator bacteria common to the digestive systems of warm-blooded animals that is cultured in standard tests to indicate either contamination from sewage or the level of disinfection; generally measured as number of colonies/100 mL or most probable number (MPN).

3.16 coliform, total (TC): Measurement of water quality expressed as the number of colony-forming units (cfu) of coliform bacteria per unit volume.

3.17 commercial facilities: Businesses such as lodging establishments, business parks and campuses, shopping facilities, places of public assembly where no manufacturing, assembly, industrial or

food processing is involved, and laundering facilities for hospitals, hotels, rental uniforms, and other facilities likely to handle high amounts of soiling, or high-strength commercial cleaners. Wastewater (including greywater) from commercial facilities may exhibit moderately high concentrations of biochemical oxygen demand, chemical oxygen demand, total suspended solids and salts. Commercial facilities do not include multifamily residential applications.

3.18 commercial wastewater treatment system: An organized and coordinated system of components that functions to treat all wastewater generated by a commercial facility.

3.19 contact chamber: The tank or compartment that provides mixing and retention time for disinfection to occur.

3.20 contaminant: An undesirable substance in water. This substance can be organic or inorganic, soluble or insoluble, including some microbiological organisms.

3.21 corrosion resistant: A material that is capable of maintaining original surface characteristics under prolonged contact with the intended end-use environment and exposure to cleaning or sanitizing procedures according to the manufacturer's recommendations.

3.22 cottage systems (seasonal systems): Cottage systems are those systems that are intended for occasional use. Cottage settings can include vacation homes, weekend cottages, and cabins.

3.23 data day: Any day in which the required daily grab and composite samples have been collected and evaluated, establishing influent and effluent values.

3.24 data day (NSF/ANSI 40): Any day in which the daily composite sample has been collected and evaluated, establishing influent and effluent values for $CBOD_5$ and total suspended solids.

3.25 data quality indicators: Quantitative and qualitative measures of principal attributes, including precision, accuracy, representativeness, comparability, completeness, and sensitivity employed as a means of specifying criteria which, if achieved, will provide an indication that the resulting data are expected to meet the data quality objectives of the standard.

3.26 disinfection: The killing or inactivation of microbiological organisms by a chemical or physical process.

3.27 effluent: Liquid flowing out of a component or device.

3.28 electrical component: A component that requires electrical power in order to function as intended.

3.29 end product: The solid, liquid, and gaseous outputs from a component or device.

3.30 end products (liquid): The liquid output discharged from a non-liquid saturated treatment system.

3.31 end products (solid): The solid output discharged or removed from a non-liquid saturated treatment system.

3.32 *Escherichia coli* (*E. coli*): Member of the coliform bacteria group normally present in human and animal intestines; indicator organism for fecal contamination in water. See also *coliform bacteria*, *fecal*; *coliform bacteria, total*; and *indicator organism*.

3.33 feed rate: A flow rate from a chemical feed source to the wastewater.

3.34 flow capacity: The rated flow for the disinfection device measured in liters per day (LPD) (gallons per day [GPD]) as defined by the manufacturer.

3.35 flow rate: The flow through a disinfection device measured as liters per minute (LPM) (gallons per minute [GPM]).

3.36 geometric mean (geo mean): A type of average, calculated as the n^{th} root of the product of *n* values. For example, if ten measurements were taken, the geometric mean of those measurements would be the 10^{th} root of the product of those ten measurements.

3.37 gravity chlorine disinfection device: A chlorine disinfection device that relies on liquid passing through the device under gravity flow conditions to control the amount of chlorine delivered to the contact tank.

3.38 greywater: Wastewater from water bearing fixtures, including laundry, such as clothes washers and laundry sinks, and bathing, such as bathtubs, showers, or sinks, but excluding toilets, urinals, bidets, kitchen sinks, and dishwashers.

3.39 greywater treatment system: A system of components that functions to treat greywater generated by residences and commercial facilities.

3.40 irradiance: The measure of light "intensity" at the surface; the radiant power arriving at a point on a surface, per unit area (mW/cm^2).

3.41 maintenance contract: A written contract between the owner and an individual certified by the manufacturer and the responsible regulatory agency for assuring that the owner's system is maintained in accordance with the manufacturer's requirements and any applicable regulations.

3.42 manufactured product: A system of infiltration cell components or a single component that functions to disperse wastewater discharged from a septic tank. Manufactured product does not include naturally occurring or crushed coarse aggregate. Alternate terms include "product cell" and "product trench."

3.43 mechanical component: A moving part or device that does not contain a power source with an individual and distinct function to perform some type of work in the wastewater treatment process.

3.44 ozone diffusion device (ozone diffusion system): The mechanism that introduces ozone gas into water to be disinfected.

3.45 ozone disinfection: See *disinfection*.

3.46 ozone disinfection device (ozonation system): A device that produces ozone and introduces it into water for the purpose of disinfection and provides sufficient retention time to achieve disinfection.

3.47 ozone generator: A device that produces ozone gas.

3.48 permanently affixed: The method to attach a label as required in this Standard that will at minimum require a tool to remove (e.g., a sticker or plate). Twist ties and fasteners that are not UV stabilized are excluded from this definition.

3.49 population equivalent (p.e.): The average number of excrement events produced by an average adult person in one 24-h period. For this Standard, 1 p.e. is defined as 1.2 fecal events and 4 urine events per person per day.

3.50 population rating: *(1)* For day-use systems, it is the total number of uses or the combination of the daily total of urine and fecal events a system is designed to handle in a 24-h period. *(2)* For residential and cottage systems, it is the maximum number of people the system is designed to service in a 24-h period, without regard to the number of fecal events or the number of urine events.

3.51 pump dependent chlorine disinfection device: A chlorine disinfection device that relies on the operation of a pump to control the amount of chlorine delivered to the contact tank.

3.52 quality assurance project plan (QAPP): A written document that describes the implementation of quality assurance and quality control (QA/QC) activities during the life cycle of the project.

3.53 rated daily hydraulic capacity: The rated flow measured in liters per day (LPD) (gallons per day [GPD]) as defined by the manufacturer.

3.54 residential: Single-family dwellings, occupied on a year-round basis.

3.55 residential laundry facilities: Laundering for residences, and businesses that launder residential type laundry such as coin-operated facilities.

3.56 residential wastewater: Human body waste and liquid waste generated by the occupants of an individual residence.

3.57 residential wastewater treatment system: An organized and coordinated system of components that functions to treat wastewater generated by individual residences.

3.58 security fastener: A fastener that requires a tool other than a slotted or Philips driver for installation or removal.

3.59 specialized tools: Tools that are required to remove or install a security fastener.

3.60 stress recovery: The period of time beginning immediately following completion of a stress loading and ending with the final scheduled sample collection following that stress loading.

3.61 test plan: A written document prepared to describe the procedures for conducting a test according to the requirements of this standard at a particular field site. At a minimum, and where applicable, the test plan includes detailed instructions for sample and data collection, sample handling and preservation, and quality assurance and quality control requirements relevant to the particular field site.

3.62 testing organization: One or more independent, third-party testing organizations that are qualified by and under contract to the verification organization to implement the test plan, including documentation and test reporting to the verification organization.

3.63 third-party testing: Testing conducted by an independent party under contract to the verification organization to test a particular product pursuant to an approved test plan, with an obligation to report all results. Third-party testing generally represents independent verification of a product to a published standard or protocol.

3.64 total nitrogen: The sum of the total Kjeldahl nitrogen (TKN), nitrite (NO_2) and nitrate (NO_3) in a sample, expressed as mg/L as N (nitrogen).

3.65 total process: A process receiving raw wastewater and discharging a treated effluent. Types of total processes may be classified as biological, chemical, physical / mechanical, or any combination of these processes.

3.66 total suspended solids (TSS): The quantity of solids (expressed as mg/L) that can be readily removed from a well-mixed sample with standard laboratory filtering procedures.

3.67 treatment device: A wastewater treatment system designed to provide influent test water to the disinfection device under test (the treatment device effluent will be the disinfection device influent). The treatment device is part of the test system, not part of the system undergoing certification testing.

3.68 unit process: A single step in the total treatment process (comminution, screening, aeration, sedimentation, chemical precipitation, vacuum filtration, centrifugation, incineration, chlorination, etc.).

3.69 urban water use

3.69.1 restricted urban water use (indoor and outdoor): Treated water acceptable for use in toilet / urinal flushing (indoor) and subsurface irrigation and dispersal (outdoor).

3.69.2 unrestricted urban water use (outdoor): Treated water acceptable for use in surface irrigation and subsurface irrigation, including irrigation of edible crops, provided that the edible portion does not come in direct contact with the treated water.

3.70 upset: An exceptional incident in which there is unintentional and temporary noncompliance with designated effluent limitations because of factors beyond the reasonable control of the manufacturer.

3.71 UV disinfection: Disinfection of wastewater by exposure to sufficient intensity and sufficient contact with UV light radiation (254-nm germicidal wavelength light).

3.72 UV disinfection device: A device used to irradiate secondary treated wastewater with UV light for sufficient exposure time and with sufficient intensity to reduce microbiological organisms to concentrations meeting this standard.

3.73 UV dose: The product of irradiance at 254 nm and time over a given area expressed as mJ/cm^2.

3.74 UV sensor: A device used to measure UV irradiance.

3.75 UV transmittance: The fraction of UV light at 254 nm remaining after passage through a 1.0-cm (0.4-in) path length of a sample of water measured in percent (%).

3.76 verification organization: The organization responsible for oversight of the testing organization in preparation and completion of testing, and in preparation, review, and completion of the final report. The verification organization shall have demonstrated experience in the evaluation of residential wastewater treatment systems, development of product test protocols, quality assurance / quality control practices and procedures, and management of field studies and evaluations.

3.77 wash load: The discharge from a residential clothes washer or clothes washer simulator. A wash load consists of one wash and two rinse cycles completed within 45 min. Powdered laundry detergent and powdered nonchlorine bleach are included in each wash load. The detergent and bleach are added at the rates specified on the detergent and bleach packaging for a single large wash load. Each cycle consists of 45.4 ± 3.8 L (12 ± 1 gal) of water. Wash and rinse temperature shall be between 20 and 30 °C (68 and 86 °F).

3.78 wastewater: The spent or used water that contains dissolved and suspended matter.

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Standards[3]

The following standards established and adopted by NSF as minimum voluntary consensus standards are used internationally:

Std. #	Standard title
2	Food Equipment
3	Commercial Warewashing Equipment
4	Commercial Cooking, Rethermalization, and Powered Hot Food Holding and Transport Equipment
5	Water Heaters, Hot Water Supply Boilers, and Heat Recovery Equipment
6	Dispensing Freezers
7	Commercial Refrigerators and Freezers
8	Commercial Powered Food Preparation Equipment
12	Automatic Ice Making Equipment
13	Refuse Processors and Processing Systems
14	Plastics Piping System Components and Related Materials
18	Manual Food and Beverage Dispensing Equipment
20	Commercial Bulk Milk Dispensing Equipment
21	Thermoplastic Refuse Containers
24	Plumbing System Components for Recreational Vehicles
25	Vending Machines for Food and Beverages
29	Detergent and Chemical Feeders for Commercial Spray-Type Dishwashing Machines
35	High Pressure Decorative Laminates for Surfacing Food Service Equipment
37	Air Curtains for Entranceways in Food and Food Service Establishments
40	Residential Wastewater Treatment Systems
41	Non-liquid Saturated Treatment Systems
42	Drinking Water Treatment Units – Aesthetic Effects
44	Residential Cation Exchange Water Softeners
46	Evaluation of Components and Devices Used in Wastewater Treatment Systems
49	Biosafety Cabinetry – Design, Construction, Performance, and Field Certification
50	Equipment and Chemicals for Swimming Pools, Spas, Hot Tubs, and Other Recreational Water Facilities
51	Food Equipment Materials
52	Supplemental Flooring
53	Drinking Water Treatment Units – Health Effects
55	Ultraviolet Microbiological Water Treatment Systems
58	Reverse Osmosis Drinking Water Treatment Systems
59	Mobile Food Carts
60	Drinking Water Treatment Chemicals – Health Effects
61	Drinking Water System Components – Health Effects
62	Drinking Water Distillation Systems
140	Sustainable Carpet Assessment
169	Special Purpose Food Equipment and Devices
170	Glossary of Food Equipment Terminology
173	Dietary Supplements
177	Shower Filtration Systems – Aesthetic Effects

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Std. #	Standard title
184	Residential Dishwashers
223	Conformity Assessment Requirements for Certification Bodies that Certify Products Pursuant to NSF/ANSI/CAN 60: Drinking Water Treatment Chemicals – Health Effects
244	Drinking Water Treatment Units Supplemental Microbiological Water Treatment Systems – Filtration
245	Wastewater Treatment Systems – Nitrogen Reduction
305	Personal Care Products Containing Organic Ingredients
321	Goldenseal Root (*Hydrastis canadensis*)
330	Glossary of Drinking Water Treatment Unit Terminology
332	Sustainability Assessment for Resilient Floor Coverings
336	Sustainability Assessment for Commercial Furnishings Fabric
342	Sustainability Assessment for Wallcovering Products
347	Sustainability Assessment for Single-Ply Roofing Membranes
350	Onsite Residential and Commercial Water Reuse Treatment Systems
350-1	Onsite Residential and Commercial Greywater Treatment Systems for Subsurface Discharge
358-1	Polyethylene Pipe and Fittings for Water-Based Ground-Source “Geothermal” Heat Pump Systems
358-2	Polypropylene Pipe and Fittings for Water-Based Ground-Source “Geothermal” Heat Pump Systems
358-3	Cross-linked Polyethylene (PEX) Pipe and Fittings for Water-based Ground-Source (Geothermal) Heat Pump Systems
358-4	Polyethylene of Raised Temperature (PE-RT) Tubing and Fittings for Water-based Ground-Source (Geothermal) Heat Pump Systems
359	Valves for Cross-linked Polyethylene (PEX) Water Distribution Tubing Systems
360	Wastewater Treatment Systems – Field Performance Verification
363	Good Manufacturing Practices (GMP) for Pharmaceutical Excipients
372	Drinking Water Treatment System Components – Lead Content
375	Sustainability Assessment for Water Contact Products
385	Disinfection Mechanics
391.1	General Sustainability Assessment Criteria for Professional Services
401	Drinking Water Treatment Units – Emerging Compounds / Incidental Contaminants
416	Sustainability Assessment for Water Treatment Chemical Products
418	Effluent Filters – Field Longevity Testing
419	Public Drinking Water Equipment Performance – Filtration
426	Environmental Leadership and Corporate Social Responsibility Assessment of Servers
437	Glossary of Wastewater Technology Terminology
455-1	Terminology for the NSF 455 Portfolio of Standards
455-2	Good Manufacturing Practices for Dietary Supplements
455-3	Good Manufacturing Practices for Cosmetics
455-4	Good Manufacturing Practices for Over-the-Counter Drugs
456	Vaccine Storage
457	Sustainability Leadership Standard for Photovoltaic Modules and Photovoltaic Inverters
505	Conformity Assessment Requirements for Certification Bodies that Certify Pool Chemicals Pursuant to NSF/ANSI/CAN 50: Equipment and Chemicals for Swimming Pools, Spas, Hot Tubs, and Other Recreational Water Facilities
600	Health Effects Evaluation and Criteria for Chemicals in Drinking Water
14159-1	Hygiene Requirements for the Design of Meat and Poultry Processing Equipment
14159-2	Hygiene Requirements for the Design of Hand-held Tools Used in Meat and Poultry Processing Equipment
14159-3	Hygiene Requirements for the Design of Mechanical Belt Conveyors Used in Meat and Poultry Processing Equipment

***THE HOPE OF MANKIND** rests in the ability of man to define and seek out the environment which will permit him to live with fellow creatures of the earth, in health, in peace, and in mutual respect.*