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Water reuse — Vocabulary

Réutilisation de l'eau — Vocabulaire

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This document was prepared by Technical Committee ISO/TC 282, *Water reuse*.

This second edition cancels and replaces the first edition (ISO 20670:2018), which has been technically revised.

The main changes are as follows:

— certain definitions modified;

— addition of entries 3.1, 3.9, 3.16, 3.31, 3.34, 3.35, 3.51, 3.52, 3.54, 3.55, 3.56, 3.58, 3.61, 3.62, 3.65, 3.67, 3.70, 3.78, 3.82, 3.97, 3.99, 3.100, 3.101, 3.102 and 3.103.

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Introduction

Water reuse is the use of treated wastewater which, in turn, can have as its source surface water, groundwater, desalinated brackish water, desalinated seawater and reuse water, which can include treated wastewater, greywater, rainwater and stormwater.

With economic development, climate change, increases in population and rapid urbanization, water has become a strategic resource, especially in arid and semi-arid regions. Water shortages are considered as one of the most serious threats to sustainable development of society. Although conservation can reduce per capita demand, the remaining supplies can be insufficient to meet overall water demand needs. To address these shortages, reclaimed water is increasingly being considered for use to satisfy water demands that do not require potable water quality, and this strategy has proven useful in increasing the reliability of long-term water supplies in many water-scarce areas of the world.

Reclaimed water is used to satisfy a significant proportion of the water demands in rural and urban areas in many countries, such as agricultural irrigation, landscape irrigation, industrial reuse, groundwater recharge, toilet and urinal flushing, firefighting and fire suppression, ornamental water features and various other urban uses, including direct and indirect potable reuse.

There is a rapidly growing global market for water reuse, which inevitably demands International Standards. Today, many regions of the world face water shortages. The reality of water reuse and the lack of uniform and consistent water quality standards are raising concerns for human health and the environmental and societal implications of water reuse across the world. Consequently, there is a growing need for international standardization from suppliers, users, regulators and all stakeholders. A coherent approach to the description of water reuse activities and the use of water reuse terminology from this document will be of benefit to all users and stakeholders.

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The objective of this document is to ensure a coherent approach to the description of water reuse activities and the use of water reuse terminology. Its purpose is to foster mutual understanding common to the different stakeholders.

An important new concept in water reuse is the “fit for purpose” approach, which entails the production of reclaimed water to a quality that meets the needs of the intended end uses.

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This document presents terms and definitions in the following areas:

— water reuse of any kind and for any purpose;

— treated wastewater use for irrigation purposes;

— water reuse in urban areas;

— risk and performance evaluation of water reuse systems;

— water reuse for industrial purposes.

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Water reuse — Vocabulary

1 Scope

This document defines terms and definitions commonly used in water reuse standards. It is applicable to all types and sizes of water reuse facilities and systems and to all types of stakeholders involved in water reuse.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

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3.1
advanced oxidation process
AOP
process (3.70) that generates hydroxyl radicals in sufficient quantity to remove organics by oxidation

3.2
advanced treatment
treatment for the removal of total dissolved solids and/or trace *constituents* (3.17) as required for specific water reuse applications [e.g. activated carbon adsorption, reverse osmosis and *advanced oxidation processes* (3.1)]

3.3
agriculture
science or practice of farming, including cultivation of the soil for the growing of crops and the rearing of animals to provide food or other products

3.4
aquifer
subsurface layer or layers of rock or other geological strata of sufficient porosity and permeability to allow either a significant flow of groundwater or the abstraction of significant quantities of groundwater

[SOURCE: Directive 2000/60/EC, Article 2, 11]

3.5
augmentation
process (3.70) of using *reclaimed water* (3.81) to increase the amount of water flowing through a surface body of water or *aquifer* (3.4) (i.e. reservoir, lake, river, stream, wetland and/or groundwater basin) for beneficial purposes

3.6
background water
freshwater (3.36) supplied for domestic, institutional, commercial and industrial use, from which *wastewater* (3.105) is generated

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3.7
barrier
means that reduces or prevents health and environmental *risks* (3.83) by preventing contact with the treated *wastewater* (3.105) and/or by improving its quality

3.8
beneficial use
water use for overall advantages, which include environmental health and wellbeing to promote sustainability

EXAMPLE Municipal water supply, agricultural and urban irrigation, industrial applications, navigation, stream *augmentation* (3.5) for fish and wildlife habitat enhancement, toilet and urinal flushing, recreational water contact.

3.9
biodosimetry
procedure of measuring the UV reduction equivalent dose of a specific microorganism in a UV unit and comparing the results to the known UV dose-response curve of this microorganism determined by bioassay (typically collimated beam methods)

3.10
biofilm
surface slime caused by growth of surface-attached microorganisms within their extracellular polymeric substances

3.11
biological stability
maintaining microbial water quality from the point of water production up to the point of consumption

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3.12
blackwater
wastewater (3.105) originating from sanitary sources (e.g. toilets, urinals and bidets), as well as drainage from food preparation and utensil-cleaning activities (e.g. kitchen sinks and dishwashers)

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3.13
brackish water
water containing dissolved solids at a concentration higher than acceptable standards for intended use

Note 1 to entry: The concentration of total dissolved solids in brackish water can vary from 1 000 mg/l to 10 000 mg/l. Brackish water is less saline than sea water [1 000 to 10 000 mg/l of total dissolved solids for brackish vs up to 35 000 mg/l for sea water].

Note 2 to entry: The concentration of total dissolved solids of many brackish waters can vary considerably over space and/or time.

Note 3 to entry: See Reference [19].

[SOURCE: ISO 14046:2014, 3.1.2, modified — Definition and Note 1 to entry modified; Note 3 to entry added.]

3.14
centralized water reuse system
water reuse system typically applied on a large scale, such as municipal level, and including the entire *reclaimed water* (3.81) source, treatment, distribution, storage and monitoring components to produce a final treated effluent for its intended uses

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3.15
chemical stability
tendency of the treated water to possibly have reactions during the water distribution, storage or use processes, and the potential scaling, fouling and corrosion effects on pipes and equipment to which the water is exposed

Note 1 to entry: See Reference [18].

Note 2 to entry: Examples of reactions include deposition of calcium carbonate and the formation of *disinfection* (3.24) by-products.

3.16
concentrate
stream exiting a membrane module containing the constituents rejected by the membrane

Note 1 to entry: Concentrate stream contains increased concentrations of *constituents* (3.17) over the feed stream due to the accumulation of rejected constituents by membranes in the feed stream.

3.17
constituents
individual or group of physical, chemical or biological substances or matter present in water that are the target of removal, reduction or transformation in the *treatment process* (3.94)

3.18
contaminant
physical, chemical, biological or radiological substance or matter in water

Note 1 to entry: The presence of contaminants does not necessarily indicate that the water poses a *health risk* (3.41).

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3.19
critical control point
CCP
point, step or procedure at which control can be applied and is essential to prevent or eliminate a *hazard* (3.38) or reduce it to an acceptable level

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[SOURCE: ISO 5667-13:2011, 3.3, modified — Abbreviated term “CCP” added.]

3.20
cross-connection
actual or potential connection between a potable water system and any source or system that can or does contain *non-potable water* (3.63) or other substances that pose a public *health risk* (3.41)

3.21
decentralized water reuse system
water reuse system applied on a small scale

EXAMPLE Water reuse system which works offline from a centralized system, water reuse system at private level. In this context, decentralized water reuse systems refer to specialized reuse projects for individual residential homes, clusters of homes or commercial or institutional facilities.

3.22
desalination
partial or near-complete removal of ionic species from seawater or *brackish water* (3.13) and treated wastewater, usually to make it drinkable or usable as processing water, cooling water or irrigation water

3.23
direct reuse
production and supply of *reclaimed water* (3.81) to a *distribution system* (3.25) via pipelines, storage tanks and other infrastructure for reuse purposes

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3.24
disinfection
process (3.70) that destroys, inactivates or removes microorganisms until an appropriate level is reached

3.25
distribution system
piping network required to deliver water from a transmission pipeline to the points of connection to users' plumbing systems

Note 1 to entry: Pumping stations are included as part of the distribution system.

3.26
environment
surroundings in which an *organization* (3.64) operates, including air, water, land, other natural resources, flora, fauna, humans and their interrelationships

Note 1 to entry: Surroundings in this context range from the environment within an *organization* (3.64) to the global system in the particular geographical area that can be impacted by *water reuse* (3.109).

Note 2 to entry: Surroundings can be described in terms of biodiversity, ecosystems, climate or other characteristics.

[SOURCE: ISO 14001:2015, 3.2.1, modified — Note 1 to entry modified.]

3.27
environmental aspect
element or characteristic of an activity, product or service that interacts or can interact with the *environment* (3.26)

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Note 1 to entry: Environmental aspects can cause *environmental impacts* (3.28). In the case of *water reuse* (3.109), they can have either beneficial impacts or adverse impacts.

[SOURCE: ISO 14001:2015, 3.2.2, modified — Definition and Note 1 to entry revised; Note 2 to entry deleted.]

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3.28
environmental impact
change to the *environment* (3.26), whether adverse or beneficial, wholly or partially resulting from one or more *environmental aspects* (3.27)

Note 1 to entry: As a rule, *water reuse* (3.109) has beneficial environmental impacts, but potential adverse impacts can also occur depending on *reclaimed water* (3.81) quality and the sensitivity of the *environment* (3.26) of concern.

[SOURCE: ISO 14001:2015, 3.2.4, modified — Definition revised; Note 1 to entry added.]

3.29
exposure assessment
estimation (qualitative or quantitative) of the magnitude, frequency, duration, route and extent of exposure to one or more contaminated media

3.30
filtration
physical separation of solid particles from water by passing the water through a physical porous *barrier* (3.7) to trap and separate suspended solids from the water

Note 1 to entry: Examples of *barriers* (3.7) include media bed, surface or depth filter, screen and membrane.

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