Terminologie hydrologique et vocabulaire de langue étrangère

Lexique hydrologique pour le 2e cycle (càd. pour l'enseignant/e)

Absorption

On désigne par absorption la dissolution de substances gazeuses dans des liquides et solides conformément aux principes physiques.

Adoucissement

L'adoucissement de l'eau permet de réduire sa dureté. A cet effet, les ions alcalino-terreux magnésium et calcium sont extraits de l'eau afin d'éviter la formation de tartre qui risquerait d'endommager les instruments ou les tuyauteries. Un échangeur d'ions est souvent employé pour adoucir l'eau.

Adsorption

Il s'agit de la liaison de particules chargées aux groupes chimiquement actifs d'une surface de matière solide. Ce principe physique est appliqué lors de l'utilisation de charbon actif.

Aérobiose

Principe des micro-organismes aérobies nécessitant l'oxygène pour vivre et se développer.

Alcalinité

L'alcalinité désigne la capacité de l'eau de neutraliser les acides. Cette propriété dépend entre autres de la concentration de carbonate, de bicarbonate et d'hydroxydes dans l'eau. L'unité de mesure de l'alcalinité est le milligramme (mg), la substance mesurée est le carbonate de calcium contenu dans un litre d'eau (mg/l $CaCO_3$).

Anaérobiose

Le développement des micro-organismes anaérobies ne nécessite pas d'oxygène; ils sont capables d'exister dans un environnement entièrement dépourvu d'oxygène.

Anion

Un anion est un ion dont la charge est négative, ce qui signifie qu'il possède un électron additionnel.

Baisse de pression

Une baisse de pression dans les tuyauteries est provoquée par une perte en énergie du liquide transporté. Les causes possibles sont la viscosité du liquide ou la forme de la tuyauterie.

Bioaccumulation

C'est un procédé de concentration de substances dans des organismes vivants. Dans la chaîne alimentaire, cet « enrichissement » a été observé notamment pour les métaux lourds.

Biocide

Les biocides sont des substances chimiques capables d'anéantir toute forme de vie biologique. Il s'agit entre autres de bactéricides, d'insecticides et de pesticides, dont les désignations révèlent les organismes visés par leur utilisation.

Biopellicule

Une biopellicule est une couche formée de micro-organismes se trouvant dans une matrice organique (p.ex. une couche de boue) qui se constitue en surface en liaison avec de l'eau. Une introduction d'agents pathogènes dans la biopellicule peut préserver les micro-organismes d'une concentration de biocides qui risquerait sans cela de provoquer leur disparition ou leur inhibition si les micro-organismes pathogènes circulaient librement dans l'eau.

Cation

Un cation est un ion doté d'une charge électrique positive.

Charbon actif

Le charbon actif constitue une substance d'adsorption efficace pour le traitement des eaux, notamment en ce qui concerne les propriétés organoleptiques de celles-ci (l'odeur, le goût et la couleur). Le charbon actif est disponible sous forme de granules et de poudre. Certaines variétés sont recyclables après l'usage. Les systèmes de filtrage fonctionnent à base de charbon actif.

Coagulant

Substance chimique ou organique favorisant la coagulation de colloïdes en suspension. Les coagulants les plus utilisés sont le sulfate d'aluminium, l'aluminate de soude et le chlorure ferrique.

Coagulation

Il s'agit d'un mécanisme de floculation caractérisé par l'inactivation des forces répulsives entre les colloïdes en suspension dans l'eau. Cela permet de faire agglomérer ces particules, un procédé qu'il est possible d'accélérer par l'ajout d'un coagulant approprié.

Colloïde

Les colloïdes sont des particules extrêmement petites à dispersion homogène dans l'eau, dont le diamètre se situe entre 1 et 100 nanomètres. Comme il est impossible d'éliminer ces particules par le biais de la sédimentation ou de la flottation, on a recours à la coagulation, la floculation et la précipitation consécutive pour la purification des eaux contenant des colloïdes.

Conductivité

On désigne par conductivité la capacité de l'eau plus ou moins élevée à conduire de l'électricité. Elle dépend de la concentration en ions et de la température de l'eau.

Cycle hydrologique

Le flux de l'eau sur la Terre est constant et circulaire, traversant plusieurs étapes. L'eau contenue dans les nuages provient pour la plus grande partie des océans: elle s'évapore à la surface de la mer, des lacs et des fleuves, effet dû à l'énergie solaire. Puis elle rejoint l'atmosphère où elle se refroidit et forme des nuages. Lorsque ceux-ci sont saturés en eau, l'eau retombe sous forme de précipitations.

Alors, il existe deux possibilités: soit les précipitations atteignent des sols imperméables et affluent vers un cours d'eau récepteur pour ensuite rejoindre la mer. Par contre, si la surface est perméable à l'eau, celle-ci pénètre les sols pour former éventuellement une nouvelle nappe phréatique. L'eau souterraine ainsi engendrée peut ensuite parcourir des distances énormes avant de ressurgir sous forme de source.

DBO/BOD

La demande biochimique en oxygène (BOD en anglais) est la quantité d'oxygène nécessaire à un micro-organisme pour résorber une substance organique contenue dans une eau par aérobiose pour donner du dioxyde de carbone et de l'eau. Une DBO très élevée risque de provoquer un manque d'oxygène dans l'eau, ce qui entraînerait un renversement des eaux.

DCO/COD

La demande chimique en oxygène (COD en anglais) est la quantité d'oxygène nécessaire à l'oxydation chimique de substances organiques et anorganiques contenues dans l'eau. L'agent oxydant le plus souvent utilisé est le dichromate de potassium ($K_2Cr_2O_7$).

Dioxyde de chlore

Le ClO_2 ou dioxyde de chlore est un agent oxydant très fort. Il s'agit d'un gaz instable dont la fabrication peut s'effectuer de deux manières différentes. La première possibilité est la production du dioxyde de chlore sur place moyennant une procédure spéciale, la deuxième est la commande de la substance sous une forme stabilisée (SCD).

Distillation

La distillation de l'eau «imite» le procédé d'évaporation naturel. L'eau destinée à la distillation est portée à ébullition et toutes les particules en solution et les substances nocives s'en évaporent. De nombreuses procédures industrielles ont recours à l'eau distillée.

Déminéralisation

L'eau déminéralisée ne contient pas d'ions minéraux en solution. Des échangeurs d'ions sont utilisés pour obtenir ce résultat.

Désinfection

Procédure de traitement des eaux appliquée dans le but de supprimer les micro-organismes contenus dans l'eau afin de minimiser le risque d'infection des hommes par l'effet d'organismes pathogènes.

Dureté de l'eau

La dureté de l'eau dépend de sa concentration en ions calcium et magnésium. Plus cette concentration est élevée, plus l'eau est dure. La cuisson d'une eau dure entraîne la précipitation de calcaire ou de tartre ($CaCO_3$). La dureté de l'eau s'exprime en degré français (°fH): 1 °fH = 10 mg/l $CaCO_3$.

Eau de surface

Il s'agit d'eaux situées à la surface de la terre, qu'elles soient dormantes ou en courants: les mares, fleuves, ruisseaux, lacs et océans.

Eau minérale

L'eau minérale contient une grande quantité de sels minéraux en solution, dont le calcium, le magnésium, le sodium et le fer. Elle est désignée par eau minérale lorsqu'elle contient au minimum 250 ppm de sels minéraux en solution. Sa particularité: elle présente une composition chimique toujours constante à sa source.

Eau potable

Une eau est considérée comme potable lorsque sa consommation ne représente aucun risque pour la santé de l'être humain.

Eau ultrapure

Comme son nom l'indique, l'eau ultrapure ne contient pratiquement pas de substances organiques ou anorganiques en solution.

Eaux usées

On distingue deux différents types d'eaux usées: celles provenant de procédés industriels (eaux de lessivage, de réfrigération, etc.) d'une part et les eaux usées communales provenant d'une utilisation ménagère de l'eau d'autre part. Des techniques de traitement différentes sont appliquées à ces deux types d'eaux usées.

Echangeur d'ions

Les échangeurs d'ions sont des corps insolubles capables d'absorber des cations ou des anions provenant d'une solution électrolyte et de les échanger contre une quantité équivalente d'autres ions possédant une charge du même signe. Ils sont employés pour adoucir l'eau, éliminer les métaux lourds des eaux usées et pour la déminéralisation.

Ecoulement

Vidange d'eaux industrielles usées non contrôlée entraînant une pollution de l'environnement plus ou moins importante.

Emulsion

Il s'agit de la dispersion d'un liquide dans un autre lorsque les deux sont non miscibles (ex.: le lait est une émulsion huile dans eau).

Filtration

La filtration est un procédé de purification physique servant à la séparation de matières solides et de solutions aqueuses. Un matériau poreux est utilisé pour la filtration, car il retient des particules d'un diamètre donné.

Floculation

La première étape de la floculation est la coagulation. Afin d'obtenir une précipitation efficace des colloïdes dispersés de manière homogène, il faut former des flocons aussi grands que possibles à partir des particules en présence. La floculation est favorisée par l'ajout de floculants minéraux, organiques, artificiels ou naturels. L'hydroxyde de calcium, les sels de fer et d'aluminium sont des floculants souvent utilisés.

Hypochlorite

L'hypochlorite (ClO-) est une substance efficace utilisée pour la purification et la désinfection d'eau des piscines. Cette substance est extraite d'un sel (NaClO) dont l'exploitation a lieu aux Pays-Bas. L'électrolyse permet d'obtenir l'hypochlorite à partir de ce sel.

Légionellose

La légionellose est une maladie provoquée par une bactérie appelée Legionella pneumophilla. L'origine naturelle de cette bactérie est l'eau, notamment des eaux dormantes d'une température relativement élevée (> 40 °C). Ce type de pneumonie peut être mortelle, en particulier pour les personnes âgées ou fragiles.

Métaux lourds

Les métaux lourds se caractérisent par des nombres atomiques très élevés dans la table périodique des éléments. Ceux présentant les plus grands dangers pour la santé sont le mercure, le plomb, le cadmium, le chrome, le cuivre et le zinc, dont la présence est très courante. Leur propriété est de se concentrer dans les organismes et donc aussi dans la chaîne alimentaire. Le système nerveux, le sang et la moelle osseuse sont les parties de l'organisme les plus menacées par les métaux lourds, qui sont pour la plupart cancérigènes.

Microfiltration

Ce type de filtration est appliqué à des particules mesurant entre 0,1 et 10 µm. La pression ambiante de la microfiltration se situe normalement entre 0,5 et 5 bars. Elle sert notamment au traitement des eaux usées issues de fermentation.

Milligramme par litre (mg/l)

C'est une unité de mesure beaucoup utilisée en rapport avec les techniques de traitement des eaux. 1 mg/l correspond à 1 ppm.

Nanofiltration

La nanofiltration est une technique de filtration employée lorsque la microfiltration ou l'ultrafiltration ne sont ni utiles ni efficaces. Parmi les exemples d'application de la nanofiltration, citons la déminéralisation ou le dessalement de l'eau de mer.

Nappes phréatiques

Il s'agit d'eaux (souterraines) provenant de l'infiltration des précipitations atmosphériques et remplissant les cavités souterraines dans le sol et les roches pour former une nappe.

Osmose inverse

Ce procédé de purification consiste à contraindre l'eau contre une membrane afin de retenir les impuretés dans le matériau de filtration. Cette membrane peut présenter une perméabilité réduite au point d'être capable de séparer presque toutes les impuretés de l'eau, telles que les molécules de sels, les bactéries et même les virus.

Oxydation

L'oxydation est la fusion d'oxygène avec d'autres éléments ou liaisons. Cédant des électrons, une substance oxydée est présente sous sa forme réduite. L'oxydation joue un rôle important dans les organismes vivants car elle leur permet de générer de l'énergie. Un type très courant et visible d'oxydation est la rouille (oxydation du fer).

Oxydation biologique aérobie

Une oxydation biologique est appelée aérobie lorsque des micro-organismes aérobies sont utilisés dans une méthode de traitement des eaux afin de réduire les liaisons polluantes, la quantité de substances organiques ou la DBO.

Oxygénation

Il s'agit de l'ajout d'air à l'eau afin de garantir un échange gazeux optimal entre l'oxygène atmosphérique et l'eau. L'oxygénation s'emploie dans le but d'éliminer des substances gazeuses indésirables (CO_2, H_2S), d'obtenir une bonne saturation d'oxygène dans l'eau et de provoquer l'oxydation de liaisons anorganiques telles que le fer et le manganèse. Il existe plusieurs systèmes d'oxygénation des eaux.

Ozone

Un gaz (O_3) incolore dans toutes les concentrations industrielles. Il possède une odeur piquante caractéristique souvent associée aux étincelles électriques et aux tempêtes. En général, l'odorat humain détecte sa présence lorsque sa concentration se situe entre 0,02 et 0,05 ppm. Il s'agit d'un oxydant puissant que l'industrie utilise depuis longtemps pour la désinfection. L'ozone est produite moyennent des générateurs dédiés.

pH

Le pH permet de mesurer l'activité des ions d'hydrogène. Il est défini comme le logarithme décimal négatif de la concentration d'ions d'hydrogène dans l'eau. Il joue un rôle très important dans un grand nombre de procédés et de réactions chimiques liés à la purification des eaux.

ppm (parts per million)

Il s'agit d'une unité de mesure couramment employée pour exprimer surtout les concentrations en substances polluantes (1 ppm = 1 mg/l).

Précipitation

La précipitation désigne la transition de matières en suspension dans l'eau vers une forme insoluble.

«Stripping»

Ce procédé chimique d'extraction au gaz consiste à «mettre à l'air» des substances volatiles pour les extraire d'une solution aqueuse et les faire passer à la phase vapeur.

Traitement) physico-chimique

Le traitement physico-chimique des eaux et des eaux usées permet de séparer les solides, les huiles et les graisses de l'eau. Différentes techniques sont employées pour atteindre ce but (filtration, coagulation, flottation, centrifugation et précipitation). Cependant, le traitement physico-chimique ne représente qu'une étape intermédiaire normalement suivie d'une étape de traitement biologique.

Turbidité

La turbidité désigne l'opacité de l'eau (signifiant donc une translucidité amoindrie). Cette opacité peut être provoquée par la présence de particules et de colloïdes en suspension dans l'eau (p.ex. la boue, le limon, les micro-organismes, etc.). La turbidité fait partie des paramètres importants pris en compte par les normes servant à déterminer la qualité d'une eau potable.

Ultrafiltration

Il s'agit d'une méthode de filtration ayant recours à une membrane et à une pression élevée (env. 10 bars). Elle permet de retenir des particules mesurant entre 0,005 et 0,10 µm. Cette technique sert à éliminer les micro-organismes, les macromolécules et les émulsions huile-eau.

UV

Les rayons UV servent à désinfecter l'eau. L'exposition de micro-organismes aux rayons UV modifie leur noyau cellulaire, ce qui empêche les cellules de se diviser et donc de se reproduire.

Viscosité

La viscosité est utilisée pour décrire la capacité d'écoulement de liquides, et son unité de mesure est le poiseuille (= Pa·s). La viscosité dynamique autorise le calcul de grandeurs telles que le nombre de Reynolds qui permet de déterminer si l'écoulement est laminaire ou turbulent.

Anglais

Absolute

The micron rating of a filter. It indicates that any particle larger than a specific size will be trapped within the filter.

Absorption

When a solid takes up molecules into its structure.

Acid aerosol

Very small liquid or solid particles that are acidic and are small enough to become airborne.

Acid neutralizing capacity

Measure of the buffering capacity of water; the ability of water to resist changes in pH.

Acid rain

Rain that has a flamboyantly low pH, due to contact with atmospheric pollutants such as sulphuric oxides.

Acidity

The quantitative capacity of water to neutralize a base, expressed in ppm or mg/L calcium carbonate equivalent. The number of hydrogen atoms that are present determines this. It is usually measured by titration with a standard solution of sodium hydroxide.

Activated coal

This is the most commonly used adsorption medium, produced by heating carbonaceous substances or cellulose bases in the absence of air. It has a very porous structure and is commonly used to remove organic matter and dissolved gases from water. Its appearance is similar to coal or peat. Available in granular, powder or block form; in powder form it has the highest adsorption capacity.

Activated sludge

Oxygen dependent biological process that serves to convert soluble organic matter to solid biomass, that is removable by gravity or filtration.

Active groups

Really fixed ions bolted on to the matrix of an ion exchanger. Each active group must always have a counter-ion of opposite charge near itself.

Adsorption

Separation of liquids, gases, colloids or suspended matter from a medium by adherence to the surface or pores of a solid.

Advanced oxidation process

One of several combination oxidation processes. Advanced chemical oxidation processes use (chemical) oxidants to reduce COD/BOD levels, and to remove both organic and oxidisable inorganic components. The processes can completely oxidise organic materials to carbon dioxide and water, although it is often not necessary to operate the processes to this level of treatment.

A wide variety of advanced oxidation processes are available:

- Chemical oxidation process using hydrogen peroxide, ozone, combined ozone & peroxide, hypochlorite, Fenton's reagent, etc.

- Ultra-violet (UV) enhanced oxidation such as UV/ ozone, UV/ hydrogen, UV/air

- Wet air oxidation and catalytic wet air oxidation (where air is used as the oxidant)

More info on advanced oxidation

Advanced water treatment

The level of water treatment that requires an 85-percent reduction in pollutant concentration, also known as tertiary treatment.

Advanced Wastewater Treatment

Any treatment of sewage water that includes the removal of nutrients such as phosphorus and nitrogen and a high percentage of suspended solids.

Aerated lagoon

A water treatment pond that speeds up biological decomposition of organic waste by stimulating the growth and activity of bacteria, which are responsible for the degradation.

Aeration

Technique that is used with water treatment that demands oxygen supply, commonly known as aerobic biological water purification. Either water is brought into contact with water droplets by spraying or air is brought into contact with water by means of aeration facilities. Air is pressed through a body of water by bubbling and the water is supplied with oxygen.

Aeration tank

A tank that is used to inject air into water.

Aerobic

A process that takes place in the presence of oxygen, such as the digestion of organic matter by bacteria in an oxidation pond.

Aerosol

Very small liquid or solid particles dispersed in air.

Affinity

The keenness with which an ion exchanger takes up and holds on to a counter-ion. Affinities are very much affected by the concentration of the electrolyte surrounding the ion exchanger.

Agglomeration

A process of bringing smaller particles together to form a larger mass.

Aggressive water

Water that is soft and acidic and can corrode plumbing, pipes and appliances.

Algae

Single- or multi-celled organisms that are commonly found in surface water, such as duckweed. They produce their own food through photosynthesis. The algae population is divided up into green algae and blue algae, of which the blue algae are very damageable to human health. Excessive algae growth may cause the water to have undesirable odours or tastes. Decay of algae diminishes oxygen supplies in the water.

Algal blooms

Periods of enlarged algal growths that affect water quality. Algal blooms indicate potentially hazardous changes in the chemistry of water.

Aliquot

A measured portion of a sample taken for analysis. One or more aliquots make up a sample.

Alkalinity

Alkalinity means the buffering capacity of water; the capacity of the water to neutralize itself. It prevents the water pH levels from becoming too basic or acid. It also adds carbon to water. Alkalinity stabilizes water at pH levels around 7. However, when the acidity is high in water the alkalinity decreases, which can cause harmful conditions for aquatic life.

In water chemistry alkalinity is expressed in ppm or mg/L of equivalent calcium carbonate. Total alkalinity of water is the sum of all three sorts of alkalinity; carbonate, bicarbonate and hydroxide alkalinity.

Alluvium

Sediments deposited by erosion processes, usually by streams.

Anaerobic

A process that takes place in the absence of oxygen, such as the digestion of organic matter by bacteria in a UASB-reactor.

Anion

A negatively charged ion that results from the dissociation of salts, acids or alkali's in solution.

Anode

A site in electrolysis where metal goes into solution as a cation leaving behind an equivalent of electrons to be transferred to an opposite electrode, called a cathode.

Aquatic

Growing in water, living in water, or frequenting water.

Aqueous

Something made up of water.

Aqueous solubility

The maximum concentration of a chemical that dissolves in a given amount of water.

Aquifer

A layer in the soil that is capable of transporting a significant volume of groundwater.

Aromatics

A type of hydrocarbon that contains a ring structure, such as benzene and toluene. They can be found for instance in gasoline.

Assimilation

The ability of water to purify itself of pollutants.

Assimilative Capacity

The capacity of natural water to receive wastewaters or toxic materials without negative effects and without damage to aquatic life or humans who consume the water.

Atom

The smallest unit of matter that is unique to a particular element. They are the ultimate building blocks for all matter.

Atomic number

A specific number that differs for each element, equal to the number of protons in the nucleus of each of its atoms.

Attenuation

The process of reduction of a compound's concentration over time. This can be through absorption, adsorption, degradation, dilution or transformation.

Attrition

The action of one particle rubbing against the other in a filter media or ion exchange bed that can in time cause breakdown of the particles.

Available chlorine

A measure of the amount of chlorine available in chlorinated lime, hypochlorite compounds, and other materials.

Backflow

The flow of water in a medium in a direction opposite to normal flow. Flow is often returned into the system by backflow, if the wastewater in a purification system is severely contaminated.

Back Pressure

Pressure that can cause water to backflow into the water supply when a user's waste water system is at a higher pressure than the public system.

Back siphonage

Reverse seepage of water in a distribution system.

Backwashing

Reversing the flow of water back through the filter media to remove entrapped solids.

Bacteria

Microscopically small single-cell organisms, that reproduce by fission of spores.

Bacterial water contamination

The introduction of unwanted bacteria into a water body.

Base

An alkaline substance that has a pH that exceeds 7,5.

Bed Load

Sediment particles resting on or near the channel bottom that are pushed or rolled along by the flow of water.

Benthic zone

The lower region of a body of water including the bottom.

Bicarbonates

Salts containing the anion HCO3-. When acid is added, this ion breaks into H2O and CO2, and acts as a buffer.

Binder

Chemicals that hold short fibres together in a cartridge filter.

Bioaccumulation

The increase in concentration of a substance in living organisms, as they take in contaminated air, water, or food, due to slow metabolization and excretion.

Biochemical Oxygen Demand (BOD)

The amount of oxygen (measured in mg/L) that is required for the decomposition of organic matter by single-cell organisms, under test conditions. It is used to measure the amount of organic pollution in wastewater.

Biocide

A chemical that is toxic to microorganisms. Biocides are often used to eliminate bacteria and other single-cell organisms from water.

Biodegradable pollutants

Pollutants that are capable of decomposing under natural conditions.

Biofilm

Population of various microorganisms, trapped in a layer of slime and excretion products, attached to a surface.

Biological contaminants

Living organisms such as viruses, bacteria, fungi, and mammal and bird antigens that can cause harmful health effects to humans.

Biologically activated carbon

Activated carbon that supports active microbial growth, in order to aid in the degradation of organics that have been absorbed on its surface and in its pores.

Biological oxidation

Decomposition of complex organic materials by microorganisms through oxidation.

Biomonitoring

The use of living organisms to test the suitability of effluents for discharge into receiving waters and to test the quality of such waters downstream from the discharge.

Bioremediation

The biological treatment of wastewater and sludge, by inducing the breakdown of organics and hydrocarbons to carbon dioxide and water.

Biota

All living organisms in a region or ecosystem.

Biotransformation

Conversion of a substance into other compounds by organisms; including biodegradation.

Blackwater

Water that contains waste of humans, animals or food.

Blind spots

Any place on a filter medium where fluids cannot flow through.

Blinding

A build-up of particles in a filter medium, that prevents fluids from flowing through.

BOD_5

The amount of dissolved oxygen consumed in five days by bacteria that perform biological degradation of organic matter.

Boiling point

The temperature at which the vapour pressure of a liquid equals the pressure of its surface. The liquid will than vaporize. If the pressure of the liquid varies, the actual boiling point varies. For water the boiling point is 100 degrees Celsius.

Bottled water

Water that is sold in plastic containers for drinking water and/or domestic use.

Brackish water

Water that is neither falls in the category of salt water, nor in the category of fresh water. It holds the middle between either one of the categories.

Breakpoint chlorination

Addition of chlorine to water until there is enough chlorine present for disinfection of water.

Breakthrough

Crack or break in a filter bed that allows the passage of floc or particulate matter through a filter.

Brine

Highly salty and heavily mineralised water, containing heavy metal and organic contaminants.

Buffer

A substance that reacts with hydrogen or hydroxyl ions in a solution, in order to prevent a change in pH.

Cake

Solid dewatered residue on a filter media after filtration.

Calcium hypo chlorite

A chemical that is widely used for water disinfection, for instance in swimming pools or water purification plants. It is especially useful because it is a stable dry powder and can be made into tablets.

Candle filter

A relatively coarse aperture filter, designed to retain a coat of filter medium on an extended surface.

Capillary action

Water that at some point rises higher than that portion of its surface, not in contact with the solid surface. This is due to adhesion, cohesion and surface tension where later touches a solid.

Cappilary membranes

Membranes about the thickness of a human hair, used for Reverse Osmosis, nanofiltration, ultrafiltration and microfiltriton.

Capillary zone

Soil area above the water table where water can rise up slightly through the cohesive force of capillary action.

Carcinogen

Any dissolved pollutant that can induce cancer.

Cartridge filter

Disposable filter device that has a filter range of 0.1 micron to 100 microns.

Carbonates

Chemical compounds related to carbon dioxide.

Carbonate hardness

Hardness of water caused by carbonate and bicarbonate by-products of calcium and magnesium.

Catalyses

Chemical that increases the rate of a reaction but does not take a direct part in the reaction, so that it is still intact after the reaction has taken place.

Catch basin

A sedimentation area designed to remove pollutants from runoff before being discharged into a stream or pond.

Cathode

A site in electrolysis where cations in solution are neutralized by electrons that plate out on the surface or produce a secondary reaction with water.

Cation

A negatively charged ion, resulting from dissociation of molecules in solution.

Centrifugation

A separation process, which uses the action of centrifugal force to promote accelerated settling of particles in a solid-liquid mixture.

CFU

Colony Forming Units. This is a measure that indicates the number of microrganisms in water.

Check valve

A valve that allows water to stream in one direction and will then close to prevent development of a back-flow.

Chelating agents

Organic compounds that have the ability to draw ion from their water solutions into soluble complexes.

Chemical Oxygen Demand (COD)

The amount of oxygen (measured in mg/L) that is consumed in the oxidation of organic and oxidasable inorganic matter, under test conditions. It is used to measure the total amount of organic and inorganic pollution in wastewater. Contrary to BOD, with COD practically all compounds are fully oxidized.

Chemical pollution

Introduction of chemical contaminants into a water body.

Chemical weathering

Dissolving of rock by exposure to rainwater, surface water, oxygen and other gases in the atmosphere and compounds secreted by organisms.

Chloramines

A chemical complex that consists of chlorine and ammonia. It serves as a water disinfectant in public water supplies in place of chlorine because chlorine can combine with organics to form dangerous reaction products. In which forms chloramines exist depends on the physical/chemical properties of the water source.

Chlorinated hydrocarbons

Hydrocarbons that contain chlorine. These include a class of persistent insecticides that accumulate in the aquatic food chain. Among them are DDT, aldrin, dieldrin, heptachlor, chlordane, lindane, endrin, Mirex, hexachloride, and toxaphene.

Chlorinated solvent

An organic solvent containing chlorine atoms that is often used as aerosol spray container, in highway paint, and dry cleaning fluids.

Chlorination

A water purification process in which chlorine is added to water for disinfection, for the control of present microrganisms. It is also used in the oxidation of compound impurities in water.

Chlorine-contact chamber

The part of a water treatment plant where effluent is disinfected by chlorine.

Clarity

The clearness of a liquid.

Coagulation

Destabilisation of colloid particles by addition of a reactive chemical, called a coagulant. This happens through neutralization of the charges.

Coalescence

Liquid particles in suspension that unite to create particles of a greater volume.

Coastal zone

Lands and waters near the coast, whose uses and ecology are affected by the sea.

Coliform bacteria

Bacteria that serve as indicators of pollution and pathogens when found in water. These are usually found in the intestinal tract of humans and other warm-blooded animals.

Coliform index

A rating of the purity of water based on a count of coliform bacteria.

Collector sewers

Pipes to collect and carry wastewater from individual sources to an interceptor sewer that will carry it to a treatment facility.

Colloids

Matter of very small particle size, in the range of 10-5 to 10-7 in diameter.

Combined sewer

A sewer system that carries both sewage and rain water runoff.

Composite sample

A series of water samples taken over a given period of time and weighted by flow rate.

Compounds

Two or more different elements held together in fixed proportions by attractive forces called chemical bonds.

Concentrate

The totality of different substances that are left behind in a filter medium after filtration.

Concentration

The amount of material dissolved in a unit of solution, expressed in mg/L.

Concentration process

The process of increasing the number of particles per unit volume of a solution, usually by evaporating the liquid.

Condensate

Water obtained by condensation of water vapour.

Condensation

The change of state from a gas to a liquid.

Conductivity

The amount of electricity the water can conduct. It is expressed in a chemical magnitude. Please use also our information about TDS and conductivity.

Conduit

A natural or artificial channel through which fluids may be transported.

Consumptive water use

Water removed from available supplies without return to a water resources system; water used in manufacturing, agriculture and food preparation.

Contact time

The length of time a substance is in contact with a liquid, before it is removed by filtration or the occurrence of a chemical change.

Contaminant

Any foreign component in a substance, for example in water.

Conventional sewer systems

Systems that were traditionally used to collect municipal wastewater in gravity sewers and convey it to a central primary or secondary treatment plant, before discharge on receiving surface waters.

Conveyance loss

Water loss in pipes and channels by leakage or evaporation.

Cooling tower

Large tower used to transfer the heat in cooling water from a power or industrial plant to the atmosphere either by direct evaporation or by convection and conduction.

Corrosivity

Ability of water to dissolve or break down certain substances, particularly metals.

Cross flow filtration

A process that uses opposite flows across a membrane surface to minimize particle build-up.

Cryptosporidium

A microorganism in water that causes gastrointestinal illness in humans. It is commonly found in untreated surface water and can be removed by filtration. It is resistant to disinfectants such as chlorine.

Cultural eutrophication

Decline of the oxygen rate in water, which has serious consequences for aquatic life, caused by humans.

Current

The portion of a stream or body of water, which is moving much faster than the rest of the water. The progress of the water is principally concentrated in the current.

Cycle

The length of time a filter can be used before it needs cleaning, usually including cleaning time.

Dealkalinisation

Any process that serves to reduce the alkalinity of water.

Decarbonation

The process of removing carbon dioxide from water, using contact towers or air scrubbers.

Decant

To draw off the upper layer of liquid after the heaviest material (a solid or another liquid) has settled.

Decomposition

The break down of organic matter by bacteria and fungi, to change the chemical structure and physical appearance of matter.

Defluoridation

The removal of fluoride from drinking water to prevent teeth damage.

De-foaming agents

Chemicals that are added to wastewater discharges to prevent the water from foaming when it is discharged into a receiving water body.

Degasification

The process of removing dissolved gasses from water, using vacuum or heat.

Deionisation

Process that serves to remove all ionised substances from a solution. Most commonly is the exchange process where cations and anions are removed independently of each other.

Demineralisation

Processes to remove minerals from water, usually the term is restricted to ion exchange processes.

Demiwater

Demineralised water. Water that is treated to be contaminant-, mineral- and salt free.

Denitrification

Removal of nitrate and nitrate product from water to produce a quality that answeres common water standards.

Density

The weight of a certain amount of water. It is usually expressed in kilograms per cubic metre.

Depression storage

The storage of water in low areas, such as ponds, and wetlands.

Depth filtration

Treatment process in which the entire filter bed is used to trap insoluble and suspended particles in its voids as water flows through it.

Desalination

The removal of salt from seawater or brackish water to produce drinking water, using various techniques.

Desorption

The opposite of adsorption; the release of matter from the adsorption medium, usually to recover material.

Detention time

The actual time that a small amount of water is in a settling basin or flocculating basin. In storage reservoirs, it means the length of time water will be stored.

Detergent

A water-soluble cleansing agent, other than soap.

Dewater

The separation of water from sludge, to produce a solid cake.

Diffuser

A component of the ozone contacting system in an ozone generator that allows diffusion of an ozone containing gas.

Diffusion

The movement of gas molecules or aerosols into liquids, caused by a concentration gradient.

Digester

A closed tank for wastewater treatment, in which bacterial action is induced to break down organic matter.

Diluting water

Distilled water that has been stabilized, buffered and aerated. It is often applied in the BOD tests.

Direct run-off

Water that flows from the ground surface directly into streams, rivers and lakes.

Discharge

Flow of surface water in a stream or canal.

Disinfectants

Fluids or gasses to disinfect filters, pipelines, systems, etc.

Disinfection

The decontamination of fluids and surfaces. To disinfect a fluid or surface a variety of techniques are used, such as ozone disinfection. Often disinfection means eliminating the present microrganisms with a biocide.

Dissolve

The process during which solid particles mix molecule by molecule with a liquid and appear to become part of the liquid.

Dissolved air flotation (DAF)

A procedure of induced flotation with very fine air bubbles or 'micro bubbles', of 40 to 70 microns.

Dissolved oxygen

The amount of oxygen dissolved in water at a certain time, expressed in ppm mg/L.

Dissolved solids

Solids material that totally dissolves in water and can be removed by means of filtration.

Distillation

Water treatment method where water is boiled to steam and condensed in a separate reservoir. Contaminants with higher boiling points than water do not vaporize and remain in the boiling flask.

Dredging

Cleaning, deepening or widening of a waterway, using a machine (dredge) that removes materials by means of a scoop or a suction device.

Drought

Term applied to periods of less than average precipitation over a certain period of time.

Duplicates

Two separate samples with separate containers taken at the same time and at the same place.

Dystrophic lakes

Acidic bodies of water that contain many plants but few fish, due to the presence of great amounts of organic matter.

Effluent

The outlet or outflow of any system that deals with water flows, for an oxidation pond for biological water purification. It is the product water of the given system.

Ejector

A device used to inject a chemical solution into wastewater during water treatment.

Electrical charge

The charge on an ion, declared by its number of electrons. A Cl- ion is in fact a Cl atom which has acquired an electron, and a Ca++ ion is a Ca atom, which has lost two electrons.

Electrolyte

Substance that dissociates into ions when it dissolves in water.

Electrodialysis

A process that uses electrical currents, applied to permeable membranes, to remove minerals from water.

Electrolysis

Process where electrical energy will change in chemical energy. The process happens in an electrolyte, a watery solution or a salt melting which gives the ions a possibility to transfer between two electrodes. The electrolyte is the connection between the two electrodes, which are also connected to a direct current. If you apply an electrical current, the positive ions migrate to the cathode while the negative ions will migrate to the anode. At the electrodes, the cations will be reduced and the anions will be oxidated.

Electrons

Negatively charged building blocks of an atom that circle around the nucleus.

Elements

The distinctive building blocks of matter that make up every material substance.

Elutriation

Freeing sludge of its mother liquor by washing it with water.

Emulsifier

A chemical that helps suspending one liquid in another.

Emulsion

Dispersion of one liquid in another liquid, occurs when a liquid in insoluble.

End-of-pipe techniques

Techniques for water purification that serve the reduction pollutants after they have formed.

Enrichment

When the addition of nutrients, such as nitrogen and phosphorus, from sewage effluent or agricultural runoff to surface water, greatly increases algal growth.

Erosion

The wearing away of the land surface by wind, water, ice or other geological agents. Erosion occurs naturally from weather or runoff but is often intensified by human land use practices.

Eschericha coli (E. coli)

Coliform bacterium that is often associated with human and animal waste and is found in the intestinal court. It is used by health departments and private laboratories to measure the purity of water.

Estuary

Region of interaction between rivers and near-shore ocean waters, where tidal action and river flow mix fresh and salt water. Therefore estuaries mainly consist of brackish water.

Eutrophic

Referring to water that is rich in nutrients such as nitrogen and phosphorous.

Eutrophication

Enrichment of water, which causes excessive growth of aquatic plants and increasing activity of anaerobic microrganisms. As a result the oxygen levels in the water quickly decline and the water chokes, making life impossible for aerobic water organisms.

Evaporation

The process of the passage of water from liquid to vapour.

Evaporation ponds

Areas where sewage sludge is dumped and dried.

Evapotranspiration

The loss of water from the soil through vaporizing, both by direct evaporation and by transpiration from plants.

Facultative bacteria

Bacteria that can live under aerobic or anaerobic conditions.

Fermentation

The conversion of organic matter to methane, carbon dioxide and other molecules by anaerobic bacteria.

Filter medium

The permeable material that separates solids from liquids passing through it.

Filtrate

A liquid that has passed through the filter medium.

Filtration

Separation of a solid and a liquid by using a porous substance that only lets the liquid pass through.

First draw

The water that comes out when a tap is first opened. It is likely that is has the highest level of lead contamination from weathering of pipelines.

Fission

Reproduction of microrganisms by means of cell division.

Floc

A flocculent mass that is formed in the accumulation of suspended particles. It can occur naturally, but is usually induced in order to be able to remove certain particles from wastewater.

Flocculation

The accumulation of destabilized particles and micro flakes, and subsequently the formation of sizeable flakes. One must ad another chemical called flocculent in order to facilitate the formation of flakes called flocs.

More info on flocculation

Floodplain

The flat or nearly flat land along a river or stream that is covered by water during a flood.

Flotation

A solids-liquid or liquid-liquid separation procedure, which is applied to particles of which the density is lower than that of the liquid they are in. There are three types: natural, aided and induces flotation.

Flow

The discharge rate of a resource, expressed in volume during a certain period of time.

Flow augmentation

The addition of water to meet flow needs.

Flux

The rate at which a Reverse Osmosis Membrane allows water to pass through it.

Fouling

The deposition of organic matter on the membrane surface, which causes inefficiencies.

Fragmentation

The subdivision of a solid in fragments. The fragments will then adhere to the nearest surface.

Freezing

The change of a liquid into a solid as temperature decreases. For water, the freezing point is 0 degrees Celsius.

Freshwater

Water containing less than 1 mg/l of dissolved solids of any type.

Gallon

A unit that is now almost entirely out of date. It is equivalent to 3.785 litres.

Giardia

A microrganism that is commonly found in untreated surface water and can be removed by filtration. It is resistant to disinfectants such as chlorine.

Granular activated carbon

The heating of carbon to encourage active sites to absorb pollutants.

Gray Water

Domestic wastewater composed of wash water from kitchen, bathroom, and laundry sinks and from tubs, and washers.

Groundwater

Water that can be found in the saturated zone of the soil; a zone that consists merely of water. It slowly moves from places with high elevation and pressure to places with low elevation and pressure, such as rivers and lakes.

Groundwater discharge

Ground water entering coastal waters, which has been contaminated by land-fill leachates, deep well injection of hazardous wastes and septic tanks.

Groundwater hydrology

The branch of hydrology that deals with the occurrence, movements, replenishment and depletion, properties and methods of investigation and utilisation of groundwater.

Gully

A deeply eroded channel created by the concentrated flow of water.

Half-life

The time required for a pollutant to lose one-half of its original concentraton.

Hard water

Water that contains a great number of positive ions. The hardness is determined by the number of calcium and magnesium atoms present. Soap usually dissolves badly in hard water.

More info on hard water

Heat exchanger

A component that is utilized to remove heat from or ad heat to a liquid.

Heavy metals

Metals that have a density of 5.0 or higher and a high elemental weight. Most are toxic to humans, even in low concentrations.

More info on heavy metals

Heavy water

Water in which all the hydrogen atoms have been replaced by deuterium.

Henry's Law

A way of calculating the solubility of a gas in a liquid, based on temperature and partial pressure, by means of constants.

Holding Pond

A pond or reservoir, usually made of earth, built to store polluted runoff.

Homeowner water system

A water system that supplies piped water to a single residence.

Humidification

The addition of water vapour to air.

Hydraulic conductivity

The rate at which water can move through a permeable medium.

Hydraulic gradient

In general, the direction of groundwater flow due to changes in the depth of the water table.

Hydrocarbon

Organic compounds that are built of carbon and hydrogen atoms and are often used in petroleum industries.

Hydroelectric power water use

The use of water in the generation of electricity at plants where the turbine generators are driven by falling water.

Hydrogen sulfide (H_2S)

A gas emitted during organic decomposition by a select group of bacteria, which strongly smells like rotten eggs.

Hydrogeology

The science of chemistry and movement of groundwater.

Hydrograph

A chart that measures the amount of water flowing past a point as a function of time.

Hydrolysis

The decomposition of organic compounds by interaction with water.

Hydrologic cycle

The natural cycle of water passing through the environment, including evaporation, condensation, retention and run-off.

Hydrophilic

Having an affinity for water.

Hydrophobic

Having an aversion for water.

Hydrosphere

Region that includes all the earth's liquid water, frozen water, floating ice, frozen upper layer of soil and the small amounts of water vapour in the atmosphere.

Hypo chlorite

An anion that forms products such as calcium and sodium hypo chlorite. These products are often used for disinfection and bleaching.

Hypoxic waters

Waters with dissolved oxygen concentrations of less than 2 mg/L, the level generally accepted as the minimum required for life and reproduction of aquatic organisms.

Ice

The solid form of water.

Imhoff cone

A clear, cone-shaped container used to measure the volume of settle able solids in a specific volume of water.

Immiscibility

The inability of two or more solids or liquids to readily dissolve into one another.

Impermeable

Not easily penetrated by water.

Impurities

Particles or other objects that cause water to be unclear.

Indicator

Any biological entity or process, or community whose characteristics show the presence of specific environmental conditions or pollutants.

Indicator organisms

Microorganisms, such as coliforms, whose presence is indicative for pollution or for the presence more harmful microorganisms.

Indicator tests

Tests for a specific contaminant, group of contaminants or constituent which signals the presence of something else.

Indirect discharge

Introduction of pollutants from a non-domestic source into a publicly owned wastewater treatment system. Indirect dischargers can be commercial or industrial facilities whose wastes enter local sewers.

Infiltration

Penetration of water into a medium, for instance the soil.

Influent

The stream of water that enters any system or treatment unit.

Inhibitor

Chemical that interferes with a chemical reaction, such as precipitation.

Injection

The introduction of a chemical or medium into the process water to alter its chemistry or filter specific compounds.

Ion

An atom in a solution that is charged, either positively (cations) or negatively (anions).

Ion exchange

The replacement of undesirable ions with a certain charge by desirable ions of the same charge in a solution, by an ion-permeable absorbent.

More info on ion exchange

Inorganic chemicals

Chemical substances of mineral origin, not of basically carbon structure.

Irrigation

Applying water or wastewater to land areas to supply the water and nutrient needs of plants.

Jar test

A laboratory test procedure with differing chemical doses, mix speeds and settling times to estimate the minimum or ideal coagulant dose required to achieve water quality goals.

Kinetic Energy

Energy possessed by moving water.

Kinetic rate coefficient

A number that describes the rate at which a water constituent such as a biochemical oxygen demand or dissolved oxygen rises or falls.

Laboratory water

Purified water used in the laboratory as a basis to create solutions or making dilutions. It contains no interfering substances.

Lagoon

A shallow pond where sunlight, bacterial action and oxygen work to purify wastewater.

Lake

An inland body of water, usually fresh water, formed by glaciers, river drainage, etc. It is usually larger than a pool or pond.

Laminar flow

A flow in which rapid fluctuations are absent.

Land Application

Discharge of wastewater onto the ground for treatment or reuse.

Langelier Index (LI)

An index reflecting the equilibrium pH of a water with respect to calcium and alkalinity; used in stabilizing water to control both corrosion and scale deposition.

Large water system

A water system that services more than 50’000 customers.

Leachate

Water that contains solute substances, so that it contains certain substances in solution after percolation through a filter or soil.

Leaching

The process by which soluble constituents are dissolved and filtered through the soil by a percolating fluid.

Leakage

A species of ions in the feed of an ion exchanger present in the effluent.

Light absorption

The amount of light a certain amount of water can absorb over time.

Lime

Common water treatment chemical. Lime can be deposed on walls of showers and bathrooms, after lime has reacted with calcium to form limestone.

Limnology
The study of the physical, chemical, hydrological and biological aspects of fresh water.

Liquid
A state of matter, neither gas nor solid, that flows and takes the shape of its container.

Maximum Contaminant Level (MCL)
The maximum level of a contaminant allowed in water by federal law. Based on health effects and currently available treatment methods.

Mechanical aeration
Use of mechanical energy to inject air into water to cause a waste stream to absorb oxygen.

Mechanical flotation
A term used in the mineral industry to describe the use of dispersed air to produce bubbles that measure 0.2 to 2 mm in diameter.

Media
Materials that form a barrier to the passage of certain suspended solids or dissolved liquids in filters.

Medium-size water system
A water system that serves 3’300 to 50’000 customers.

Melting
The change of a solid into a liquid.

Membrane
A thin barrier that allows some compounds or liquids to pass through, and troubles others. It is a semi-permeable skin of which the pass-through is determined by size or special nature of the particles. Membranes are commonly used to separate substances.

Mesotrophic
Reservoirs and lakes which contain moderate quantities of nutrients and are moderately productive in terms of aquatic animal and plant life.

Metabolise
Conversion of food, for instance soluble organic matter, to cellular matter and gaseous by-products through a biological process.

MFS
Micro Filtration System, it serves full automatic solid/ liquid separation.

More info on MFS

Microbial growth
The multiplication of microrganisms such as bacteria, algae, diatoms, plankton, and fungi.

Micron
A unit to discribe a measure of length, equal to one millionth of a metre.

Microorganisms
Organisms that are so small that they can only be observed through a microscope, for instance bacteria, fungi or yeasts.

Mineral Water
Contains large amounts of dissolved minerals such as calcium, sodium, magnesium and iron. Some tap waters contain as many or more minerals than some commercial mineral waters. There is no scientific evidence that either high or low mineral content water is beneficial to humans.

Miscibility
The ability of two liquids to mix.

Mist
Liquid particles measuring 40 to 500 micrometers are formed by condensation of vapour. By comparison, fog particles are smaller than 40 micrometers.

Mixture
Various elements, compounds or both, that are mixed.

Molecules
Combinations of two or more atoms of the same or different elements held together by chemical bonds.

Municipal discharge

Discharge of effluent from wastewater treatment plants, which receive wastewater from households, commercial establishments, and industries in the coastal drainage basin.

Municipal sewage

Liquid wastes, originating from a community. They may have been composed of domestic wastewaters or industrial discharges.

Municipal Sludge

Semi liquid residue that remains from the treatment of municipal water and wastewater.

Neutralization

The addition of substances to neutralize water, so that it is neither acid, nor basic. Neutralization does not specifically mean a pH of 7.0, it just means the equivalent point of an acid-base reaction.

Neutrons

Uncharged building blocks of an atom that play a part in radio-activity. They can be found in the nucleus.

Nitrification

A biological process, during which nitrifying bacteria convert toxic ammonia to less harmful nitrate. It is commonly used to remove nitrogen substances from wastewater, but in lakes and ponds it occurs naturally.

Non-point sources

Diffuse water pollution sources without a specific point of origin. The pollutants are generally carried off the land by storm water. Common non-point sources are agriculture and atmospheric disposal.

Non-potable

Water that is unsafe or unpalatable to drink because it contains pollutants, contaminants, minerals or infective agents.

Nucleus

The center of an atom, that contains protons and neutrons and carries a positive charge.

Nuisance Contaminant

Constituents in water, which are not normally harmful to health but may cause offensive taste, odor, color, corrosion, foaming, or staining.

Nutrient

Any substance that promotes growth with living organisms. The term is generally applied to nitrogen and phosphorus in wastewater, but is also applied to other essential and trace elements.

Nutrient Pollution

Contamination of water resources by excessive inputs of nutrients. In surface waters, excess algal production is a major concern.

Oligotrophic lakes

Deep clear lakes with few nutrients, little organic matter and a high dissolved-oxygen level.

Organic matter

Substances of (dead) plant or animal matter, with a carbon-hydrogen structure.

Osmosis

Water molecules passing through membranes naturally to the side with the highest concentration of dissolved impurities.

Outfall

The place where a wastewater treatment plant discharges treated water into the environment.

Overflow rate

One of the guidelines for design of the settling tanks and clarifiers in a treatment plant to determine if tanks and clarifiers are used enough.

Oxidation

A chemical reaction in which ions are transferring electrons, to increase positive valence.

Oxidation pond

A man-made body of water in which waste is consumed by bacteria.

Oxidation-reduction potential

The electric potential required to transfer electrons from the oxidant to the reductant, used as a qualitative measure of the state of oxidation in water treatment systems.

Oxygen depletion

The reduction of the dissolved oxygen level in a water body.

Ozone

An unstable oxidizing agent, that consists of three oxygen atoms and can be found in the ozone layer in the atmosphere. It is produced by electrical discharge through oxygen or by specifically designed UV-lamps.

Ozone generator

A device that generates ozone by passing a voltage through a chamber that contains oxygen. It is often used as a disinfection system.

More info on ozone and ozone generators

Parameter

A variable, measurable property whose value is a determinant of the characteristics of a system such as water. Temperature, pressure, and density are examples of parameters.

Partial pressure

That pressure of a gas in a liquid, which is in equilibrium with the solution. In a mixture of gases, the partial pressure of any one gas is the total pressure times the fraction of the gas in the mixture (by volume or number of molecules).

Particle size

The sizes of a particle, determined by the smallest dimension, for instance a diameter. It is usually expressed in micron measurements.

Particulate loading

The mass of particulates per unit volume of water.

Parts per billion

Expressed as ppb; a unit of concentration equivalent to the µg/l.

Parts per million

Expressed as ppm; a measure of concentration. One ppm is one unit weight of solute per million unit weights of solution. In water analysis the ppm is equivalent to mg/l.

Pasteurisation

The elimination of microrganisms by heat applies for a certain period of time.

Pathogens

Disease-producing microorganisms.

Percent saturation

The amount of a substance that is dissolved in a solution compared to the amount that could be dissolved in it.

Percolating water

Water that passes through rocks or soil under the force of gravity.

Periodic chart

Arrangement of elements in order of increasing atomic numbers, created by a scientist called Mendelejef.

Permeability

The ability of a medium to pass a fluid under pressure.

Persistence

Refers to the length of time a compound stays in the environment, once introduced.

pH

The value that determines if a substance is acid, neutral or basic, calculated from the number of hydrogen ions present. It is measured on a scale from 0 to 14, on which 7 means the substance is neutral. pH values below 7 indicate that a substance is acidic and pH values above 7 indicate that it is basic.

Phase

A state of matter. This can be solid, liquid or gaseous.

Photosynthesis

The process of conversion of water and carbon dioxide to carbohydrates. It takes place in the presence of chlorophyll and is activated by sunlight. During the process oxygen is released. Only plants and a limited number of microrganisms can perform photosynthesis.

Physical and chemical treatment

Processes generally used in wastewater treatment facilities. Physical processes are for instance filtration. Chemical treatment can be coagulation, chlorination or ozon treatment.

Physical weathering

Breaking down of rock into bits and pieces by exposure to temperature and changes and the physical action of moving ice and water, growing roots and human activities such as farming and construction.

Phytoplankton

Free-floating, mostly microscopic aquatic plants.

Pilot tests

The testing of a cleanup technology under actual site conditions in a laboratory in order to identify potential problems before implementation.

POE-treatment

Point-Of-Entry treatment. Total water treatment at the inlet to an entire building or facility.

Pore

An opening in a membrane or medium that allows water to pass through.

Point source

A stationary location from which pollutants are discharged. It is a single identifiable source of pollution, such as a pipeline or a factory.

Polar substance

A substance that carries a positive or negative charge, for instance water.

Pollutant

A contaminant at a concentration high enough to endanger the life of organisms.

POP's

Persistent Organic Pollutants, complex compounds that are very persistent and difficultly biologically degradable.

Potable water

Water that is safe for drinking and cooking.

Potentiation

The ability of one chemical to increase the effect of another chemical.

Potentiometric surface

The surface to which water in an aquifer can rise by hydrostatic pressure.

POU-treatment

Point-Of-Use treatment. Water treatment at a limited number of outlets in a building, for less than the whole building.

Precipitate

An insoluble reaction product in an aqueous chemical reaction.

Precipitation process

The altering of dissolved compounds to insoluble or badly soluble compounds, in order to be able to remove the compounds by means of filtration.

Pressure sewers

A system of pipes in which water, wastewater or other liquid is pumped to a higher elevation.

Pre-treatment

Processes used to reduce or eliminate wastewater pollutants from before they are discharged.

Primary wastewater treatment

The removal of suspended, floating and precipitated solids from untreated wastewater.

Click here for an overview of the wastewater treatment process

Process water

Water that serves in any level of the manufacturing process of certain products.

Product water

Water that has passed through a water treatment plant and is ready to be delivered to consumers.

Protons

Positively charged building blocks of an atom that are centered in the nucleus.

Protozoa

Large microorganisms, which consume bacteria.

Public water system

A system that provides piped water for human consumption to at least 15 service connections or regularly serves 25 individuals.

Putrefaction

Biological decomposition of organic matter; associated with anaerobic conditions.

Pyrogen

Substance that is produces by bacteria and it fairly stable. It causes fever in mammals.

Qualitative water assessment

Analyses of water used to discribe the visible or aestetic charcteristics of water.

Quantitative water assessment

Use of analyses of water properties and concentrations of compounds and contaminants in order to define water quality.

Quicksilver water

A solution of mercury nitrate used in gilding.

Radioactive

Having the property of releasing radiation.

Raw sewage

Untreated wastewater and its contents.

Raw water

Intake water before any treatment or use.

Reaeration

Renewing air supplies in the lower layers of a reservoir in order to raise oxygen levels.

Recarbonization

Process in which carbon dioxide is bubbled into treatment water in order to lower the pH.

Receiving waters

A river, lake, ocean, stream or other watercourse into which wastewater or treated effluent is discharged.

Recharge Area

An area where rainwater soaks through the ground to reach an aquifer.

Recirculation

Recycling water after it is used. Often it has to pass a wastewater purification system before it can be reused.

Redox

Shortened term for reduction/oxidation reactions. Redox reactions are a series of reactions of substances in which electron transfer takes place. The substance that gains electrons is called oxidising agent.

Reduction

A chemical reaction in which ions gain electrons to reduce their positive valence.

Regeneration

Putting the desired counter-ion back on the ion exchanger, by displacing an ion of higher affinity with one of lower affinity.

Reserve Capacity

Extra treatment capacity built into wastewater treatment plants and sewers to be able to catch up with future flow increases due to population growth.

Reservoir

A natural or artificial holding area used to store water.

Residue

The dry solids remaining after the evaporation of a sample of water or sludge.

Resolution

The breaking of an emulsion into its individual components.

Reverse Osmosis process

The Reversed Osmosis (RO) process uses a semi-permeable membrane to separate and remove dissolved solids, organics, pyrogens, submicron colloidal matter, viruses and bacteria from water. The process is called 'reverse' osmosis since it requires pressure to force pure water across a membrane, leaving the impurities behind.

More info on reversed osmosis

Run-Off

The part of precipitation water that runs off the land into streams or other surfacewater.

Safe water

Water that does not contain harmful bacteria, toxic materials, or chemicals and is considered safe for drinking.

Safe yield

The annual amount of water that can be taken from a source of supply over a period of years without depleting that source beyond its ability to be naturally refilled.

Salinity

The presence of soluble minerals in water.

Sand filtration

Sand filtration is a frequently used and very robust method to remove suspended solids from water. The filtration medium consists of a multiple layer of sand with a variety in size and specific gravity. Sand filters can be supplied in different sizes and materials both hand operated and fully automatically.

More info on sand filtration

Saturated zone

The area below the water table where all open spaces are filled with water.

Saturation

The condition of a liquid when it has taken into solution the maximum possible quantity of a given substance.

Scale

The precipitate that forms on surfaces in contact with water as the result of a physical or chemical change.

Screening

Use of screens to remove coarse floating and suspended solids from sewage.

Secondary treatment

The removal or reduction of contaminants and BOD of effluent from primary wastewater treatment.

Click here for an overview of the wastewater treatment process

Sedimentation

Settling of solid particles in a liquid system due to gravity.

Sediments

Soil, sand and minerals washed from land into water, usually after rain.

Semi-confined aquifer

An aquifer partially confined by soil layers of low permeability through which recharge and discharge can still occur.

Semipermeable

A medium that allows water to pass through, but rejects dissolved solids, so that it can be used to separate solids from water.

Separate sewer

A sewer system that carries only sanitary sewage; no storm-water runoff. When a sewer is constructed this way, wastewater treatment plants can be sized to treat sanitary wastes only and all of the water entering the plant receives complete treatment at all times.

Separation

The isolation of the various compounds in a mixture.

Septic tank

An underground storage tank for wastes from homes not connected to a sewer line. Waste goes directly from the home to the tank.

Settleable solids

Those suspended solids in wastewater that will settle over a certain period of time and are removed in that way.

Settling

The process of sinking of a substance sinking in water. This occurs when the substance does not dissolve in water and its density is larger than that of water.

Sewage

Waste fluid in a sewer system.

Sewage contamination

The introduction of untreated sewage into a water body.

Sewage sludge

Sludge produced in a public sewer.

Sewerage

The entire system of sewage collection, treatment and disposal.

Sludge

A semi-solid residue, containing microorganisms and their products, from any water treatment process.

Softening

The removal of calcium and magnesium from water to reduce hardness.

Soft water

Any water that does not contain large concentrations of the dissolved minerals calcium or magnesium.

Solidification

Removal of wastewater from a waste or changing it chemically to make it less permeable and susceptible to transport by water.

Solubility

The amount of mass of a compound that will dissolve in a unit volume of water.

Solute

Matter dissolved in a liquid, such as water.

Solvent

Substance (usually liquid) capable of dissolving one or more other substances.

Sparger

A device that introduces compressed air into a liquid.

Sparging

Injection of air below the water table to strip dissolved volatile organic compounds and to facilitate aerobic biodegradation of organic compounds.

Specific conductance

Method to estimate the dissolved solid content of a water supply by testing its conductivity.

Spring

Ground water seeping out of the earth where the water table exceeds the ground surface.

Stoke's Law

A method to calculate the rate of fall of particles through a fluid, based on density, viscosity and particle size.

Sublimation

The transitions of water directly from the solid state to the gaseous state, without passing through the liquid state.

Surface tension

The elastic-like force in a body, especially a liquid, tending to minimize, or constrict, the area of the surface.

Surface water

All water naturally open to the atmosphere, concerning rivers, lakes, reservoirs, ponds, streams, impoundments, seas, estuaries and wetlands.

Suspended solids

Solid organic or inorganic particles that are held in suspension in a solution.

Synergism

The combined action of several chemicals, which produces a total effect greater than the effects of the chemicals separately.

Tertiary treatment

Advanced cleaning of wastewater that goes beyond the secondary or biological stage, removing nutrients such as phosphorus, nitrogen, and most BOD and suspended solids.

Thermal pollution

Discharge of heated water from industrial processes in receiving surface water, causing death or injury of aquatic organisms.

Titration

An analytical technique to determine how much of a substance is present in a water sample by adding another substance and measuring how much of that substance must be added to produce a reaction.

TDS

Total Dissolved Solids. The weight per unit volume of water of suspended solids in a filter media after filtration or evaporation. Please use also our information about TDS and conductivity.

TH

Total Hardness. The sum of calcium and magnesium hardness, expressed as a calcium carbonate equivalent.

TS

Total Solids. The weight of all present solids per unit volume of water. It is usually determined by evaporation. The total weight concerns both dissolved and suspended organic and inorganic matter.

Total solids

All the solids in wastewater or sewage water, including suspended solids and filterable solids.

Toxic water pollutants

Compounds that are not naturally found in water at the given concentrations and that cause death, disease, or birth defects in organisms that ingest or absorb them.

Transmission lines

Pipelines that transport raw water from its source to a water treatment plant.

Transmissivity

The ability of an aquifer to transmit water.

Transpiration

The process by which water vapour is released into the atmosphere after transpiring of living plants.

Treatment plant

A structure built to treat wastewater before discharging it into the environment.

Trickling filter

A wastewater treatment unit that contains medium material with bacteria. The stream of wastewater is trickled over the medium and the bacteria break down the organic wastes. Bacteria are collected on the filter medium.

THM

Trihalomethanes. Toxic chemical substances that consist of a methane molecule and one of the halogen elements fluorine, bromine, chlorine and iodine attached to three positions of the molecule. They usually have carcinogenic properties.

Tube settler

Device using bundles of tubes to let solids in water settle to the bottom for removal by sludge.

Turbidity

A measure of non-transparency of water due to the presence of suspended matter.

Turbulent flow

A flow that contains may rapid fluctuations.

Ultra-violet oxidation

A process using extremely short wave-length light that can kill micro-organisms (disinfection) or cleave organic molecules (photo oxidation) rendering them polarized or ionized and thus more easily removed from the water.

Unloading

The release of the contaminant that was captured by a filter medium.

Unsaturated Zone

The area above the water table where soil pores are not fully saturated with water.

Up-flow

An upward flow of water.

UP-water

Ultra pure water creation demands a specialised way of working. A number of techniques are used amongst others; membrane filtration, ion exchanges, sub micron filters, ultra violette and ozone systems. The produced water is extremely pure and contains none to very low concentrations of salts, organic/pyrogene components, oxygen, suspended solids and bacteria.

More info on UP-water

Urban run-off

Water from city streets domestic properties that carries pollutants into the sewer systems and receiving waters.

UV

Ultra Violet. Radiation that has a wavelength shorter than visible light. It is often used to kill bacteria and destroy ozone.

Vapour

The gaseous phase of substances such as water.

Vaporize

Conversion of a liquid into vapour.

Venturi

A channel that serves the measurement of water flows.

Viruses

The smallest life forms known, that are not cellular in nature. They live inside the cells of animals, plants and bacteria and often cause disease. They are made up of a chromosome surrounded by a protein shell.

Viscosity

The syrupiness of water and it determines the mobility of the water. When the temperature rises, the viscosity degrades; this means that water will be more mobile at higher temperatures.

VOC

Volatile Organic Compound. Synthetic organic compounds which easily vaporize and are often carcinogenic.

Wastewater

The spent or used water from a home, community, farm or industry that contains dissolved or suspended matter.

Wastewater infrastructure

The plan or network for the collection, treatment, and disposal of sewage in a community.

Water monitoring

The process of constant control of a body of water by means of sampling and analyses.

Water pollution

The presence in water of enough harmful or objectionable material to damage water quality.

Water quality

The condition of water with respect to the amount of impurities in it.

Water recycling

Using water again for the same or another process step, after a small form of purification is applied.

Watershed

A land area from which water drains to a particular water body.

Water solubility

The maximum possible concentration of a chemical compound dissolved in water.

Water storage pond

An impound for liquid wastes designed to accomplish some degree of biochemical treatment.

Water supply system

The collection, treatment, storage, and distribution of water from source to consumer.

Water system

A river and all its branches.

Water table

The surface of groundwater in the soil.

Weir

A spill over device used to measure or control water flows.

Well

A deep hole with the purpose to reach underground water supplies.

Wetland

An area that is saturated by surface water or groundwater, with vegetation adapted for life under those soil conditions.

Wettability

The relative degree to which a fluid will spread into solid surface in the presence of other immiscible fluids.

Xenobiotic

Any biological substance, displaced from its normal habitat; a chemical foreign to a biological system.

Yield

The rate of production of cake from a dewatering device.

Zero discharge water

The principle of “zero discharge” is recycling of all industrial wastewater. This means that wastewater will be treated and used again in the process. Because of the water reuse wastewater will not be released on the sewer system or surface water.

Zeta potential

An electrokinetic measurement which can be used for the control of coagulation processes.

Zone of saturation

The space in the soil below the water table in which all the pores are filled with water. The water in the zone of saturation is groundwater.

Zooplankton

Tiny aquatic animals eaten by fish.

Zwitter ions

Act as cations or as anions according to the environment in which they find themselves. In water technology they are usually organic macromolecules.