

Part 5

Glossary

Adiabatic	Process in which there is no transfer of heat into or out of the system in question (thermodynamics)
Aerosol	A suspension in a gaseous medium of solid particles, liquid particles or solid and liquid particles having negligible falling velocity
Algae	Small, usually aquatic, plants which require light to grow, often found on exposed areas of cooling towers
Air conditioning	A form of air treatment whereby temperature, humidity and air cleanliness are all controlled within limits determined by the requirements of the air conditioned enclosure
Antibodies	Substances in the blood which destroy or neutralise various toxins or components of bacteria known generally as antigens. The antibodies are formed as a result of the introduction into the body of the antigen to which they are antagonistic as in all infectious diseases
Bacteria	(singular bacterium) a microscopic, unicellular (or more rarely multicellular) organism
Biocide	A substance which kills micro-organisms
Biofilm	A community of bacteria and other micro-organisms , embedded in a protective layer with entrained debris, attached to a surface
Blow down/bleed off	Water discharged from the system to control the concentration of salts or other impurities in the circulating water; usually expressed as a percentage of recirculating water flow
Calorifier	An apparatus used for the transfer of heat to water in a vessel by indirect means, the source of heat being contained within a pipe or coil immersed in the water
Chlorine	An element used in disinfection
Cold water system (CWS)	Cold water service of system. Installation of plant, pipes and fitting in which cold water is stored, distributed and subsequently discharged
Cooling tower	An apparatus through which warm water is discharged against an air stream, in doing so part of the water is evaporated to saturate the air and this cools the water. The cooler water is usually pumped to a heat exchanger to be reheated and recycled through the tower

Concentration factor	Compares the level of dissolved solids in the cooling water with that dissolved in the make-up water (also know as cycle of concentration. Usually determined by comparison of either the chloride or magnesium hardness concentration
Corrosion inhibitors	chemicals which protect metals by: (i) passivating the metal by the promotion of a thin metal oxide film (anodic inhibitors); or (ii) physically forming a thin barrier film by controlled deposition (cathodic inhibitors)
Dead end/blind end	A length of pipe closed at one end through which no water passes
Deadleg	Pipes leading to a fitting through which water only passes when there is draw off from the fitting
Dip slide(s)	A dip slide is a means of testing the microbial content of liquids. It consists of a plastic carrier bearing a sterile culture medium that can be dipped in the liquid to be sampled. It is then incubated to allow microbial growth. The microbial colonies resulting are estimated by reference to chart
Disinfection	A process which destroys or irreversibly inactivates micro-organisms and reduces their number to a non hazardous level
Distribution circuit	Pipework which distributes water from hot or cold water plant to one or more fittings/appliances
Domestic water services	Hot and cold water intended for personal hygiene, culinary, drinking water or other domestic purposes
Drift	Circulating water lost from the tower as liquid droplets entrained in the exhaust air stream: usually expressed as a percentage of circulating water flow but for more precise work it is parts of water per million by weight of air for a given liquid to gas ratio
Drift eliminator	More correctly referred to as drift reducers or minimisers - equipment containing a complex system of baffles designed to remove water droplets from cooling tower air passing through it
Evaporative condenser	A heat exchanger in which refrigerant is condensed by a combination of air movement and water sprays over its surface
Evaporative cooling	A process by which a small portion of a circulating body of water is caused to evaporate thereby taking the required latent heat of vaporisation from the remainder of the water and cooling it
Fill/Packing	That portion of a cooling tower which constitutes its primary heat transfer surface; sometimes called ' packing ' or ' pack
Fouling	Organic growth or other deposits on heat transfer surfaces causing loss in efficiency

Half life	Ratio of system volume to purge rate
Hot water system (HWS)	Installation of plant, pipes and fittings in which water is heated, distributed and subsequently discharged (not including cold water feed tank or cistern)
Legionnaires' disease	a form of pneumonia caused by Legionella
Legionella	A genus of aerobic bacteria that belongs to the family Legionellaceae and has over 42 species. These are ubiquitous in the environment and found in a wide spectrum of natural and artificial collections of predominantly warm water
legionella	A bacterium belonging to the genus <i>Legionella</i> (note the name is italicised when referring to the genus)
Legionellae	Plural of Legionella , bacteria belonging to the genus <i>Legionella</i>
<i>L. pneumophila</i>	The species of <i>Legionella</i> that most commonly causes legionnaires' disease
Legionellosis	Any illness caused by exposure to Legionella
Pontiac fever	An upper respiratory illness caused by Legionella , but less severe than legionnaires' disease
Make-up water	Water which is added to a cooling water system to compensate for wastage (e.g. via system leaks), evaporative loss and bleed
Micro-organism	An organism of microscopic size including bacteria fungi and viruses
Non-oxidising biocide	A non-oxidising biocide is one that functions by mechanisms other than oxidation, including interference with cell metabolism and structure
Nutrient	A food source for micro-organisms
Oxidising biocide	Agent capable of oxidising organic matter, e.g. cell material, enzymes or proteins that are associated with microbiological populations resulting in death of the microorganisms. The most commonly used oxidising biocides are based on chlorine or bromine (halogens) which liberate hypochlorous or hypobromous acids on hydrolysis in water. The exception is chlorine dioxide, a gas which does not hydrolyse but which functions in the same way
Pasteurisation	Heat treatment to destroy pathogens usually at high temperature
ppm	Parts per million a measure of dissolved substances given as the number of parts there are in a million parts of solvent. It is numerically equivalent to milligrams per litre mg/l with respect to water
Pond retention time	Time a chemical is retained in the system
Scale inhibitors	Chemicals used to control scale. They function by holding up the precipitation process and/or distorting the crystal shape, thus preventing the build-up of a

	hard adherent scale
Sero-group	A sub-group of the main species
Sentinel taps	For a hot water services – the first and last taps on a recirculating system. For cold water systems (or non-recirculating hot water systems), the nearest and furthest taps from the storage tank. The choice of sentinel taps may also include other taps which are considered to represent a particular risk
Sessile sludge	A general term for soft mud-like deposits found on heat transfer surfaces or other important sections of a cooling system
Shunt pump	A circulation pump fitted to hot water service/plant to overcome the temperature stratification of the stored water
Slime	A mucus-like exudate which covers a surface produced by some micro-organisms
Stagnation	The condition where water ceases to flow and is therefore liable to microbiological growth
Strainers	A coarse filter usually positioned upstream of a sensitive component such as a pump control valve or heat exchanger to protect it from debris
Thermal disinfection	Heat treatment to disinfect a system
Thermostatic mixing valve	Mixing valve in which the temperature at the outlet is pre-selected and controlled automatically by the valve
Total viable counts (TVC)	The total number of living micro-organisms (per volume or area) in a given sample remembering that it only includes those organisms detectable by the particular method used
Risk assessment	Identifying and assessing the risk from legionellosis from work activities and water sources on premises and determining any necessary precautionary measures