

10.3.6 PERFORMANCE REPORTING

Performance assessment, based on the long-term review of monitoring data, should be reported internally to relevant staff and departments, as well as to senior management.

Performance reporting on water supply systems is also an important issue for health and regulatory authorities, and for consumers. Providing assurance that performance is reviewed regularly and that improvements are made in response to identified problems contributes to confidence in the water supplied and the water supply organisation. External reporting ensures that system management and drinking water quality performance remains open and transparent. External reporting may be done through an annual report, the contents of which may be determined by a regulatory agency.

10.3.7 SUMMARY OF GUIDELINE VALUES FOR MICROBIAL, CHEMICAL AND PHYSICAL AND CHARACTERISTICS

Tables 10.4 and 10.5 summarise of the guideline values for microbial, chemical and physical and characteristics, to provide a ready reference when monitoring results are being evaluated. More detailed information on each characteristic can be found in the relevant fact sheet.

Table 10.5 Performance measure for *Escherichia coli* within the distribution system

- *Escherichia coli* (*E. coli*) should not be detected in a minimum 100 mL sample of drinking water.
- If detected, immediate corrective action must be taken

Table 10.6 Guideline values for physical and chemical characteristics

Characteristic	Guideline values (mg/L unless otherwise specified)		Comments
	Health	Aesthetic	
Acephate	0.008		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Acrylamide	0.0002		Minor impurity of polyacrylamide, used sometimes as a flocculant aid.
Aldicarb	0.004		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Aldrin & Dieldrin	0.0003 (combined)		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Aluminium (acid-soluble)	c	0.2	Guideline value based on post-flocculation problems; < 0.1 mg/L desirable. Lower levels needed for renal dialysis. No health-based guideline value can be established currently.
Ametryn	0.07		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Amitraz	0.009		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Amitrole	0.0009		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Ammonia (as NH ₃)	c	0.5	Presence may indicate sewage contamination and/or microbial activity. High levels may corrode copper pipes and fittings.
Antimony	0.003		Exposure may rise with increasing use of antimony–tin solder.
Arsenic	0.01		From natural sources and mining/industrial/agricultural wastes.

Characteristic	Guideline values (mg/L unless otherwise specified)		Comments
	Health	Aesthetic	
Asbestos	c		From dissolution of minerals/industrial waste, deterioration of asbestos-cement pipes in distribution systems. No evidence of cancer when ingested (unlike inhaled asbestos).
Asulam	0.07		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Atrazine	0.02		Pesticide, has occasionally been reported in Australian drinking waters, but unlikely to be found at levels that may cause health concerns.
Azinphos-methyl	0.03		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Barium	2		Primarily from natural sources.
Benomyl	0.09		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns
Bentazone	0.4		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Benzene	0.001		Could occur in drinking water from atmospheric deposition (motor vehicle emissions) and chemical plant effluent. Human carcinogen.
Beryllium	0.06		From weathering of rocks, atmospheric deposition (burning of fossil fuels) discharges.
Bioresmethrin	0.1		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Boron	4		From natural leaching of minerals and contamination. <1 mg/L in uncontaminated sources; higher levels may be associated with seawater intrusion.
Bromacil	0.4		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Bromate	0.02		Possible by-product of disinfection using ozone, otherwise unlikely to be found in drinking water.
Bromophos-ethyl	0.01 f		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Bromoxynil	0.01		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Cadmium	0.002		Indicates industrial or agricultural contamination; from impurities in galvanised (zinc) fittings, solders and brasses.
Captan	0.4		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Carbaryl	0.03		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Carbendazim	0.09		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Carfentrazone-ethyl	0.1		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Carbofuran	0.01		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Carbon tetrachloride	0.003		Sometimes occurs as impurity in chlorine used for disinfection (it is not a disinfection by-product).

Characteristic	Guideline values (mg/L unless otherwise specified)		Comments
	Health	Aesthetic	
Carbophenothion	0.0005		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Carboxin	0.3		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Chloral hydrate (Trichloroacetaldehyde)	0.1 e		By-product of chlorination. Action to reduce chloral hydrate is encouraged, but must not compromise disinfection, as non-disinfected water poses significantly greater risk than chloral hydrate.
Chloramine — see monochloramine			
Chlorantraniliprole	6		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Chlorate	c e		By-product of chlorination. Insufficient data to set a health-related guideline value.
Chlordane	0.002		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Chlorfenvinphos	0.002		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Chloride	c	250	From natural mineral salts, effluent contamination. High concentrations more common in groundwater and certain catchments.
Chlorinated furanones (MX)	c e		By-product of chlorination. Insufficient data to set a health-related guideline value.
Chlorine	5	0.6	Widely used to disinfect water, and this can produce (free) chlorinated organic by-products. Odour threshold generally 0.6 mg/L, but 0.2 mg/L for a few people. In some supplies it may be necessary to exceed the aesthetic guideline in order to maintain an effective disinfectant residual throughout the system.
Chlorine dioxide	c	0.4	Oxidising agent and disinfectant in water treatment.
Chlorite	0.8		By-product of chlorine dioxide disinfection. Action to reduce chlorite is encouraged, but must not compromise disinfection, as non-disinfected water poses significantly greater risk than chlorite.
Chloroacetic acids chloroacetic acid dichloroacetic acid trichloroacetic acid	e 0.15 0.1 0.1		By-product of chlorination. Action to reduce chloroacetic acids is encouraged, but must not compromise disinfection, as non-disinfected water poses significantly greater risk than chloroacetic acids.
Chlorobenzene	0.3	0.01	Could occur in drinking water from spills or discharges. Taste/odour threshold (0.01 mg/L) is well below health level.
Chloroketones 1,1-dichloropropanone 1,3-dichloropropanone 1,1,1-trichloropropanone 1,1,3-trichloropropanone	e c c c c		By-product of chlorination.

Characteristic	Guideline values (mg/L unless otherwise specified)		Comments
	Health	Aesthetic	
Chlorophenols	e		By-product of chlorination of water containing phenol or related chemicals. Action to reduce chlorophenols is encouraged, but must not compromise disinfection, as non-disinfected water poses significantly greater risk than chlorophenols.
2-chlorophenol	0.3	0.0001	
2,4-dichlorophenol	0.2	0.0003	
2,4,6-trichlorophenol	0.02	0.002	
Chloropicrin	c		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns. Data are inadequate to set a health-based guideline.
Chlorothalonil	0.05		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Chloroxuron	0.01		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Chlorpyrifos	0.01		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Chlorsulfuron	0.2		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Chromium (as Cr(VI))	0.05		From industrial/agricultural contamination of raw water or corrosion of materials in distribution system/plumbing. If guideline value exceeded, analyse for hexavalent chromium.
Clopyralid	2		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Colour (true)		15 HU	An important aesthetic characteristic for customer acceptance. Treatment processes can be optimised to remove colour.
Copper	2	1	From corrosion of pipes/fittings by salt, low pH water. Taste threshold 3 mg/L. High concentrations colour water blue/green. >1 mg/L may stain fittings. >2 mg/L can cause ill effects in some people.
Cyanide	0.08		From industrial waste and some plants and bacteria.
Cyanogen chloride (as cyanide)	0.08		By-product of chloramination. Action to reduce cyanogen chloride is encouraged, but must not compromise disinfection, as non-disinfected water poses significantly greater risk than cyanogen chloride.
Cyfluthrin, Beta-cyfluthrin	0.05		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Cypermethrin isomers	0.2		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Cyprodinil	0.09		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
2,4-D [(2,4-Dichlorophenoxy) acetic acid]	0.03		Pesticide, has occasionally been reported in Australian drinking waters, but unlikely to be found at levels that may cause health concerns.
DDT	0.009		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Deltamethrin	0.04		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.

Characteristic	Guideline values (mg/L unless otherwise specified)		Comments
	Health	Aesthetic	
Diazinon	0.004		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Dicamba	0.1		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Dichlobenil	0.01 f		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Dichlorobenzenes 1,2-dichlorobenzene 1,3-dichlorobenzene 1,4-dichlorobenzene	1.5 c 0.04	0.001 0.02 0.0003	Could occur in drinking water from spills, discharges, atmospheric deposition, leaching from contaminated soils. Health levels are well above offensive taste/odour thresholds.
Dichloroethanes 1,1-dichloroethane 1,2-dichloroethane	c 0.003		Could occur in drinking water from industrial effluents, spills, discharges.
Dichloroethenes 1,1-dichloroethene 1,2-dichloroethene	0.03 0.06		Rarely found in drinking water; found occasionally in groundwater from wells heavily contaminated by solvents.
Dichloromethane (methylene chloride)	0.004		Widely used solvent, commonly found in ground and surface waters overseas. Volatilises from surface waters and biodegrades in the atmosphere.
1,3-Dichloropropene	0.1		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Dichloroprop / Dichloroprop-P	0.1		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Dichlorvos	0.005		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Diclofop-methyl	0.005		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Dicofol	0.004		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Dieldrin see Aldrin			
Difenzoquat	0.1 f		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Diflubenzuron	0.07		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Dimethoate	0.007		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Diphenamid	0.3 f		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Diquat	0.007		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Dissolved oxygen	Not necessary	>85%	Low concentrations allow growth of nuisance microorganisms (iron/manganese/sulfate/nitrate-reducing bacteria), causing taste and odour problems, staining, corrosion. Low oxygen concentrations are normal in groundwater supplies and the guideline value may not be achievable.

Characteristic	Guideline values (mg/L unless otherwise specified)		Comments
	Health	Aesthetic	
Disulfoton	0.004		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Diuron	0.02		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
2,2-DPA	0.5		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
EDB	0.001 f		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Endosulfan	0.02		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Endothal	0.1		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Epichlorohydrin	0.0005d		Used in manufacture of some resins used in water treatment.
EPTC	0.3		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Esfenvalerate	0.03		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Ethion	0.004		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Ethoprophos	0.001		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Ethylbenzene	0.3	0.003	Natural component of petrol and petroleum products.
Ethylenediamine tetraacetic acid (EDTA)	0.25		Metal-complexing agent widely used in industry and agriculture, and as a drug in chelation therapy.
Etridiazole	0.1		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Fenamiphos	0.0005		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Fenarimol	0.04		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Fenchlorphos	c		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Fenitrothion	0.007		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Fenoprop	0.01 f		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Fensulfothion	0.01 f		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Fenthion	0.007		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Fenvalerate	0.06		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.

Characteristic	Guideline values (mg/L unless otherwise specified)		Comments
	Health	Aesthetic	
Fipronil	0.0007		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Flamprop-methyl	0.004		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Fluometuron	0.07		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Fluoride	1.5		Occurs naturally in some water from fluoride-containing rocks. Often added at up to 1 mg/L to protect against dental caries. >1.5 mg/L can cause dental fluorosis. >4 mg/L can cause skeletal fluorosis.
Fluproponate	0.009		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Formaldehyde	0.5		By-product of ozonation.
Formothion	0.05 f		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Fosamine	0.03 f		Pesticide, has occasionally been reported in Australian drinking waters, but unlikely to be found at levels that may cause health concerns.
Glyphosate	l		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Haloacetonitriles dichloroacetonitrile trichloroacetonitrile dibromoacetonitrile bromochloroacetonitrile	e c c c c		By-product of chlorination.
Haloxyfop	0.001		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Hardness (as CaCO ₃)	Not necessary	200	Caused by calcium and magnesium salts. Hard water is difficult to lather. <60 mg/L CaCO ₃ – soft but possibly corrosive. 60-200 mg/L CaCO ₃ – good quality. 200-500 mg/L CaCO ₃ – increasing scaling problems. >500 mg/L CaCO ₃ – severe scaling.
Heptachlor	0.0003		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Hexachlorobutadiene	0.0007		Industrial solvent.
Hexaflurate	0.03 f		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Hexazinone	0.4		Pesticide, has occasionally been reported in Australian drinking waters, but unlikely to be found at levels that may cause health concerns.
Hydrogen sulfide	c	0.05	Formed in water by sulfate-reducing microorganisms or hydrolysis of soluble sulfide under anoxic conditions. Obnoxious 'rotten egg' odour; threshold 0.05 mg/L.
Imazapyr	9		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Iodide	0.5		From mineral and salt deposits.

Characteristic	Guideline values (mg/L unless otherwise specified)		Comments
	Health	Aesthetic	
Iodine	c		Can be used as an emergency water disinfectant. Taste threshold 0.15 mg/L.
Iprodione	0.1		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Iron	c	0.3	Occurs naturally in water, usually at <1 mg/L, but up to 100 mg/L in oxygen-depleted groundwater. Taste threshold 0.3 mg/L. High concentrations stain laundry and fittings. Iron bacteria cause blockages, taste/odour, corrosion.
Lanthanum	0.002		Rare earth element. Occurs naturally in water from rock weathering. Other sources include use as a phosphate binder to reduce algal blooms in water reservoirs, an agriculture fertiliser or leaching from the tailings of rare earth mining.
Lead	0.01		Occurs in water via dissolution from natural sources or household plumbing containing lead (e.g. pipes, solder).
Lindane	0.01		Pesticide, has occasionally been reported in Australian drinking waters, but unlikely to be found at levels that may cause health concerns.
Maldison (Malathion)	0.07		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Mancozeb	for ETU: 0.009		Mancozeb degrades in the environment to ethylene thiourea (ETU), hence the health-based guideline is based on the toxicity of ETU. Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Manganese	0.5	0.1	Occurs naturally in water; low in surface water, higher in oxygen-depleted water (e.g. groundwater at bottom of deep storages). >0.1 mg/L causes taste, staining. <0.05 mg/L desirable.
MCPA	0.04		Pesticide, has occasionally been reported in Australian drinking waters, but unlikely to be found at levels that may cause health concerns.
Mercury	0.001		From industrial emissions/spills. Very low concentrations occur naturally. Organic forms most toxic, but these are associated with biota, not water.
Metaldehyde	0.02		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Metham	for MITC: 0.001		Metham degrades to methylisothiocyanate (MITC) in the environment, hence the health-based guideline is based on the toxicity of MITC. Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Methidathion	0.006		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Methiocarb	0.007		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Methomyl	0.02		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Methoxychlor	0.3 f		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.

Characteristic	Guideline values (mg/L unless otherwise specified)		Comments
	Health	Aesthetic	
Methyl bromide	0.001		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Metiram	for ETU: 0.009		Metiram degrades in the environment to ethylene thiourea (ETU), hence the health-based guideline is based on the toxicity of ETU. Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Metolachlor/s- Metolachlor	0.3		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Metribuzin	0.07		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns
Metsulfuron-methyl	0.04		Pesticide, has occasionally been reported in Australian drinking waters, but unlikely to be found at levels that may cause health concerns.
Mevinphos	0.005		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Microcystins	1.3 µg/L		Hepatotoxic peptide produced by a range of cyanobacteria, expressed as microcystin-LR toxicity equivalents.
Molinate	0.004		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Molybdenum	0.05		Concentrations usually <0.01 mg/L; higher concentrations from mining, agriculture, or fly-ash deposits from coal-fuelled power stations.
Monochloramine	3		Used as water disinfectant. Odour threshold 0.5 mg/L.
Monocrotophos	0.002 f		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Naphthalophos	c		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns. No value set, as the health concerns have not been fully evaluated.
Napropamide	0.4		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Nicarbazin	1		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Nickel	0.02		Concentrations usually very low; but up to 0.5 mg/L reported after prolonged contact of water with nickel-plated fittings.
Nitralin	0.5 f		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Nitrate (as nitrate)	50		Occurs naturally. Increasing in some waters (particularly groundwater) from intensive farming and sewage effluent. Guideline value will protect bottle-fed infants under 3 months from methaemoglobinaemia. Adults and children over 3 months can safely drink water with up to 100 mg/L nitrate.
Nitrioltriacetic acid	0.2		Chelating agent in laundry detergents (replacing phosphate). May enter water through sewage contamination.
Nitrite (as nitrite)	3		Rapidly oxidised to nitrate (see above).

Characteristic	Guideline values (mg/L unless otherwise specified)		Comments
	Health	Aesthetic	
N-Nitrosodimethylamine (NDMA)	0.0001 mg/L (100 ng/L)		By-product of chloramination and to a lesser extent chlorination. Action to reduce N-Nitrosodimethylamine is encouraged, but must not compromise disinfection, as non-disinfected water poses significantly greater risk than N-Nitrosodimethylamine
Norflurazon	0.05		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Omethoate	0.001		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Organotins dialkyltins tributyltin oxide	c 0.001		Stabilisers in plastics. May leach from new polyvinyl chloride (PVC) pipes for a short time. Tributyltins are biocides used as antifouling agents on boats and in boiler waters.
Oryzalin	0.4		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Oxamyl	0.007		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns (for further information, see Information Sheet 1.6).
Ozone			As ozone used for disinfection leaves no residual, no guideline value or fact sheet has been provided.
Paraquat	0.02		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Parathion	0.02		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Parathion-methyl	0.0007		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Pebulate	0.03		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Pendimethalin	0.4		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Pentachlorophenol	0.01		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Sum of perfluorooctane sulfonate (PFOS) and perfluorohexane sulfonate (PFHxS)	0.07 µg/L (70 ng/L)		Per- and poly-fluoroalkyl substances (PFAS) are manufactured chemicals that do not occur naturally in the environment. PFAS chemicals include perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA) and perfluorohexane sulfonate (PFHxS) amongst a large group of other compounds. PFAS are persistent in the environment, show the potential for bioaccumulation and biomagnification, and are toxic in animal studies (potential developmental, reproductive and systemic toxicity). They have been used in a wide range of consumer products including surface treatments such as non-stick cookware, and notably in aqueous film forming foam used to extinguish fires.
Perfluorooctanoic acid (PFOA)	0.56 µg/L (560 ng/L)		
Permethrin	0.2		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.

Characteristic	Guideline values (mg/L unless otherwise specified)		Comments
	Health	Aesthetic	
pH	c	pH 6.5–8.5	While extreme pH values (<4 and >11) may adversely affect health, there are insufficient data to set a health guideline value. <6.5 may be corrosive. >8 progressively decreases efficiency of chlorination. >8.5 may cause scale and taste problems. New concrete tanks and cement-mortar lined pipes can significantly increase pH and a value up to 9.2 may be tolerated provided monitoring indicates no deterioration in microbial quality.
Picloram	0.3		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Piperonyl butoxide	0.6		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Pirimicarb	0.007		Pesticide, has occasionally been reported in Australian drinking waters, but unlikely to be found at levels that may cause health concerns.
Pirimiphos-ethyl	0.0005 f		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Pirimiphos methyl	0.09		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Plasticisers di(2-ethylhexyl) phthalate di(2-ethylhexyl) adipate	0.01 c		Used in all flexible PVC products, and may leach from these over a long time. Could also occur in drinking water from spills.
Polihexanide	0.7		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Polycyclic aromatic hydrocarbons (PAHs) Benzo-(a)-pyrene	0.00001 (10 ng/L)		Widespread. Contamination can occur through atmospheric deposition, or leaching from bituminous linings in distribution systems.
Profenofos	0.0003		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Promecarb	c		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Propachlor	0.07		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Propanil	0.7		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Propargite	0.007		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Propazine	0.05		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Propiconazole	0.1		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Propyzamide	0.07		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Pyrasulfotole	0.04		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Pyrazophos	0.02		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.

Characteristic	Guideline values (mg/L unless otherwise specified)		Comments
	Health	Aesthetic	
Pyroxsulam	4		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Quintozene	0.03		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Selenium	0.01		Generally very low concentrations in natural water..
Silica		80	An important characteristic for both aesthetics and treatment processes. Can form films on glass and can also affect reverse osmosis.
Silver	0.1		Concentrations generally very low. Silver and silver salts occasionally used for disinfection.
Simazine	0.02		Pesticide, has occasionally been reported in Australian drinking waters, but unlikely to be found at levels that may cause health concerns.
Sodium	Not necessary	180	Natural component of water. Guideline value is taste threshold.
Spirotetramat	0.2		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns
Styrene (vinylbenzene)	0.03	0.004	Could occur in drinking water from industrial contamination.
Sulfate	c	250	Natural component of water, and may be added via treatment chemicals. Guideline value is taste threshold. >500 mg/L can have purgative effects.
Sulprofos	0.01		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns
2,4,5-T	0.1 f		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns
Taste and odour	Not necessary	Not offensive to most people	May indicate undesirable contaminants, but usually indicate problems such as algal or biofilm growths.
Temephos	0.4		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Temperature	Not necessary	No value set	Generally impractical to control; rapid changes can bring complaints.
Terbacil	0.2		Pesticide, has occasionally been reported in Australian drinking waters, but unlikely to be found at levels that may cause health concerns
Terbufos	0.0009		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Terbutylazine	0.01		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Terbutryn	0.4		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Tetrachloroethene	0.05		Dry-cleaning solvent and metal degreaser. Could occur in drinking water from contamination or spills.
Tetrachlorvinphos	0.1 f		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.

Characteristic	Guideline values (mg/L unless otherwise specified)		Comments
	Health	Aesthetic	
Thiobencarb	0.04		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Thiometon	0.004 f		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Thiophanate	0.005		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Thiram	0.007		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Tin	Not necessary		Concentrations in water very low; one of the least toxic metals.
Toltrazuril	0.004		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Toluene	0.8	0.025	Occurs naturally in petrol and natural gas, forest-fire emissions. Could occur in drinking water from atmospheric deposition, industrial contamination, leaching from protective coatings in storage tanks.
Total dissolved solids	Not necessary	600	Based on taste: <600 mg/L is regarded as good quality drinking water. 600-900 mg/L is regarded as fair quality 900-1200 mg/L is regarded as poor quality >1200 mg/L is regarded as unacceptable.
Triadimefon	0.09		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Trichlorfon	0.007		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Trichlorobenzenes (total)	0.03	0.005	Industrial chemical.
1,1,1-Trichloroethane	c		Could occur in drinking water from contamination/spills.
Trichloroethylene	c		Industrial solvent, cleaning fluid, metal degreaser. Could occur in drinking water from direct contamination or via atmospheric contamination of rainwater.
Triclopyr	0.02		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Trifluralin	0.09		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Trihalomethanes (THMs) (Total)	0.25 e		By-product of chlorination and chloramination. Action to reduce trihalomethanes is encouraged, but must not compromise disinfection, as non-disinfected water poses significantly greater risk than trihalomethanes.
Turbidity	c	5 NTU	5 NTU is just noticeable in a glass. <0.2 NTU is the target for effective filtration of <i>Cryptosporidium</i> and <i>Giardia</i> . <1 NTU is the target for effective disinfection.
Uranium	0.017		Occurs naturally, or from release from mill tailings, combustion of coal and phosphate fertilizers.

Characteristic	Guideline values (mg/L unless otherwise specified)		Comments
	Health	Aesthetic	
Vernolate	0.04		Pesticide, unlikely to be found in drinking water at levels that may cause health concerns.
Vinyl chloride	0.0003		From chemical spills. Used in making PVC pipes. Human carcinogen.
Xylene	0.6	0.02	Could occur in drinking water as a pollutant, or from solvent used for bonding plastic fittings.
Zinc	c	3	Usually from corrosion of galvanised pipes/fittings and brasses. Natural concentrations generally <0.01 mg/L. Taste problems >3 mg/L.

HU = Hazen units; NTU = nephelometric turbidity units; THMs = trihalomethanes.

- a Aesthetic values are not listed if the compound does not cause aesthetic problems, or if the value determined from health considerations is the same or lower.
- b If present at all in Australian drinking waters, concentrations of all organic compounds other than disinfection byproducts are likely to be very low relative to the guideline value.
- c Insufficient data to set a guideline value based on health considerations.
- d The guideline value is below the limit of quantitation. Improved analytical procedures are required for this compound.
- e The concentration of all chlorination byproducts can be minimised by removing naturally occurring organic matter from the source water, reducing the amount of chlorine added, or using an alternative disinfectant (which may produce other byproducts). Action to reduce trihalomethanes and other byproducts is encouraged, but must not compromise disinfection.
- f No corresponding fact sheet for these pesticides. Guideline values for these pesticides appeared in a previous version of the ADWG and have been retained in Table 10.5 for information purposes only.

Note: All values are as 'total' unless otherwise stated.

Note: Routine monitoring for these compounds is not required unless there is potential for contamination of water supplies (e.g. accidental spillage).

Table 10.7 Guideline values radiological quality of drinking water

Guideline value

The total estimated dose per year from all radionuclides in drinking water, excluding the dose from potassium-40, should not exceed 1.0 mSv.

If this guideline value is exceeded, the water provider, in conjunction with the relevant health authority, should evaluate possible remedial actions on a cost-benefit basis to assess what action can be justified to reduce the annual exposure.

Screening of water supplies

Compliance with the guideline for radiological quality of drinking water should be assessed, initially, by screening for gross alpha and gross beta activity concentrations. The recommended screening level for gross alpha activity is 0.5 Bq/L. The recommended screening level for gross beta activity is 0.5 Bq/L after subtraction of the contribution from potassium-40.

If either of these activity concentrations is exceeded, specific radionuclides should be identified and their activity concentrations determined. The concentrations of both radium-226 and radium-228 should always be determined, as these are the most significant naturally occurring radionuclides in Australian water supplies. Other radionuclides should be identified if necessary to ensure all gross alpha and beta activity is accounted for, after taking into account the counting and other analytical uncertainties involved in their determination.

10.4 Reference

Mosse P, Murray B (2008). *Practical Guide to the Operation and Optimisation of Media Filters*. Water Industry Operators Association, Shepparton.