

## Approved methods for sampling and analysis of water pollutants in NSW: comparison table

The new *Approved Methods for Sampling and Analysis of Water Pollutants in NSW* replaces the 2004 version of the document.

This document contains:

- a comparison of the changes against the 2004 Approved Methods (Table 1)
- a list of new analytes included in the updated Approved Methods (Table 2).

**Table 1 Comparison of changes against the 2004 Approved Methods for the Sampling and Analysis of Water Pollutants in New South Wales**

### Note

The letters in the USEPA methods for water refer to version (dates), hence they are not included in the proposed list of methods.

The letters in the APHA methods refer to sections in the method, hence they are included.

Analyte in 2004 Approved Methods	How analyte is listed in updated Approved Methods	Change	Reason for change
Acenaphthene	Included in extractable base/neutrals and acids and polycyclic aromatic hydrocarbons	Additional method allowed – USEPA 625.1	New method published since 2004
Acenaphthylene	Included in extractable base/neutrals and acids and polycyclic aromatic hydrocarbons	Additional method allowed – USEPA 625.1	New method published since 2004
Acrolein	Not included	NA	Not listed on any licence
Acrylonitrile	Not included	NA	Not listed on any licence
Aldrin	Included in extractable base/neutrals and acids and organochlorine pesticides	Additional methods allowed – USEPA 625.1, 608.3, 8085	New methods published since 2004
Alkalinity (bicarbonate)	Same	No change	-
Alkalinity (total)	Same	No change	-
Aluminium (acid extractable)	Same	No substantive change to methods (see note 1)	-
Anionic surfactants	Included in methylene blue active substance	No change	-
Anthracene	Same	Additional method allowed – USEPA 8410	New method published since 2004

Analyte in 2004 Approved Methods	How analyte is listed in updated Approved Methods	Change	Reason for change
Antimony (acid extractable)	Same	No substantive change to methods (see note 1)	-
Arsenic (acid extractable)	Same	No substantive change to methods (see note 1)	-
Atrazine	Same	Two additional methods allowed – USEPA 8085 and 8270	New methods published since 2004
Barium (acid extractable)	Same	No substantive change to methods (see note 1)	-
Benzene	Included in VOCs	Additional method allowed – USEPA 8261	New method published since 2004
Benzdine	Included in extractable base/neutrals and acids	Additional method allowed – USEPA 625.1	New method published since 2004
Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(e)pyrene Benzo(ghi)perylene Benzo(k)fluoranthene	Included in extractable base/neutrals and acids (except for benzo(e)pyrene) and polycyclic aromatic hydrocarbons (all included)	Additional method allowed – USEPA 625.1 for all but benzo(e)pyrene	New method published since 2004
Beryllium (acid extractable)	Same	No change	-
Alpha-BHC Beta-BHC	Included in extractable base/neutrals and acids and organochlorine pesticides	Three additional methods allowed – USEPA 625.1, 608.3 and 8085	New methods published since 2004
Biochemical oxygen demand	BOD (5 day)	Additional method allowed – APHA 5210D	A commonly used standard method for this analyte
Boron (acid extractable)	Same	No substantive change to methods (see notes 1 and 3)	-
Bromide	Same	Two additional methods allowed USEPA 6500 and 9056	New methods published since 2004
Bromoform	Included in trihalomethanes and chlorinated organic solvents and volatile organic compounds (VOCs)	Additional method allowed – USEPA 8261	New method published since 2004
Cadmium (acid extractable)	Same	No change	-
Calcium (acid extractable)	Same	An additional method allowed – USEPA 200.7 Also note 1 applies.	New method published since 2004

Analyte in 2004 Approved Methods	How analyte is listed in updated Approved Methods	Change	Reason for change
Carbamate pesticides Includes: carbaryl methomyl	Not included	NA	Analyte not listed in any EPL
Chemical oxygen demand	Same	No change	-
Chlordane and isomers (cis, trans and total)	Same and also included in organochlorine pesticides	Three additional methods allowed – USEPA 8085, 625.1 and 608.3	New methods published since 2004
Chloride	Same	Two additional methods allowed – USEPA 6500 and 9056	New methods published since 2004
Chlorinated phenoxy acid herbicides Includes: 2,4-D pentachlorophenol 2,4,5-T	No longer includes pentachlorophenol which is listed separately	No change to methods for remaining analytes	-
Chlorine (combined residual)	Same	No change	-
Chlorine (free residual)	Same	No change	-
Chlorine (total residual)	Same	No change	-
Chlorobenzene	Included in volatile organic compounds	Additional method allowed – USEPA 8261	New method published since 2004
Chloroform	Included in trihalomethanes and chlorinated organic solvents and volatile organic compounds	Additional method allowed – USEPA 8261	New method published since 2004
1-Chloronaphthalene	Not included	NA	Not listed in any EPL
2-Chlorophenol	Included in extractable base/neutrals and acids	Additional method allowed – USEPA 625.1	New method published since 2004
Chlorophyll a	Same	No change	-
Chlorpyrifos	Included in organophosphorus pesticides	Additional method allowed – USEPA 8085	New method published since 2004
Chromium (acid extractable)	Same	No change	-
Chromium (hexavalent)	Same	One additional method allowed – USEPA 7199	New method published since 2004
Chromium (trivalent)	Same	No change	-

Analyte in 2004 Approved Methods	How analyte is listed in updated Approved Methods	Change	Reason for change
Chrysene	Included in extractable base/neutrals and acids and polycyclic aromatic hydrocarbons	Additional method allowed – USEPA 625.1	New method published since 2004
Cobalt (acid extractable)	Same	No change	-
Coliforms: (a) total coliforms (b) faecal coliforms	Faecal coliforms listed in thermotolerant coliforms. Total coliforms not included	Additional method allowed – AS4276.6 <b>Note:</b> <ul style="list-style-type: none"> <li>AS 4276.4 has been amalgamated and designated as AS 4276.6.</li> <li>APHA 9223 and AS 4276.5 are methods for total coliforms.</li> </ul>	New method published since 2004
Colour (true)	Same	No change	-
Conductivity	Same	No change	-
Copper (acid extractable)	Same	No substantive change to methods (see note 1)	-
Coronene	Included in polycyclic aromatic hydrocarbons	No change	-
Cyanide (amenable to chlorination)	Not included	NA	Not in any EPL
Cyanide (free)	Same	No change	-
Cyanide (total)	Same	Additional method allowed – USEPA 335.4	New method published since 2004
Cyanide (weak acid dissociable)	Same	No change	-
2,4-D	Included in chlorinated phenoxy acids herbicides	No change	-
4,4'-DDD 4,4'-DDE 4,4'-DDT	Included in extractable base/neutrals and acids and organochlorine pesticides	Three additional methods allowed – USEPA 625.1, 608.3 and 8085 No changes to preferred methods	New methods published since 2004
Depth	Same	No change	-
Diazinon	Included in organophosphorus pesticides	Additional method allowed – USEPA 8085	New method published since 2004

Analyte in 2004 Approved Methods	How analyte is listed in updated Approved Methods	Change	Reason for change
Dibenzo(a,h)anthracene	Included in extractable base/neutrals and acids and polycyclic aromatic hydrocarbons	Additional method allowed – USEPA 625.1	New method published since 2004
Dibromochloromethane	Included in trihalomethanes and chlorinated organic solvents and volatile organic compounds	Additional method allowed – USEPA 8261	New method published since 2004
1,2-Dichlorobenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene	Included in extractable base/neutrals and acids and volatile organic compounds <i>(3,3'-dichlorobenzidine also included in extractable base/neutrals and acids)</i>	Two additional methods allowed – USEPA 625.1 and 8261	New methods published since 2004
3,3'-Dichlorobenzidine	Included in extractable base/neutrals and acids	Additional method allowed – USEPA 625.1	New method published since 2004
1,1-Dichloroethane 1,2-Dichloroethane 1,1-Dichloroethene	Included in volatile organic compounds	Additional method allowed – USEPA 8261	New method published since 2004
2,4-Dichlorophenol	Included in dissolved organic halogen	Two additional methods allowed – APHA section 5320 (screening method) USEPA 625.1	New method published since 2004
Dieldrin	Included in extractable base/neutrals and acids and organochlorine pesticides	Three additional methods allowed – USEPA 625.1, 608.3 and 8085	New methods published since 2004
2,4-Dimethylphenol	Included in extractable base/neutrals and acids and phenol and individual phenolic compounds	Additional method allowed – USEPA 625.1	New method published since 2004
1,2-Diphenylhydrazine	Not included	NA	Not in any EPL
Diquat	Included in quaternary salts	No change (USEPA method 549.2 is the same as USEPA method 549.1)	-
Dissolved organic carbon	Same	No change	-

Analyte in 2004 Approved Methods	How analyte is listed in updated Approved Methods	Change	Reason for change
Dissolved organic halogen Includes: trihalomethanes trichloroethene tetrachloroethene other halogenated alkanes and alkenes chlorinated and brominated pesticides polychlorinated biphenyls hexachlorobenzene 2,4-dichlorophenol	Same	No change	-
Dissolved oxygen	Same	No change	-
Diuron	Same	No change	-
DTPA	Not included	No change	Not in any EPL
Endosulfan I Endosulfate II Endosulfan sulfate	Included as extractable base/neutrals and acids and organochlorine pesticides	Three additional methods allowed – USEPA 625.1, 608.3 and 8085	New methods published since 2004
Endrin	Included in organochlorine pesticides	Two additional methods allowed – USEPA 608.3 and 8085	New methods published since 2004
Enterococci	Same	Two additional methods allowed – USEPA 1106.1 and 1600	New methods using membrane filtration published since 2004
Ethanol	Same	Two additional methods allowed – USEPA 8260 and 8261	USEPA 8261 is anew published met since 2004 USEPA 8260 updated
Ethyl benzene	Included in volatile organic compounds	Additional method allowed – USEPA 8261	New method published since 2004
Extractable base/neutrals and acids Includes: acenaphthene acenaphthylene aldrin anthracene benzo(a)anthracene benzo(a)pyrene benzo(b)fluoranthene benzo(ghi)perylene benzo(k)fluoranthene beta-BHC	Same	Additional method allowed – USEPA 625.1	New method published since 2004

Analyte in 2004 Approved Methods	How analyte is listed in updated Approved Methods	Change	Reason for change
Extractable base/ neutrals and acids (continued) chlordane 2-chlorophenol chrysene 4,4'-ddd 4,4'-dde 4,4'-ddt dibenzo(a,h)anthracene 1,2-dichlorobenzene 1,3-dichlorobenzene 1,4-dichlorobenzene 3,3'-dichlorobenzidine 2,4-dichlorophenol dieldrin 2,4-dimethylphenol endosulfan sulfate fluoranthene heptachlor heptachlor epoxide hexachlorobenzene indeno(1,2,3-cd)pyrene naphthalene nitrobenzene pentachlorophenol phenol polychlorinated biphenyls (PCB-1016, PCB-1221, PCB-1232, PCB-1242, PCB-1248, PCB-1254, PCB-1260) pyrene 2,4,6-trichlorophenol	Same	Additional method allowed – USEPA 625.1	New method published since 2004
Faecal coliforms	Included in thermotolerant coliforms	Same <b>Note: AS 4276.4 has been amalgamated and designated as AS 4276.6</b>	-
Floatables	Not included	NA	Not in any EPL
Flow	Same	No change	-
Fluoranthene	Included in polycyclic aromatic hydrocarbons and extractable base/ neutrals and acids	Additional method allowed – USEPA 625.1	New method published since 2004

Analyte in 2004 Approved Methods	How analyte is listed in updated Approved Methods	Change	Reason for change
Fluoride	Same	Three additional methods allowed – APHA 4110, USEPA 6500 and USEPA 9056	New methods published since 2004
Formaldehyde	Same	No change	-
Glyphosate	Same	No change	-
Heptachlor Heptachlor epoxide	Included in Extractable base/neutrals and acids and organochlorine pesticides	Three additional methods allowed – USEPA 625.1, 608.3 and 8085	New methods published since 2004
Hexachlorobenzene	Same and a general screening method is included for this analyte in dissolved organic halogen	Two additional methods allowed – USEPA 625.1 and 8410 Also, a screening method APHA 5320 is included	New methods published since 2004
Hydrogen sulfide (un-ionised)	Same	No change	-
Indeno(1,2,3-cd)pyrene	Included in extractable base/neutrals and acids and Polycyclic aromatic hydrocarbons	Additional method allowed – USEPA 625.1	New method published since 2004
Iron (acid extractable)	Same	No substantive change to methods (see note 1)	-
Iron (dissolved)	Included in metals (dissolved)	Same	-
Iron (suspended)	Not included	NA	Not in any EPL
Lead (acid extractable)	Same	No change	-
Lead (dissolved)	Included in metals (dissolved)	No change	-
Lead (suspended)	Not included	NA	Not in any EPL
Lindane	Included as gamma-BHC (lindane) in extractable base/neutrals and acids and organochlorine pesticides	Three additional methods allowed – USEPA 625.1, 608.3 and 8085	New methods published since 2004
Lithium (acid extractable)	Same	Additional method allowed when testing very low concentrations and it is preferred – APHA 3125. Also see note 1.	New method published since 2004



Analyte in 2004 Approved Methods	How analyte is listed in updated Approved Methods	Change	Reason for change
Magnesium (acid extractable)	Same	No substantive change to methods (see note 1)	-
Malathion	Included in organophosphorus pesticides	Additional method allowed – USEPA 8085	New method published since 2004
Manganese (acid extractable)	Same	No substantive change to methods (see note 1)	-
Manganese (dissolved)	Included in metals (dissolved)	No change	-
MCPA	Included in chlorinated phenoxy acids herbicides	No change	-
Mercury (dissolved)	Same	Two additional methods allowed – APHA 3120 (preferred) APHA 3125 (preferred when testing very low concentrations)	New methods published since 2004
Mercury (total)	Same	Three additional methods allowed – USEPA 245.7 APHA 3120 (preferred) APHA 3125 (preferred when testing very low concentrations)	New methods published since 2004
Methane	Same	No change	-
Methomyl	Same	No change	-
Methoxychlor	Included in organochlorine pesticides	Two additional methods allowed – USEPA 608.3 USEPA 8085	New methods published since 2004
Methyl azinphos	Included in organophosphorus pesticides	Additional method allowed – USEPA 8085	New method published since 2004
Methylene blue active substances	Same	No change	-
Methyl ethyl ketone	Same	Two additional methods allowed – USEPA 8015 and 8261	USEPA 8261 is a new published since 2004 Methyl ethyl ketone listed by alternative name (2-butanone or butanone) in USEPA 8015
2-Methylphenol 3-Methylphenol 4-Methylphenol	Included in methylphenols	Additional method allowed – USEPA 8410 Preferred methods are identified	New method published since 2004

Analyte in 2004 Approved Methods	How analyte is listed in updated Approved Methods	Change	Reason for change
Metolachlor	Same	USEPA 8081 and 8141 are no longer allowed. New method allowed – USEPA 8085	Analyte is not specifically listed in the USEPA 8081 and 8141
Molinate	Same	Three additional methods allowed – USEPA 8085, 8141 and 8321	New methods published since 2004
Molybdenum (acid extractable)	Same	No substantive change to methods (see note 3)	-
Molybdenum (dissolved)	Included in metals (dissolved)	No change	-
Naphthalene	Included in extractable base/neutrals and acids and polycyclic aromatic hydrocarbons	Two additional methods allowed – USEPA 625.1 USEPA 8021	New methods published since 2004
Nickel (acid extractable)	Same	No substantive change to methods (see note 1)	-
Nitrobenzene	Included in extractable base/neutrals and acids	Additional method allowed – USEPA 625.1	New published method since 2004
Nitrogen (ammonia)	Same	No change	-
Nitrogen (nitrate)	Nitrate	Three additional methods allowed – USEPA 353.2, 6500 and 9056	New methods published since 2004
Nitrogen (nitrite)	Nitrite	Four additional methods allowed – APHA 4140, USEPA 353.2, 6500 and 9056	New methods published since 2004
Nitrogen (organic)	Not included – however could be worked out using the current formula: <i>Nitrogen (organic) = Total Kjeldahl nitrogen – Nitrogen (ammonia)</i> or <i>Nitrogen (organic) = Nitrogen (total) – [Nitrogen (ammonia) + Nitrogen (total oxidised)]</i>	NA	-
Nitrogen (total)	Same	Additional method allowed – ASTM D5176	Another suitable standard method
Nitrogen (total oxidised)	Same	Four additional methods allowed – USEPA 353.2, 4140, 6500 and 9056	New methods published since 2004

Analyte in 2004 Approved Methods	How analyte is listed in updated Approved Methods	Change	Reason for change
Total Kjeldahl nitrogen	Same	No change	-
Nonylphenol ethoxylates Octylphenol ethoxylates	Same except that octylphenol ethoxylates not listed	-	Octylphenol ethoxylates not listed in any EPL
Odour	Not included	NA	Not a water sampling requirement in any EPL
Oil and grease	Same	No change	-
Organochlorine pesticides Includes: Aldrin alpha-BHC beta-BHC 4,4'-DDD 4,4'-DDE 4,4'-DDT Dieldrin Endosulfan sulfate Endrin Heptachlor Heptachlor epoxide Lindane Methoxychlor	Same	Revised list includes additional analytes – cis-chlordane, trans-chlordane, endosulfan I and II Two additional methods allowed – USEPA 608.3 and 8085	New methods published since 2004
Organophosphorus pesticides Includes: Chlorpyrifos Chlorpyrifos Methyl Diazinon Dimethoate Ethion Malathion Methyl azinphos Parathion Parathion methyl	Same	Revised list includes an additional analyte – atrazine. An additional method allowed – USEPA 8085	New method published since 2004
Oxidation–reduction potential	Same	No change	-
Paraquat	Included in quaternary salts	USEPA 549.1 replaced with USEPA 549.2	Updated method
Parathion	Included in organophosphorus pesticides	Additional method allowed – USEPA 8085	New method published since 2004
Pentachlorophenol	Same except no longer also included in chlorinated phenoxy acids herbicides.	Additional method may be used – USEPA 625.1	New method published since 2004

Analyte in 2004 Approved Methods	How analyte is listed in updated Approved Methods	Change	Reason for change
Perylene	Not included	NA	Not in any EPL
Petroleum hydrocarbons and BTEX: (a) Total petroleum hydrocarbons (b) BTEX (equals Benzene +Ethyl Benzene +Toluene +Xylene, including m-Xylene, o-Xylene and p-Xylene)	Same	Additional method allowed – USEPA 8000	New method published since 2004
pH value	Same	No change	-
Phenol and individual phenolic compounds Includes: 2-chlorophenol 2,4-dichlorophenol 2,4-dimethylphenol phenol 2,4,6-trichlorophenol	Same	No change	-
Substituted phenols and cresols	Not included	NA	Not in any EPL
Total phenolics	Same	Additional method allowed – USEPA 420.4	New method published since 2004
Phosphorus (dissolved reactive)	Filterable reactive phosphate	No change	-
Phosphorus (total)	Same	Methods listed under metals (acid extractable) methods are also suitable for this analyte	Phosphorus can be measured using both metals (acid extractable) methods and colorimetry methods
Phosphorus (total dissolved)	Same	Methods listed under metals (dissolved) are also suitable for this analyte	Phosphorus can be measured using both metals (acid extractable) methods and colorimetry methods
Polychlorinated biphenyls	Same	Four additional methods allowed – APHA 5320 (screening) APHA 6410 USEPA 625.1 USEPA 8270 (an additional preferred method)	New methods published since 2004

Analyte in 2004 Approved Methods	How analyte is listed in updated Approved Methods	Change	Reason for change
Polynuclear aromatic hydrocarbons Includes: acenaphthene acenaphthylene anthracene benzo(a)anthracene benzo(a)pyrene benzo(b)fluoranthene benzo(ghi)perylene benzo(k)fluoranthene chrysene dibenzo(a,h)anthracene fluoranthene indeno(1,2,3-cd)pyrene naphthalene pyrene	As polycyclic aromatic hydrocarbons	Methods same except for USEPA method 8100 no longer allowed Additional analytes are included in the group – coronene, chrysene, phenanthrene	The sensitivity and selectivity of USEPA method 8100 are inferior to other standard methods.
Potassium (acid extractable)	Same	No substantive change to methods (see note 1)	-
Pyrene	Included in extractable base/neutrals and acids and polycyclic aromatic hydrocarbons	Additional method allowed – USEPA 625.1	New method published since 2004
Quaternary salts Includes: diquat paraquat	Same	USEPA 549.1 replaced with USEPA 549.2	Updated method
Radionuclide(s)	Not included	NA	Not in any EPL
Salinity	Same	APHA 2510 no longer listed	APHA 2510 is method for analysing conductivity which is listed separately
Selenium (acid extractable)	Same	No substantive change to methods (see note 1)	-
Semi-volatile organic hydrocarbons	Same	No change	-
Silver (acid extractable)	Same	No substantive change to methods (see note 1)	-
Simazine	Same	Additional method allowed – USEPA 8085	New method published since 2004
Sodium (acid extractable)	Same	No substantive change to methods (see note 1)	-

Analyte in 2004 Approved Methods	How analyte is listed in updated Approved Methods	Change	Reason for change
Solids: (a) total dissolved solids (b) total suspended solids	Same but listed separately and not under a 'solids' heading	No change	-
Standing water level	Same	No change	-
Styrene	Included in volatile organic compounds	Additional method allowed – USEPA 8261	New method published since 2004
Substituted phenols and cresols	Phenol included in extractable base/neutrals and acids and phenol and individual phenolic compounds	Additional method allowed – USEPA 625.1	New method published since 2004
Sulfate	Same	Three additional methods allowed – USEPA 375.2, 6500, 9056	New methods published since 2004
Sulfide (dissolved)	Same	No change	-
Sulfide (total)	Same	No change	-
Hydrogen sulfide (un-ionised)	Same	No change	-
2,4,5-T	Included in chlorinated phenoxy acids herbicides	No change	-
Temperature	Same	No change	-
Tetrachloroethene	Included in dissolved organic halogen and volatile organic compounds	Two additional methods allowed – APHA 5320 (screening) USEPA 8261	New methods published since 2004
2,3,4,6-Tetrachlorophenol	Same and also added in extractable base/neutrals and acids and phenol and individual phenolic compounds	Two additional methods allowed – USEPA 625.1 and 8085	New methods published since 2004
Thermotolerant coliforms (also known as faecal coliforms)	Same	Additional method allowed – USEPA 1604	New method published since 2004
Thiobencarb	Same	USEPA 8270 no longer listed because it does not specifically mention the analyte	Method may be used once validated
Tin (acid extractable)	Same	No substantive change to methods (see notes 1, 2 and 3)	-
Titanium (acid extractable)	Same	Additional method allowed – APHA 3120 (additional preferred)	New method published since 2004

Analyte in 2004 Approved Methods	How analyte is listed in updated Approved Methods	Change	Reason for change
Toluene	Included in volatile organic compounds	Additional method allowed – USEPA 8261	New method published since 2004
Toluene 2,4-diisocyanate (TDI)	Not included	NA	Not in any EPL
Total Kjeldahl nitrogen	Same	No change	-
Total organic carbon (in water)	Same	Additional method allowed – USEPA 9060	New method published since 2004
Total dissolved solids Total suspended solids	Same	No change	-
Toxicity testing	Same	More guidance provided on criteria to determine the most suitable toxicity test	-
Tributyltin	Same	USEPA 282.3 may no longer be used Two additional methods allowed – APHA 6710 and ISO 17353	New published method since 2004
1,1,1-Trichloroethane 1,1,2-Trichloroethane	Included in volatile organic compounds	Additional method allowed – USEPA 8261	New method published since 2004
Trichloroethene	Included in volatile organic compounds	Additional method allowed – USEPA 8261	New method published since 2004
2,4,6-Trichlorophenol	Included in extractable base/neutrals and acids and phenol and individual phenolic compounds	Additional method allowed – USEPA 625.1	New method published since 2004
Trifluralin	Same	Two additional methods allowed – USEPA 8085 and 8091	New methods published since 2004
Trihalomethanes and chlorinated organic solvents Includes: bromoform bromodichloromethane carbon tetrachloride chloroform dibromochloromethane tetrachloroethene 1,1,1-trichloroethane 1,1,2-trichloroethane trichloroethene	Same	Additional method allowed – APHA 5320 for screening	New methods published since 2004
Vanadium (acid extractable)	Same	No change	-
Turbidity	Same	No change	-
Velocity (of flow)	Same	No change	-

Analyte in 2004 Approved Methods	How analyte is listed in updated Approved Methods	Change	Reason for change
Vinyl chloride	Included in volatile organic compounds	Additional method allowed – USEPA 8261	New method published since 2004
Volatile halogenated compounds	Same	Additional method allowed – USEPA 8261	New method published since 2004
Volatile organic compounds Includes: benzene bromoform carbon tetrachloride chlorobenzene chloroform dibromochloromethane 1,2-dichlorobenzene 1,3-dichlorobenzene 1,4-dichlorobenzene 1,1-dichloroethane 1,2-dichloroethane 1,1-dichloroethene ethyl benzene naphthalene styrene tetrachloroethene toluene 1,1,1-trichloroethane 1,1,2-trichloroethane trichloroethene vinyl chloride m-xylene o-xylene p-xylene	Same	Additional method allowed – USEPA 8261	New method published since 2004
Volume	Same	No change but requesting input from stakeholders on a more contemporary standard	-
Xylene Includes: m-xylene o-xylene p-xylene	Included in volatile organic compounds	Additional method allowed – USEPA 8261	New method published since 2004
Zinc (acid extractable)	Same	No substantive change to methods (see note 1)	-
Zinc (dissolved)	Same	No change	-



## Notes

1. USEPA method 3020 is no longer listed as one of the methods for preliminary treatment (sample preparation) of these analytes as they are not specifically listed in the method. However, the method could be used for these analytes with adequate method validation and QCs.
2. APHA 3125 and USEPA method 200.8 are no longer listed as methods for tin because tin is not specifically listed in these methods. However, the methods could be used for tin with adequate method validation and QCs.
3. USEPA method 6020 is no longer listed as one of the methods for these analytes and they are not specifically listed in the method. However, the method could be used for these analytes with adequate method validation and QCs.

**Table 2 New analytes included in the updated Approved Methods**

Analyte	Method
Amitrole	There are no standard methods for this analyte. If you need to monitor for this analyte, seek advice from the EPA before commencing sampling or analysis. Situation 6 in section 4.2 applies here.
Aniline	Use one of the following: USEPA method 8131 USEPA method 8261 USEPA method 8270
Arsenic III (arsenite)	USEPA method 1632
Arsenic V (arsenate)	USEPA method 1632
Carbonate	APHA section 2320
Chlorinated volatile compounds	Use one of the following: APHA section 6200 *USEPA method 8021 *USEPA method 8260 USEPA method 8261
Escherichia coli	Use one of the following: APHA section 9221F APHA section 9221G APHA section 9222 AS 4276 (several volumes) USEPA method 1103.1 USEPA method 1603 USEPA method 1604
Hardness (as calcium carbonate)	Use one of the following: APHA section 2340 USEPA method 130.1
Hexachlorobutadiene	Use one of the following: USEPA method 8021 USEPA method 8260 USEPA method 8261 *USEPA method 8270 USEPA method 8410
Hexachloroethane	Use one of the following: USEPA method 8260 USEPA method 8270 USEPA method 8410

Analyte	Method
Newly included metals (acid extractable):	For preliminary treatment, use one of the following:
strontium (Sr)	APHA section 3030(E–K)
thallium (Tl)	USEPA method 3005
uranium (U)	USEPA method 3010
sulfur (S) Ψ	USEPA method 3015
	USEPA method 3020^.
	Then use one of the following:
	*APHA section 3113~
	*APHA section 3120
	*APHA section 3125†◇
	USEPA method 200.7
	USEPA method 200.8†#
	*USEPA method 6010
	*USEPA method 6020†Δ.
	Ψ Sulfur is not a metal, but it is included here because it can be analysed using the same methods that are listed for metals (acid extractable).
	^ Sample preparation method only for selected heavy metals (Be, Cd, Cr, Co, Pb, Mo, Tl and V)
	~ Only for analysis of Al, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Fe, Pb, Mn, Mo, Ni, Se, Ag and Sn
	◇ Analysis for the listed analytes except for B, Ca, Fe, Mg, K, P, Na, Sn, S and Ti
	# Analysis for the listed analytes except for B, Ca, Fe, Mg, K, P, Na, Sn, S, Ti, Sr and Li
	Δ Analysis for the listed analytes except for B, Li, Mo, P, S, Sn, Sr, Ti and U

Analyte	Method
Metals (dissolved) Includes: aluminium (Al) antimony (Sb) arsenic (As) barium (Ba) beryllium (Be) boron (B) cadmium (Cd) calcium (Ca) chromium (Cr) cobalt (Co) copper (Cu) iron (Fe) lead (Pb) lithium (Li) magnesium (Mg) manganese (Mn) molybdenum (Mo) nickel (Ni) phosphorus (P) potassium (K) selenium (Se) silver (Ag) sodium (Na) strontium (Sr) sulfur (S) Ψ tin (Sn) titanium (Ti) thallium (Tl) uranium (U) vanadium (V) zinc (Zn)	For preliminary treatment use APHA section 3030B then treat according to 'Metals (acid extractable)'.  Ψ Sulfur is not a metal, but it is included here because it can be analysed using the same methods that are listed for metals (dissolved).
Metsulfuron-methyl	There are no standard methods for this analyte. If you need to monitor for this analyte, seek advice from the EPA before commencing sampling or analysis. Situation 6 in s4.2 applies here.
Nitrite (NO <sub>2</sub> <sup>-</sup> )	Use one of the following: methods as listed in 'Anions' APHA section 400-NO <sub>2</sub> <sup>-</sup> APHA section 400-NO <sub>3</sub> <sup>-</sup> F (with cadmium colour removed) APHA section 400-NO <sub>3</sub> <sup>-</sup> I (with cadmium colour removed) APHA section 4120 APHA section 4130 USEPA method 353.2

Analyte	Method
Per- and polyfluorinated alkyl substances Includes: perfluorobutanesulfonic acid (PFBS) perfluorodecanoic acid (PFDA) perfluoroheptanoic acid (PFHpA) perfluorohexanesulfonic acid (PFHxS) perfluorohexanoic acid (PFHxA) perfluorononanoic acid (PFNOA) perfluorooctanesulfonic acid (PFOS) perfluorooctanoic acid (PFOA) Other PFAS analytes as specified in PFAS NEMP	Use the standard methods in accordance with the methods listed in the PFAS National Environmental Management Plan (PFAS NEMP) that are relevant to your specific monitoring requirement.
Phenanthrene (included in polycyclic aromatic hydrocarbons)	Use one of the following: APHA section 6410 APHA section 6440 *USEPA method 8100 *USEPA method 8270 *USEPA method 8310

\* Preferred methods

† Used when very low concentrations (<100µg/L) are tested

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