Instructions for Handling Test Materials and Recording Results

Changes to Document from Previous Issue

- Samples 35 to 40 added
- Samples 7A & 19A split in to 2 spiking solutions
- Addition of 1,2,4-trimethylbenzene and MTBE to sample 6C
- Sample 23 and 24 minor text changes.

General Instructions

Sample Storage

All samples and spiking solutions should be stored in a refrigerator at 2-8^{o}C in the dark from the time of arrival at your laboratory. If a preservative is routinely added to the type of sample provided as part of your laboratory procedures, a suitable aliquot should be preserved as soon as possible in the normal way. Any dilutions that result from addition of preservatives should be corrected for before submission of results.

Sample Preparation

All samples should be equilibrated at room temperature 20(±5)^{o}C before any dilutions or analyses are performed. Samples should be prepared in accordance with the specific instructions for the sample. The dilutions specified should be conducted in such a way as to ensure that any errors introduced by this dilution are much smaller than the overall analytical error involved in your method. As a general rule it is suggested that the error from dilution should be less than 1%. Example dilutions are given for illustration to help clarify the meaning of the instructions. These procedures should be followed exactly to ensure comparability of results. **Any dilutions detailed as part of these procedures should not be used in the calculation of results. These dilutions simply provide a final sample for analysis within the expected concentration ranges.**

Diluents Used

The Sample Preparation Instructions refer to various different diluents. If the diluent required is anything other than deionised water it is supplied by Aquacheck. Diluents referred to/supplied are: ‘Concentrated Effluent Matrix’, ‘Concentrated Chromium Effluent Matrix’, ‘Groundwater Sample’, ‘Matrix Water’, ’Sample 1 & 2 Hard Water’, ‘Sample 1 & 2 Soft Water’, 'Sample 4 Matrix', ‘Sample 4G Matrix’, 'Sample 5 Matrix’, ‘Sample 5A Matrix’, 'Sample 5B Matrix’, ‘Sample 5G Matrix’ and ‘Sample 17C Metals’. Sometimes different spiking solutions in the same sample will use different diluents, e.g. Sample 1H and 1S Kjeldahl Nitrogen Spiking Solution requires dilution with deionised water, whereas Sample 1H and 1S Total Phosphorus Spiking Solution requires dilution with matrix water.

If an effluent concentrate is supplied, it must be diluted by a factor of 4 with deionised water before use.

Sample Analysis

Samples should be analysed by the normal methods used for those determinands by your laboratory.

Aquacheck samples should be treated like any other samples and all normal quality control procedures should be adopted.

Results should only be corrected for recovery and blank, if appropriate **and** if this is the normal practice in the laboratory. **If the sample is diluted as part of the analytical process (this is apart from the dilutions in the sample preparation instructions), such dilutions should be corrected for.**

Instructions for Handling Test Materials and Recording Results
Sample 1H

Materials Supplied
- 2 x 1L LDPE bottles containing hard matrix water (labelled as 'Sample 1& 2 Hard Water')
- 2 x 30mL LDPE bottles containing spiking solutions for kjeldahl nitrogen and total phosphorus

N.B: The deionised water required for dilution of the kjeldahl nitrogen spiking solution is **NOT** supplied.

Preparation

Determinand	Bottle for analysis	Instruction
Calcium	**Sample 1 & 2 Hard Water**	Analyse as supplied
Magnesium	**Sample 1 & 2 Hard Water**	Analyse as supplied
Total Hardness	**Sample 1 & 2 Hard Water**	Analyse as supplied
Alkalinity	**Sample 1 & 2 Hard Water**	Analyse as supplied
Potassium	**Sample 1 & 2 Hard Water**	Analyse as supplied
Sodium	**Sample 1 & 2 Hard Water**	Analyse as supplied
Chloride	**Sample 1 & 2 Hard Water**	Analyse as supplied
Sulfate	**Sample 1 & 2 Hard Water**	Analyse as supplied
Fluoride	**Sample 1 & 2 Hard Water**	Analyse as supplied
Conductivity (20^{o}C)	**Sample 1 & 2 Hard Water**	Analyse as supplied
Kjeldahl Nitrogen	**Sample 1 KjN**	Dilute spiking solution with **deionised** water by a factor of 100 (e.g. 1mL made up to 100mL)
Total Phosphorus	**Sample 1 TP**	Dilute spiking solution with **matrix** water by a factor of 100 (e.g. 1mL made up to 100mL)
Barium	**Sample 1 & 2 Hard Water**	Analyse as supplied

Do not correct the results for these dilutions.

Reporting
Both mS/cm and µS/cm (at both 20 and 25^{o}C) are available to participants as reporting units. However, results will be reported back to participants in µS/cm (at 20^{o}C)

Instructions for Handling Test Materials and Recording Results
Sample 1S

Materials Supplied
- 2 x 1L LDPE bottles containing soft matrix water (labelled as 'Sample 1& 2 Soft Water')
- 2 x 30mL LDPE bottles containing spiking solutions for kjeldahl nitrogen and total phosphorus

N.B: The deionised water required for dilution of the kjeldahl nitrogen spiking solution is **NOT** supplied.

Preparation

Determinand	Bottle for analysis	Instruction
Calcium	**Sample 1 & 2 Soft Water**	Analyse as supplied
Magnesium	**Sample 1 & 2 Soft Water**	Analyse as supplied
Total Hardness	**Sample 1 & 2 Soft Water**	Analyse as supplied
Alkalinity	**Sample 1 & 2 Soft Water**	Analyse as supplied
Potassium	**Sample 1 & 2 Soft Water**	Analyse as supplied
Sodium	**Sample 1 & 2 Soft Water**	Analyse as supplied
Chloride	**Sample 1 & 2 Soft Water**	Analyse as supplied
Sulfate	**Sample 1 & 2 Soft Water**	Analyse as supplied
Fluoride	**Sample 1 & 2 Soft Water**	Analyse as supplied
Conductivity (20^{o}C)	**Sample 1 & 2 Soft Water**	Analyse as supplied
Kjeldahl Nitrogen	**Sample 1 KjN**	Dilute spiking solution with **deionised** water by a factor of 100 (e.g. 1mL made up to 100mL)
Total Phosphorus	**Sample 1 TP**	Dilute spiking solution with **matrix** water by a factor of 100 (e.g. 1mL made up to 100mL)
Barium	**Sample 1 & 2 Soft Water**	Analyse as supplied

Do not correct the results for these dilutions.

Reporting
Both mS/cm and µS/cm (at both 20 and 25^{o}C) are available to participants as reporting units. However, results will be reported back to participants in µS/cm (at 20^{o}C)

Instructions for Handling Test Materials and Recording Results

Sample 1A

Materials Supplied

- 1 x 1L LDPE bottle containing spiked matrix water
- 1 x 25mL glass bottle containing spiking solution for TOC
- 1 x 500mL LDPE bottle containing sample for determination of pH

Preparation

Determinand	Bottle for analysis	Instruction
Sodium	**Sample 1A Matrix**	Analyse as supplied
Magnesium	**Sample 1A Matrix**	Analyse as supplied
Chloride	**Sample 1A Matrix**	Analyse as supplied
Sulfate	**Sample 1A Matrix**	Analyse as supplied
pH at 20-25^{o}C	**Sample 1A pH**	Analyse as supplied at 20-25^{o}C within 3 days of sample delivery
Conductivity (20^{o}C)	**Sample 1A Matrix**	Analyse as supplied
Total Organic Carbon (TOC)	**Sample 1A TOC**	Dilute spiking solution with **matrix** water by a factor of 10 (e.g. 10mL made up to 100mL)
Total Dissolved Solids (180^{o}C)	**Sample 1A Matrix**	Analyse as supplied

Do not correct the results for the TOC dilution.

Reporting

Both mS/cm and µS/cm (at both 20 and 25^{o}C) are available to participants as reporting units. However, results will be reported back to participants in µS/cm (at 20^{o}C)

Instructions for Handling Test Materials and Recording Results

Sample 2H

Materials Supplied

- 1 x 1L LDPE bottle containing hard matrix water (labelled as 'Sample 1& 2 Hard Water')
- 7 x 30mL LDPE bottles (5 clear and 2 amber) containing spiking solutions for nitrite, ammonia, SR phosphorus, colour, permanganate index, total cyanide and free cyanide
- 1 x 500mL LDPE bottle containing sample for determination of pH and conductivity

N.B: The deionised water required for dilution of some spiking solutions is **NOT** supplied.

Preparation

Determinand	Bottle for analysis	Instruction
Total Oxidised Nitrogen (TON)	**Sample 1 & 2 Hard Water**	Analyse as supplied within 3 days of sample delivery
Silicate	**Sample 1 & 2 Hard Water**	Analyse as supplied
Nitrite	**Sample 2 Nitrite**	Dilute spiking solution with **deionised** water by a factor of 100 (e.g. 1mL made up to 100mL). Analyse within 3 days of sample delivery
Ammonia	**Sample 2 Ammonia**	Dilute spiking solution with **matrix** water by a factor of 100 (e.g. 1mL made up to 100mL). Analyse within 3 days of sample delivery
Soluble Reactive Phosphorus (SRP - PO_4)	**Sample 2 SRP**	Dilute spiking solution with **matrix** water by a factor of 100 (e.g. 1mL made up to 100mL)
pH at 20-25^{o}C	**Sample 2 pH/conductivity**	Analyse as supplied at 20-25^{o}C within 3 days of sample delivery
Conductivity (20^{o}C)	**Sample 2 pH/conductivity**	Analyse as supplied
Colour	**Sample 2 Colour**	Dilute spiking solution with **deionised** water by a factor of 10 (e.g. 10mL made up to 100mL). **N.B.** Do **not** perform a pH adjustment on this solution.
Permanganate Index (PI)	**Sample 2 PI**	Dilute spiking solution with **deionised** water by a factor of 10 (e.g. 10mL made up to 100mL)
Total Cyanide	**Sample 2 Total Cyanide**	Dilute spiking solution with **matrix** water by a factor of 100 (e.g. 1mL made up to 100mL)
Free Cyanide	**Sample 2 Free Cyanide**	Dilute spiking solution with **matrix** water by a factor of 100 (e.g. 1mL made up to 100mL)
Nitrate	**Sample 1 & 2 Hard Water**	Analyse as supplied within 3 days of sample delivery
Total Dissolved Solids	**Sample 1 & 2 Hard Water**	Analyse as supplied

Do not correct the results for these dilutions.
N.B: The cyanide spiking solutions contain cyanides and are prepared in 0.5% sodium hydroxide as a preservative.

Instructions for Handling Test Materials and Recording Results
Sample 2S

Materials Supplied
- 1 x 1L LDPE bottle containing soft matrix water (labelled as 'Sample 1& 2 Soft Water')
- 8 x 30mL LDPE bottles (6 clear and 2 amber) containing spiking solutions for nitrite, nitrate, ammonia, SR phosphorus, colour, permanganate index, total cyanide and free cyanide
- 1 x 500mL LDPE bottle containing sample for determination of pH and conductivity

N.B: The deionised water required for dilution of some spiking solutions is **NOT** supplied.

Preparation

Determinand	Bottle for analysis	Instruction
Total Oxidised Nitrogen (TON)	**Sample 1 & 2 Soft Water**	Analyse as supplied within 3 days of sample delivery
Silicate	**Sample 1 & 2 Soft Water**	Analyse as supplied
Nitrite	**Sample 2 Nitrite**	Dilute spiking solution with **deionised** water by a factor of 100 (e.g. 1mL made up to 100mL). Analyse within 3 days of sample delivery
Ammonia	**Sample 2 Ammonia**	Dilute spiking solution with **matrix** water by a factor of 100 (e.g. 1mL made up to 100mL). Analyse within 3 days of sample delivery
Soluble Reactive Phosphorus (SRP - PO_4)	**Sample 2 SRP**	Dilute spiking solution with **matrix** water by a factor of 100 (e.g. 1mL made up to 100mL)
pH at 20-25^{o}C	**Sample 2 pH/conductivity**	Analyse as supplied at 20-25^{o}C within 3 days of sample delivery
Conductivity (20^{o}C)	**Sample 2 pH/conductivity**	Analyse as supplied
Colour	**Sample 2 Colour**	Dilute spiking solution with **deionised** water by a factor of 10 (e.g. 10mL made up to 100mL). **N.B.** Do **not** perform a pH adjustment on this solution.
Permanganate Index (PI)	**Sample 2 PI**	Dilute spiking solution with **deionised** water by a factor of 10 (e.g. 10mL made up to 100mL)
Total Cyanide	**Sample 2 Total Cyanide**	Dilute spiking solution with **matrix** water by a factor of 100 (e.g. 1mL made up to 100mL)
Free Cyanide	**Sample 2 Free Cyanide**	Dilute spiking solution with **matrix** water by a factor of 100 (e.g. 1mL made up to 100mL)
Nitrate	**Sample 2 Nitrate**	Dilute spiking solution with **deionised** water by a factor of 100 (e.g. 1mL made up to 100mL). Analyse within 3 days of sample delivery
Total Dissolved Solids	**Sample 1 & 2 Soft Water**	Analyse as supplied

Do not correct the results for these dilutions.
N.B: The cyanide spiking solutions contain cyanides and are prepared in 0.5% sodium hydroxide as a preservative.

Instructions for Handling Test Materials and Recording Results

Sample 2A

Materials Supplied

- 2 x 500mL LDPE bottles containing sample for determination of pH

Preparation

Determinand	Bottle for analysis	Instruction
pH at 20-25°C – Low	**Sample 2A pH Low in Poorly Buffered Waters**	Analyse as supplied at 20-25°C within 3 days of sample delivery
pH at 20-25°C – High	**Sample 2A pH High in Poorly Buffered Waters**	Analyse as supplied at 20-25°C within 3 days of sample delivery

NB: To avoid CO_2 contamination, do not expose to the atmosphere until the sample temperature is at 20-25°C.

The “pH High” samples are very susceptible to pH decreases on exposure to air. Therefore, special care is needed during the measurement process

Instructions for Handling Test Materials and Recording Results
Sample 3

Materials Supplied

- 6 x 30mL LDPE bottles containing spiking solutions for BOD, COD, MBAS, Non-ionic surfactants, DOC and turbidity
- 1 x 30mL PP bottle containing spiking solution for suspended solids

N.B: The deionised water required for dilution of these spiking solutions is **NOT** supplied, nor is the BOD seed or dilution water required for the BOD test.

Preparation

Determinand	Bottle for analysis	Instruction
BOD (5 day)	**Sample 3 BOD**	Dilute spiking solution with **seeded dilution** water by a factor of 1,000 (e.g. 1mL made up to 1,000mL). Alternatively, dilute with deionised water prior to adding seed so that the overall dilution factor is still 1,000
COD	**Sample 3 COD**	Dilute spiking solution with **deionised** water by a factor of 10 (e.g. 10mL made up to 100mL)
Suspended Solids	**Sample 3 Suspended solids No. xxx**	Wash **all** supplied spiking solution out of bottle and make up to 2L with **deionised** water
Methylene Blue Active Substances (MBAS)	**Sample 3 MBAS**	Dilute spiking solution with **deionised** water by a factor of 100 (e.g. 1mL made up to 100mL)
Non-ionic Surfactants	**Sample 3 Non-ionic Surfactants**	Dilute spiking solution with **deionised** water by a factor of 100 (e.g. 1mL made up to 100mL)
Dissolved Organic Carbon	**Sample 3 DOC**	Dilute spiking solution with **deionised** water by a factor of 100 (e.g. 1mL made up to 100mL)
Turbidity	**Sample 3 Turbidity**	Dilute spiking solution with **deionised** water by a factor of 10 (e.g. 10mL made up to 100mL)

Do not correct the results for these dilutions.

Aquacheck uses sodium lauryl sulphate as the anionic detergent but calculates the amount of active anion lauryl sulphate present to calculate the assigned value using the ratio of molecular weights.

Take particular care when using units for MBAS other than “MBAS as µg LS (MW 265) per litre” that the conversion factor used is correct. If the MBAS standard curve is created using an anionic detergent X with a molecular weight of M and the concentration axis has units of ugX/L the result will need to be multiplied by 265/M to convert it into Aquacheck units.

Instructions for Handling Test Materials and Recording Results

Sample 3A

Materials Supplied

- 4 x 30mL LDPE bottles containing spiking solutions for chlorate/chlorite (high and low levels), bromide and bromate

N.B: The deionised water required for the dilution of these spiking solutions is **NOT** supplied.

Preparation

Determinand	Bottle for analysis	Instruction
Bromide	**Sample 3A Bromide**	Dilute spiking solution with **deionised** water by a factor of 100 (e.g. 1mL made up to 100mL)
Bromate	**Sample 3A Bromate**	Dilute spiking solution with **deionised** water by a factor of 100 (e.g. 1mL made up to 100mL)
Chlorate (low level)	**Sample 3A Chlorate/Chlorite (low level)**	Dilute spiking solution with **deionised** water by a factor of 100 (e.g. 1mL made up to 100mL)
Chlorite (low level)	**Sample 3A Chlorate/Chlorite (low level)**	Dilute spiking solution with **deionised** water by a factor of 100 (e.g. 1mL made up to 100mL)
Chlorate (high level)	**Sample 3A Chlorate/Chlorite (high level)**	Dilute spiking solution with **deionised** water by a factor of 100 (e.g. 1mL made up to 100mL)
Chlorite (high level)	**Sample 3A Chlorate/Chlorite (high level)**	Dilute spiking solution with **deionised** water by a factor of 100 (e.g. 1mL made up to 100mL)

Do not correct the results for these dilutions.

Analyse solutions immediately following preparation.

Instructions for Handling Test Materials and Recording Results

Sample 3B

Materials Supplied

- 1 x 500mL glass bottle containing matrix water
- 1 x 10mL amber glass vial containing spiking solution for free chlorine
- 1 x 30mL plastic bottle to be used for mixing solutions

Preparation

Determinand	Bottle for analysis	Instruction
Free Chlorine	**Sample 3B Free Chlorine**	Mix the matrix water with the free chlorine spiking solution. Analyse the sample **immediately** by usual laboratory method

The following technique should be used when mixing solutions:

- Pour a small amount of the matrix water into the 30mL plastic bottle supplied.
- Empty the vial into the 500mL matrix water bottle.
- Rinse the vial into the 500mL matrix water bottle at least three times with the matrix water in the 30mL plastic bottle
- Pour any remaining matrix water from the 30mL plastic bottle back into the 500mL matrix water bottle
- Invert twenty times to ensure thorough mixing
- Analyse immediately using usual laboratory method

Samples must be analysed within three days of receipt.

Analyse solutions immediately following preparation.

Instructions for Handling Test Materials and Recording Results

Sample 3C

Materials Supplied

- 1 x 500mL glass bottle containing matrix water
- 1 x 10mL amber glass vial containing spiking solution for total chlorine
- 1 x 30mL plastic bottle to be used for mixing solutions

Preparation

Determinand	Bottle for analysis	Instruction
Total Chlorine	**Sample 3C Total Chlorine**	Mix the matrix water with the total chlorine spiking solution. Allow the sample to equilibrate for **15 minutes** then analyse the sample **immediately** by usual laboratory method

The following technique should be used when mixing solutions:

- Pour a small amount of the matrix water into the 30mL plastic bottle supplied.
- Empty the vial into the 500mL matrix water bottle.
- Rinse the vial into the 500mL matrix water bottle at least three times with the matrix water in the 30mL plastic bottle
- Pour any remaining matrix water from the 30mL plastic bottle back into the 500mL matrix water bottle
- Invert twenty times to ensure thorough mixing
- Allow the sample to equilibrate for 15 minutes (±30 seconds)
- Analyse immediately using usual laboratory method

Samples must be analysed within three days of receipt.

Analyse solutions immediately following preparation and the defined equilibration time.

N.B: The total chlorine is defined as the sum of the free and combined chlorine concentrations in the sample:

Total chlorine = Free chlorine + Combined chlorine

Instructions for Handling Test Materials and Recording Results

Sample 4

Materials Supplied

- 1 x 500mL LDPE bottle containing spiked matrix water preserved with 0.5% nitric acid
- 1 x 30mL LDPE bottle containing spiking solution for silver preserved with 0.5% nitric acid

Preparation

Determinand	Bottle for analysis	Instruction
Iron	**Sample 4 Matrix**	Analyse as supplied
Manganese	**Sample 4 Matrix**	Analyse as supplied
Copper	**Sample 4 Matrix**	Analyse as supplied
Aluminium	**Sample 4 Matrix**	Analyse as supplied
Zinc	**Sample 4 Matrix**	Analyse as supplied
Silver	**Sample 4 Silver**	Dilute spiking solution with **Sample 4 Matrix** water by a factor of 100 (e.g. 1mL made up to 100mL)
Barium	**Sample 4 Matrix**	Analyse as supplied
Boron	**Sample 4 Matrix**	Analyse as supplied
Strontium	**Sample 4 Matrix**	Analyse as supplied
Lithium	**Sample 4 Matrix**	Analyse as supplied

Do not correct the results for these dilutions.

Instructions for Handling Test Materials and Recording Results

Sample 4G

Materials Supplied

- 1 x 500mL LDPE bottle containing a spiked groundwater matrix preserved with 0.5% nitric acid
- 1 x 30mL LDPE bottle containing spiking solution for silver preserved with 0.5% nitric acid

Preparation

Determinand	Bottle for analysis	Instruction
Iron	**Sample 4G Matrix**	Analyse as supplied
Manganese	**Sample 4G Matrix**	Analyse as supplied
Copper	**Sample 4G Matrix**	Analyse as supplied
Aluminium	**Sample 4G Matrix**	Analyse as supplied
Zinc	**Sample 4G Matrix**	Analyse as supplied
Silver	**Sample 4G Silver**	Dilute spiking solution with **Sample 4G Matrix** water by a factor of 100 (e.g. 1mL made up to 100mL)
Barium	**Sample 4G Matrix**	Analyse as supplied
Boron	**Sample 4G Matrix**	Analyse as supplied
Strontium	**Sample 4G Matrix**	Analyse as supplied
Lithium	**Sample 4G Matrix**	Analyse as supplied

Do not correct the results for these dilutions.

Instructions for Handling Test Materials and Recording Results

Sample 5

Materials Supplied

- 1 x 500mL LDPE bottle containing spiked matrix water preserved with 0.5% nitric acid
- 1 x 30mL LDPE bottle containing spiking solution for mercury preserved with 0.5% nitric acid and 0.05% potassium dichromate
- 1 x 30mL LDPE bottle containing spiking solution for tin preserved with 0.5% nitric acid

Preparation

Determinand	Bottle for analysis	Instruction
Cadmium	**Sample 5 Matrix**	Analyse as supplied
Lead	**Sample 5 Matrix**	Analyse as supplied
Nickel	**Sample 5 Matrix**	Analyse as supplied
Selenium	**Sample 5 Matrix**	Analyse as supplied
Arsenic	**Sample 5 Matrix**	Analyse as supplied
Antimony	**Sample 5 Matrix**	Analyse as supplied
Mercury	**Sample 5 Mercury**	Dilute spiking solution with **Sample 5 Matrix** water by a factor of 100 (e.g. 1mL made up to 100mL)
Cobalt	**Sample 5 Matrix**	Analyse as supplied
Vanadium	**Sample 5 Matrix**	Analyse as supplied
Chromium	**Sample 5 Matrix**	Analyse as supplied
Molybdenum	**Sample 5 Matrix**	Analyse as supplied
Tin	**Sample 5 Tin**	Dilute spiking solution with **Sample 5 Matrix** water by a factor of 100 (e.g. 1mL made up to 100mL)
Beryllium	**Sample 5 Matrix**	Analyse as supplied

Do not correct the results for these dilutions.

The mercury sample should be treated as any other sample received by your laboratory e.g. addition of more acid or preservatives. Please correct for any changes in concentration produced by these additions.

Instructions for Handling Test Materials and Recording Results

Sample 5A

Materials Supplied

- 1 x 500mL LDPE bottle containing spiked water preserved with 0.5% hydrochloric acid

Preparation

Determinand	Bottle for analysis	Instruction
Arsenic	**Sample 5A Matrix**	Analyse as supplied
Selenium	**Sample 5A Matrix**	Analyse as supplied
Antimony	**Sample 5A Matrix**	Analyse as supplied
Tin	**Sample 5A Matrix**	Analyse as supplied

Sample 5B

Materials Supplied

- 1 x 500mL LDPE bottle containing spiked matrix water preserved with 0.5% nitric acid
- 1 x 30mL LDPE bottle containing spiking solution for mercury preserved with 0.5% nitric acid and 0.05% potassium dichromate

Preparation

Determinand	Bottle for analysis	Instruction
Cadmium	**Sample 5B Matrix**	Analyse as supplied
Copper	**Sample 5B Matrix**	Analyse as supplied
Total Chromium	**Sample 5B Matrix**	Analyse as supplied
Lead	**Sample 5B Matrix**	Analyse as supplied
Nickel	**Sample 5B Matrix**	Analyse as supplied
Zinc	**Sample 5B Matrix**	Analyse as supplied
Vanadium	**Sample 5B Matrix**	Analyse as supplied
Mercury	**Sample 5B Mercury**	Dilute spiking solution with **Sample 5B Matrix** water by a factor of 100 (e.g. 1mL made up to 100mL)

Do not correct the results for these dilutions.
The mercury sample should be treated as any other sample received by your laboratory e.g. addition of more acid or preservatives. Please correct for any changes in concentration produced by these additions.

Instructions for Handling Test Materials and Recording Results

Sample 5C

Materials Supplied

- 1 x 30mL LDPE bottle containing spiking solution for Chromium (VI)

N.B: The deionised water required for the dilution of this spiking solution is **NOT** supplied.

Preparation

Determinand	Bottle for analysis	Instruction
Chromium (VI)	**Sample 5C Chromium (VI)**	Dilute spiking solution with **deionised** water by a factor of 1,000 (e.g. 1mL made up to 1L)

Do not correct the results for these dilutions.

Instructions for Handling Test Materials and Recording Results

Sample 5G

Materials Supplied

- 1 x 500mL LDPE bottle containing a spiked groundwater matrix preserved with 0.5% nitric acid
- 1 x 30mL LDPE bottle containing spiking solution for mercury preserved with 0.5% nitric acid and 0.05% potassium dichromate
- 1 x 30mL LDPE bottle containing spiking solution for tin preserved with 0.5% nitric acid

Preparation

Determinand	Bottle for analysis	Instruction
Cadmium	**Sample 5G Matrix**	Analyse as supplied
Lead	**Sample 5G Matrix**	Analyse as supplied
Nickel	**Sample 5G Matrix**	Analyse as supplied
Selenium	**Sample 5G Matrix**	Analyse as supplied
Arsenic	**Sample 5G Matrix**	Analyse as supplied
Antimony	**Sample 5G Matrix**	Analyse as supplied
Mercury	**Sample 5G Mercury**	Dilute spiking solution with **Sample 5G Matrix** water by a factor of 100 (e.g. 1mL made up to 100mL)
Cobalt	**Sample 5G Matrix**	Analyse as supplied
Vanadium	**Sample 5G Matrix**	Analyse as supplied
Chromium	**Sample 5G Matrix**	Analyse as supplied
Molybdenum	**Sample 5G Matrix**	Analyse as supplied
Tin	**Sample 5G Tin**	Dilute spiking solution with **Sample 5G Matrix** water by a factor of 100 (e.g. 1mL made up to 100mL)
Beryllium	**Sample 5G Matrix**	Analyse as supplied

Do not correct the results for these dilutions.

The mercury sample should be treated as any other sample received by your laboratory e.g. addition of more acid or preservatives. Please correct for any changes in concentration produced by these additions.

Instructions for Handling Test Materials and Recording Results

Sample 6A

Materials Supplied

- 1 x 10mL amber glass vial containing spiking solution of haloforms and chlorinated solvents in methanol
- 1 x 2L glass/PETG bottle containing groundwater

Preparation

Determinand	Bottle for analysis	Instruction
Chloroform	**Sample 6A**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Bromodichloromethane	**Sample 6A**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Dibromochloromethane	**Sample 6A**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Bromoform	**Sample 6A**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Trichloroethene	**Sample 6A**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Tetrachloroethene	**Sample 6A**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Carbon Tetrachloride	**Sample 6A**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
1,2-Dichloroethane	**Sample 6A**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)

Do not correct the results for these dilutions.

Instructions for Handling Test Materials and Recording Results

Sample 6B

Materials Supplied

- 1 x 10mL amber glass vial containing spiking solution of phenols in methanol
- 1 x 2L PETG bottle containing groundwater

Preparation

Determinand	Bottle for analysis	Instruction
Phenol	**Sample 6B**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50uL to 500mL)
2-Chlorophenol	**Sample 6B**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50uL to 500mL)
4-Chlorophenol	**Sample 6B**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50uL to 500mL)
3-Bromophenol	**Sample 6B**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50uL to 500mL)
2,4-Dichlorophenol	**Sample 6B**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50uL to 500mL)
2,4,6-Trichlorophenol	**Sample 6B**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50uL to 500mL)
Pentachlorophenol	**Sample 6B**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50uL to 500mL)
2,5-Dimethylphenol	**Sample 6B**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50uL to 500mL)
3,5-Dimethylphenol	**Sample 6B**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50uL to 500mL)
2-Methylphenol (o-cresol)	**Sample 6B**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50uL to 500mL)
3-Methylphenol (m-cresol)	**Sample 6B**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50uL to 500mL)
4-Methylphenol (p-cresol)	**Sample 6B**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50uL to 500mL)
Total monosubstituted methylphenols	**Sample 6B**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50uL to 500mL)

Do not correct the results for these dilutions.

The actual result for phenol index determination is not exactly equal to the sum of the individual components.

Instructions for Handling Test Materials and Recording Results

Sample 6C

Materials Supplied

- 1 x 10mL amber glass vial containing spiking solution of BTEX components in methanol
- 1 x 2L glass/PETG bottle containing groundwater

Preparation

Determinand	Bottle for analysis	Instruction
Benzene	**Sample 6C**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Toluene	**Sample 6C**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Ethylbenzene	**Sample 6C**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Styrene	**Sample 6C**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
o-Xylene	**Sample 6C**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
m-Xylene	**Sample 6C**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
p-Xylene	**Sample 6C**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Total Xylene	**Sample 6C**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
m- + p-Xylene	**Sample 6C**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
1,2,4-trimethylbenzene	**Sample 6C**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
MTBE (methyl tert-butyl ether)	**Sample 6C**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)

Do not correct the results for these dilutions.

Instructions for Handling Test Materials and Recording Results

Sample 7A

Materials Supplied

- 2 x 10mL amber glass vial containing spiking solution of organochlorine pesticides in methanol
  - Spike 7A(1) contains analytes endrin to pendimethalin
  - Spike 7A(2) contains analytes cis-chlordane to methoxychlor
- 1 x 2L PETG bottle containing groundwater

Preparation

Determinand	Bottle for analysis	Instruction
Endrin	**Sample 7A(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Dieldrin	**Sample 7A(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Aldrin	**Sample 7A(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
p,p'-DDT	**Sample 7A(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
o,p-DDT	**Sample 7A(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
p,p'-DDE	**Sample 7A(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
o,p'-DDE	**Sample 7A(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
p,p'-DDD	**Sample 7A(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
o,p'-DDD (TDE)	**Sample 7A(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Alpha Hexachlorocyclohexane	**Sample 7A(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Beta Hexachlorocyclohexane	**Sample 7A(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Delta Hexachlorocyclohexane	**Sample 7A(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Lindane (gamma HCH)	**Sample 7A(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Trifluralin	**Sample 7A(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Alpha Endosulphan	**Sample 7A(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Beta Endosulphan	**Sample 7A(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Hexachlorobenzene	**Sample 7A(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Heptachlor	**Sample 7A(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Heptachlor Epoxide	**Sample 7A(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Pentachlorobenzene	**Sample 7A(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)

Instructions for Handling Test Materials and Recording Results

Sample 7A – continued

Determinand	Bottle for Analysis	Instruction
Pendimethalin	**Sample 7A(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Cis-chlordane	**Sample 7A(2)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Trans-chlordane	**Sample 7A(2)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Methoxychlor	**Sample 7A(2)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)

Do not correct the results for these dilutions.

Sample 7B

Materials Supplied

- 1 x 10mL amber glass vial containing spiking solution of chlorinated solvents in methanol
- 1 x 2L glass/PETG bottle containing groundwater

Preparation

Determinand	Bottle for analysis	Instruction
Hexachlorobutadiene	**Sample 7B**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Carbon Tetrachloride	**Sample 7B**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Tetrachloroethene	**Sample 7B**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
1,2,4-Trichlorobenzene	**Sample 7B**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Trichloroethene	**Sample 7B**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
1,1,1-Trichloroethane	**Sample 7B**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
1,3,5-Trichlorobenzene	**Sample 7B**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
1,2,3-Trichlorobenzene	**Sample 7B**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
1,2-Dichloroethane	**Sample 7B**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Chloroform	**Sample 7B**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)

Do not correct the results for these dilutions.

Instructions for Handling Test Materials and Recording Results

Sample 7C

Materials Supplied

- 2 x 10mL amber glass vial containing spiking solutions of polycyclic aromatic hydrocarbons in methanol
  - Spike 7C(1) contains analytes fluoranthene to indeno(1,2,3-cd)Pyrene
  - Spike 7C(2) contains analytes acenaphthene to pyrene
- 1 x 2L PETG bottle containing groundwater

Preparation

Determinand	Bottle for analysis	Instruction
Fluoranthene	**Sample 7C(1)**	Dilute spiking solution with **groundwater** by a factor of 1,000 (e.g. 500µL to 500mL)
Benzo(b)fluoranthene	**Sample 7C(1)**	Dilute spiking solution with **groundwate**r by a factor of 1,000 (e.g. 500µL to 500mL)
Benzo(k)fluoranthene	**Sample 7C(1)**	Dilute spiking solution with **groundwater** by a factor of 1,000 (e.g. 500µL to 500mL)
Benz(a)pyrene	**Sample 7C(1)**	Dilute spiking solution with **groundwater** by a factor of 1,000 (e.g. 500µL to 500mL)
Benzo(ghi)perylene	**Sample 7C(1)**	Dilute spiking solution with **groundwater** by a factor of 1,000 (e.g. 500µL to 500mL)
Indeno(1,2,3-cd)pyrene	**Sample 7C(1)**	Dilute spiking solution with **groundwater** by a factor of 1,000 (e.g. 500µL to 500mL)
Acenaphthene	**Sample 7C(2)**	Dilute spiking solution with **groundwater** by a factor of 1,000 (e.g. 500µL to 500mL)
Acenaphthylene	**Sample 7C(2)**	Dilute spiking solution with **groundwater** by a factor of 1,000 (e.g. 500µL to 500mL)
Anthracene	**Sample 7C(2)**	Dilute spiking solution with **groundwater** by a factor of 1,000 (e.g. 500µL to 500mL)
Benz(a)anthracene	**Sample 7C(2)**	Dilute spiking solution with **groundwater** by a factor of 1,000 (e.g. 500µL to 500mL)
Chrysene	**Sample 7C(2)**	Dilute spiking solution with **groundwater** by a factor of 1,000 (e.g. 500µL to 500mL)
Dibenz(ah)anthracene	**Sample 7C(2)**	Dilute spiking solution with **groundwater** by a factor of 1,000 (e.g. 500µL to 500mL)
Fluorene	**Sample 7C(2)**	Dilute spiking solution with **groundwater** by a factor of 1,000 (e.g. 500µL to 500mL)
Naphthalene	**Sample 7C(2)**	Dilute spiking solution with **groundwater** by a factor of 1,000 (e.g. 500µL to 500mL)
Perylene	**Sample 7C(2)**	Dilute spiking solution with **groundwater** by a factor of 1,000 (e.g. 500µL to 500mL)
Phenanthrene	**Sample 7C(2)**	Dilute spiking solution with **groundwater** by a factor of 1,000 (e.g. 500µL to 500mL)
Pyrene	**Sample 7C(2)**	Dilute spiking solution with **groundwater** by a factor of 1,000 (e.g. 500µL to 500mL)

Do not correct the results for these dilutions.

N.B. To ensure the full solubility of the analytes in this sample, sub-stock solutions are prepared in hexane as part of the production process. The maximum level of this interferant will be 0.6%

Instructions for Handling Test Materials and Recording Results

Sample 7D

Materials Supplied

- 1 x 10mL amber glass vial containing spiking solution of polychlorinated biphenyls in methanol
- 1 x 2L PETG bottle containing groundwater

Preparation

Determinand	Bottle for analysis	Instruction
PCB (28)	**Sample 7D**	Dilute spiking solution with **groundwater** by a factor of 1,000 (e.g. 500µL to 500mL)
PCB (52)	**Sample 7D**	Dilute spiking solution with **groundwater** by a factor of 1,000 (e.g. 500µL to 500mL)
PCB (101)	**Sample 7D**	Dilute spiking solution with **groundwater** by a factor of 1,000 (e.g. 500µL to 500mL)
PCB (118)	**Sample 7D**	Dilute spiking solution with **groundwater** by a factor of 1,000 (e.g. 500µL to 500mL)
PCB (138)	**Sample 7D**	Dilute spiking solution with **groundwater** by a factor of 1,000 (e.g. 500µL to 500mL)
PCB (153)	**Sample 7D**	Dilute spiking solution with **groundwater** by a factor of 1,000 (e.g. 500µL to 500mL)
PCB (180)	**Sample 7D**	Dilute spiking solution with **groundwater** by a factor of 1,000 (e.g. 500µL to 500mL)

Do not correct the results for these dilutions

N.B. To ensure the full solubility of the analytes in this sample, sub-stock solutions are prepared in hexane as part of the production process. The maximum level of this interferant will be 0.75%

Instructions for Handling Test Materials and Recording Results

Sample 8

Materials Supplied

- 2 x 10mL amber glass vial containing spiking solution of acid herbicides in methanol
  - Spike 8(1) contains all determinands except glyphosate and AMPA
  - Spike 8(2) contains glyphosate and AMPA
- 1 x 2L PETG bottle containing groundwater

Preparation

Determinand	Bottle for analysis	Instruction
MCPA	**Sample 8(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
MCPB	**Sample 8(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
2,4-D	**Sample 8(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Dichlorprop	**Sample 8(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Dicamba	**Sample 8(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
2,4-DB	**Sample 8(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Bentazone	**Sample 8(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Mecoprop	**Sample 8(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Propyzamide	**Sample 8(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Ioxynil	**Sample 8(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Bromoxynil	**Sample 8(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Triclopyr	**Sample 8(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Clopyralid	**Sample 8(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Fluroxypyr	**Sample 8(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
2,3,6-TBA	**Sample 8(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
2,4,5-T	**Sample 8(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Dichlobenil	**Sample 8(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Bromacil	**Sample 8(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Metazachlor	**Sample 8(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Propachlor	**Sample 8(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)

Instructions for Handling Test Materials and Recording Results

Sample 8 – continued

Determinand	Bottle for analysis	Instruction
Benazolin	**Sample 8(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
2,4,5-TP (Fenoprop)	**Sample 8(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Metaldehyde	**Sample 8(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Glyphosate	**Sample 8(2)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
AMPA	**Sample 8(2)**	Dilute spiking solution with **groundwater** by a factory of 10,000 (e.g. 50µL to 500mL)

Do not correct the results for these dilutions.

Instructions for Handling Test Materials and Recording Results

Sample 8B

Materials Supplied

- 2 x 10mL amber glass vial containing spiking solution of triazines and urea herbicides in methanol
  - Spike 8B(1) contains analytes isoproturon to metamitron
  - Spike 8B(2) contains analytes simazine to pirimicarb
- 1 x 2L PETG bottle containing groundwater

Preparation

Determinand	Bottle for analysis	Instruction
Isoproturon	**Sample 8B(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Diuron	**Sample 8B(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Linuron	**Sample 8B(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Chlortoluron	**Sample 8B(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Monuron	**Sample 8B(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Methabenzthiazuron	**Sample 8B(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Diflufenican	**Sample 8B(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Metamitron	**Sample 8B(1)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Simazine	**Sample 8B(2)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Atrazine	**Sample 8B(2)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Propazine	**Sample 8B(2)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Cyanazine	**Sample 8B(2)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Trietazine	**Sample 8B(2)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Prometryn	**Sample 8B(2)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Terbutryn	**Sample 8B(2)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Ametryn	**Sample 8B(2)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Carbetamide	**Sample 8B(2)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Pirimicarb	**Sample 8B(2)**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)

Do not correct the results for these dilutions.

Instructions for Handling Test Materials and Recording Results
Sample 9

Materials Supplied
- 1 x 10mL amber glass vial containing spiking solution of organophosphorus pesticides in methanol
- 1 x 2L PETG bottle containing groundwater

Preparation

Determinand	Bottle for analysis	Instruction
Azinphos-methyl	**Sample 9**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Azinphos-ethyl	**Sample 9**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Dichlorvos	**Sample 9**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Fenitrothion	**Sample 9**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Malathion	**Sample 9**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Mevinphos	**Sample 9**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Chlorfenvinphos	**Sample 9**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Diazinon	**Sample 9**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Fenthion	**Sample 9**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Parathion-ethyl	**Sample 9**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Parathion-methyl	**Sample 9**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Chlorpyrifos	**Sample 9**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Cypermethrin	**Sample 9**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)
Propetamphos	**Sample 9**	Dilute spiking solution with **groundwater** by a factor of 10,000 (e.g. 50µL to 500mL)

Do not correct the results for these dilutions.

N.B. Chlorfenvinphos is a mixture of the Z and E isomers. The total concentration of these two isomers should be reported.

Instructions for Handling Test Materials and Recording Results

Sample 10

Materials Supplied

- 6 x 30mL LDPE bottles containing spiking solutions for nitrate, nitrite, ammonia, silicate, SR phosphorus, chloride, total cyanide, free cyanide, kjeldahl nitrogen and total phosphorus

N.B: The deionised water required for dilution of these spiking solutions is **NOT** supplied.

Preparation

Determinand	Bottle for analysis	Instruction
Total Oxidised Nitrogen (TON)	**Sample 10 Nitrate/Nitrite/Ammonia**	Dilute spiking solution with **deionised** water by a factor of 20 (e.g. 5mL made up to 100mL)
Nitrate	**Sample 10 Nitrate/Nitrite/Ammonia**	Dilute spiking solution with **deionised** water by a factor of 20 (e.g. 5mL made up to 100mL)
Nitrite	**Sample 10 Nitrate/Nitrite/Ammonia**	Dilute spiking solution with **deionised** water by a factor of 20 (e.g. 5mL made up to 100mL)
Ammonia	**Sample 10 Nitrate/Nitrite/Ammonia**	Dilute spiking solution with **deionised** water by a factor of 20 (e.g. 5mL made up to 100mL)
Silicate	**Sample 10 Silicate**	Dilute spiking solution with **deionised** water by a factor of 10 (e.g. 10mL made up to 100mL)
Soluble Reactive Phosphorus (SRP - PO_4)	**Sample 10 SRP/Chloride**	Dilute spiking solution with **deionised** water by a factor of 20 (e.g. 5mL made up to 100mL)
Chloride	**Sample 10 SRP/Chloride**	Dilute spiking solution with **deionised** water by a factor of 20 (e.g. 5mL made up to 100mL)
Total Cyanide	**Sample 10 Total Cyanide**	Dilute spiking solution with **deionised** water by a factor of 20 (e.g. 5mL made up to 100mL)
Kjeldahl Nitrogen	**Sample 10 KjN/Total P**	Dilute spiking solution with **deionised** water by a factor of 20 (e.g. 5mL made up to 100mL)
Free Cyanide	**Sample 10 Free Cyanide**	Dilute spiking solution with **deionised** water by a factor of 20 (e.g. 5mL made up to 100mL)
Total Nitrogen	**Sample 10 Nitrate/Nitrite/Ammonia and Sample 10 KjN/Total P bottle**	Dilute each spiking solutions with **deionised** water by a factor of 20 (e.g. 5mL made up to 100mL). **N.B.** Sum of nitrogen content = Nitrate + Nitrite + Ammonia + KjN
Total Phosphorus	**Sample 10 KjN/Total P**	Dilute spiking solution with **deionised** water by a factor of 20 (e.g. 5mL made up to 100mL)

Do not correct the results for these dilutions.

N.B: The cyanide spiking solutions contain cyanides, and are prepared in 0.5% sodium hydroxide as a preservative.

Instructions for Handling Test Materials and Recording Results

Sample 11

Materials Supplied

- 4 x 30mL LDPE bottles containing spiking solutions for COD,MBAS,DOC/TOC and Non-ionic surfactants
- 1 x 125mL LDPE bottle containing solution for Turbidity
- 2 x 30mL PP bottle containing spiking solution for BOD and Suspended solids

N.B: The deionised water required for dilution of these spiking solutions is **NOT** supplied, nor is the BOD seed or dilution water required for the BOD test.

Preparation

Determinand	Bottle for analysis	Instruction
BOD (5 day)	**Sample 11 BOD**	Dilute spiking solution with **seeded dilution** water by a factor of 20 (e.g. 5mL made up to 100mL)
COD	**Sample 11 COD**	Dilute spiking solution with **deionised** water by a factor of 10 (e.g. 10mL made up to 100mL)
Suspended Solids	**Sample 11 Suspended Solids No. xxx**	Wash **all** the supplied spiking solution out of the bottle and make up to 2L with **deionised** water
Methylene Blue Active Substances (MBAS)	**Sample 11 MBAS**	Dilute spiking solution with **deionised** water by a factor of 20 (e.g. 5mL made up to 100mL)
Dissolved/Total Organic Carbon	**Sample 11 DOC/TOC**	Dilute spiking solution with **deionised** water by a factor of 4 (e.g. 5mL made up to 20mL)
Turbidity	**Sample 11 Turbidity**	Analyse as supplied
Non-ionic surfactants	**Sample 11 Non-ionic surfactants**	Dilute spiking solution with **deionised** water by a factor of 100 (e.g. 1mL made up to 100mL)

Do not correct the results for these dilutions.

Aquacheck uses sodium lauryl sulphate as the anionic detergent but calculates the amount of active anion lauryl sulphate present to calculate the assigned value using the ratio of molecular weights.

Take particular care when using units for MBAS other than “MBAS as mg LS (MW 265) per litre” that the conversion factor used is correct. If the MBAS standard curve is created using an anionic detergent X with a molecular weight of M and the concentration axis has units of mgX/L the result will need to be multiplied by 265/M to convert it into Aquacheck units.

Instructions for Handling Test Materials and Recording Results

Sample 12

Materials Supplied

- 1 x 250mL LDPE bottle containing concentrated effluent matrix preserved with 0.5% nitric acid
- 1 x 125mL LDPE bottle containing spiking solution for metals preserved with 0.5% nitric acid
- 1 x 30mL LDPE bottle containing spiking solution for mercury preserved with 0.5% nitric acid and 0.05% potassium dichromate

Preparation

- **Dilute the concentrated effluent matrix water with deionised water by a factor of 4 (e.g. 25mL made up to 100mL) before use (the deionised water required for this is NOT provided)**

Determinand	Bottle for analysis	Instruction
Antimony	**Sample 12 Metals**	Dilute metals solution with **effluent** water by a factor of 20 (e.g. 5mL made up to 100mL)
Arsenic	**Sample 12 Metals**	Dilute metals solution with **effluent** water by a factor of 20 (e.g. 5mL made up to 100mL)
Aluminium	**Sample 12 Metals**	Dilute metals solution with **effluent** water by a factor of 20 (e.g. 5mL made up to 100mL)
Chromium	**Sample 12 Metals**	Dilute metals solution with **effluent** water by a factor of 20 (e.g. 5mL made up to 100mL)
Iron	**Sample 12 Metals**	Dilute metals solution with **effluent** water by a factor of 20 (e.g. 5mL made up to 100mL)
Manganese	**Sample 12 Metals**	Dilute metals solution with **effluent** water by a factor of 20 (e.g. 5mL made up to 100mL)
Cadmium	**Sample 12 Metals**	Dilute metals solution with **effluent** water by a factor of 20 (e.g. 5mL made up to 100mL)
Copper	**Sample 12 Metals**	Dilute metals solution with **effluent** water by a factor of 20 (e.g. 5mL made up to 100mL)
Lead	**Sample 12 Metals**	Dilute metals solution with **effluent** water by a factor of 20 (e.g. 5mL made up to 100mL)
Nickel	**Sample 12 Metals**	Dilute metals solution with **effluent** water by a factor of 20 (e.g. 5mL made up to 100mL)
Zinc	**Sample 12 Metals**	Dilute metals solution with **effluent** water by a factor of 20 (e.g. 5mL made up to 100mL)
Mercury	**Sample 12 Mercury**	Dilute mercury spiking solution with **effluent** water by a factor of 20 (e.g. 5mL made up to 100mL)
Selenium	**Sample 12 Metals**	Dilute metals solution with **effluent** water by a factor of 20 (e.g. 5mL made up to 100mL)
Molybdenum	**Sample 12 Metals**	Dilute metals solution with **effluent** water by a factor of 20 (e.g. 5mL made up to 100mL)
Tellurium	**Sample 12 Metals**	Dilute metals solution with **effluent** water by a factor of 20 (e.g. 5mL made up to 100mL)

Instructions for Handling Test Materials and Recording Results

Sample 12 - continued

Uranium	**Sample 12 Metals**	Dilute metals solution with **effluent** water by a factor of 20 (e.g. 5mL made up to 100mL)

Do not correct the results for these dilutions.

The mercury sample should be treated as any other sample received by your laboratory e.g. addition of more acid or preservatives. Please correct for any changes in concentration produced by these additions.

Sample 12C

Materials Supplied

- 1 x 30mL LDPE bottle containing spiking solution for chromium (VI)
- 1 x 500mL LDPE bottle containing concentrated chromium effluent matrix water

Preparation

- **Dilute the concentrated chromium effluent matrix water with deionised water by a factor of 4 (e.g. 25mL made up to 100mL) before use (the deionised water required for this is NOT provided)**

Determinand	Bottle for analysis	Instruction
Chromium (VI)	**Sample 12C Chromium (VI)**	Dilute spiking solution with **chromium effluent** water by a factor of 100 (e.g. 1mL made up to 100mL)

Do not correct the results for these dilutions.

Instructions for Handling Test Materials and Recording Results
Sample 13

Materials Supplied
- 1 x plastic bottle containing approximately 20g of air dried sewage sludge

Preparation

Determinand	Bottle for Analysis	Instruction
Arsenic	**Sample 13 Sewage Sludge**	Analyse as supplied
Cadmium	**Sample 13 Sewage Sludge**	Analyse as supplied
Chromium	**Sample 13 Sewage Sludge**	Analyse as supplied
Copper	**Sample 13 Sewage Sludge**	Analyse as supplied
Lead	**Sample 13 Sewage Sludge**	Analyse as supplied
Mercury	**Sample 13 Sewage Sludge**	Analyse as supplied
Molybdenum	**Sample 13 Sewage Sludge**	Analyse as supplied
Nickel	**Sample 13 Sewage Sludge**	Analyse as supplied
Vanadium	**Sample 13 Sewage Sludge**	Analyse as supplied
Zinc	**Sample 13 Sewage Sludge**	Analyse as supplied
Selenium	**Sample 13 Sewage Sludge**	Analyse as supplied
Total Boron	**Sample 13 Sewage Sludge**	Analyse as supplied
Fluoride	**Sample 13 Sewage Sludge**	Analyse as supplied
Total Nitrogen	**Sample 13 Sewage Sludge**	Analyse as supplied
Total Phosphorus	**Sample 13 Sewage Sludge**	Analyse as supplied
Total Potassium	**Sample 13 Sewage Sludge**	Analyse as supplied
Cobalt	**Sample 13 Sewage Sludge**	Analyse as supplied
Iron	**Sample 13 Sewage Sludge**	Analyse as supplied
Manganese	**Sample 13 Sewage Sludge**	Analyse as supplied

N.B. Analyse the sample and report results based on the air dry weight of sludge as received.

Instructions for Handling Test Materials and Recording Results
Sample 14

Materials Supplied
- 1 x plastic bottle containing approximately 100g of air dried, sieved soil

Preparation

Determinand	Bottle for Analysis	Instruction
Arsenic	**Sample 14 Soil**	Analyse as supplied
Cadmium	**Sample 14 Soil**	Analyse as supplied
Chromium	**Sample 14 Soil**	Analyse as supplied
Copper	**Sample 14 Soil**	Analyse as supplied
Lead	**Sample 14 Soil**	Analyse as supplied
Mercury	**Sample 14 Soil**	Analyse as supplied
Molybdenum	**Sample 14 Soil**	Analyse as supplied
Nickel	**Sample 14 Soil**	Analyse as supplied
Vanadium	**Sample 14 Soil**	Analyse as supplied
Zinc	**Sample 14 Soil**	Analyse as supplied
Selenium	**Sample 14 Soil**	Analyse as supplied
Total Boron	**Sample 14 Soil**	Analyse as supplied
Water Extractable Boron	**Sample 14 Soil**	Analyse as supplied
Fluoride	**Sample 14 Soil**	Analyse as supplied
Total Nitrogen	**Sample 14 Soil**	Analyse as supplied
Total Phosphorus	**Sample 14 Soil**	Analyse as supplied
Total Potassium	**Sample 14 Soil**	Analyse as supplied
Cobalt	**Sample 14 Soil**	Analyse as supplied
Iron	**Sample 14 Soil**	Analyse as supplied
Manganese	**Sample 14 Soil**	Analyse as supplied
Total Solids	**Sample 14 Soil**	Analyse as supplied
Loss on Ignition	**Sample 14 Soil**	Analyse as supplied
pH at 20-25^{o}C	**Sample 14 Soil**	Analyse as supplied
Extractable Phosphorus	**Sample 14 Soil**	Analyse as supplied
Extraction of Potassium	**Sample 14 Soil**	Analyse as supplied
Extraction of Magnesium	**Sample 14 Soil**	Analyse as supplied
Extraction of Sodium	**Sample 14 Soil**	Analyse as supplied
Organic Carbon Content	**Sample 14 Soil**	Analyse as supplied
Conductivity (20^{o}C)	**Sample 14 Soil**	Analyse as supplied
Carbonate Content	**Sample 14 Soil**	Analyse as supplied

N.B. Analyse the soil using the usual laboratory method and report results based on the air dry weight of the soil as received.

Instructions for Handling Test Materials and Recording Results

Sample 15

Materials Supplied

- 1 x 1L LDPE bottle containing sample for settleable solids determination.

Preparation

Determinand	Bottle for analysis	Instruction
Settleable Solids	**Sample 15 Settleable Solids**	Shake well and analyse the whole sample (or ensure a representative sample is taken) and analyse for settleable solids using your usual method.

N.B. The method this sample is intended to test was the Standard Methods for the Examination of Water and Wastewater Method 2540, using an Imhoff cone, or similar.

Sample 16

Materials Supplied

- 1 x glass jar containing approximately 50g real sewage sludge

Preparation

Determinand	Bottle for Analysis	Instruction
Total Solids (105±5C)	**Sample 16 Sewage Sludge**	Analyse as supplied
Loss on Ignition (500±5C)	**Sample 16 Sewage Sludge**	Analyse as supplied
pH at 20-25C	**Sample 16 Sewage Sludge**	Analyse as supplied
Calcium	**Sample 16 Sewage Sludge**	Analyse as supplied
Magnesium	**Sample 16 Sewage Sludge**	Analyse as supplied

N.B. Results for calcium and magnesium should be reported as mg/kg dried weight, i.e. after drying at 105^{o}C

Please ensure that you quote the Loss on Ignition of the total solid content. The calculations should follow:

- **% Total Solids @ 105^{o}C = (Dried weight @ 105 ^{o}C /Original weight) x 100**
- **% Loss on ignition @ 500 ^{o}C = ((Dried weight @ 105 ^{o}C – Weight remaining after ignition)/Dried weight @105 ^{o}C) x 100**

e.g. If in a 100g sample, the weight of solids after drying at 105°C was 37.57g, giving Total Solids Content of 37.57%. From the 37.57g of solid material, 17.4g of solid was volatile at 500°C, giving a Loss on Ignition of 46.31%

Instructions for Handling Test Materials and Recording Results

Sample 17A

Materials Supplied

- 1 x 1L LDPE bottle containing synthetic wastewater

Preparation

N.B: Determine suspended solids **BEFORE** other determinations

Determinand	Bottle for Analysis	Instruction
pH at 20-25°C	**Sample 17A No xxx**	Analyse sample as supplied at 20-25°C within 3 days of sample delivery
Settled COD	**Sample 17A No xxx**	Allow bottle to settle for 30 minutes after shaking vigorously before sampling
Total COD	**Sample 17A No xxx**	Shake bottle vigorously and sample immediately
Suspended Solids	**Sample 17A No xxx**	**Analyse for this determinand first.** Shake bottle vigorously and sample immediately
Conductivity (20°C)	**Sample 17A No xxx**	Analyse as supplied
Total dissolved solids (180°C)	**Sample 17A No xxx**	Analyse as supplied
Non Filterable COD	**Sample 17A No xxx**	Analyse as supplied
Salinity	**Sample 17A No xxx**	Analyse as supplied

N.B: If determining settled or non filterable COD **and** total COD it is important that the sample for total COD or non filterable COD is taken first. Taking the settled COD sample first will affect the results.

Non filterable COD is the COD in the sample that is not removed by filtration it is therefore practically equivalent to “dissolved COD”

Reporting

Both mS/cm and µS/cm (at both 20 and 25°C) are available to participants as reporting units. However, results will be reported back to participants in mS/cm (at 20°C)

Instructions for Handling Test Materials and Recording Results

Sample 17B

Materials Supplied

- 1 x 125mL LDPE bottle containing sample for the determination of total phenol
- 1 x 125mL LDPE bottle containing sample for the determination of sulfate
- 1 x 125mL LDPE bottle containing sample for the determination of cyanide

Preparation

Determinand	Bottle for Analysis	Instruction
Total Phenol	**Sample 17B Total Phenol**	Analyse as supplied
Cyanide	**Sample 17B Cyanide**	Analyse as supplied
Sulfate	**Sample 17B Sulfate**	Analyse as supplied

N.B. Cyanide spiking solutions contain cyanides, and are prepared in 0.5% sodium hydroxide as a preservative.

The matrix containing phenol is acidified with 0.5% nitric acid to ensure sample stability in transit. If necessary, it may be neutralised with sodium carbonate after dilution and immediately prior to testing.

Participants should be aware that prolonged exposure to the atmosphere could lead to sample instability.

Instructions for Handling Test Materials and Recording Results

Sample 17C

Materials Supplied

- 1 x 250mL LDPE bottle containing spiked synthetic wastewater sample
- 1 x 30mL LDPE bottle containing spiking solution for mercury preserved with 0.5% nitric acid and 0.05% potassium dichromate
- 1 x 30mL LDPE bottle containing spiking solution for silver preserved with 0.5% nitric acid
- 1 x 30mL LDPE bottle containing spiking solution for tin preserved with 0.5% nitric acid

Preparation

Determinand	Bottle for Analysis	Instruction
Aluminium	**Sample 17C Metals**	Analyse as supplied
Antimony	**Sample 17C Metals**	Analyse as supplied
Arsenic	**Sample 17C Metals**	Analyse as supplied
Barium	**Sample 17C Metals**	Analyse as supplied
Boron	**Sample 17C Metals**	Analyse as supplied
Cadmium	**Sample 17C Metals**	Analyse as supplied
Chromium	**Sample 17C Metals**	Analyse as supplied
Cobalt	**Sample 17C Metals**	Analyse as supplied
Copper	**Sample 17C Metals**	Analyse as supplied
Iron	**Sample 17C Metals**	Analyse as supplied
Lead	**Sample 17C Metals**	Analyse as supplied
Manganese	**Sample 17C Metals**	Analyse as supplied
Molybdenum	**Sample 17C Metals**	Analyse as supplied
Mercury	**Sample 17C Mercury**	Dilute spiking solution with **Sample 17C Metals** by a factor of 20 (e.g. 1mL made up to 20mL)
Nickel	**Sample 17C Metals**	Analyse as supplied
Selenium	**Sample 17C Metals**	Analyse as supplied
Silver	**Sample 17C Silver**	Dilute spiking solution with **Sample 17C Metals** by a factor of 20 (e.g. 1mL made up to 20mL)

Instructions for Handling Test Materials and Recording Results
Sample 17C – continued

Determinand	Bottle for Analysis	Instruction
Tin	**Sample 17C Tin**	Dilute spiking solution with **Sample 17C Metals** by a factor of 20 (e.g. 1mL made up to 20mL)
Vanadium	**Sample 17C Metals**	Analyse as supplied
Zinc	**Sample 17C Metals**	Analyse as supplied

Do not correct the results for these dilutions

The mercury sample should be treated as any other sample received by your laboratory e.g. addition of more acid or preservatives. Please correct for any changes in concentration produced by these additions.

Participants should be aware of possible sample instability after dilution of tin spike with matrix water. Samples should be analysed promptly after dilution.

Sample 17D

Materials Supplied
- 1 x 125mL LDPE bottle containing solution for the determination of ammonia and SR phosphorus
- 1 x 125mL LDPE bottle containing solution for the determination of total nitrogen
- 1 x 125mL LDPE bottle containing solution for the determination of total phosphorus

Preparation

Determinand	Bottle for Analysis	Instruction
Ammonia	**Sample 17D Ammonia & SRP**	Analyse as supplied
Soluble Reactive Phosphorus (SRP - PO_4)	**Sample 17D Ammonia & SRP**	Analyse as supplied
Total Phosphorus	**Sample 17D Total P**	Analyse as supplied
Total Nitrogen	**Sample 17D Total N**	Analyse as supplied

N.B: The total nitrogen solution includes ammonia, nitrate and organic nitrogen forms comprising a mixture of urea and nicotinamide.

Reporting
The total nitrogen result reported must **not** include the ammonia result from the ammonia/SRP sample.

Instructions for Handling Test Materials and Recording Results

Sample 18A

Materials Supplied

- 1 x 10mL amber glass vial containing spiking solution of haloforms and chlorinated solvents in methanol
- 1 x 500mL glass bottle containing concentrated effluent water

Preparation

- **Dilute the concentrated effluent matrix water with deionised water by a factor of 4 (e.g. 25mL made up to 100mL) before use (deionised water NOT provided)**

Determinand	Bottle for Analysis	Instruction
Chloroform	**Sample 18A**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Bromodichloromethane	**Sample 18A**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Dibromochloromethane	**Sample 18A**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Bromoform	**Sample 18A**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Trichloroethene	**Sample 18A**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Tetrachloroethene	**Sample 18A**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Carbon Tetrachloride	**Sample 18A**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
1,2-Dichloroethane	**Sample 18A**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)

Do not correct the results for these dilutions

The matrix is acidified with 0.5% nitric acid to ensure sample stability in transit if necessary it may be neutralised with sodium carbonate after dilution and immediately prior to spiking.

Instructions for Handling Test Materials and Recording Results

Sample 18B

Materials Supplied

- 1 x 10mL amber glass vial containing spiking solution of phenols in methanol
- 1 x 500mL glass bottle containing concentrated effluent water

Preparation

- **Dilute the concentrated effluent matrix water with deionised water by a factor of 4 (e.g. 25mL made up to 100mL) before use (deionised water NOT provided)**

Determinand	Bottle for analysis	Instruction
Phenol	**Sample 18B**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
2-Chlorophenol	**Sample 18B**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
4-Chlorophenol	**Sample 18B**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
3-Bromophenol	**Sample 18B**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
2,4-Dichlorophenol	**Sample 18B**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
2,4,6-Trichlorophenol	**Sample 18B**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Pentachlorophenol	**Sample 18B**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
2,5-Dimethylphenol	**Sample 18B**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
3,5-Dimethylphenol	**Sample 18B**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
2-Methylphenol (o-cresol)	**Sample 18B**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
3-Methylphenol (m-cresol)	**Sample 18B**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
4-Methylphenol (p-cresol)	**Sample 18B**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Total monosubstituted methylphenols	**Sample 18B**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)

Do not correct the results for these dilutions

The matrix is acidified with 0.5% nitric acid to ensure sample stability in transit if necessary it may be neutralised with sodium carbonate after dilution and immediately prior to spiking.

The actual result for phenol index determination is not exactly equal to the sum of the individual components.

Instructions for Handling Test Materials and Recording Results

Sample 18C

Materials Supplied

- 1 x 10mL amber glass vial containing spiking solution of BTEX components in methanol
- 1 x 500mL glass bottle containing concentrated effluent water

Preparation

- **Dilute the concentrated effluent matrix water with deionised water by a factor of 4 (e.g. 25mL made up to 100mL) before use (deionised water NOT provided)**

Determinand	Bottle for Analysis	Instruction
Benzene	**Sample 18C**	Dilute spiking solution with **effluent** water by a factor of 500 (e.g. 1mL to 500mL)
Toluene	**Sample 18C**	Dilute spiking solution with **effluent** water by a factor of 500 (e.g. 1mL to 500mL)
Ethylbenzene	**Sample 18C**	Dilute spiking solution with **effluent** water by a factor of 500 (e.g. 1mL to 500mL)
Styrene	**Sample 18C**	Dilute spiking solution with **effluent** water by a factor of 500 (e.g. 1mL to 500mL)
o-Xylene	**Sample 18C**	Dilute spiking solution with **effluent** water by a factor of 500 (e.g. 1mL to 500mL)
m-Xylene	**Sample 18C**	Dilute spiking solution with **effluent** water by a factor of 500 (e.g. 1mL to 500mL)
p-Xylene	**Sample 18C**	Dilute spiking solution with **effluent** water by a factor of 500 (e.g. 1mL to 500mL)
Total Xylene	**Sample 18C**	Dilute spiking solution with **effluent** water by a factor of 500 (e.g. 1mL to 500mL)
m- + p-Xylene	**Sample 18C**	Dilute spiking solution with **effluent** water by a factor of 500 (e.g. 1mL to 500mL)

Do not correct the results for these dilutions

The matrix is acidified with 0.5% nitric acid to ensure sample stability in transit if necessary it may be neutralised with sodium carbonate after dilution and immediately prior to spiking.

Instructions for Handling Test Materials and Recording Results

Sample 19A

Materials Supplied

- 1 x 10mL amber glass vial containing spiking solution of organochlorine pesticides in methanol
  - Spike 19A(1) contains analytes endrin to pendimethalin
  - Spike 19A(2) contains analytes cis-chlordane to methoxychlor
- 1 x 500mL glass bottle containing concentrated effluent water

Preparation

- **Dilute the concentrated effluent matrix water with deionised water by a factor of 4 (e.g. 25mL made up to 100mL) before use (deionised water NOT provided)**

Determinand	Bottle for Analysis	Instruction
Endrin	**Sample 19A(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Dieldrin	**Sample 19A(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Aldrin	**Sample 19A(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
p,p'-DDT	**Sample 19A(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
o,p-DDT	**Sample 19A(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
p,p'-DDE	**Sample 19A(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
o,p'-DDE	**Sample 19A(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
p,p'-DDD	**Sample 19A(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
o,p'-DDD (TDE)	**Sample 19A(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Alpha Hexachlorocyclohexane	**Sample 19A(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Beta Hexachlorocyclohexane	**Sample 19A(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Delta Hexachlorocyclohexane	**Sample 19A(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Lindane (gamma HCH)	**Sample 19A(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Trifluralin	**Sample 19A(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Alpha Endosulphan	**Sample 19A(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Beta Endosulphan	**Sample 19A(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Hexachlorobenzene	**Sample 19A(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Heptachlor	**Sample 19A(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Heptachlor Epoxide	**Sample 19A(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)

Instructions for Handling Test Materials and Recording Results

Sample 19A – continued

Determinand	Bottle for Analysis	Instruction
Pentachlorobenzene	**Sample 19A(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Pendimethalin	**Sample 19A(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Cis-chlordane	**Sample 19A(2)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Trans-chlordane	**Sample 19A(2)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Methoxychlor	**Sample 19A(2)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)

Do not correct the results for these dilutions

The matrix is acidified with 0.5% nitric acid to ensure sample stability in transit if necessary it may be neutralised with sodium carbonate after dilution and immediately prior to spiking.

Instructions for Handling Test Materials and Recording Results

Sample 19B

Materials Supplied

- 1 x 10mL amber glass vial containing spiking solution of chlorinated solvents in methanol
- 1 x 500mL glass bottle containing concentrated effluent water

Preparation

- **Dilute the concentrated effluent matrix water with deionised water by a factor of 4 (e.g. 25mL made up to 100mL) before use (deionised water NOT provided)**

Determinand	Bottle for Analysis	Instruction
Hexachlorobutadiene	**Sample 19B**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Carbon Tetrachloride	**Sample 19B**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Tetrachloroethene	**Sample 19B**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
1,2,4-Trichlorobenzene	**Sample 19B**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Trichloroethene	**Sample 19B**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
1,1,1-Trichloroethane	**Sample 19B**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
1,3,5-Trichlorobenzene	**Sample 19B**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
1,2,3-Trichlorobenzene	**Sample 19B**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
1,2-Dichloroethane	**Sample 19B**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Chloroform	**Sample 19B**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)

Do not correct the results for these dilutions

The matrix is acidified with 0.5% nitric acid to ensure sample stability in transit if necessary it may be neutralised with sodium carbonate after dilution and immediately prior to spiking.

Instructions for Handling Test Materials and Recording Results

Sample 19C

Materials Supplied

- 2 x 10mL amber glass vial containing spiking solutions of PAHs in methanol
  - Spike 19C(1) contains analytes fluoranthene and indeno(1,2,3-cd)pyrene
  - Spike 19C(2) contains analytes acenaphthene and pyrene
- 1 x 500mL glass bottle containing concentrated effluent water

Preparation

- **Dilute the concentrated effluent matrix water with deionised water by a factor of 4 (e.g. 25mL made up to 100mL) before use (deionised water NOT provided)**

Determinand	Bottle for analysis	Instruction
Fluoranthene	**Sample 19C(1)**	Dilute spiking solution with **effluent** water by a factor of 100 (e.g. 500µL to 50mL)
Benzo(b)fluoranthene	**Sample 19C(1)**	Dilute spiking solution with **effluent** water by a factor of 100 (e.g. 500µL to 50mL)
Benzo(k)fluoranthene	**Sample 19C(1)**	Dilute spiking solution with **effluent** water by a factor of 100 (e.g. 500µL to 50mL)
Benz(a)pyrene	**Sample 19C(1)**	Dilute spiking solution with **effluent** water by a factor of 100 (e.g. 500µL to 50mL)
Benzo(ghi)perylene	**Sample 19C(1)**	Dilute spiking solution with **effluent** water by a factor of 100 (e.g. 500µL to 50mL)
Indeno(1,2,3-cd)pyrene	**Sample 19C(1)**	Dilute spiking solution with **effluent** water by a factor of 100 (e.g. 500µL to 50mL)
Acenaphthene	**Sample 19C(2)**	Dilute spiking solution with **effluent** water by a factor of 100 (e.g. 500µL to 50mL)
Acenaphthylene	**Sample 19C(2)**	Dilute spiking solution with **effluent** water by a factor of 100 (e.g. 500µL to 50mL)
Anthracene	**Sample 19C(2)**	Dilute spiking solution with **effluent** water by a factor of 100 (e.g. 500µL to 50mL)
Benz(a)anthracene	**Sample 19C(2)**	Dilute spiking solution with **effluent** water by a factor of 100 (e.g. 500µL to 50mL)
Chrysene	**Sample 19C(2)**	Dilute spiking solution with **effluent** water by a factor of 100 (e.g. 500µL to 50mL)
Dibenz(ah)anthracene	**Sample 19C(2)**	Dilute spiking solution with **effluent** water by a factor of 100 (e.g. 500µL to 50mL)
Fluorene	**Sample 19C(2)**	Dilute spiking solution with **effluent** water by a factor of 100 (e.g. 500µL to 50mL)
Naphthalene	**Sample 19C(2)**	Dilute spiking solution with **effluent** water by a factor of 100 (e.g. 500µL to 50mL)
Perylene	**Sample 19C(2)**	Dilute spiking solution with **effluent** water by a factor of 100 (e.g. 500µL to 50mL)
Phenanthrene	**Sample 19C(2)**	Dilute spiking solution with **effluent** water by a factor of 100 (e.g. 500µL to 50mL)

Instructions for Handling Test Materials and Recording Results

Sample 19C - continued

Pyrene	**Sample 19C(2)**	Dilute spiking solution with **effluent** water by a factor of 100 (e.g. 500µL to 50mL)

Do not correct the results for these dilutions

The matrix is acidified with 0.5% nitric acid to ensure sample stability in transit if necessary it may be neutralised with sodium carbonate after dilution and immediately prior to spiking.
N.B. To ensure the full solubility of the analytes in this sample, sub-stock solutions are prepared in hexane as part of the production process. The maximum level of this interferant will be 0.6%

Sample 19D

Materials Supplied

- 1 x 10mL amber glass vial containing spiking solution of polychlorinated biphenyls in methanol
- 1 x 500mL glass bottle containing concentrated effluent water

Preparation

- **Dilute the concentrated effluent matrix water with deionised water by a factor of 4 (e.g. 25mL made up to 100mL) before use (deionised water NOT provided)**

Determinand	Bottle for Analysis	Instruction
PCB (28)	**Sample 19D**	Dilute spiking solution with **effluent** water by a factor of 100 (e.g. 500µL to 50mL)
PCB (52)	**Sample 19D**	Dilute spiking solution with **effluent** water by a factor of 100 (e.g. 500µL to 50mL)
PCB (101)	**Sample 19D**	Dilute spiking solution with **effluent** water by a factor of 100 (e.g. 500µL to 50mL)
PCB (118)	**Sample 19D**	Dilute spiking solution with **effluent** water by a factor of 100 (e.g. 500µL to 50mL)
PCB (138)	**Sample 19D**	Dilute spiking solution with **effluent** water by a factor of 100 (e.g. 500µL to 50mL)
PCB (153)	**Sample 19D**	Dilute spiking solution with **effluent** water by a factor of 100 (e.g. 500µL to 50mL)
PCB (180)	**Sample 19D**	Dilute spiking solution with **effluent** water by a factor of 100 (e.g. 500µL to 50mL)

Do not correct the results for these dilutions

The matrix is acidified with 0.5% nitric acid to ensure sample stability in transit if necessary it may be neutralised with sodium carbonate after dilution and immediately prior to spiking.

N.B. To ensure the full solubility of the analytes in this sample, sub-stock solutions are prepared in hexane as part of the production process. The maximum level of this interferant will be 0.75%

Instructions for Handling Test Materials and Recording Results

Sample 20

Materials Supplied

- 2 x 10mL amber glass vial containing spiking solution of acid herbicides in methanol
  - Spike 20(1) contains all determinands except glyphosate and AMPA
  - Spike 20(2) contains glyphosate and AMPA
- 1 x 500mL glass bottle containing concentrated effluent water

Preparation

- **Dilute the concentrated effluent matrix water with deionised water by a factor of 4 (e.g. 25mL made up to 100mL) before use (deionised water NOT provided)**

Determinand	Bottle for Analysis	Instruction
MCPA	**Sample 20(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
MCPB	**Sample 20(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
2,4-D	**Sample 20(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Dichlorprop	**Sample 20(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Dicamba	**Sample 20(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
2,4-DB	**Sample 20(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Bentazone	**Sample 20(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Mecoprop	**Sample 20(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Propyzamide	**Sample 20(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Ioxynil	**Sample 20(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Bromoxynil	**Sample 20(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Triclopyr	**Sample 20(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Clopyralid	**Sample 20(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Fluroxypyr	**Sample 20(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
2,3,6-TBA	**Sample 20(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
2,4,5-T	**Sample 20(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Dichlobenil	**Sample 20(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Bromacil	**Sample 20(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)

Instructions for Handling Test Materials and Recording Results

Sample 20 – continued

Determinand	Bottle for Analysis	Instruction
Metazachlor	**Sample 20(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Propachlor	**Sample 20(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Benazolin	**Sample 20(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Metaldehyde	**Sample 20(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
2,4,5-TP (Fenoprop)	**Sample 20(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Glyphosate	**Sample 20(2)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
AMPA	**Sample 20(2)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)

Do not correct the results for these dilutions
The matrix is acidified with 0.5% nitric acid to ensure sample stability in transit if necessary it may be neutralised with sodium carbonate after dilution and immediately prior to spiking.

Instructions for Handling Test Materials and Recording Results

Sample 20B

Materials Supplied

- 2 x 10mL amber glass vial containing spiking solution of triazine and urea herbicides in methanol
  - Spike 20B(1) contains analytes isoproturon to metamitron
  - Spike 20B(2) contains analytes simazine to pirimicarb
- 1 x 500mL glass bottle containing concentrated effluent water

Preparation

- **Dilute the concentrated effluent matrix water with deionised water by a factor of 4 (e.g. 25mL made up to 100mL) before use (deionised water NOT provided**

Determinand	Bottle for analysis	Instruction
Isoproturon	**Sample 20B(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Diuron	**Sample 20B(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Linuron	**Sample 20B(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Chlortoluron	**Sample 20B(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Monuron	**Sample 20B(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Methabenzthiazuron	**Sample 20B(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Diflufenican	**Sample 20B(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Metamitron	**Sample 20B(1)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Simazine	**Sample 20B(2)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Atrazine	**Sample 20B(2)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Propazine	**Sample 20B(2)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Cyanazine	**Sample 20B(2)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Trietazine	**Sample 20B(2)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Prometryn	**Sample 20B(2)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Terbutryn	**Sample 20B(2)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Ametryn	**Sample 20B(2)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Carbetamide	**Sample 20B(2)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Pirimicarb	**Sample 20B(2)**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)

Do not correct the results for these dilutions.

Instructions for Handling Test Materials and Recording Results

Sample 21

Materials Supplied

- 1 x 10mL amber glass vial containing spiking solution of organophosphorus pesticides in methanol
- 1 x 500mL glass bottle containing concentrated effluent water

Preparation

- **Dilute the concentrated effluent matrix water with deionised water by a factor of 4 (e.g. 25mL made up to 100mL) before use (deionised water NOT provided)**

Determinand	Bottle for Analysis	Instruction
Azinphos-methyl	**Sample 21**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Azinphos-ethyl	**Sample 21**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Dichlorvos	**Sample 21**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Fenitrothion	**Sample 21**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Malathion	**Sample 21**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Mevinphos	**Sample 21**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Chlorfenvinphos	**Sample 21**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Diazinon	**Sample 21**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Fenthion	**Sample 21**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Parathion-ethyl	**Sample 21**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Parathion-methyl	**Sample 21**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Chlorpyrifos	**Sample 21**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Cypermethrin	**Sample 21**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)
Propetamphos	**Sample 21**	Dilute spiking solution with **effluent** water by a factor of 1,000 (e.g. 500µL to 500mL)

Do not correct the results for these dilutions

The matrix is acidified with 0.5% nitric acid to ensure sample stability in transit if necessary it may be neutralised with sodium carbonate after dilution and immediately prior to spiking.

N.B. Chlorfenvinphos is a mixture of the Z and E isomers. The total concentration of these two isomers should be reported.

Instructions for Handling Test Materials and Recording Results

Sample 22

Materials Supplied

- 1 x 1mL capillary vial containing a solution of 10 organic compounds at a level of approximately 20mg/L in dichloromethane, labelled 'Sample 22 spike'
- 1 x 1mL capillary vial containing a solvent blank, labelled 'Sample 22 blank'

Preparation

- Analyse the sample as received or dilute, if necessary, to bring into working range of your instrument.
- Identify the 10 unknowns present in the test sample and enter the CAS number (in the format 000000-00-0) and name of the compounds found on the result entry page of the reporting system.

The blank sample has been provided to assist in eliminating adventitious contaminants. The unknowns should be present in the solution only and not be present (or present at only trace levels) in the blank.

The spiking solution can be easily removed from the vials by use of a syringe.

Sample 22A

Materials Supplied

- 1 x 40mL glass vial containing 6 compounds at approximately 50ug/L in deionised water with traces of methanol, labelled 'Sample 22A spike'
- 1 x 40mL glass vial containing deionised water with traces of methanol, labelled 'Sample 22A blank'

Preparation

- Analyse the sample as received or dilute, if necessary, to bring into working range of your instrument.
- Identify the 6 unknowns present in the test sample and enter the CAS number (in the format 000000-00-0) and name of the compounds found on the result entry page of the reporting system.

The blank sample has been provided to assist in eliminating adventitious contaminants. The unknowns should be present in the solution only and not be present (or present at only trace levels) in the blank.

Instructions for Handling Test Materials and Recording Results
Sample 23

Materials Supplied
1 x glass bottle (variable volume) containing water sample

Preparation

- This sample should be acidified with hydrochloric acid to pH<2 prior to analysis if this is part of your normal procedure for this type of sample

Determinand	Bottle for Analysis	Instruction
Volume of Sample Provided	**Sample 23 Oil in Water**	This has to be assessed by marking the liquid level or weighing the bottle before any extraction is undertaken
Total Hydrocarbons	**Sample 23 Oil in Water**	Analyse as supplied

N.B: Oil has been spiked into each bottle so the sample is not homogeneous and sub sampling from the bottle, as with a real sample, is unlikely to give reliable results. Also some oil is likely to be adsorbed to the glass so in situ extraction or washing the container with solvent will be necessary.

The sample volume has to be determined, as it would in a real sample, and results calculated using this volume. Use normal laboratory method to assess the sample volume prior to any extractions.

The oils used are standard Type A and B mineral oils with a carbon number range of C10 to C40. If more information is required, please email aquacheck@lgcpt.com.

Instructions for Handling Test Materials and Recording Results

Sample 24

Materials Supplied
1 x glass bottle (variable volume) containing water sample

Preparation

- This sample should be acidified with hydrochloric acid to pH<2 prior to analysis if this is part of your normal procedure for this type of sample

Determinand	Bottle for Analysis	Instruction
Volume of Sample Provided	**Sample 24 Oil & Grease in Water**	This has to be assessed by marking the liquid level or weighing the bottle before any extraction is undertaken
Total Oil and Grease	**Sample 24 Oil & Grease in Water**	Analyse as supplied

N.B: Oil has been spiked into each bottle so the sample is not homogeneous and sub sampling from the bottle, as with a real sample, is unlikely to give reliable results. Also some oil is likely to be adsorbed to the glass so in situ extraction or washing the container with solvent will be necessary.

The sample volume has to be determined, as it would in a real sample, and results calculated using this volume. Use normal laboratory method to assess the sample volume prior to any extractions.

The oils used are standard Type A and B mineral oils with a carbon number range of C10 to C40, as the oil component, and olive oil as the grease. If more information is required, please email aquacheck@lgcpt.com.

Sample 25

Materials Supplied
1 x 2L glass bottle containing contaminated clean water

Preparation

- Analyse as supplied

Reporting
Participants should seek to identify any contaminants present in the sample which are consistent with the text on the bottle label. If the contaminant is complex, the broad class should be reported. In addition any specific compounds of known toxicological importance should be identified. Participants should also suggest a possible source of contamination.

Instructions for Handling Test Materials and Recording Results

Sample 26

Materials Supplied

- 1 x 5mL amber glass vial containing spiking solution of PFOS and PFOA in acetone.

N.B: The deionised water required for dilution of this spiking solution is **NOT** supplied

Preparation

Determinand	Bottle for Analysis	Instruction
PFOS	**Sample 26**	Dilute spiking solution with **deionised** water by a factor of 10,000 (e.g. 50µL to 500mL)
PFOA	**Sample 26**	Dilute spiking solution with **deionised** water by a factor of 10,000 (e.g. 50µL to 500mL)

Do not correct the results for these dilutions

Sample 27

Materials Supplied

- 1 x 10mL amber glass vial containing spiking solution for analysis of AOX in methanol
- 1 x 500mL glass bottle containing concentrated effluent water

N.B: The deionised water required for dilution of the concentrated effluent water is **NOT** supplied

Preparation

- **Dilute the concentrated effluent matrix water with deionised water by a factor of 4 (e.g. 25mL made up to 100mL) before use (deionised water NOT provided)**

Determinand	Bottle for Analysis	Instruction
AOX	**Sample 27**	Dilute spiking solution with **effluent** water by a factor of 10 (e.g. 1mL to 10mL)

Do not correct the results for these dilutions

Instructions for Handling Test Materials and Recording Results

Sample 28

Materials Supplied

- 1 x 10ml formaldehyde spiking solution

N.B: The deionised water required for dilution of this spiking solution is **NOT** supplied

Preparation

Determinand	Bottle for analysis	Instruction
Formaldehyde	**Sample 28 Formaldehyde**	Dilute spiking solution with **deionised water** by a factor of 10,000 (e.g. 100uL to 1L)

Do not correct the results for these dilutions.

Sample 29

Materials Supplied

- 2 x 250ml bottles containing solutions for analysis of high and low level COD

N.B: The deionised water required for the dilution of the low level spike is **NOT** supplied.

Preparation

Determinand	Bottle for analysis	Instruction
Low Level COD	**Sample 29 Low Level COD**	Dilute spiking solution by a factor of 10 with **deionised** water
High Level COD	**Sample 29 High Level COD**	Analyse as supplied

Do not correct the results for these dilutions.

Instructions for Handling Test Materials and Recording Results

Sample 30

Materials Supplied

- 1 x 2L plastic bottle containing sample for gross alpha and gross beta activity. This sample has been acidified to give a final nitric acid concentration of 0.5% $^{v}/_{v}$.

Preparation

Determinand	Bottle for Analysis	Instruction
Gross Alpha as ^{239}Plutonium	**Sample 30 Alpha/Beta**	Analyse as supplied
Gross Alpha as ^{241}Americium	**Sample 30 Alpha/Beta**	Analyse as supplied
Gross Alpha as ^{230}Thorium	**Sample 30 Alpha/Beta**	Analyse as supplied
Gross Beta as ^{40}Potassium	**Sample 30 Alpha/Beta**	Analyse as supplied
Gross Beta as ^{137}Caesium	**Sample 30 Alpha/Beta**	Analyse as supplied
Gross Beta as ^{90}Strontium	**Sample 30 Alpha/Beta**	Analyse as supplied

Sample 31

Materials Supplied

- 1 x 250ml glass bottle sample for tritium analysis

Preparation

Determinand	Bottle for Analysis	Instruction
Aqueous Tritium	**Sample 31 Tritium**	Analyse as supplied

Results should be decay corrected to the date stipulated on the sample label.

Participants may use the nuclear data of their choice. Please note that the National Physical Laboratory (NPL) and the United Kingdom Accreditation Service (UKAS) recommend the following source of nuclear data:

DDEP (the international Decay Data Evaluation Project):
www.nucleide.org/DDEP_WG/DDEPdata.htm

Instructions for Handling Test Materials and Recording Results

Sample 32

Materials Supplied

- 1 x 125mL HDPE bottle containing sample for total sulfide analysis

Preparation

Determinand	Bottle for Analysis	Instruction
Total sulfide	**Sample 32 Sulfide**	Shake bottle well then analyse as supplied

Sample 33

Materials Supplied

- 1 x 5ml vial containing algae extract for chlorophyll *a* determination

Preparation

Determinand	Bottle for Analysis	Instruction
Chlorophyll *a*	**Sample 33 Chlorophyll *a***	Carefully wash **all** of the supplied extract out of vial and stopper and make up to 1L with **deionised water**. Dilute the extract solution with **deionised water** by a factor of 10 (e.g. 100 mL to 1000 mL) prior to analysis. Please record the sample number (located on the stopper) in the comments section of Portal.

Do not correct the results for these dilutions.

Instructions for Handling Test Materials and Recording Results

Sample 34

Sample A

Materials Supplied

- One 500ml LDPE bottle containing a solution of metals in 0.5% nitric acid
- One 30ml LDPE bottle containing a spiking solution of mercury in 0.5% nitric acid and 0.05% potassium dichromate.

Preparation

Determinand	Bottle for analysis	Instruction
Cadmium	**Sample A Metals**	Analyse as supplied
Lead	**Sample A Metals**	Analyse as supplied
Mercury	**Sample A Mercury Spiking Solution**	Dilute spiking solution with '**Sample A Metals**' **water** by a factor of 100 (e.g. 1ml made up to 100mls)
Nickel	**Sample A Metals**	Analyse as supplied

Do not correct the results for these dilutions.

The mercury sample should be treated as any other sample received by your laboratory e.g. addition of more acid or preservatives. Please correct for any changes in concentration produced by the addition of these.

Sample B

Materials Supplied

- One 10ml amber glass vial containing all determinands in a solution of methanol.
- One 2L groundwater matrix

Preparation

Determinand	Bottle for analysis	Instruction
Atrazine	**Sample B Spiking Solution**	Dilute spiking solution with **groundwater supplied** by a factor of 10,000 (e.g. 50ul to 500mls)
Diuron	**Sample B Spiking Solution**	Dilute spiking solution with **groundwater supplied** by a factor of 10,000 (e.g. 50ul to 500mls)
Isoproturon	**Sample B Spiking Solution**	Dilute spiking solution with **groundwater supplied** by a factor of 10,000 (e.g. 50ul to 500mls)
Simazine	**Sample B Spiking Solution**	Dilute spiking solution with **groundwater supplied** by a factor of 10,000 (e.g. 50ul to 500mls)

Do not correct the results for these dilutions

Instructions for Handling Test Materials and Recording Results

Sample C

Materials Supplied

- One 10ml amber glass vial containing all determinands in a solution of methanol.

Preparation

Determinand	Bottle for analysis	Instruction
Alachlor	**Sample C Spiking Solution**	Dilute spiking solution with **deionised water** by a factor of 10,000 (e.g. 50ul to 500mls)
Chlorfenvinphos	**Sample C Spiking Solution**	Dilute spiking solution with **deionised water** by a factor of 10,000 (e.g. 50ul to 500mls)
Chlorpyrifos	**Sample C Spiking Solution**	Dilute spiking solution with **deionised water** by a factor of 10,000 (e.g. 50ul to 500mls)

Do not correct results for these dilutions

Sample D

Matreial Supplied

- One 10ml amber glass vial containing all determinands in a solution of methanol.

Preparation

Determinand	Bottle for analysis	Instruction
Pentylphenol	**Sample D Spiking Solution**	Dilute spiking solution with **deionised water** by a factor of 10,000 (e.g. 50ul to 500mls)
Hexylphenol	**Sample D Spiking Solution**	Dilute spiking solution with **deionised water** by a factor of 10,000 (e.g. 50ul to 500mls)
Heptylphenol	**Sample D Spiking Solution**	Dilute spiking solution with **deionised water** by a factor of 10,000 (e.g. 50ul to 500mls)
Octylphenol	**Sample D Spiking Solution**	Dilute spiking solution with **deionised water** by a factor of 10,000 (e.g. 50ul to 500mls)
Nonylphenol	**Sample D Spiking Solution**	Dilute spiking solution with **deionised water** by a factor of 10,000 (e.g. 50ul to 500mls)
Pentachlorophenol	**Sample D Spiking Solution**	Dilute spiking solution with **deionised water** by a factor of 10,000 (e.g. 50ul to 500mls)

Instructions for Handling Test Materials and Recording Results

Sample D – continued

Bisphenol A	**Sample D Spiking Solution**	Dilute spiking solution with **deionised water** by a factor of 10,000 (e.g. 50ul to 500mls)

Do not correct results for these dilutions

Sample E

Materials Supplied

- One 10ml amber glass vial containing all determinands in a solution of methanol.
- One 2L groundwater matrix

Preparation

Determinand	Bottle for analysis	Instruction
Endosulphan	**Sample E Spiking Solution**	Dilute spiking solution **with groundwater supplied** by a factor of 10,000 (e.g. 50ul to 500mls)
Hexachlorobenzene	**Sample E Spiking Solution**	Dilute spiking solution with **groundwater supplied** by a factor of 10,000 (e.g. 50ul to 500mls)
Hexachlorocyclohexane	**Sample E Spiking Solution**	Dilute spiking solution with **groundwater supplied** by a factor of 10,000 (e.g. 50ul to 500mls)
Pentachlorobenzene	**Sample E Spiking Solution**	Dilute spiking solution with **groundwater supplied** by a factor of 10,000 (e.g. 50ul to 500mls)
Trifluralin	**Sample E Spiking Solution**	Dilute spiking solution with **groundwater supplied** by a factor of 10,000 (e.g. 50ul to 500mls)
Hexachlorobutadiene	**Sample E Spiking Solution**	Dilute spiking solution with **groundwater supplied** by a factor of 10,000 (e.g. 50ul to 500mls)

Do not correct results for these dilutions

Instructions for Handling Test Materials and Recording Results

Sample F

Materials Supplied

- One 10ml amber glass vial containing all determinands in a solution of methanol.

Preparation

Determinand	Bottle for analysis	Instruction
Benzo(a)pyrene	**Sample F Spiking Solution**	Dilute spiking solution with **deionised water** by a factor of 1,000 (e.g. 500ul to 500mls)
Benzo(b)fluoranthene	**Sample F Spiking Solution**	Dilute spiking solution with **deionised water** by a factor of 1,000 (e.g. 500ul to 500mls)
Benzo(ghi)perylene	**Sample F Spiking Solution**	Dilute spiking solution with **deionised water** by a factor of 1,000 (e.g. 500ul to 500mls)
Benzo(k)fluoranthene	**Sample F Spiking Solution**	Dilute spiking solution with **deionised water** by a factor of 1,000 (e.g. 500ul to 500mls)
Indeno(123-cd)pyrene	**Sample F Spiking Solution**	Dilute spiking solution with **deionised water** by a factor of 1,000 (e.g. 500ul to 500mls)
Anthracene	**Sample F Spiking Solution**	Dilute spiking solution with **deionised water** by a factor of 1,000 (e.g. 500ul to 500mls)
Fluoranthene	**Sample F Spiking Solution**	Dilute spiking solution with **deionised water** by a factor of 1,000 (e.g. 500ul to 500mls)

Do not correct results for these dilutions

Sample G

Material Supplied

- One 10ml amber glass vial containing determinand in a solution of methanol.

Preparation

Determinand	Bottle for analysis	Instruction
Tributyltin	**Sample G Spiking Solution**	Dilute spiking solution with **deionised water** by a factor of 10,000 (e.g. 50ul to 500mls)

Do not correct results for these dilutions

Instructions for Handling Test Materials and Recording Results

Sample H

Materials Supplied

- One 10ml amber glass vial containing all determinands in a solution of methanol.

Preparation

Determinand	Bottle for analysis	Instruction
1,2-Dichloroethane	**Sample H Spiking Solution**	Dilute spiking solution with **deionised water** by a factor of 1,000 (e.g. 500ul to 500mls)
Dichloromethane	**Sample H Spiking Solution**	Dilute spiking solution with **deionised water** by a factor of 1,000 (e.g. 500ul to 500mls)
Trichlorobenzenes	**Sample H Spiking Solution**	Dilute spiking solution with **deionised water** by a factor of 1,000 (e.g. 500ul to 500mls)
Trichloromethane	**Sample H Spiking Solution**	Dilute spiking solution with **deionised water** by a factor of 1,000 (e.g. 500ul to 500mls)

Do not correct results for these dilutions

SAMPLE I

Material Supplied

- One 10ml amber glass vial containing all determinands in a solution of methanol.

Preparation

Determinand	Bottle for analysis	Instruction
2,4,4 –Tribromodiphenylether (BDE 28)	**Sample I Spiking Solution**	Dilute spiking solution with **deionised water** by a factor of 10,000 (e.g. 50ul to 500mls)
2,2,4,4,5 – Pentabromodiphenylether (BDE 99)	**Sample I Spiking Solution**	Dilute spiking solution with **deionised water** by a factor of 10,000 (e.g. 50ul to 500mls)
2,2,4,4,5,6-Hexabromodiphenylether (BDE 154)	**Sample I Spiking Solution**	Dilute spiking solution with **deionised water** by a factor of 10,000 (e.g. 50ul to 500mls)

Do not correct results for these dilutions

Instructions for Handling Test Materials and Recording Results

SAMPLE J

Materials Supplied

- Two 10ml amber glass vials containing all determinands in a solution of methanol.
- One 'blank' DEHP sample in methanol.

Preparation

Determinand	Bottle for analysis	Instruction
DEHP	**Sample J(1) Spiking Solution**	Dilute spiking solution with **deionised water** by a factor of 1,000 (e.g. 500ul to 500mls)
Benzene	**Sample J(2) Spiking Solution**	Dilute spiking solution with **deionised water** by a factor of 1,000 (e.g. 500ul to 500mls)
Naphthalene	**Sample J(2) Spiking Solution**	Dilute spiking solution with **deionised water** by a factor of 1,000 (e.g. 500ul to 500mls)

Do not correct results for these dilutions

Sample 35

Materials Supplied

- 2 x 30mL LDPE bottles containing spiking solutions for BOD and COD

Preparation

Determinand	Bottle for analysis	Instruction
BOD (5 day)	**Sample 35 BOD**	Dilute spiking solution with **seeded dilution** water by a factor of 20 (e.g. 5mL made up to 100mL)
COD	**Sample 35 COD**	Dilute spiking solution with **deionised** water by a factor of 10 (e.g. 10mL made up to 100mL)

Do not correct the results for these dilutions

Instructions for Handling Test Materials and Recording Results

Sample 36

Materials Supplied

- 1 x 1000mL glass bottle containing test solution for the determination of TON.
- 1 x 500mL PET bottle containing test solution for the determination of TFN.

N.B: The reference/blank water required for the dilution of this test sample is **NOT** supplied by LGC Standards

Preparation

Determinand	Bottle for analysis	Instruction
TON	**Sample 36 TON**	Please read instructions below
TFN	**Sample 36 TFN**	Please read instructions below

Participants should analyse the samples using their routine laboratory methods as far as practicable. In order to ensure comparability between participants the following procedures must be followed.

Participants are required to carry out a quantitative determination of the Threshold Flavour Number (TFN) and the Threshold Odour Number (TON) as described in EN1622:2006. A range of dilutions of the test sample are prepared in a geometric series

Px

Where
x is the ratio of the concentration of successive dilutions in the series (the value of x shall be between 1.3 and 3)
P is a series of whole numbers (1,2,3,4…i)indicating the position of each dilution in the test series

The samples are presented to each panellist in a paired testing procedure. The samples should be diluted by participants using their own 'blank' water and this should also be used as the 'reference' sample when the dilutions are presented to the panellists.

The two samples (one a dilution of the test sample and one, a blank, reference water) are presented at the same time by a 'coordinator' and the panellist will select the sample with the 'stronger' taste or odour. The greatest dilution at which the panellist can determine a difference between the diluted sample and the reference sample is the 'result' for that panellist.

Calculation

Participants may use as many panellists as they wish, but should report the TON and TFN as calculated below.

$$TON = \sqrt[n]{TON_1 \times TON_2 \times TON_3 \times \ldots \times TON_n}$$

$$TFN = \sqrt[n]{TFN_1 \times TFN_2 \times TFN_3 \times \ldots \times TFN_n}$$

Where TON_n and TFN_n are the results of the nth selected panellist.

Instructions for Handling Test Materials and Recording Results

Sample 37

Materials Supplied

- 1 x 10ml acrylamide spiking solution

Preparation

Determinand	Bottle for analysis	Instruction
Acrylamide	**Sample 37 Acrylamide**	Dilute spiking solution with **deionised water** by a factor of 1000 (e.g. 1mL to 1000mL)

Do not correct the results for these dilutions

Sample 38

Materials Supplied

- 1 x 60ml of unfiltered solution

Preparation

Determinand	Bottle for analysis	Instruction
UV Absorption	**Sample 38 UV Absorption**	Analyse as supplied within 7 days of sample delivery. Mix the sample well and filter through 0.45 µm Millipore membrane filters. Set wavelength to 253.7nm and adjust spectrophotometer to read zero absorbance with the organic-free water blank.

Note: Absorbance is the negative logarithm of the percent transmittance divided by 100 and can be calculated by using the equation:

$$\text{Absorbance} = -\log(\%\ \text{transmittance} / 100)$$

Sample 39

Materials Supplied

- 1 x 1L sample containing geosmin and methyl isoborneol

Preparation

Determinand	Bottle for analysis	Instruction
Geosmin	**Sample 39 Geosmin**	Shake a bottle well and analyze as supplied
Methyl isoborneol	**Sample 39 MiB**	Shake a bottle well and analyze as supplied

Instructions for Handling Test Materials and Recording Results

Sample 40

Materials Supplied

- 1 x 10ml fungicides spiking solution
- 1 x 500mL groundwater

Preparation

Determinand	Bottle for analysis	Instruction
Carbendazim	**Sample 40 Fungicides**	Dilute spiking solution with groundwater by a factor of 10000 (e.g. 50µL to 500mL)
Chlorothalonil	**Sample 40 Fungicides**	
Fenpropimorph	**Sample 40 Fungicides**	
Flutriafol	**Sample 40 Fungicides**	
Epoxyconazole	**Sample 40 Fungicides**	
Flusilazole	**Sample 40 Fungicides**	
Cyproconazole	**Sample 40 Fungicides**	
Tebuconazole	**Sample 40 Fungicides**	
Azoxystrobin	**Sample 40 Fungicides**	
Boscalid	**Sample 40 Fungicides**	
Kresoxym-methyl	**Sample 40 Fungicides**	
Captan	**Sample 40 Fungicides**	

Do not correct the results for these dilutions.

Sample 50

Materials Supplied

- 1 x 500mL LDPE bottle containing a solution of zinc sulphate

Preparation

- Dilute the sample provided using your usual preparation procedures for the specific test which is to be carried out.
  - The ecotoxicity tests involved are:
    - *Daphnia Magna* 48hr EC50
    - *Daphnia Magna* 24hr EC50
    - *Vibrio Fischeri* 30 minute IC50 (ISO 11348-3)
    - Other 30 min luminescent bacteria IC50 tests
    - 15 minute luminescent bacteria IC50 tests
    - Freshwater algae growth inhibition test (*Pseudokirschneriella subcapitata*)

Reporting

Record the % dilution that you estimate will produce a 50% response in the ecotoxicity test(s) you are using. This result will then be converted to mgZn/L according to the concentration of zinc in the sample.