Instruction Sheets

AIR
Ambient, Indoor, Workplace Air and Stack Emissions Proficiency Testing Scheme

lgcstandards.com/AXIO

Issue No: 55
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GENERAL INFORMATION

Receipt and Storage

- All samples should be stored in accordance with the instructions provided on the sample labels 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.
- All samples should be stored, prior to analysis, in the format provided to minimise potential from contamination.
- **VOC samples on sorbent tubes should be stored away from other potential sources of solvent in the laboratory.**

Sample Preparation

- All samples should be equilibrated at room temperature 20(±5) ˚C before any analyses are performed.
- Samples should be prepared in accordance with the specific instructions for the group.
- These procedures should be followed exactly to ensure comparability of results**.**

Sample Analysis

- Samples should be analysed by the normal method or methods used by your laboratory.
- Replicate determinations can be made if this is normal laboratory procedure.
- Only one value per method can be submitted to LGC Standards Proficiency Testing for statistical analysis and reporting on laboratory performance.
- All samples should be treated like any other samples and all normal quality control procedures should be adopted.
- Results should 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 excludes the dilutions in the sample preparation instructions), such dilutions should be corrected for.**

Reporting Results

- All results should be submitted using PORTAL
- Please go to https://portal.lgcstandards.com
- Login using your Lab ID, username, and password.
- A PORTAL user guide can be downloaded from the help section.

If you need any help at all, please do not hesitate to contact our support team using the details below or your local LGC representative.
Tel: +44(0)161 762 2500

Email: axiopt@lgcgroup.com

Protocol WPA-INO-1	Sample codes: PT-AR-01	Description: - 4 x 25 mm diameter mixed cellulose ester filter spiked with metal solutions - 2 x blank filters	

All analytes

Step 1
Analyse each sample by your chosen instrumental technique

Back to sample list

Protocol WPA-INO-1A	Sample codes: PT-AR-1A	Description: - 4 x 37 mm diameter cellulose acetate cassette capsule spiked with metal solutions - 2 x blank filters	

All analytes

Step 1
Analyse each sample by your chosen instrumental technique

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Protocol WPA-INO-1B	Sample codes: PT-AR-1B	Description: - 4 x 37 mm diameter mixed cellulose ester filter spiked with metal solutions - 2 x blank filters	

All analytes

Step 1
Analyse each sample by your chosen instrumental technique

Back to sample list

Protocol WPA-INO-1C	Sample codes: PT-AR-1C	Description: - 4 x 25 mm diameter Zefon Disposable Inhalable Sampler mixed cellulose ester filter spiked with metal solutions - 2 x blank filters	

All analytes

Step 1
Analyse each sample by your chosen instrumental technique

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Protocol WPA-INO-2	Sample codes: PT-AR-2X PT-AR-2F PT-AR-2I	Description: - 3 x 25 mm diameter PVC filters (GLA5000) loaded with aerosolised quartz by employing the BCIRA respirable sampler (Higgins-Dewell design) - 1 blank filter OR - up to 3 x blank filter	

All analytes

Step 1
Analyse each sample by your chosen instrumental technique

Note: - One blank filter supplied for participants using XRD technique (PT-AR-2X) or indirect methods (PT-AR-2I)
- Up to three blank filters for participants using FTIR technique (PT-AR-2F)

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Protocol WPA-DU-1	Sample codes: PT-AR-03	Description: - 4 x 25mm diameter glass fibre (GFA) filters spiked with sodium borate salt as a mass surrogate - 3 x blank filters	

All samples

Step 1
Weigh each sample by your chosen instrument

Step 2
Return the samples to:
Dispatch Manager
LGC Standards Proficiency Testing
1 Chamberhall Business Park
Chamberhall Green
Bury, Lancashire
BL9 0AP
United Kingdom

Please retain the box and packaging in which you receive the filters and use this to return the samples to LGC once the initial weighing has been completed. This will ensure the maximum protection for the samples and help to maintain their integrity during transportation

Step 3
Weigh each sample returned by LGC by your chosen instrument

Calculation: Weight of filters after spiking – initial weight = mass of solids

Step 4
Report your results in PORTAL.
Share pictures of the filters using the Upload image functionality

PORTAL
Fast. Simple. Interactive.

Initial weights and weights of filters after spiking are for reference purpose only.

The mass of solids is the value which will be assessed

Note: Please return the samples to LGC using your preferred courier method; we would suggest the use of a reputable courier with a tracking service. Please note that LGC must receive the returned filters by the date indicated on the application form and in the e-mail sent with the samples

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Protocol WPA-DU-2	Sample codes: PT-AR-04	Description: - 4 x 37mm diameter glass fibre (GFA) filters spiked with sodium borate salt as a mass surrogate - 3 x blank filters	

All samples

Step 1
Weigh each sample by your chosen instrument

Step 2
Return the samples to:
Dispatch Manager
LGC Standards Proficiency Testing
1 Chamberhall Business Park
Chamberhall Green
Bury, Lancashire
BL9 0AP
United Kingdom

Please retain the box and packaging in which you receive the filters and use this to return the samples to LGC once the initial weighing has been completed. This will ensure the maximum protection for the samples and help to maintain their integrity during transportation

Step 3
Weigh each sample returned by LGC by your chosen instrument

Calculation: Weight of filters after spiking – initial weight = mass of solids

Step 4
Report your results in PORTAL.
Share pictures of the filters using the Upload image functionality

Initial weights and weights of filters after spiking are for reference purpose only.

The mass of solids is the value which will be assessed

Note: Please return the samples to LGC using your preferred courier method; we would suggest the use of a reputable courier with a tracking service. Please note that LGC must receive the returned filters by the date indicated on the application form and in the e-mail sent with the samples

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Protocol WPA-VOC-1	Sample codes: PT-AR-05 PT-AR-06	Description: - 4 x charcoal filled glass sorbent tubes dynamically loaded from the gas phase (prepared in accordance with procedures set out in ISO 6145 part 4) for analysis by solvent desorption - 4 x blank sorbent tubes	

All analytes

Step 1
Analyse each sample by your chosen instrumental technique

Note: Two of these blank sorbent tubes are unopened to use, if required, by participants for internal spike recovery tests.

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Protocol AIR-VOC-2	Sample codes: PT-AR-07 PT-AR-12 PT-AR-12A PT-AR-21	Description: - 4 x filled sorbent tubes (Perkin Elmer type- 6.4mm OD, 5 mm ID and 90 mm long) for analysis by thermal desorption - 2 x blank sorbent tubes	

All analytes

Step 1
Analyse each sample by your chosen instrumental technique

Note: Participants are reminded to take extra care when handling the tubes to avoid returning damaged tubes.

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Protocol AIR-VOC-3	Sample codes: PT-AR-22	Description: - 2 x filled sorbent tubes (Perkin Elmer type- 6.4mm OD, 5 mm ID and 90 mm long) for analysis by thermal desorption - 2 x blank sorbent tubes	

All analytes

Step 1
Analyse each sample by your chosen instrumental technique

Note: Participants are reminded to take extra care when handling the tubes to avoid returning damaged tubes.

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Protocol WPA-AL	Sample codes: PT-AR-08	Description: - 4 x 25 mm diameter glass fibre filters (GFA) spiked with formaldehyde and acetaldehyde, 2,4,DNPH derivatives, in an amber glass vial - 3 x DNPH only treated blanks, in an amber glass vial	

All analytes

Step 1
Analyse each sample by your chosen instrumental technique

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Protocol WPA-CR	Sample codes: PT-AR-09	Description: - 4 x 25 mm diameter NaOH treated Millipore PVDF filters spiked with Cr (VI) - 2 x NaOH only blank filters	

All analytes

Step 1
Analyse each sample by your chosen instrumental technique

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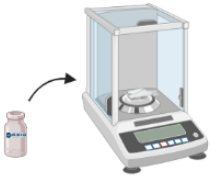
Protocol WPA-INO-3	Sample codes: PT-AR-10A PT-AR-10B	Description: 1 x powder sample - 10A: Welding fume derived from mild and stainless-steel welding process - 10B: Lead containing dusts	

All analytes			
Step 1 Dry the nominal 100 mg supplied sample overnight at a nominal temperature of 95 °C		**Step 2** Weigh 10 (± 1.0) mg to the nearest 0.1 mg. A small glass weighing boat is recommended for handling such materials which can be prone to static effects	
Step 3 Once weighed, rinse the sample through the tubular stem of the weighing boat into the receiving digestion vessel using aliquots of an acid used in the digestion method e.g. nitric acid		**Step 4** Analyse sample by your chosen instrumental technique	

Note for Step 2: Occasionally, the sample weight can be 20 (±1.0) mg. When this is the case, this will be stated in the dispatch e-mail

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Protocol WPA-INO-4	Sample codes: PT-AR-16	Description: - 4 x 25 mm diameter quartz fibre filters loaded with diesel fume - 3 x blank filters	

All analytes

Step 1
Analyse each sample by your chosen instrumental technique

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Protocol WPA-INO-5	Sample codes: PT-AR-18	Description: - 4 x 37 mm diameter mixed cellulose ester filter spiked with beryllium solutions - 2 x blank filters	

All analytes

Step 1
Analyse each sample by your chosen instrumental technique

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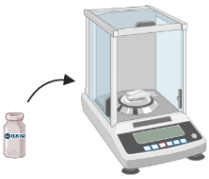
Protocol WPA-INO-6	Sample codes: PT-AR-19	Description: 1 x bulk chromate-containing welding fume or paint dust sample	

All analytes			
Step 1 From the nominal 40 mg supplied sample, weigh 10 (± 1.0) mg to the nearest 0.1 mg. A small glass weighing boat is recommended for handling such materials which can be prone to static effects		**Step 2** Once weighed the sample can be rinsed through the tubular stem of the weighing boat into the receiving extraction vessel using aliquots of the recommended extracting solution	
Step 3 Analyse sample by your chosen instrumental technique			

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Protocol AA-1	Sample codes: PT-AR-11	Description: 4 x Palmes- type diffusion tubes spiked with sodium nitrite as a surrogate for Nitrogen dioxide (NO_2)	

All analytes

Step 1
Analyse each sample by your chosen instrumental technique

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Protocol AA-2	Sample codes: PT-AR-13 PT-AR-14	Description: - 4 x 47 mm diameter quartz fibre filters spiked with metal solutions - 2 x blank filters	

All analytes	
Step 1 Analyse each sample by your chosen instrumental technique	

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Protocol AA-3	Sample codes: PT-AR-17	Description: - 4 x 47 mm diameter quartz fibre filters spiked with sodium borate salt as a mass surrogate - 3 x blank filters	

All samples

Step 1
Weigh each sample by your chosen instrument

Step 2
Return the samples to:
Dispatch Manager
LGC Standards Proficiency Testing
1 Chamberhall Business Park
Chamberhall Green
Bury, Lancashire
BL9 0AP
United Kingdom

Please retain the box and packaging in which you receive the filters and use this to return the samples to LGC once the initial weighing has been completed. This will ensure the maximum protection for the samples and help to maintain their integrity during transportation

Step 3
Weigh each sample returned by LGC by your chosen instrument

Calculation: Weight of filters after spiking – initial weight = mass of solids

Step 4
Report your results in PORTAL.
Share pictures of the filters using the Upload image functionality

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Fast. Simple. Interactive.

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The mass of solids is the value which will be assessed

Note: Please return the samples to LGC using your preferred courier method; we would suggest the use of a reputable courier with a tracking service. Please note that LGC must receive the returned filters by the date indicated on the application form and in the e-mail sent with the samples

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Protocol SE-1	Sample codes: PT-AR-31	Description: - 1 x variable volume impinger solution (prepared in accordance with BS EN 13211) containing mercury	

All analytes			
Step 1 Determine the sample volume		**Step 2** Analyse the sample by your chosen instrumental technique	

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Protocol SE-2	Sample codes: PT-AR-32	Description: - 1 x variable volume impinger solution (prepared in accordance with BS EN 13211) containing mercury	

All analytes			
Step 1 Determine the sample volume		**Step 2** Analyse the sample by your chosen instrumental technique	

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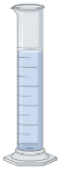
Protocol SE-3	Sample codes: PT-AR-33	Description: - 1 x variable volume 3.3% nitric acid impinger solution (prepared in accordance with BS EN 14385) containing heavy metals	

All analytes			
Step 1 Determine the sample volume		**Step 2** Analyse the sample by your chosen instrumental technique	 

Note: Elements vary round on round.
Please refer to the application form for elements provided in each round.

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Protocol SE-4	Sample codes: PT-AR-34	Description: - 1 x variable volume 0.3% hydrogen peroxide impinger solution (prepared in accordance with BS EN 14791) containing sulfur dioxide (to be determined as sulfate)	

All analytes			
Step 1 Determine the sample volume		**Step 2** Analyse the sample by your chosen instrumental technique	 

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Protocol SE-5	Sample codes: PT-AR-35	Description: - 1 x variable volume 0.1M sodium hydroxide impinger solution (prepared in accordance with BS EN 15713) containing fluoride	

All analytes			
Step 1 Determine the sample volume		**Step 2** Analyse the sample by your chosen instrumental technique	

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Protocol SE-6	Sample codes: PT-AR-36	Description: - 1 x variable volume impinger solution (prepared using chloride-free reagents, in accordance with BS EN 1911-2) containing hydrogen chloride	

All analytes			
Step 1 Determine the sample volume		**Step 2** Analyse the sample by your chosen instrumental technique	

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Protocol SE-7	Sample codes: PT-AR-37	Description: - 1 x variable volume 0.28% sulfuric acid impinger solution (prepared in accordance with US EPA method 26) containing ammonia	

All analytes			
Step 1 Determine the sample volume		**Step 2** Analyse the sample by your chosen instrumental technique	 

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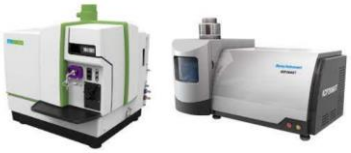
Protocol SE-8	Sample codes: PT-AR-38	Description: - 1 x 47mm diameter quartz filters spiked with potassium hydrogen phthalate salt as mass surrogate (for analysis in accordance with EN 13284-1) - 1 blank filter	

All analytes	
Step 1 Analyse each sample by your chosen instrumental technique	

Note: Elements vary round on round.
Please refer to the application form for elements provided in each round.

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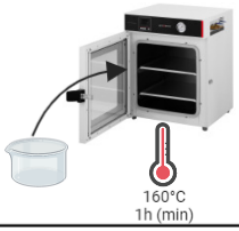
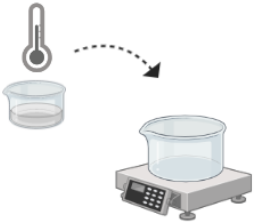
Protocol SE-9	Sample codes: PT-AR-39	Description: - 1 x 250mL rinsing solution containing dissolved and suspended solids (prepared in accordance with EN 13284-1)	

All analytes			
Step 1 Pre-weigh evaporation container		**Step 2** Rinse the entire contents of the sample container into the container	
Step 3 Evaporate in an oven at 120°C at ambient pressure		**Step 4** After evaporation, place the weighing containers in the drying oven for at least 1 hour at 160°C	
Step 5 Cool to ambient temperature and calculate the total solids content in the sample. **Report result in mg**			

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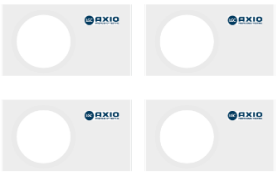
Protocol SE-10	Sample codes: PT-AR-40	Description: 4 x 47mm diameter quartz filters spiked with potassium hydrogen phthalate salt as mass surrogate (for analysis in accordance with EN 13284-1)	

All samples

Step 1
Weigh each sample by your chosen instrument

Step 2
Return the samples to:
Dispatch Manager
LGC Standards Proficiency Testing
1 Chamberhall Business Park
Chamberhall Green
Bury, Lancashire
BL9 0AP
United Kingdom

Please retain the box and packaging in which you receive the filters and use this to return the samples to LGC once the initial weighing has been completed. This will ensure the maximum protection for the samples and help to maintain their integrity during transportation

Step 3
Weigh each sample returned by LGC by your chosen instrument

Calculation: Weight of filters after spiking – initial weight = mass of solids

Step 4
Report your results in PORTAL.
Share pictures of the filters using the Upload image functionality

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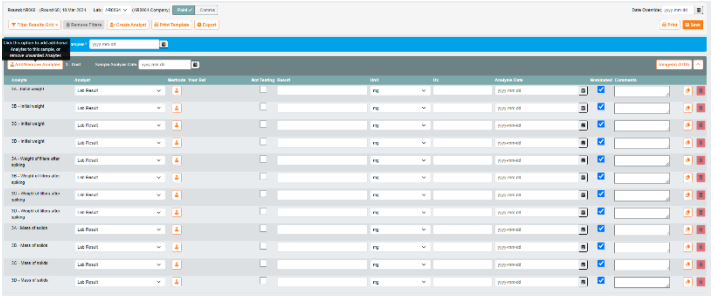
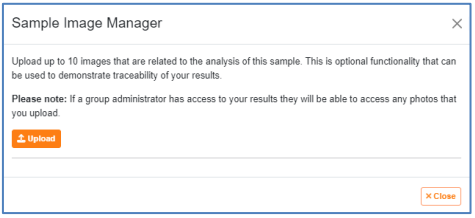
Uploading pictures in PORTAL

Upload image via the result entry screen. Each sample header contains an image upload button on the right hand side	
Click the images button to upload up to 10 images relating to this sample. Images must be less than 10mb in size and be either .jpg or .png format	
Click view to see the image you have uploaded	

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