

Proficiency testing provider organisation accredited by NAH under No NAH-8-0003/2014.

GROUNDWATER TESTING

Work instructions

2018/Round II.

1. General instructions

Due to properties of parameters to be quantified, participants should prepare proficiency testing samples in situ by adding the spike solutions issued to drinking water available in their laboratory according to instructions below (see section 1.3).

Please follow the safety instructions for laboratory chemicals when handling samples.

1.1 Description of spike solutions

1.1.1. GW-Org-1 and GW-Org-2 samples for the analysis of PAHs and PCBs:

Container: amber CERTAN® capillary bottle
Quantity: ~4 cm³
Solvent: acetonitrile

1.1.2. GW-Org-3 and GW-Org-4 samples for the analysis of EPH:

Container: amber CERTAN® capillary bottle
Quantity: ~4 cm³
Solvent: 20% n-pentane, 80 % methanol

1.1.3. GW-Org-5 and GW-Org-6 samples for the analysis of BTEX:

Container: amber CERTAN® capillary bottle
Quantity: ~4 cm³
Solvent: methanol

1.2. Storage of spike solutions:

Samples should be stored unopened at $4 \pm 2^{\circ}\text{C}$ in the dark until analysis. Appropriate measures should be taken to prevent cross-contamination. Samples should be prepared **within 1 week from the time of arrival of spike solutions** to your laboratory.

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1.3. Preparation of samples:

Take a 1 dm³ volumetric flask and fill it with approximately 0,5 dm³ drinking water (laboratory tap water). In case of **PAHs** analysis, add **1 cm³ isopropanol** and **1 cm³ spike solution**. In case of **PCBs, EPH and BTEX** analysis, add **1 cm³ spike solution only**. Fill the flask to the mark and shake it thoroughly. Proceed with sample preparation and analysis as in case of routine samples.

For spike solution removal from CERTAN® capillary bottles, use of Hamilton syringe with 70 mm needle is preferred.

Measurement results should be reported for the samples prepared as above and should be corrected for matrix blank and recovery values.

2. Samples:

2.1. Sample code: GW-Org-1, GW-Org-2

Parameters and expected concentration ranges:

PAHs: acenaphthene, acenaphthylene, anthracene, benz(a)anthracene, benz(a)pyrene, benz(e)pyrene, benz(b)fluoranthene, benz(k)fluoranthene, benz(g,h,i)perylene, dibenz(a,h)anthracene, phenanthrene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, chrysene, pyrene.

Total: 0,2– 1,2 µg/dm³

PCBs: PCB-28, 52, 101, 118, 138, 153, 180

Total: 0,01 – 0,12 µg/dm³

2.2. Sample code: GW-Org-3, GW-Org-4

Parameters and expected concentration ranges:

EPH (C₁₀-C₄₀):

30 – 200 µg/dm³

2.3. Sample code: GW-Org-5, GW-Org-6

Parameters and expected concentration ranges:

BTEX: benzene

0,3 – 3,5 µg/dm³

toluene

10 – 65 µg/dm³

ethylbenzene

10 – 65 µg/dm³

xylene (Σ o, m, p)

5 – 65 µg/dm³

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3. Reporting of results:

Participants are asked to report their expanded measurement uncertainty together with the measurement results using a coverage factor of $k = 2$, so that E_n numbers can be calculated during evaluation. E_n numbers help participants to assess the validity of their uncertainty estimation. Please make sure that expanded measurement uncertainties are reported in the **same unit of measurement** as the measurement results.

Results can be reported as chosen on the application form:

- **Electronically via our website** (www.qualcoduna.hu) using your personal login ID communicated earlier by e-mail. (Choose *Login to online services*, then go to *Reporting of results* to see the online data report forms. After required fields are filled in and data report form is sent, you will receive a confirmation that your data is received. This can be saved and printed for your later use. If you do not receive the confirmation, reporting of your results failed. In this case please try again.
- **By fax (+36-1-872-3806) or post using the data report form** enclosed (also available in pdf format on our website – see *Downloads*). Postal address is **WESSLING Public Benefit Nonprofit Ltd.**, Proficiency Testing Department (**Anonymus utca 6., H-1045 Budapest, Hungary**).

Reporting deadline: June 19, 2018

Please make the appropriate rounding and report in the unit of measurement stated on data report forms. **Results reported after the above deadline or as „< LOD/LOQ” will be excluded from evaluation, results reported in inappropriate units of measurement will not be converted.** (Reference: ISO 13528:2015 Statistical methods for use in proficiency testing by interlaboratory comparisons.)

Budapest, May 10, 2018

Zsigmond Szegény
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