

PROFEA BAM PT Scheme for Environmental Analysis

Based on many years of experience as an organiser of interlaboratory comparisons BAM will launch a new proficiency testing (PT) scheme in autumn 2006.

PROFEA is primarily projected as a regional European PT scheme for testing laboratories outside Germany working in the field of soil analysis. (*Please note that for German laboratories BAM is operating a separate PT programme.*)

The main objectives of PROFEA are:

- provision of an independent and objective basis to assess a laboratory's ability to perform particular tests competently,
- to support testing laboratories in their efforts to ensure or to improve the quality of measurement results,
- to give indications for necessary corrective actions to those participants whose performance does not meet the required level of acceptability,
- provision of an opportunity for testing laboratories to meet the demand of accreditation bodies to participate in appropriate PT schemes.

PROFEA will be operated in full compliance with „The International Harmonized Protocol for the Proficiency Testing of Analytical Chemistry Laboratories“ (IUPAC Technical Report, 2006) and the requirements of ISO/IEC Guide 43-1 (1997).

The PT scheme will be focussed on the analysis of „real-world“ soils which were collected from contaminated sites to provide similar matrix composition and analyte contents as routinely encountered in the daily work of testing laboratories. Above all it is aiming at the correct use of EN and ISO standard testing procedures.

Preparation, bottling and homogeneity testing of the samples to be analysed are performed by BAM. Normally, assigned values for the analytes to be determined in the framework of planned PT rounds are calculated using analytical data obtained in several BAM working groups. In cases where this is not possible due to a lack of personnel or technical resources, the consensus robust mean of all participants will be used as the assigned value.

Participants performance will be assessed for each analyte under test on the difference between their result and the corresponding assigned value.

As a measure of laboratory's performance the Z-score is calculated for each individual result according to

$$Z = (X_{\text{lab}} - X_a) / s_a$$

where X_{lab} is the individual result, X_a is the assigned value, and s_a is a set target value for the acceptable deviation of X_{lab} from X_a . The values for s_a are assigned by BAM according to the required (expected) performance of routine analyses taking into account the contents of the relevant analytes in the test samples.

Z-scores should be interpreted as follows:

$|Z| \leq 2$ is satisfactory

$2 < |Z| < 3$ is questionable

$|Z| \geq 3$ is unsatisfactory (requiring corrective action)

PT samples will be dispatched by standard air parcel together with all instructions concerning the required analyses and data reporting. Participants have to return their results within a specified deadline, usually within four weeks.

Following the statistical evaluation of submitted results a report will be produced that is planned to be available six weeks after the results deadline at the latest. This report will include graphical and tabular presentations of all received results and will be provided electronically as Adobe Acrobat (pdf) file. PROFEA is fully confidential, with all participants only identified in the report by an individual identification number.

An individual certificate of participation showing only laboratory's Z-scores will be sent to each participant as a hard copy. A summarising statement concerning laboratory's overall performance will not be given. Primarily, PROFEA should be regarded as a self-help tool that enables participating laboratories to detect unexpected sources of error in their measurement results obtained for particular analytes.

The first round of PROFEA will start in October 2006 with only one sample of a contaminated soil offering the determination of ten inorganic analytes. It is up to the participants to determine the full range or only a selection of these analytes.

Depending on the response to this first round an extension of the scope of PROFEA (inclusion of organic analytes and split-level samples in the scheme) is planned for forthcoming rounds.

BAM intends to offer bottled test samples not used up in connection with specific PROFEA rounds for sale as control materials for internal quality assurance.

PROFEA Round #1

Matrix: 1 sample of contaminated soil (40 g/bottle, grain sizes < 63 µm)

Analytes: As, Cd, Co, Cr, Cu, Hg, Ni, Pb, V and Zn after extraction with aqua regia according to ISO 11466
(*For analysing the aqua regia extract participants may use the method of their choice, e.g. AAS, ICP-AES or ICP-MS.*)

Fee: 150 EURO (to be paid before sample dispatch)

Sample mailing charges: 10 EURO

Deadline for registration: September 8th, 2006
An official registration form will be delivered after receiving a declaration of interest.

Sample delivery: October 6th, 2006

Results deadline: November 3rd, 2006
Results shall be submitted according to instructions which will be provided to participants after they have been registered.

For further information and to receive the registration form please contact:

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