UK NEQAS
For Trace Elements

Information to Help Interpretation of the Trace Element Scheme Annual Report

General:

The annual report is a summary of the results submitted by participants in the last scheme year (April to March) and which are issued in the final report for each monthly distribution. As such, it includes the final results for each participant, after all amendments have been made. It contains various graphs and other data interpretation, to allow each participant to put their performance for a particular assay into context, both with respect to the analyte concentration and the performance of other participants with the same and different instrumentation. Where results are displayed in this report, they will be displayed to the number of decimal points (dp) that they were submitted in, unless otherwise stated.

Tables:

Table 1 Specimen Preparation

This table shows the concentration of standard spiked into the endogenous base material to get the final concentration for each of the pools. Each pool is used to produce two specimens, each with a separate specimen number (see Table 4).

Table 2 All Results

This table gives an overview of the results, showing the number of results submitted, all-lab-trimmed-mean (ALTM) to one dp, median, standard deviation and coefficient of variation for each of the specimens.

Table 3 Accuracy

This table calculates your spike recovery for each of the spiked specimens throughout the scheme year. It shows the specimen assigned value (ALTM), the standard deviation, your result, your Z-score, and the calculated spike recovery for each of the spiked specimens in the scheme year. The endogenous specimens are not included in this table. The spike recovery is calculated using the formula below and using your results from Tables 2, 3 and 4.

$$\frac{your\ result\ (T3) - average\ of your\ results\ for\ endogneous\ conc\ (T4)}{concentration\ added\ to\ sample\ (T2)} \times 100$$

The average endogenous concentration is calculated using your laboratories results for the 2 endogenous specimens (2 results) in each 6 monthly set of specimens (T4). The green diamond, yellow triangle and red double-triangles, indicate whether the Z-score was showing acceptable (±<2.0), intermediate poor (>2.0 or <-2), or very poor (>3.0, or <-3) performance.

Table 4 Consistency

This table lets you assess your consistency throughout the scheme year. Each 6 monthly set of specimens is made from 6 pools which are analysed twice across the 6 month period. Here your results for each of the pools measured on the two occasions are displayed next to each other, with the difference calculated.

Graphs:

In some graphs small arrows are used to represent when the values exceed the maximum limits of the graph axes, both x and y. These may or may not be present depending on your values.

Graph 1 ALTM vs SD

This graph displays the standard deviation of the results plotted against the ALTM (circles). It displays the same information for your method mean and standard deviation as well (triangles). The filled in circles represent the last distribution in the scheme year (March). This graph displays data from Table 2.

Graph 2 Result vs ALTM

This graph shows how your results compare to the ALTM across the concentration range. The white squares in this graph represent the last distribution in the scheme year (March). The equivalence line is also shown (Result = ALTM). This graph displays data from Table 3

Graph 3 Z-Score vs ALTM

This graph displays your laboratories Z-scores across the concentration range. The black circles represent the last distribution in the scheme year (March). This data comes from Table 3.

Graph 4 Average Z-Score vs Distribution

This graph displays your Z-score and how it has changed over the scheme year. The black circles that are connected show your average Z-score and the white circles show the Z-scores for each specimen in the distribution.

Graph 5 Percentage Average Recovery vs Spike

This graph shows the average spike recovery from all laboratories across the concentration range. The concentration added to the base material is displayed in Table 1

Graph 6 Percentage Lab Recovery vs Spike

This graph shows your laboratories spike recovery compared to the concentration of material added to the pools. The concentration added to the base material is displayed in Table 1, and your recoveries are calculated in Table 3

Bar Charts Z-Score in Ascending Order

This shows how your Z-score results compare to other participants and other techniques. They have been ranked from lowest to highest to show the range of Z-scores. Your laboratories Z score is highlighted with an arrow. The columns have different colours related to the method groups that are possible for the particular element. These are shown in the key for the figure.

Method group codes:

COL: Colourimetry
CVAAS: Cold Vapour Atomic Absorption Spectrometry
CVAFS: Cold Vapour Atomic Fluorescence Spectrometry
ETAAS: Electrothermal Atomic Absorption Spectrometry
FAAS: Flame Atomic Absorption Spectrometry
ICP-AES: Inductively Coupled Plasma Atomic Emission Spectrometry
ICP-MS: Inductively Coupled Plasma Mass Spectrometry