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NMISA-PT79

Proficiency Testing Scheme

Description

Determination of ethanol in air by evidential breath analyser using the water bath method

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1 FOREWORD

This is the call for participation in, and description of the NMISA proficiency testing (PT) scheme for the determination of ethanol in air by evidential breath alcohol analyser using the water bath method. Participants will be required to report on the ethanol content in air at 34 °C. A confidential report will be issued to all participants after completion of the PT scheme. Information on the concentration range, dates for distribution and reporting are listed in Table 1.

This forms part of a range of ISO 17043 accredited PT services offered by NMISA. Please consult our website www.nmisa.org for information on PT schemes on offer. NMISA can also assist with the preparation of traceable gravimetrically prepared spike solutions for benchmarking *ad-hoc* analyses for which commercial PT schemes are not available.

2 SCHEME AIMS

This scheme will assist laboratories that routinely determine ethanol in air by evidential breath alcohol analyser using the water bath testing method, to monitor and improve the quality of their measurements., and monitor their laboratory performance. The PTS allows laboratories to evaluate their accuracy and comparability of measurement results produced; the continued competency of analytical staff; and the maintenance and effectiveness of the current quality assurance systems within the laboratory. In addition, this information may also be used to provide accreditation bodies or clients with objective evidence of laboratory performance.

3 PARTICIPATION FEES AND ADDITIONAL CHARGES

The scheme will consist of three different concentrations of aqueous ethanol (1500 ml per concentration level for each participant). The cost of participation in the PT scheme is R 7 000. For delivery within the Republic of South Africa (RSA) the fee includes delivery. For participants outside the RSA the actual delivery costs, including customs and import duties, will be carried by the participants. This fee includes the material and a confidential report upon completion.

Since many of the South African participants are located within close proximity to NMISA, the option of collecting the PT scheme samples from NMISA premises is permitted.

International laboratories will have test samples sent by courier and appropriately packaged to maintain sample integrity. International participants must provide NMISA with any import or quarantine permits that might be required to complete sample delivery well in advance of the shipment date and are liable for any customs or import duties charged.

Upon registration for participation an official quotation will be provided. Participation is confirmed following receipt of a purchase order and/or proof of payment.

4 PT SCHEME DESCRIPTION

The timeline for the PTS is presented in Table 1. This study is designed to support laboratories routinely performing breathalyser calibrations using the water bath method by passing nitrogen gas at 34 °C through an ethanol solution in to a breath alcohol analyzer. Participants will be expected to measure the ethanol in air at 34°C for each of the proficiency testing samples in the usual working mode of the EBA. Duplicate results for each solution must be provided. The levels of the analytes should be easily achievable using methods typically applied. Instructions for proper handling and storage of the samples prior to sample preparation will accompany the PT scheme samples. Participants should adhere to these instructions to ensure sample integrity and comparability of the results.

Table 1: PTS details for NMISA-PT79 Evidential Breath Analyser PTS description.

NMISA- PT79 Evidential Breath Analyser PTS description		Sample format	Distribution/ Dispatch	Result reporting
Parameters	Ethanol in air at 34°C Scheme consists of three different concentration samples between 0.04 mg/ L to 3.0 mg/ L.	3 x 1 500 ml for each concentration level	June/July 2022	5 weeks after PTS distribution date
Result Reporting	<p>Participants will be required to perform the analysis using their normal laboratory procedures and are required to report <u>two results for each concentration level measured in the sample provided</u> .</p> <p>Participants are encouraged to include an uncertainty estimate for each result obtained. The result reporting form will be distributed to participants and will request additional information on the measurement technique and parameters, any recovery correction application, calibration standards used etc. Up to four sets of results can be submitted by each participating laboratory</p>			
PT conduct	<p>Assigned value</p> <p>The certified reference value and associated expanded uncertainty of measurement of the certified reference material will be used as the assigned value of PT test samples. The aqueous ethanol CRMs produced at the NMISA Organic Analysis Laboratory, are ISO 17025 and 17034 accredited solutions.</p> <p>Laboratory performance</p> <p>The expected performance of the participants is evaluated against the maximum permissible errors (mpe's) of SANS 1793: 2013 Evidential breath analysers.</p> <p>The mpe, positive or negative, shall be:</p> <ul style="list-style-type: none"> • 0,02 mg/L for measured concentration less than 0,4 mg/L; • 5% of the measured concentration greater or equal to 0,4 mg/L and less than or equal to 2,0 mg/L in accordance with later standard. • 20% of the measured concentration for all mass concentration greater to 2,0 mg/L in accordance with later standard. <p>PT report</p> <ul style="list-style-type: none"> • The PTS report will be distributed within 2 week following the result submission deadline. Reports will be provided in electronic format only (Adobe Acrobat- pdf) files. • The scheme is fully confidential. Each participant will be issued with a unique identification number. For multiple participants within the same laboratory the participating laboratory is required to identify its analysts by a code known only to the laboratory. 			