

SADCMET WATER PT Scheme – 6th Evaluation Workshop Chemistry PT

16th Nov – 18th Nov 2009, Mahé, Seychelles

Short report

Introduction

This short report summarizes the outcome of the above mentioned evaluation workshop for the 6th PT round on Chemical Analyses. It will be provided to all participants of the PT round to facilitate corrective actions and improvement in the laboratories. A detailed report will be published on <http://www.sadmet.org>.

Report of the PT provider

The PT round was provided by NamWater in the same way as in the years before, financially assisted by PTB Germany and directed by SADCWaterLab Association. The 51 participating labs came from most of the SADC and EAC countries. Samples were prepared gravimetrically based on pure water by spiking with pure chemicals. So reference values with uncertainties could be calculated from the formulation process. Samples were distributed using three different couriers: TNT, DHL and Fedex. Some problems were encountered with Fedex, where some packages were mixed up and delivered to the wrong address.

For the evaluation and assessment the reference value was used as assigned value. To calculate z-scores (the difference between the lab results and the assigned value divided by a standard deviation for proficiency assessment) the standard deviation of the data set (calculated with Algorithm A described in ISO 13528) was used whenever it was smaller than a limit agreed between the participants in the previous evaluation workshops. This limit can be regarded as a fitness-for-purpose criterion. The PT provider faced the following problems:

- Late confirmations and requests of participation
- Registration forms were sent to the provider - difficulties to contact participants
- Receipt of results by fax unclear
- E-mail problems

Report of the local coordinators

To facilitate the organisation of the PT rounds and to reduce shipment costs local coordinators (LC) for each country have been installed. During the workshop the local coordinators were requested to give a short report on their activities. The local coordinators reported on their activities to promote the PT scheme on a national level using national meetings and contacts via phone, fax, e-mail, letters and direct communication. The PT leaflet was widely used. It was reported that in many cases there was interest among the laboratory people, but nevertheless this was not followed by participation due to lack of awareness of the importance of PT among the decision makers. It was decided that a leaflet especially for decision makers should

be developed explaining why participation in PTs is indispensable for analytical laboratories to ensure high quality.

Customs problems were encountered in Zambia only, where customs clearance took 14 days.

No reports were received from Kenya and Uganda.

A list of all local coordinators will be placed on the SADC MET website (www.sadcmnet.org).

Results of the evaluation and assessment

Dr. Michael Koch, the consultant from Germany, explained the details of the evaluation and assessment. The most important facts are summarized here, for more detailed description please see the full report.

Sulphate

- Standard deviation higher than ever before
- More than 50% of the labs have unsatisfactory results
- High portion of outliers for the turbidimetric and especially for the gravimetric method
- A closer inspection of the individual performances in most cases showed no improvement in the labs

Chloride

- Standard deviations are too high – no improvement over the last years
- More unsatisfactory results than ever before
- Only 2/3 of the labs have good results
- There are problems with the endpoint detection in the argentometric determination
- Obviously there are some problems with the spectrometric method

Fluoride

- Standard deviations are very high – no improvement
- More than 50% of the values are not satisfactory
- Colorimetric values were not reliable (as in the last years!)
- Obviously some problems with ion selective electrode

Nitrate

- Some values obviously again reported in wrong units (nitrate-N instead of nitrate)
- High number of outliers
- Standard deviation are very high! – no improvement!
- Harmonization/Recommendation of methods could help

Phosphate

- Some values in wrong units (phosphate-P instead of phosphate)
- Still very high standard deviations
- More than 40% of the values not satisfactory

Calcium

- Standard deviations are very high
- High percentage of non-satisfactory results
- Errors in the application of analytical methods

Magnesium

- Standard deviations are much too high
- Almost 50% of the values are not satisfactory
- Many titrimetric values are not reliable

Sodium

- Standard deviations as in the last years, but still too high
- Slight improvement in the number of satisfactory results

Potassium

- Standard deviations higher than in last years
- Higher percentage of non-satisfactory results
- Some problems with AAS method

Iron

- Standard deviations are too high
- 1/3 of the values is not satisfactory
- Some problems with AAS

Manganese

- Standard deviations higher than ever before
- 1/3 of the values is not satisfactory

Aluminium

- Only a small number of values
- Standard deviations better than last year, but not really good
- Slight improvement of the percentage of satisfactory values

Lead

- Standard deviation similar to last year, but still too high
- No improvement

Copper

- Standard deviations better than in previous year

Zinc

- Standard deviations higher than ever before
- No improvement

Chromium

- Standard deviation very high for lowest level
- Percentage of non-satisfactory results steadily increasing
- No improvement
- Problems with AAS

Nickel

- Standard deviations high compared to last rounds
- No improvement

Arsenic

- Low number of values
- Standard deviation like the years before

Cadmium

- Highest standard deviation of all PT rounds
- Percentage of non-satisfactory results increasing

Cobalt

- Standard deviation higher than last year

All in all the results of the participating labs are not satisfactory on average.

A closer examination of the development in the individual laboratories showed that some laboratories are continuously performing well, but others constantly deliver bad quality without any change.

From the discussion during the workshop it was concluded that

- There is a lack of applying corrective actions in many laboratories

- Some labs still report the results in wrong units
- Some methods deliver unreliable results; there is a need to recommend suitable methods and to collect hints for the correct application of the recommended methods
- There is a lack of communication of the evaluation workshop findings to all participants
- In some labs there might be a lack of commitment in the management on quality issues
- Some of the participants do not have proper quality procedures; training on national level for all potential participants is necessary
- Some participants need more advice on how to perform corrective actions
- Some labs need information on how to find suitable certified reference materials (remark: this information might be found in the COMAR database www.comar.bam.de, which can be freely accessed)
- The benefits of a lab association like SADCWaterLab regarding networking is not recognized. SADCWaterLab offers the possibility to contact other laboratories which might be more experienced with certain methods. An e-mail list can be found on the SADC MET website (www.sadcmnet.org, link: Water PT)

As a consequence of the PT results two working groups were installed in SADCWaterLab:

- WG “Analytical Methods” will try to identify methods that could be recommended by SADCWaterLab taking into account the varying availability of equipment in the labs in the region
chair: Merylinda Conradie, Namwater, Namibia, conradiem@namwater.com.na
secretary: Margaret Sakala Mazhamo, Food and Drugs Control Laboratory, Zambia, mazhamoms@yahoo.com
- WG “Survey on Analytical Gaps” tries to identify the needs in the labs in the region by conducting a survey around the participating labs
chair: Teddy Ditsabatho, Water Utilities Corporation, Botswana, TDitsabatho@wuc.bw

Both WGs started their work during the evaluation workshop.

SADCWaterLab needs more promotion. An application form has to be developed and sent to all participants(this was done in the meantime. Membership in SADCWaterLab is free! All relevant information can be found on the SADC MET website.

A biannual newsletter will be published by the secretary of SADCWaterLab with contribution from all SADCWaterlab members.

During the evaluation workshop also the General Assembly of SADCWaterLab took place. More details on this will be published in the minutes of the GA on the SADC MET website.

Summary of decisions:

- A list of all local coordinators will be placed on the SADC MET website.
- A short summary report of the findings of the evaluation workshop will be distributed in future

- A leaflet targeting decision makers will be developed describing the importance of participation in PTs and the implementation of corrective actions if necessary
- A training of trainers will be implemented to facilitate training on national level on quality assurance in analytical laboratories (probably in July 2010)
- The advice how to perform corrective actions will be sent out with all evaluation reports to all participants
- A working group on “Analytical Methods” was established and started to work
- A working group for a “Survey on Analytical Gaps” was established and developed a first draft
- A biannual newsletter will be published by the SADCWaterLab secretary with contributions from all SADCWaterLab members
- An application form for SADCWaterLab and information on this network will be distributed as wide as possible

Report prepared by Dr. Michael Koch

Stuttgart, 2009-12-07

A handwritten signature in black ink, appearing to read 'M. Koch', with a stylized, cursive script.