

Report on the 5th Evaluation Workshop within the SADC MET Proficiency Testing Scheme for Water Testing Laboratories

Kampala, Uganda, 8 – 10 December 2008

Prepared by Dr.-Ing. Michael Koch

Summary

The workshop covered the evaluation of the 5th SADC MET Water PT round and all aspects that could be derived from the results. The results showed that there is - generally seen - no improvement over the 5 PT rounds. Most probably this is due to the absence of adequate corrective actions after failures in the PT.

Therefore one of the most important topics in the discussions was, how to motivate the participating labs that failed in one or more parameters to perform the necessary corrective actions.

Most of the participants are still very enthusiastic. It is highly recommended to continue the PT system. The structure of local coordinators turned out to be very useful and should be further strengthened to minimize logistical problems and to increase the number of participants. As one of the main obstacles to further expand the system and to improve the quality of the labs the lack of awareness on the importance of PT or – even more basic – the importance on quality assurance in the chemical lab was identified. To overcome this workshops on national level are recommended. Since most of the local organizations are not able to do that a training for trainers is proposed. In such a training material for a basic course on quality assurance in the analytical laboratory should be provided and the participants trained to present this in a workshop.

To support the participants in performing the corrective actions, a short guideline how to do that will be sent to the participants together with a list of e-mail addresses that should be used to seek help from other laboratories if the problem cannot be solved in the laboratory itself.

The assessment procedure of the PT using limited standard deviations has again proven to be very effective, the statistical methods are in accordance with the internationally recommended procedures.

The chemistry evaluation workshop took place on 8th and 9th of December and was followed by a training and the SADWATERLAB General Assembly on 10th of December where also the participants from microbiology workshop (11th and 12th of December) were present. For the microbiology workshop see separate report.

On 10th of December a half-day training on the management requirements of ISO/IEC 17025 was provided by John Peart from SANAS.

The SADC ASSOCIATION OF WATER TESTING LABORATORIES (SADCWATERLAB) had its general assembly (GA) meeting during the workshop. This association is the responsible body for the PT system and an opportunity for collaboration and information exchange between its members. The SADCWATERLAB official memoran-

dum of understanding was finalised. During the GA the members of the Project Management Committee (PMC), the chair and the vice chair were elected.

Introduction

The workshop reported here followed previous workshops held in Windhoek, Namibia (Feb 2004), Pretoria, South Africa (Nov 2004), Dar es Salaam, Tanzania (Nov 2005), Gaborone, Botswana (Nov 2006) and Dar es Salaam (Dec 2008). The reports are available from <http://www.sadcmnet.org>. As a result of these workshop the first and second proficiency tests for water testing laboratories were organised by Umgeni Water (Pietermaritzburg, South Africa), the following rounds after a training in Germany by Namwater (Windhoek, Namibia). The main aim of this workshop in Kampala was the discussion of the evaluation of the fifth PT round on chemical parameters.

Besides this the opportunity of the workshop was used to provide training on the management requirements of ISO/IEC 17025.

The cooperation of laboratories within the SADCWaterLab Association was also discussed during the workshop.

Participants

The workshop was attended by 34 participants from the following countries:

- Botswana 1
- Kenya 2
- Lesotho 1
- Madagascar 1
- Malawi 1
- Mauritius 1
- Namibia 3
- Seychelles 1
- South Africa 4
- Swaziland 1
- Tanzania 2
- Uganda 11
- Zambia 1
- Zimbabwe 2

A complete list of participants is given in annex 1.

PT Workshop Programme

Monday, 08 December 2008:

Welcome, Opening, Experience of the PT provider, Reports of the local coordinators, Evaluation of the PT

Tuesday, 09 December 2008:

Working group and plenary discussion on PT results, presentation and discussion on methods to determine nitrate, working group discussion, presentation on Internationally understood concepts and associated terms, lab visit

Wednesday, 10 December 2008:

Training on management requirements of ISO17025
SADCWaterLab general assembly

Monday, 08 December 2008

Opening and Evaluation of and experiences from the 4th SADCMET Water PT

- Opening
- **All Participants:** Introduction
- **M. Conradie:** Experiences of the PT provider
- **Local coordinators:** Report
- **All participants:** General discussion
- **M. Koch:** Evaluation of the 5th SADCMET WATER PT
- **All participants:** Discussion of results

Opening

The Workshop was officially opened by Ben Manyindo, deputy executive director of the Uganda National Bureau of Standards.

All participants shortly introduced themselves.

M. Conradie: Experiences of the PT provider

Meryllinda Conradie reported about her experiences with this 4th PT round (annex 2). She listed the changes in participation from the member countries (table 1).

Table 1: Number of labs participating in the PT rounds

country	2004	2005	2006	2007	2008
Angola	1	1	1	0	1
Botswana	2	2	2	4	2
Ethiopia	1	1	1	0	0
Kenya	2	2	4	3	3
Lesotho	1	1	0	1	1
Madagascar	0	0	2	2	3
Malawi	2	2	2	3	1
Mauritius	1	3	4	3	5
Mozambique	2	3	2	0	0
Namibia	2	2	3	3	3
Seychelles	1	2	2	1	1
Swaziland	1	1	0	1	2
South Africa	0	0	0	1	1
Tanzania	2	8	5	12	11
Uganda	1	3	6	5	5
Zambia	1	4	2	3	1
Zimbabwe	2	3	3	5	5
total number	22	44	39	46	45

She listed the parameters to be analysed in this PT round (table 2). Cobalt was added.

Table 2: List of parameters in the 3rd PT round

Sulphate	Manganese
Chloride	Aluminium
Fluoride	Lead
Nitrate	Copper
Phosphate	Zink
Calcium	Chromium
Magnesium	Nickel
Sodium	Arsenic
Potassium	Cadmium
Iron	Cobalt

She described the planning including the chemicals used for spiking, the necessary materials for sample preparation and packaging, choice of courier and necessary balances.

In detail she explained the preparation of the samples including

- Cleaning of bottles
- Weighing of chemicals
- Documentation of the weighings with printer attached to the balances
- Digestion of metals
- Preparation of stock solutions
- Labelling of bottles
- Preparation of final batches
- pH adjustment
- Ensuring homogeneity
- Sample dispensing
- Storage
- Preparation of documentation
- Packaging
- Information to courier
- Shipment

No customs problems were reported, obviously due to change of courier.

Results were received by fax or e-mail.

Evaluation was done using the programme developed especially for the SADC MET PT scheme.

Payments were made using bank drafts, transfers and cheques. Some payments were made, but the money is still outstanding. Namwater still experiences problems to identify the payments within Namwater due to insufficient information from bank/participant. Some payments were not yet made at all.

Local coordinators were again very helpful.

She reported some details of the evaluation:

- Number of parameter analyzed by each lab
- The percentage overall success for all labs

Due to the new balances sponsored by PTB the uncertainty of the assigned values were lower this year-

The PT provider experienced the following problems:

- Interruptions of sample preparation and evaluation by routine tasks in the laboratory
- Limited number of staff
- Late confirmations and requests of participation caused problems and unnecessary rearrangements with the courier
- Extension of the closing date for some participants delayed the evaluation report
- Six laboratories did not submit results at all.
- Some leakage problems due to wrongly delivered bottles. Due to the late delivery of the bottles it was not possible to exchange them

M. Conradie expressed her thanks to PTB for the financial support, especially for the new balances, to SADC MET secretariat, to M. Koch, to the Namwater colleagues, the local distributors and all participants.

The full presentation is included in annex 2.

Local coordinators: Report

The local coordinators were asked to report about their activities, based on the following guiding questions:

1. How did you promote the PT scheme?
2. What feedback did you get from laboratories?
3. How many labs did participate in your country?
4. Do you know about reasons for non-participation?
5. Did you arrange for a common payment? If yes, did it work?
6. Any customs problems?
7. Did you pro-actively inform customs authorities in your country?
8. Do you need additional support or guidance for your task as local coordinator?
9. Any additional comments?

- **Uganda, Aziz Mukota, UNBS**

- No problems with courier and customs
- 5 Laboratories participated
- the PT scheme was promoted using the brochures sent out by the SADC MET secretariat
- Payments were made individually

- **Tanzania, Kezia Mwambo, TBS**

- The PT scheme was promoted with letters, visits, phone calls and the brochures
- Feedback received from laboratories: Some Lab did not respond at all, some responded in writing confirming participation, some responded verbally that they will participate, some said it participation in PT is wastage of resources
- From more than 40 laboratories analysing water 14 labs got samples, but only 11 reported results to the provider
- Generally a lack of appreciation of PT has to be recognised
- No common payment was organized
- No customs problems

- There is a need to get support to hold seminars to raise awareness at country level
- **Zambia, Margaret Mazhamo, Food and Drugs Control Lab**
 - Promotion of PT schemes with letters of invitation, phone calls, e-mails and brochures
 - The reasons for non-participation:
 - Not able to perform tests
 - “We are already accredited” (!)
 - financial problems
 - no common payment
 - no customs problems
 - additional support required to arrange awareness workshops
- **Swaziland, Zanele Sgwane, Rural Water Supply**
 - Promotion of the scheme with phone calls and brochure (which came late)
 - Only three labs in the country, 2 of them for chemistry, the other lab promised to participate in 2009
 - No customs problem
 - No additional support required
- **Malawi, Willy Muyila, Malawi Bureau of Standards**
 - Promotion was done by sending the PT promotion flyers and verbal contacts through phones. There was also a proposal to hold a meeting with the water utility service providers as part of campaign but failed due to some logistical problems
 - Feedback from labs: Some 3 labs namely, Northern region water board, polytechnic lab, and Malawi bureau of standards responded positively, while some labs were very willing to participate but had no equipments for the parameters to be analysed. Currently they rely on other labs for quality checks.
 - Three labs participated
 - No common payment
 - Need for additional support in terms of equipment and organising a workshop on the importance of PTs and presentations on quality controls
 - Additional comment: There is always an improvement in subsequent PTs. The major problems noted is lack of resources such as equipment and standard methods of analysis. Despite most laboratories willing to participate they fail due to unavailability of necessary resources
- **Kenya, Daniel Jacca (on behalf of David Koech), Kenya Bureau of Standards**
 - No customs problems
 - Additional support to organize local workshops is needed
 - Accreditation will automatically increase awareness
- **Lesotho, Mapaseka Makhaba, Water and Sewerage Authority**
 - There is only one lab, which participated
- **Madagascar, Yves Mong, Centre National de Recherche pour l’Environnement**
 - Promotion of the scheme in a SADC event for promotion of quality and in the association of laboratories
 - There are only a few labs

- Due to the installation of a new ministry for water additional support from there is expected, hopefully leading to more participants
- No common payment
- No customs problems
- **Seychelles, Vivian Radegonde, Seychelles Bureau of Standards**
 - Leaflets were sent out to the laboratories, but no response
 - No customs problems
 - No additional support required
- **Mauritius, Ghansyam Seedyah, Mauritius Bureau of Standards**
 - No customs problems
- **Botswana, Teddy Ditsabatho, Water Utility Center**
 - Through the national ISO 17025 forum, a forum through which laboratories in Botswana are encouraged to adopt laboratory management systems according to the ISO/IEC 17025 international standard the laboratories have been informed. The SADC MET PTB brochure was also explained and distributed to all Botswana laboratories that participate in this forum
 - The report was positive coming from the participants in this forum, however most organisational representatives are only analysts who cannot make the decision to participate in a PT
 - Their management sometimes does not even understand the importance of a PT scheme
 - No common payment
 - No customs problem
 - “The Botswana situation is bit unique in that for most countries that participate in this PT scheme, the local coordinators are from the national bureau of standards while I come from a laboratory and this may probably have an impact on the number of laboratories willing to participate through a request from another laboratory”
- **Zimbabwe, Naume Mandizha, Zimlab**
 - The national lab association was used to promote the scheme
 - Participation was negative affected by the political situation
 - No common payment
 - No customs problem
 - There is a need for training on calibration
 - Unfortunately no information regarding the microbiology PT was available
- **Namibia, Merylinda Conradie, Namwater**
 - Promotion of the scheme through
 - the brochures (electronically and hard copies),
 - presentation of the scheme to the executive management of Namwater, so they are informed when interacting with other companies
 - -Poster presentation and distribution of brochures at the 6th Eurachem conference on Proficiency testing from 05 – 07 October 2008 in Rome
 - Some labs responden they are “not ready yet”, some didn’t respond, some have financial problems
 - No common payment

After finishing these reports (and partially during the reports) there was a general discussion on

- How to contact the “well performing” labs?
- How to perform corrective actions?
- How to increase awareness of “top management”?
- The leaflet on importance of PT to be prepared by EURACHEM PTWG
- Why do labs show enthusiasm to participate and don't report results

M. Koch: Evaluation of the 5th SADC MET Water PT

M. Koch explained in detail the result of the evaluation of the PT round. As in the last round the assigned values were derived from the weighings made for the preparation of the samples. the standard deviations were calculated using Algorithm A from ISO 13528. These standard deviations were used for the calculation of z-scores, if they were below the limits for the standard deviations agreed upon during the previous workshops (table 3).

Table 3: Limits for standard deviations

Parameter	limit in %
Sulphate	10
Chloride	10
Fluoride	12
Nitrate	15
Phosphate	10
Calcium	10
Magnesium	10
Sodium	10
Potassium	10
Iron	<1 mg/l: 20, >1 mg/l: 12
Manganese	<1 mg/l: 20, >1 mg/l: 12
Aluminium	30
Lead	< 0,5 mg/l: 40, > 0,5 mg/l: 25
Copper	20
Zinc	20
Chrome	25
Nickel	25
Cadmium	30
Arsenic	30
Cobalt	20

In order not to affect the statistical calculations by gross outliers all values outside the range ref.-value/8 to ref.-value*8 were excluded prior to these calculations. The detailed presentation is included in annex 3.

Special emphasis was put on the comparison of the results with those from last years' rounds. Comparison of the standard deviations calculated from the data set showed for almost all parameters showed no improvement over time. On the contrary for most parameters these values are higher than in the last years. Since this only shows the performance of the labs on average he took a closer look to the individual laboratories. For all laboratories the average of the absolute values of all values was calculated for each year and shown in a diagram. Since the limit for acceptability of a

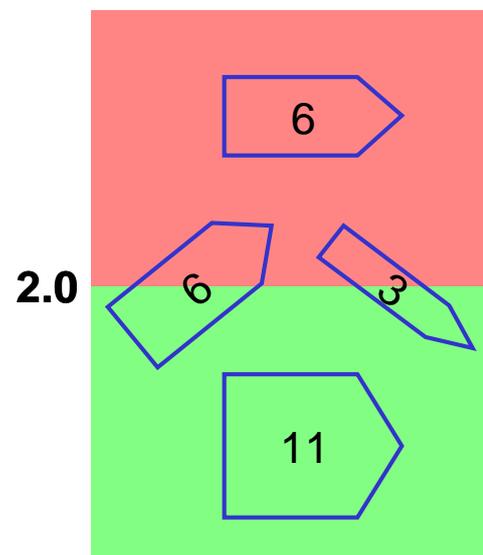
value in the PT is a score in the range of ± 2 , the value of was taken to distinguish between well performing and bad performing labs.

Laboratories were grouped into 4 classes:

- Performing well in the previous round and well in the current round (constantly good)
- Performing bad in the previous round and bad in the current round (constantly bad)
- Performing bad in the previous round and well in the current round (improving)
- Performing well in the previous round and bad in the current round (getting worse)

In the presentation this is shown with horizontal arrows (above or below the 2.0-line) and with arrows going up (getting worse) or down (improving). The number indicates the number of the respective labs.

The example shown here for Sulphate shows 11 labs performing constantly well and 6 constantly bad, 3 were improving and 6 got worse.



For the individual parameters the following conclusions could be derived from the data:

- Sulphate: There is a good agreement between the means of the data and the reference value. The standard deviations were constantly higher than the limits. The gravimetrically determined values showed a high portion of too high or too low values
- Chloride: There was a quite good agreement between the data means and the reference values. The standard deviations for the lowest value was much too high. For the other levels the standard deviations were around the limit, no improvement over time.
- Fluoride: The mean values were significantly higher than the the reference values. The standard deviations were too high, especially for the low level, no improvement over time. The colorimetrically determined values had a very high portion of non-reliable values, as in the last years.
- Nitrate: As in the previous rounds some values obviously were reported in wrong units. Therefore the mean values were quite low and the standard deviations high. The average quality of the data is very bad, no improvement over time. The parameter still needs more emphasis. Harmonization of methods could help (see separate presentation).
- Phosphate: Some values also were reported with wrong units. Generally the standard deviation and the number of outliers were very high.

- Calcium: The mean of the values were close to the reference values. The standard deviations were above the limit.
- Magnesium: The mean values were around the reference values, but the standard deviations were much too high. Titrimetrically determined values in general were not reliable.
- Sodium: The means were close to the reference values. The standard deviations were too high. Obviously some labs had calibration problems. Many values determined with FEP were too high, many of the AAS-values were not reliable.
- Potassium: The means of the values were close to the reference values, the standard deviations were higher than in the last years. AAS values contained many non-reliable data.
- Iron: The means were close to the reference values and the standard deviations were too high, no improvement. The colorimetric method delivered many outlying values.
- Manganese: The means were close to the reference values, the standard deviation higher than in the last year
- Aluminium: Only few participants analysed this parameter. Therefore the number of values was small. The means were a bit below the reference values.
- Lead: The means of the datasets were around the reference values. The standard deviations of the datasets were higher than in the last year.
- Copper: For this parameter the data means also were in good agreement with the reference values and the standard deviations also were higher than in 2007.
- Zinc: The mean values were slightly lower than the reference values. The standard deviation was comparable to last years and below the limit.
- Chromium: The mean values were slightly lower than the reference values, the standard deviation was around the limit (as in the previous years)
- Nickel: The data means also showed no bias and the standard deviations were below the limit.
- Arsenic: Only a few laboratories analysed for arsenic. So the number of values was very low. The standard deviations were around the limit
- Cadmium: The mean values of the data sets were in good agreement with the reference values. For the lowest level the standard deviation was too high
- Cobalt: The consensus means were close to the reference values, the standard deviation was a bit below the limit.

Only 4 participants analysed all parameters. The percentage of participation per laboratory is shown in fig. 2.

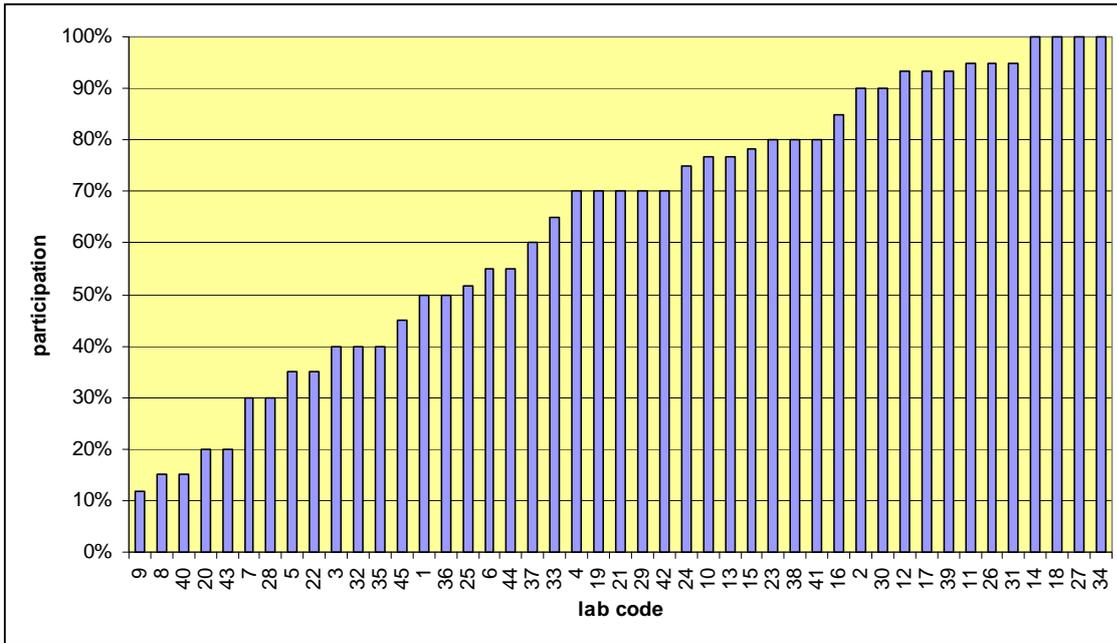


Figure 2: Percentage of participation for each participant

16 participants managed to analyse more than 80% of their values within the tolerance limits (compared to 17 labs in 2007). Fig. 3 shows the proportion of successfully analysed parameters for each participant.

For the laboratories with more than 80% successfully analysed values the number of values delivered is also shown in the diagram.

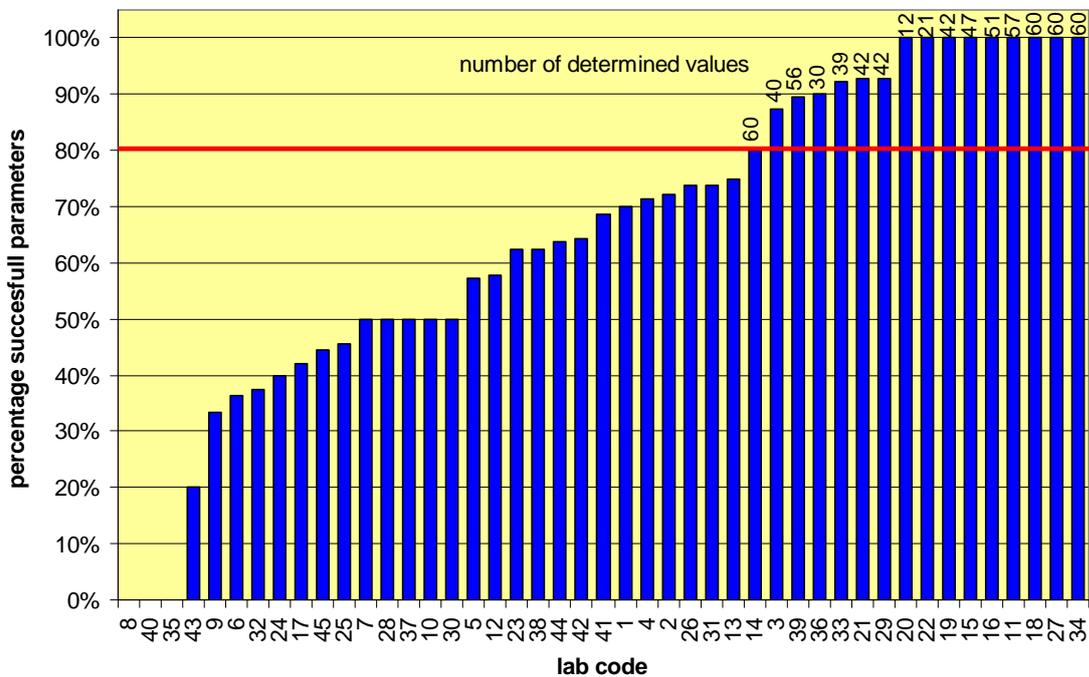


Figure 3: Percentage of successfully analysed values for each participant

The definition of fitness-for-purpose criteria (in the form of limits for the standard deviation) resulted in a higher proportion of values outside the tolerance limits. Experience from Germany shows that normally up to 20% of non-successfully analysed values can be expected for each parameter.

Fig. 4 shows for each parameter the percentage of values outside the tolerance limits. The figure shows that – on the basis of the current fitness-for-purpose-criteria - improvement is still necessary for most of the parameters.

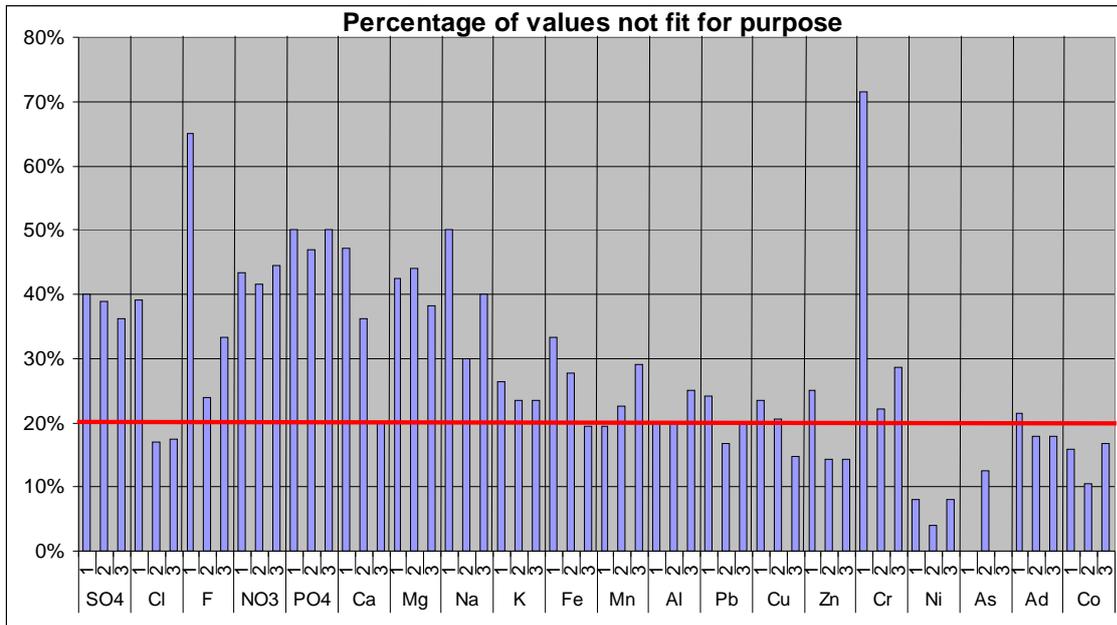


Figure 4: Percentage of values outside the tolerance limits for all samples

Michael Koch came to the following conclusions:

- The PT Provider did a very good job
- The evaluation and assessment procedure is fit for the purpose
- The SADC MET Water PT is a good possibility for the participants to compare with peers and with stated fitness-for-purpose criteria
- The results of many laboratories are still not satisfactory or getting worse
- More emphasis should be put on corrective actions after unsatisfactory participation

Tuesday, 09 December 2008

Training

- **All Participants:** Working group discussion of results
- **M. Koch:** Methods for the determination of nitrate
- **All Participants:** Working group discussion on harmonization of methods
- **S. Prins:** Internationally understood concepts and associated terms
- **All Participants:** Lab visit UNBS

All Participants: Working group discussions – Results of the PT round

Six questions were discussed in three working groups.

Results of the discussion:

1. How do you judge the outcome of the PT round?

- No significant improvement, except some labs
- Not very good
- Standard deviation increased
- Need for improvement
- Participation went down by one lab

2. What are the reasons for not improving?

- Failure to identify root causes
- Lack of corrective actions
- Lack of understanding of fundamentals of the PTs
- Insufficient capacity of resources
- Lack of quality management systems in some labs
- Insufficient management commitment
- Insufficient communication between provider, coordinators, and management
- Negative attitudes on PTs
- Instructions not followed up (e.g. regarding units)
- Limited choice of methods due to lack of resources
- High staff turnover

3. What could be done by SADCWATERLab to assist laboratories to improve?

- Encouraging labs to implement QMS through e.g. training and attachment
- Checklist for identifying root causes and corrective actions
- Harmonization of methods
- Provide training in testing methods
- Raise awareness in labs and top management
- National coordinators should do more, but may not have the necessary capacity
- National coordinator to assist other labs
- Organize training on chemical analysis and quality management

- Networking within the countries
- Compile e-mail list available to everybody

4. Any suggestions for help to be provided by PTB?

- Continued sponsorship for evaluation workshop
- Training on quality management, ISO 17025, measurement uncertainty
- Used equipment
- Assistance for national coordinators in establishing a national forum on
 - i. Why is PT important?
 - ii. How to identify root causes?
 - iii. How to perform corrective actions?
- Basic equipment for e.g. nitrate hands-on training for labs not performing well

5. Should we change the limits for standard deviation?

- no

6. Should we change the concentration range?

- Wait for the new SADC Water Standard
- Report the planned range when distributing the samples

There was a general discussion on these topics.

M. Koch: Methods for the determination of nitrate

M. Koch presented details of the methods for the determination of nitrate used by the participants in the PT round (annex 4).

More than 10 methods (mainly ion chromatographic and spectrophotometric methods) were used in the PT round.

- Ion chromatography (ISO 10304-1:1992 and APHA/AWWA/WEF Standard Methods 4500-NO3-C)
 - Two labs reported the results in the wrong unit (mg/l N instead of mg/l nitrate) and therefore were outside the limits
 - All other results were inside the tolerance limits
- Nitrate electrode (APHA/AWWA/WEF Standard Methods 4500-NO3-D)
 - Only one lab used this method with strange results
- Cadmium reduction method (APHA/AWWA/WEF Standard Methods 4500-NO3-E)
 - Two labs made gross errors and reported results much too low
 - Two labs were a bit too high, possibly due to calibration errors
 - Other results were acceptable
- Automated cadmium reduction method (ISO 13395:1996)
 - One lab used this method, but reported the results in wrong units
- 2,6-Dimethylphenol method (ISO 7890-1:1986 [withdrawn 07/2005])
 - also realized as Merck cuvette test
 - all results were inside the tolerance limits
- Direct UV screening method (APHA/AWWA/WEF Standard Methods 4500-NO3-B)
 - Application only recommended for screening
 - Two labs, one reporting in wrong units

- Phenol-2,4-disulfonic acid method (no reference available)
 - Only one lab
- Na-salicylat method (no reference available)
 - Two labs, one reporting in wrong units
- Chromotropic acid method (no reference available)
 - Only one value reported that was much too high
- There were other methods reported that couldn't be clearly identified

The following conclusions could be drawn from this:

- The following methods seem to deliver reliable results
 - Ion chromatography
 - Cd reduction method
 - 2,6-Dimethylphenol method
 - Na-salicylat method
- Be aware of reporting in correct units
- Be careful with calibration

All Participants: Working group discussions – Harmonization of methods

Based on the previous presentation four questions were discussed in three working groups.

Results of the discussion:

1. How could harmonization of methods be achieved?

- SADCWATERLAB to recommend 3-4 methods
- Provide the same information for all parameters (as made for nitrate)
- All the labs giving detailed information on the methods used
- Identifying the labs using the same methods
- The best performing labs to provide a SOP for the others

2. What could be the role of SADCWATERLab in this task?

- Provision and dissemination of information
- The PT provider to provide information as for nitrate
- Provide a forum for discussion
- Provide the logistical information to the identified labs

3. Could you imagine to volunteer for a task in that process?

- Yes, if the task is clear and if competent to carry out the task

4. Any other suggestions for improvement of methods?

- If an ISO or Standard method is used, there is nothing to be improved
- Other resources may be missing
- Suggestions may arise from corrective actions
- Improved networking
- Labs not performing well give the chance to contact provider or consultant
- Training of staff in methods of analysis
- Validation
- Evaluation of staff competence

- Are the result forms detailed enough?

S. Prins: Internationally understood concepts and associated terms

The full presentation of Sara Prins is included in Annex 5.

All participants: Lab visit

All participants had the possibility to visit the chemical and microbiological laboratories of the Uganda National Bureau of Standards.

Summary on conclusions and decisions

- The organization of the PT round worked quite well.
- The PT provider did an excellent job
- Change of courier resulted in less problems with transport and customs
- Most of the local coordinators tried hard to promote the scheme and to assist the provider. Nevertheless continuous effort is necessary.
- Local coordinators need support to organize **national workshops** to create increased awareness on the importance of quality assurance and proficiency testing. Material for such a workshop should be provided and a **training for trainers** is recommended (**M Koch, S Wallerath**)
- The evaluation of the PT round showed partially disappointing results. There was not really an improvement over the various rounds in the late years. The following measures are recommended for help in this respect:
 - To prepare a **guideline how to perform a root cause analysis and corrective action** (**M Koch**)
 - To provide an **e-mail list** (**M Koch, M Conradie, D Masuku**) for improved communication possibilities between participants, especially for those participants that were not able to participate in the evaluation workshop.
- To improve the commitment of the top management a **letter from the SADC MET regional coordinator (D Masuku)** to the top management of the participating laboratories is recommended expressing the thanks for participating and the need for taking actions if problems were identified in the PT. These actions may include the necessity to provide additional resources.
- **Labs not performing well** in one or more parameters should not hesitate to ask for help through the e-mail list
- No change in the evaluation method is recommended. The provider (**M Conradie**) is asked to report a rough concentration range during the distribution of samples. The reporting form should be checked for optimization regarding reporting of methods.
- SADCWATERLAB to recommend some methods for the analysis and to organize mutual help between labs – **who will do that?**

Evaluation questionnaire Monday and Tuesday

M. Koch distributed an evaluation questionnaire for the chemistry part of the workshop to be filled out by all participants.

The results of this questionnaire were as follows:

The judgement of the participants regarding

- **The venue of the workshop:**

Very good: 6
Good: 11
Fair: 2
Poor: 3

Mean: 2.1 (1 for very good, 2 for good, 3 for fair, 4 for poor)

- **The content of the presentations:**

Very good 10
Good 11
Fair 1

Mean: 1.6 (1 for very good, 2 for good, 3 for fair)

- **The working group discussions:**

Very good 11
Good 11

Mean: 1.5 (1 for very good, 2 for good)

The judgement of the participants regarding the different parts of the workshop on a scale from 1 (very useful) to 5 not useful):

- **Evaluation of the chemistry PT**

1: 14
2: 6
3: 1
4: 1
5: 0

Mean: 1.5

- **Concepts and associated terms**

1: 0
2: 14
3: 4
4: 2
5: 2

Mean: 2.6

- **Harmonization of methods**

1: 3
2: 15
3: 2
4: 1
5: 0

Mean: 2.0

- **Lab visit**

1: 3
2: 11
3: 3
4: 0

5: 0
Mean: 2.0

The most important topics (in brackets the number of participants mentioning this point):

- Evaluation of Chemistry PT (19)
- Harmonization of methodsWG discussion of results and reports (12)
- Harmonization of methods (11)
- Corrective actions (7)
- Standardization of analytical methods (6)
- Experience of the PT provider (6)
- Chemical analysis training (6)
- Measurement vocabulary (5)
- Methods for the determination of nitrate (5)
- Measurement uncertainty (5)
- Lab visit (5)
- Statistical analysis (3)
- How to help failing labs (1)
- Report on LC tasks (1)

Did the workshop fulfil your expectations?

Yes: 20

Partly: 1

reason: I wanted to know more about standardization of analytical methods

No answer: 1

What benefits did you draw from the workshop?

- Very educative, encouraging and call for improvement in our lab; learn from other labs; interpretation of results and reporting from Dr Koch
- Encourage labs to adopt quality management; development of checklist, best practice and training methods, awareness training around PT
- Benefits drawn from the workshop was the competence accuracy and have reliable results always
- Ability to understand presentation format of PT results
- Interacting with other participants and insights on various techniques in analysis
- How to evaluate PT results; knowing more about reliable methods in determination of NO₃⁻; knowing how to prepare a water PT
- Networking between the participating labs and PT provider; harmonizing methods which give more reliable and accurate results; statistical analysis/evaluation of PT results
- I was able to interact with others and share experience during the group work; I am now able to come up with ways of addressing corrective measures; Harmonization of standards well assist us in sharing experiences in the different methods
- I learned from the presentations of Dr Koch
 - I would suggest to set out more time for method validation / measurement uncertainty so those labs who already perform well in the PTS, can benefit even more out of this whole scheme and workshop

- If a lab/labs is doing bad continually, it should be identified by the consultant, and help should be given to them in particular
- The presentations of Dr Koch are as always excellent and you can just learn from him. It was very valuable information for all participants
- I have been able to have some of possible causes of non-conforming results; this will help me to take corrective actions
- Ability to raise real problems and discussion or exchange of experience to resolving them
- It is a very enriching workshop; the labs can find out their individual difficulties, doing a root cause analysis and corrective actions taken; certain parameters such as nitrate are well discussed in the workshop. This will help to improve especially the method used and results evaluation
- Sharing information with others
- Timeous corrective action is very important for advancement of the organisation and of the PT programme
- Got the valuable infos on PT, analytical techniques; gained much on measurement and uncertainty; got a picture on how to correct the analytical problems in my lab
- Had a good overview of how other labs function, their challenges that they face etc. Had a good understanding of the importance of a PT scheme
- New developments in the field were uncovered; opportunity for networking
- There is absolutely no use to participate in the PT if one is not addressing the non-conformances; guaranteed support from colleagues
- Importance of proficiency testing programmes in the region in form of equipment and environment
- More clearer understanding of what proficiency testing is about (intended purpose) and the requirements of the chemical laboratory in general in order to execute tasks effectively; created a network with other experienced people in the same field of work.
- Networking

Any other comments:

- Group discussions are important: Problems are identified and one hopes that corrective actions are done. Participants leave the workshop with good intentions and then nothing improves. If corrective actions are not done it is a waste of time and money.
Hotel was one of the worst rooms which I ever stayed in for the price. Not good value for money, no safe, no kettle, aircon not functioning

Wednesday, 10 December 2008

On Wednesday there was a common programme for the participants of the chemical and microbiological part of the workshop.

John Peart: Training on management requirements

Mukayi Musarurwa: Framework for an integrated cooperation of regional technical laboratories

SADCWaterLab General Assembly

John Peart: Training on management requirements

John Peart, Sanas, provided a training course on requirements and benefits for a management system with regard to quality. His presentation is included in annex 6

Mukayi Musarurwa: Framework for an integrated cooperation of regional technical laboratories

Dr. Musarurwa informed the participants on possibilities and visions for a technical cooperation between laboratories within SADC, EAC and COMESA. This could include also fields of analysis that are important for trade (food) or the medical field. In this context SADCWATERLAB could be one of the building blocks of SADCLAB or another form of cooperation. The complete presentation is included in annex 7.

SADCWaterLab General Assembly

In the afternoon there was the general assembly of SADCWaterLab including elections of the project management committee and the chair.

The elections has the following results:

PMC:

- Tanzania / Tanzania Bureau of Standards
- Botswana / Water Utility Center
- Zambia / Food and drugs control laboratory
- Zimbabwe / Zimlabs
- Mauritius / Mauritius Standards Bureau
- Madagascar / CNRE

Chair : Kezia Mbwambo, TBS

Vice-chair : Naume Mandizha, Zimlab

A detailed report about the general assembly will be provided by the secretary.

Evaluation questionnaire Monday and Tuesday

M. Koch distributed an evaluation questionnaire for the training part of the workshop and the SADCWaterLab General Assembly to be filled out by all participants.

The results of this questionnaire were as follows:

The judgement of the participants regarding

- **The content of the presentations:**

Very good 17

Good 12

Mean: 1.4 (1 for very good, 2 for good)

- **The material distributed:**

Very good 7

Good 18

Fair 1

Mean: 1.8 (1 for very good, 2 for good, 3 for fair)

The judgement of the participants regarding the different parts of the workshop on a scale from 1 (very useful) to 5 not useful):

- **Training on management requirements**

1: 25

2: 4

3: 0

4: 0

5: 0

Mean: 1.1

- **Discussion about SADCLAB**

1: 7

2: 18

3: 1

4: 0

5: 0

Mean: 2.0

- **SADCWaterLab General Assembly**

1: 8

2: 11

3: 3

4: 0

5: 0

Mean: 1,8

The most important topics (in brackets the number of participants mentioning this point):

- Training on management requirements (20)
- Framework for regional cooperation SADCLAB (14)
- SADCWaterLab General Assembly (11)
- Competence of laboratory (6)
- QC and QA (5)
- ISO 17025 documentation issues (4)
- Quality policy (3)
- SQAM-EU funding (2)
- Accreditation (2)
- Management review (2)
- New PTs for exporting and food products (2)
- Procedures (2)
- Quality improvement (1)

- Review of requests (1)
- To achieve optimum effectiveness and efficiency (1)
- National quality infrastructure (1)
- Flexibility in ISO 17025 (1)
- Handling of complaints (1)
- Implementation of a quality system (1)
- How to let the system take you to the set objective (1)
- Importance of PT schemes (1)
- Reduction of paperwork by understanding ISO 17025 (1)
- Meeting everyday challenges (1)

Did the workshop fulfil your expectations?

Yes: 29

What benefits did you draw from the workshop?

- Correct interpretation of some clauses of 17025
- The objectives of SADC was clearly brought out. The value of participating benefit to the corporation and the country
- Broaden knowledge on ISO 17025. Understanding of the operation of SADC and its role in TBT (technical barrier to trade)
- The laboratory should be organized that all factors, technical , administrative etc affecting the quality of the product, service are always under control
- Given me an opportunity to look at ISO/IEC 17025 from “a clear perspective”. Emphasized the need for “competence”
- As a key point and with a lot of challenges I gained a lot on implementation of quality system, and how the system guides us to achieve the goals we have set.
- Improved my knowledge on ISO 17025
- To be more familiar with the ISO 17025. To get involved in the discussion of SADCWaterLab expansion
- This helps me to have a push for accreditation as my lab is on the process of accreditation
- I've been able to further my knowledge with regards to ISO 17025 and SAD-CLAB and SADCA framework
- At least I have known the great influence: policy, objectives, goals have when drawing or forming an organ. Structure of a firm and their use the management of the firm. Hence a proper management system be achieved
- Networking
- Awareness of dealing with certain ISO 17025 requirements – what is important – what not
- Understanding ISO 17025 better in terms of implementing it in your own lab
- Increased understanding about the requirements of ISO 17025 and Accreditation. Understanding of role of SADCWATERLAB
- There are opportunities to explore under the SADCLAB. Implementation of ISO 17025 is easy if one knows what they want with the system
- Learned about control and quality assurance
- I have learned how to establish goals and the system to achieve them. Not only for my benefit but also for my clients (the community). Best of all so to gain confidence in my results.

- Implementation of ISO 17025 “Let the Quality System work for me”
- Implementation of ISO 17025 requirements; in a nutshell it being a vehicle that allows the quality system to work for my situation to fulfil my quality objective
- The benefits of regional cooperation
- The importance of applying ISO 17025 in laboratory QA/QC achievement
- Understood better what ISO 17025 requirements are
- Opportunity of SADCWATERLAB through different development partners
- Implementation and establishment of ISO 17025
- I have been assisted in appreciating ISO 17025 and how to apply it to my laboratory

Any other comments:

- More workshops are required and they should include as many participants/labs within the region
- Local coordinators should be given capacity to be able to reach as many labs as possible within their local countries

Closure of the meeting

Kezia Mbwambo, Donald Masuku, Stefan and Michael Koch closed the workshop and thanked all participants for their cooperation.

Report prepared by Dr.-Ing Michael Koch
Stuttgart, 2.1.2009