

**Evaluation of the  
Proficiency Testing needs  
of  
SANAS accredited laboratories (chemical,  
environmental, microbiology & civil  
engineering)**

***Mr Marlan Pillay  
South African National Accreditation System***

# AGENDA

- 1. SANAS PT policy**
- 2. Evaluation of PT plans**
- 3. Analysis**
- 4. Conclusions**
- 5. Benefits**
- 6. Summary**

# INTRODUCTION

## PT Policies – EA & ILAC arrangements

For accredited laboratories, the following applies due to the MRA's in place:

EA and ILAC policy – a lab **shall** participate in a **useful and cost effective manner** in PT / ILC for items on their schedule of accreditation

Where **no formal PT** is available, the laboratory shall indicate other inter-laboratory activities in which they intend to participate.

These may include activities arranged by themselves (bilateral or multilateral inter-laboratory comparisons etc.) with other laboratories in order to satisfy this requirement.

# SANAS POLICY



## **SANAS Policy on PT participation for testing laboratories**

(SANAS R80 available on [www.sanas.co.za](http://www.sanas.co.za))

The plan **shall** cover all accredited activities and shall be accomplished in a period not exceeding **5 years**.

The **frequency** of participation shall be **justified** by the laboratory to SANAS for each accredited method and shall be included in the plan.

Should the laboratory experience **technical issues** that require a common resolution for all laboratories in that field, the **SANAS STC** will be tasked to evaluate the issue and recommend resolutions to SANAS for approval.

The laboratory shall satisfy itself on the **competence of the PT providers** whose schemes it voluntarily participates in.

# SANAS POLICY



Laboratories participation in PT / ILC activities will be evaluated against their plan.

The laboratory **shall** make available to the assessment team all proficiency testing scheme reports. Where the laboratory has participated in informal ILC a **report shall** be prepared that includes at least the following minimum information:

Identification of the participants;

Identification of the item or sample measured;

Measured values/results;

The reference value/s and how these were established;

Evaluation of the measurement values/results;

Conclusion.

The laboratory **shall** investigate all measurement results that fail to meet the minimum acceptance criteria, and record all corrective and preventive action taken.

# **SANAS POLICY**



## **Fulfilment of SANAS R80**

### **Submit a PT plan to SANAS listing the following for each accredited method :**

- Parameters for which PT is done relative to parameters not done and reasons for not doing them
- Proficiency testing type (Inter-laboratory comparison; PT scheme)
- Details of the PT scheme
- Frequency of participation/year
- Number of tests done per year using the method
- Any problems experienced with participating in PT

Accredited method	Parameters for which PT is done relative to parameters not done and reasons for not doing them	Proficiency testing type (Inter-laboratory comparison; Intra-laboratory comparison; Use of a Reference material, PT scheme)	Name of PT scheme, names of participating laboratories where interlab comparisons are used, name and make of reference material used ; type of intra-lab (for example; two similar samples tested by one analyst, one sample split and tested by two analysts)	Frequency of participation/year or within the 5 year planned period (01 May 09 to 01 May 2014)	Number of samples tested per year using the method
Heavy Metals CP	Ba, Al, Cd, Cu, Fe, Mn, Pb, Co, Ni, Zn, V, B, Sr, Hg, As, Se, Cr, Mo, Be, U, Sb, Au, Li, Ag, Sn, Ti	Inter-laboratory on all except (U, Sb, Au, Li, Ag, Sn, Ti) no inter-lab available for these elements and are not frequently requested by customers.however Quality Control samples are done on these elements	SABS Water check Gr 1 Heavy metals	4 times per year (3 samples every 3 months)	Ba (50), Al (2400), Cd (2000), Cu (3000), Fe (8500), Mn (8500), Pb (2600), Co (280), Ni (2200), Zn (2000), V (220), B (1000), Sr (10), Hg (800), As (900), Se (250), Cr (800), Mo (20), Be (10), Ti (10), U (1500), Sb (180), Au (50), Sn (10), Ag (80)
Microbiology: Water	Heterotrophic plate count, faecal & total coliforms, <i>E.coli</i>	PT Scheme	NLA Water PTS	6 times per year (3 samples every 2 months)	Heterotrophic plate count (6000), faecal (3900) & total (5000) coliforms, <i>E.coli</i> (5000)

## Evaluation of PT plans submitted by laboratories

Received 80% back.

Lab is responsible to maintain PT plan. Monitor performance at assessments

Aim of evaluation:

To gauge extent of PT participation amongst labs

To identify areas where the SANAS STC's or other bodies can assist

To comply with EA & ILAC requirements

<b>Field</b>	<b>Number of testing facilities (267)</b>	<b>80% of the cases</b>
<b>Chemical: Ores &amp; Minerals</b>	<b>54</b>	<b>CRM's; interlab &amp; PT schemes</b>
<b>Chemical: Food</b>	<b>49</b>	<b>CRM's &amp; PT schemes</b>
<b>Chemical: Waters</b>	<b>34</b>	<b>PT scheme</b>
<b>Chemical: Petroleum</b>	<b>8</b>	<b>CRM's &amp; PT schemes</b>
<b>Civil Engineering testing</b>	<b>37</b>	<b>Duplicate testing &amp; interlab</b>
<b>Environmental: Ambient Air Monitoring</b>	<b>7</b>	<b>CRM's &amp; interlab</b>
<b>Environmental: Asbestos &amp; Physical Testing</b>	<b>1</b>	<b>CRM's &amp; interlab</b>
<b>Environmental: Chemicals &amp; Protection</b>	<b>2</b>	<b>CRM's &amp; interlab</b>
<b>Environmental: Dust</b>	<b>3</b>	<b>CRM's &amp; interlab</b>
<b>Microbiological: Food</b>	<b>34</b>	<b>PT scheme</b>
<b>Microbiological: Waters</b>	<b>38</b>	<b>PT scheme</b>

# ANALYSIS

1. Chemical: Ores & Minerals & Civil Engineering testing – Benefit from a local PT scheme preferably operating ISO 17043 & accredited
2. Chemical & microbiological: Food & Water – Benefit from access to International PT schemes at reasonable cost & expand the scope of local PT schemes in terms of number of methods covered as well as measurement ranges covered (INTI - OAA - IAAC T 002 2008 PROFICIENCY TESTING PROGRAM "Meat Analysis Moisture, Ash, Crude Fat & Nitrogen)
3. Environmental testing & Civil Engineering testing – Benefit from competent reference material producers preferably operating ISO 17034 & accredited
4. Petroleum testing small number of laboratories CRM's & inter-laboratory comparison are carried out
5. All laboratories would benefit from having access to a laboratory that can be designated a national reference laboratory for a field
6. Risks & impacts are still not clearly known

# CONCLUSIONS

- Do we require a strategy? (regionally, nationally, industry sector specific, laboratory management)
- Who needs to participate in formulating strategy? (Regulators, accreditation body, laboratory community, industry associations, PT providers, Standards writers, NMI's, Reference material producers & the public)
- How? (Workshops, Marketing to raise awareness)
- How will we get commitment & implementation?
- How will Continuous Improvement be carried out?

# BENEFITS OF PT PARTICIPATION

- Example 1 – Improvement of data quality due to PT participation

## **Interlaboratory Proficiency Testing as a Tool for Improving Performance in Laboratories Diagnosing Bovine Mastitis** **By A. Pitkälä, V. Gindonis, H. Wallin and T. Honkanen-Buzalski**

In 2000, 48 laboratories in Finland analyzed 130,000 quarter milk samples for bovine mastitis.

Previously, the methods used were not standardized, and external quality assurance was neither systematic nor regular. None of the laboratories sought accreditation for the method during the program. The absence of quality assurance measures for fertility, sterility, pH checks of the media, use of control strains, and calibration and performance checks of equipment in some laboratories was worrying.

# BENEFITS OF PT PARTICIPATION

- Example 1 – Improvement of data quality due to PT participation

Use of a PT scheme operating ISO Guide 43

The overall improvement was quite rapid, which reflects the fact that the laboratories were motivated to change their procedures and used the program as a source of relevant training.

**THINK! ELIMINATING TECHNICAL TRADE BARRIERS, RAPID RESPONSE  
TO A NATIONAL CRISIS**

# BENEFITS OF PT PARTICIPATION



- Example 2 – Improvement of method performance due to PT participation

## **Impact of external haematology proficiency testing programme on quality of laboratories by Renu Saxena, S.C. Katoch, Upendra Srinivas, Seema Rao & Hema Anand**

*Department of Haematology, All India Institute of Medical Sciences, New Delhi, India*

At the start of the programme in 1992, there were a higher proportion of outliers who used manual methods for testing. With a large number of laboratories using automated counters in 2006, the proportions of outliers have decreased emphasizing the efficacy of automated counters.

## BENEFITS OF PT PARTICIPATION

- Example 2 – Improvement of method performance due to PT participation

In conclusion, the PT programme for Hb, TLC, reticulocyte counts and peripheral blood smear assessment run by the AIIMS, New Delhi, has been successful in generating awareness about haematology proficiency testing and improving the quality of reporting of these parameters in Indian laboratories.

THINK H1N1! NATIONAL CAPABILITY TO DETECT VIRUS & ITS IMPACT

# BENEFITS OF PT PARTICIPATION

- Example 3 – Confidence in laboratories that participate in PT

## **Proficiency Testing, Accreditation and Environmental Laboratory Data Quality by Ken Middlebrook**

Canadian Association for Environmental Analytical Laboratories

The Canadian Association for Environmental Analytical Laboratories (CAEAL) is one of a few organizations that operate both a proficiency testing program and an accreditation program.

As such, it has long-term data on both laboratory performance and accreditation. This paper will use this data to examine the effects of both proficiency testing and accreditation on analytical performance

## BENEFITS OF PT PARTICIPATION

- Example 3 – Confidence in laboratories that participate in PT

From the data presented in this paper it can be concluded that the benefits laboratories obtain from participation in proficiency testing are real and measurable, and that this benefit can be maximized by selecting an appropriate frequency of PT participation.

Further to this, it can be shown that, as a group, laboratories accredited to ISO/IEC 17025 perform better than laboratories that are not, and that these benefits are maximized by laboratory management being proactive and committed to the accreditation process.

## **SUMMARIZE**

**Laboratories do benefit from operating a laboratory quality system (e.g. ISO/IEC 17025)**

**There is value in participating in a peer evaluation process (e.g. Accreditation)**

**There are real and tangible benefits from participating in PT (within the lab context; nationally & internationally)**

**Work needs to be done to develop the infrastructure to support PT participation**

## **ASSESSOR'S ROLE**

- **Use the F176 to record the gaps**
- **Evaluate the PT needs of the lab at the assessment**
- **Make suggestions to SANAS STC on what can be done & discuss with the FM**
- **Encourage labs to develop ILC's and PT schemes to close the gap**



**THANK YOU**

**Email:**  
**[marlanp@sanas.co.za](mailto:marlanp@sanas.co.za)**