

## National Laboratory Association – South Africa NPC

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# Proficiency Testing Scheme Brochure Aquatic Toxicity 2026

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## Introduction

The National Laboratory Association – South Africa (NLA – SA) is a representative body that evolved from the previous National Laboratory Accreditation service. Following the assumption of overall responsibility for accreditation (including laboratory accreditation) by the South African National Accreditation System (SANAS) during 1998, it was decided that a new independent body should be created. The NLA – SA now looks after the interests of the large number of laboratories in South Africa. The acronym, NLA, which was linked to the previous National Laboratory Accreditation service was retained, both for the purpose of continuity and because it was well-recognised and respected. During 2019/20 the NLA – SA, a Not-for-Profit organisation, restructured Board representation and formed a Board committee which is now named the 'Council'. This was done in order to provide for wider input into its strategic intent. The formation of the Council has meant that interests from the government Technical Infrastructure organisations such as NMISA, SANAS, SABS – Standards and the NRCS are accommodated, as well as various other interests without having to be co-opted on to the Board which was previously required. The NLA – SA's focus is primarily on the representation of the activities, interests and opinions of all members' laboratories. NLA – SA membership is voluntary and open to all companies that have laboratories.

In 2015, the NLA – SA was accredited as a proficiency testing provider according to SANS 17043, Conformity assessment – General requirements for the competence of proficiency testing providers. The Aquatic Toxicity proficiency testing scheme (PTS) is not accredited but operates under the same principles as the accredited schemes.

## What is proficiency testing?

- Proficiency testing is a powerful quality assurance tool for analytical measurement laboratories.
- Samples are distributed to laboratories for analysis, the results evaluated and a report generated.
- Laboratories should use their routine validated methods of analysis.
- Proficiency testing should be used as an educational tool to identify and address measurement problems.

## Benefits of proficiency testing

- Provides a regular independent check on the quality of analytical measurements.
- Enables participants to compare their performance with peer laboratories.
- Facilitates the demonstration of competence to accreditation bodies, regulators and customers.
- Enables monitoring of trends, over time, in the quality of measurements.
- Assists in the evaluation of methods and instrumentation.
- Helps educate laboratory staff and their customers.

## Why participate in proficiency testing?

Many international and national standards emphasise the importance of maintaining environmental quality. To ensure a safe environment, analytical results are frequently used as a measuring tool and have to be accurate and reliable. Participation in a PTS provides the opportunity to measure the quality of analysis. It also helps laboratories to meet the requirements of accreditation organisations and assists laboratories to optimise their quality control and analytical performance for the benefit of their customers. It provides independent evidence of laboratory performance for both laboratory management and customers.

## Scope

The PTS will include the following toxicity tests:

- 30-minute *Vibrio fischeri* bioluminescent bacteria toxicity test
- 72-hour *Selenastrum capricornutum* growth inhibition test
- 48-hour *Daphnia pulex* acute toxicity test
- 48-hour *Daphnia magna* acute toxicity test
- 96-hour *Poecilia reticulata* acute toxicity test.

Reference solutions, Cadmium chloride ( $\text{CdCl}_2$ ) and Potassium dichromate ( $\text{K}_2\text{Cr}_2\text{O}_7$ ), will be supplied for Rounds 1 and 3. These will be used to conduct definitive tests and the results reported as detailed below:

- 30-minute *Vibrio fischeri* bioluminescent test  $\text{EC}_{50}$  value reported as mg/L Potassium dichromate ( $\text{K}_2\text{Cr}_2\text{O}_7$ ).
- 72-hour *Selenastrum capricornutum* growth inhibition test  $\text{EC}_{50}$  value reported as mg/L Potassium dichromate ( $\text{K}_2\text{Cr}_2\text{O}_7$ ).
- 48-hour *Daphnia pulex* acute toxicity test  $\text{LC}_{50}$  value reported as mg/L Cadmium (Cd)
- 48-hour *Daphnia magna* acute toxicity test  $\text{LC}_{50}$  value reported as mg/L Potassium dichromate ( $\text{K}_2\text{Cr}_2\text{O}_7$ ).
- 96-hour *Poecilia reticulata* acute toxicity test  $\text{LC}_{50}$  value reported as mg/L Potassium dichromate ( $\text{K}_2\text{Cr}_2\text{O}_7$ ).

Round 2 will be an infield collected environmental sample and Round 4 will be reference solutions of unknown concentrations. These will be used to conduct definitive tests and results reported as detailed below:

- 30-minute *Vibrio fischeri* bioluminescent test  $\text{EC}_{50}$  value reported as % of the sample.
- 72-hour *Selenastrum capricornutum* growth inhibition test  $\text{EC}_{50}$  value reported as % of the sample.
- 48-hour *Daphnia pulex* acute toxicity test  $\text{LC}_{50}$  value reported as % of the sample.
- 48-hour *Daphnia magna* acute toxicity test  $\text{LC}_{50}$  value reported as % of the sample.
- 96-hour *Poecilia reticulata* acute toxicity test  $\text{LC}_{50}$  value reported as % of the sample

The measured concentration of the Round 4 reference solutions will be provided in the final report to be used by those laboratories wishing to convert the  $\text{EC}/\text{LC}_{50}$  of the unknown reference solution into a “true value”.

## Programme

The programme for the 2026 PTS and the costs involved are as follows:

| Round | Due date for reporting of results | Price (Excluding VAT) |            |
|-------|-----------------------------------|-----------------------|------------|
|       |                                   | NLA – SA member       | Non-member |
| 1     | 30 March 2026                     | R13 600               | R15 200    |
| 2     | 20 July 2026                      |                       |            |
| 3     | 14 September 2026                 |                       |            |
| 4     | 09 November 2026                  |                       |            |

Additional samples can be purchased at a cost of R2 850 per sample set. This needs to be arranged at least one month prior to the start of the round.

## Distribution of samples

The samples will be shipped as per the events calendar on page 7. The package will reach you via a courier service. A protocol will be e-mailed to participants when samples are shipped. Participants who prefer to arrange collection of their samples using their own courier company are allowed to do this. This needs to be communicated to the coordinator when registering to participate.

## Submission of results

Results are due within 4 weeks of sample distribution. Results are submitted on form NLA-PT-T-F-09 (Aquatic Toxicity Result Sheet) via email to the coordinator. No late submissions will be accepted, unless the laboratory experienced problems. This need to be communicated to the coordinator before the due date for results submission. The late submission of results needs to be agreed upon by the coordinator.

## Evaluation of results

After the submission of results, the coordinator will tabulate the results so it will be an accurate representation of the submitted data. Performance will be evaluated by calculating z scores, which represent the performance of a participant relative to all the other participants. The z scores will be tabulated and distributed as a final report

## Reporting of results

The final report will be issued 3 to 4 weeks after the due date for results submission for each round. No preliminary reports will be distributed.

## Recognition for participation

Certificates of participation will be issued annually to indicate participation in the PTS.

## **Confidentiality**

Participating laboratories will be identified by a unique code to ensure confidentiality. Results may be presented on relevant occasions but not to harm any individual or to identify a laboratory.

## **General**

The NLA – SA will review the principles of the PTS annually. Any changes will be adopted during the following year, where possible.

## **How to join the PTS**

Participation in the PTS is open to all testing laboratories, regardless of being accredited or not.

Laboratories wishing to join the PTS should complete form NLA-PT-F-01 (PT Scheme Participation Application Form) as well as form NLA-PT-F-08 (Declaration to prevent Collusion between participants and/or Falsification of Proficiency Testing Scheme results). Note that the individuals indicated as the contact person and alternate contact person on the application form will receive all communications, including those concerning sample delivery and the reports. Both completed forms should be sent by e-mail to the coordinator, Esna Portwig (esnap@nla.org.za).

Please return both completed forms on or before 23 January 2026 after which you will be invoiced. Terms of payment are strictly 30 days, unless arrangements have been made with the NLA – SA finance section (accounts@nla.org.za).

If you do not want to participate in the proposed PTS for 2026, but wish to be informed about future exercises, send an e-mail to the coordinator to remain on the distribution list.

## **Customer participation**

Comments and suggestions for changes are always welcome on all aspects of the PTS. Participants are invited to attend the NLA – SA Annual General Meeting. Further details of this meeting will be sent to all participants in advance.

## Aquatic Toxicity PTS Events Calendar for 2026

| Round                                     | Event                              | Date         | Responsibility |
|-------------------------------------------|------------------------------------|--------------|----------------|
| Returning of completed registration forms |                                    | 23 January   | Lab managers   |
| 1                                         | Despatching samples                | 02 March     | NLA – SA       |
|                                           | Due date for submission of results | 30 March     | Participants   |
|                                           | Distribution of final report       | 20 April     | NLA – SA       |
| 2                                         | Despatching samples                | 22 June      | NLA – SA       |
|                                           | Due date for submission of results | 20 July      | Participants   |
|                                           | Distribution of final report       | 03 August    | NLA – SA       |
| 3                                         | Despatching samples                | 17 August    | NLA – SA       |
|                                           | Due date for submission of results | 14 September | Participants   |
|                                           | Distribution of final report       | 5 October    | NLA – SA       |
| 4                                         | Despatching samples                | 12 October   | NLA – SA       |
|                                           | Due date for submission of results | 09 November  | Participants   |
|                                           | Distribution of final report       | 30 November  | NLA – SA       |

Kindly incorporate these dates into your year planning to ensure a successful programme. If any of these dates need to be changed due to unforeseen circumstances, participants will be notified in advance.