

Instructions to Participating Laboratories

Trace Elements in Drinking Water

(Anions; Nitrate and Chloride)

2014. June.

All laboratories participating in this proficiency testing program shall be fully aware of the following notices before measuring the proficiency testing sample.

1. Introduction

1.1 The purpose of this Proficiency Testing (PT) is to monitor the capabilities of the participating laboratories to perform water quality analysis and to enhance their quality assurance of measurements.

1.2 This proficiency testing is composed of testing anions (Nitrate and Chloride) in water.

2. Responsibilities

K-water (Water Analysis and Research Center) is responsible for preparing, packaging and dispatching samples, collecting test results from participating laboratories, conducting statistical analyses of the data, handling participants' queries and issuing final reports. K-water is the proficiency testing provider accredited by KOLAS on the basis of ISO/IEC 17043.

3. Invitation of participants

3.1 If you would like to join this proficiency testing program, please complete the attached '**NOMINATION FORM FOR ACCREDITATION BODY**' and then **fax (+82-42-629-2079) or e-mail (shko627 @kwater.or.kr) it to us by July 18th, 2014.**

- Application fee: Free of charge (Each accreditation body of APLAC members is invited to nominate up to a maximum of 8 laboratories from you economy.)
- See '**NOMINATION FORM FOR ACCREDITATION BODY**', *English-only*

3.2 **The term of testing: July 23th to August 14th**

4. Proficiency testing sample

4.1 Information about PT sample

One sample (30 mL) will be provided to the participants. Participating laboratories will be given one sample bottle labeled KOLAS PT-2014-15 from K-water. The bottle contains about 30 mL of a transparent and colorless mixture including Anions in water. . This concentrate is preserved with purified water. The concentrate can be stored at room temperature. New sample will be replaced for any damaged claims.

Please TEST after 10 TIMES DILUTION.

Table 1 shows the final concentration range.

Unit \ Item	Nitrate (NO ₃ ⁻)	Chloride (Cl ⁻)	Note
mg/L	0.100 ~ 5.000	1.000 ~ 40.000	Result of 10 times dilution

4.2 Receipt of the sample

The sample will be sent by air freight. Once the sample is received, please complete the attached ***"RECEIPT FORM"*** and then **fax (+82-42-629-2079) or e-mail (shko627@kwater.or.kr) within 3 days of receipt.**

5. Test

5.1 Preparation

Proper dilution procedure is as follows:

- Fill up a 50 mL flask with about 40 mL of purified water.
- Add 5 mL of the provided sample to the flask.
- Fill the flask with purified water to exactly 50 mL.
- Use the sample as a final analytical sample.

5.2 Test conditions

Please complete the testing as soon as possible after open the sample.

All standard methods for Nitrate and Chloride in water can be used.

(Recommend participants' usual test method.)

Note the test method and equipment used. If you are using Standard Methods 21st edition 4110, you would report 1) test method; Determination of Anions by Ion Chromatography, 2) equipment; IC (Ion Chromatograph).

5.3 Laboratory safety

The sample should be handled in a laboratory. The analyst should have experience in handling, disposing of, and applying appropriate testing methods. Safety devices (safety goggles, hood system, etc.) should be fully equipped. Responsibility for the safe use of these products rests entirely with the buyer and/or user. Material Safety Data Sheets (MSDS) for the sample are available upon request.

6. Submission of results

Participants should submit their results electronically by **fax (+82-42-629-2079) or e-mail (shko627@kwater.or.kr)** before the deadline (August 14th, 2014). Results submitted after the deadline will not be accepted. Under no circumstances, corrections or adjustments of the analytical data will be accepted after submission.

**** Participants should be aware that all submitted results are considered to be final and accordingly such data and units should be thoroughly checked before submission.***

7. Assigned Value and Performance assessment

There are two ways of performance assessment.

1. z-score with the robust mean

The assigned value for the test material used in the round of this proficiency testing scheme is the robust mean of the results reported by all the participants in the round. Evaluation of the Performance with ISO 13528:2005 in reference, z-scores will be applied to evaluate the test results that given by the participants, as following:

$$z = \frac{x - \hat{x}}{\hat{\sigma}}$$

Where x is the measurement value of the participant, \hat{x} is the robust mean (assigned value), $\hat{\sigma}$ is the standard deviation for proficiency assessment.

The assigned value (\hat{x}) and SDPA for each item are derived from the results submitted by participants after eliminating the apparent blunders following Algorithm A in Annex C (normative) of ISO 13528.

The samples are from CRM (certified reference material) and a reference value from provider is to be compared with the assigned value. The standard deviation for proficiency assessment is set with reference to data obtained from a round of proficiency testing scheme.

Interpretation of the report

For the evaluation of performance, the interpretation is as follow:

$|z| \leq 2.0$ Satisfactory, $2.0 < |z| < 3.0$ Questionable, $|z| \geq 3.0$ Unsatisfactory

2. D % statistics (if there is no significant outlier)

The assigned value is the robust mean of the results reported by all the participants in the round.

Evaluation of the Performance with ISO/IEC 17043:2010 in reference, D % will be applied to evaluate the test results as following:

$$D_{\%} = 100 \times \frac{x - \hat{x}}{\hat{x}}$$

Where x is the measurement value of the participant, \hat{x} is the assigned value.

Interpretation of the report

For the evaluation of performance, the interpretation is as follow:

$|D| \leq 5\%$ Satisfactory, $|D| > 5\%$ Unsatisfactory

8. Confidentiality

To preserve this confidentiality, participants receive reports giving all results for that assessment but without identifying individual laboratories. The code number (I-****) assigned to a participant in this program is made known to the contact person or authorized person of his laboratory and the respective nominating accreditation body when the application is accepted.

9. General Information

For general queries, please contact us:

Suhyun Ko (Water Analysis & Research Center, K-water)

Tel.: +82-42-629-2034

Fax: +82-42-629-2079

E-mail: shko627@kwater.or.kr

Address: Water Analysis & Research Center, K-water

200Shintanjin-Ro, Daedeok-gu, Daejeon, Republic of Korea 306-711

RECEIPT FORM

(Trace Elements in Drinking Water)

In order to monitor the progress of inter-laboratory comparisons, we kindly ask each laboratory to fill in this “**RECEIPT FORM**” and fax or e-mail the form to the contact information provided afterwards.

Thank you in advance for your cooperation.

The sample was received on: (date)

After inspection, were the contents damaged? (yes/no)

If yes, were the contents seriously damaged? (yes/no)

If yes, were the contents still suitable for use? (yes/no)

Remarks: _____

Participating Laboratory:

Contact Person:

Fax:

E-mail:

Water Analysis & Research Center, K-water

SuhyunKo

Tel.: +82-42-629-2034, **Fax:** +82-42-629-2079

E-mail: shko627@kwater.or.kr

Address: Water Analysis & Research Center, K-water

200 Shintanjin-Ro, Daedeok-gu, Daejeon, Republic of Korea 306-711

RESULTS SHEET

(Trace Elements in Drinking Water)

Laboratory Code :

(The number located on the label of each bottle)

Test Items		Result (mg/L)	Measurement of Uncertainty (mg/L)	Test Method and Equipment
Nitrate (NO ₃ ⁻)	1			
	2			
	3			
	Mean			
Chloride (Cl ⁻)	1			
	2			
	3			
	Mean			

Note)

1. Fill in every blank including the testing method used and equipment.
2. Write down the result of 10 times dilution to TWO-TENTH of a decimal.
(Form of 4 digits; X.XXX)
3. Report all test results (more than 3times) for accurate statistical analysis.
4. Measurements of uncertainties should be written to two-tenth of a decimal.
5. If the result is not detected, please write down the limit of quantitation.

Remarks: _____

(Comment your opinion on this PT program)

Participating Laboratory:

Contact Person:

Fax:

E-mail:

Date:

Signature: