

The Second Session
of the Scientific Advisory Committee
on the Acid Deposition Monitoring Network
in East Asia
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Report on Questionnaire Survey of QA/QC activities in the participating countries

November 2002

Network Center

I. INTRODUCTION

The long-term objectives of the Acid Deposition Monitoring Network in East Asia (EANET) include to create a common understanding of the state of the acid deposition problems in East Asia and to provide useful inputs for decision-making at local, national and regional levels aimed at preventing or reducing adverse impacts on the environment caused by acid deposition.

In order to achieve these objectives, it is very important to accumulate accurate and precise data on acid deposition. Therefore, a lot of effort was made to develop QA/QC (Quality Assurance and Quality Control) Programs for EANET to obtain reliable data that can be comparable among the countries of the East Asian region, as well as with other networks by ensuring data accuracy, precision, representativeness and completeness in acid deposition monitoring. QA/QC Programs were adopted at the First Session of the Interim Scientific Advisory Group (ISAG) in October 1998 and revised at the Second Session of ISAG in March 2000.

According to the QA/QC Programs, the National Center in each participating country is required to prepare and implement the national QA/QC programs including appointment of the national QA/QC manager, guide for the preparation of SOPs at relevant organizations/laboratories. The activities for QA/QC of sampling organizations and chemical analysis laboratories include preparation of SOPs and participation in QA/QC activities should be conducted by the National Center.

II. QUESTIONNAIRE SURVEY 2002

The Work Program and Budget in 2002 for the Acid Deposition Monitoring Network in East Asia (EANET), approved by the Intergovernmental Meeting at its Third Session in November 2001, describes that a “report on QA/QC activities in the participating countries will be prepared for review and consideration by SAC members, based on the information by the participating countries.”

In line with the Work Program, the Network Center implemented this questionnaire survey in September 2002 to obtain information about QA/QC activities in the participating countries.

The questionnaire consists of ten parts about fundamental items for QA/QC programs such as SOPs, audits of sites/laboratories, field blank test, data verification and training.

The Network Center received replies from all the participating countries except Cambodia that had just participated in EANET in November 2001.

The results of the survey are showed in this report with some graphs and tables, and the Questionnaire formats, examples are also attached as APPENDIX 1, 2.

III. RESULTS OF SURVEY

The results of Questionnaire survey were summarized and prepared in the form of tables (VI. Summary tables) and by graphs (V. Graphs of result presentations). The general remarks on the fundamental items are the followings.

1. The national QA/QC programs

The numbers of countries that checked each of all items are presented in Table 1 and Figure 1.

The following observations may be pointed out.

- More than a half of participating countries have QA/QC programs for Wet deposition, Dry deposition and Inland aquatic environment.
- Only three countries have QA/QC programs for Soil & vegetation monitoring.

2. Standard operating procedures (SOPs)

The numbers of countries that checked each item are presented in Table 1 and Figure 2,3.

The following observations may be pointed out.

- Over half of participating countries have SOPs for Wet & Dry deposition monitoring as well as for inland aquatic environment monitoring in all sites and all laboratories.
- In other countries, laboratories have prepared more SOPs than monitoring sites.
- About half of participating countries have no SOPs for Soil & vegetation.
- Almost all of participating countries have SOPs for the sampling instruments, laboratories and the management of measurement/analysis instrument, materials and reagents.

3. Site performance audits

The numbers of countries that checked each items are presented in Table 1 and Figure 4.

The following observations may be pointed out.

- Eight countries are carrying out the site audit, but a half of participating countries has no SOPs for site performance audits and they don't make the report of the results of each audit.
- There are two countries that have never conducted site performance audits.

4. Field blank tests in collection and handling of samples for wet deposition monitoring

The numbers of countries that checked each items are presented in Table 1 and Figure 5.

The following observations may be pointed out.

- Over half of participating countries carry out monthly field blank tests on the rainfall collectors in all or some laboratories.
- Three laboratories have not carried out monthly field blank tests.

5. Laboratory audits

The numbers of countries that checked each items are presented in Table 1 and Figure 6.

The following observations may be pointed out.

- Seven countries are carrying out the laboratory audit, but there are some countries that don't check the SOPs, standard samples, the pure water every time.
- Three countries have never conducted site performance audits.

6. Data control and reporting

The numbers of countries that checked each items are presented in Table 1 and Figure 7, 8, 9.

The following observations may be pointed out.

- Almost all of participating countries have personnel in charge of data management and reporting and their supervisors have been appointed in relevant laboratory.
- Some laboratories have not established a system of data check and approval.
- Almost all of participating countries have data verification activities for EANET monitoring data for Wet and Dry deposition, but some countries have not these activities for soil-vegetation and inland aquatic monitoring.

7. Training

The numbers of countries that checked each items are presented in Table 1 and Figure 10.

The following observations may be pointed out.

- Almost all of participating countries have carried out technical training specifically for the implementation of the monitoring activities or as a part of more general training.

IV. CONCLUSION

The results of this questionnaire survey could be summarized as follows.

- Over half of participating countries have QA/QC programs and SOPs for Wet deposition monitoring, Dry deposition monitoring and Inland aquatic environment monitoring. But, this is not enough for Soil & vegetation monitoring. Therefore, we should make more efforts to prepare QA/QC programs and SOPs for all fields.
- Over 70-80% of participating countries are carrying out site & laboratory audit, and field blank test. All countries should entirely carry out these activities.
- Some laboratories have not established a system of data check and approval. All of participating countries should establish these systems as a whole.
- Almost all of participating countries have carried out technical training. It is important to keep these activities.

V. GRAPHS OF RESULT PRESENTATION

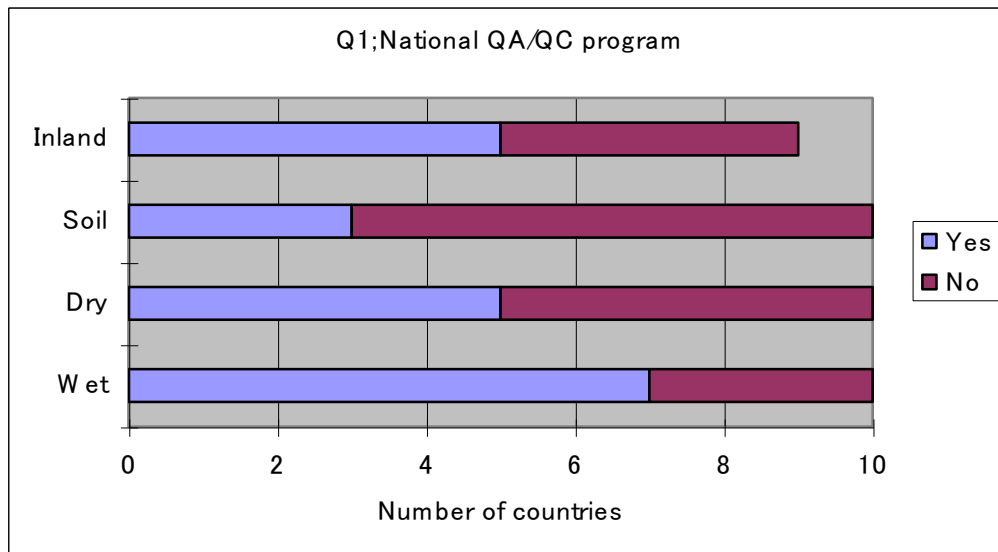


Figure 1 Preparing national QA/QC program

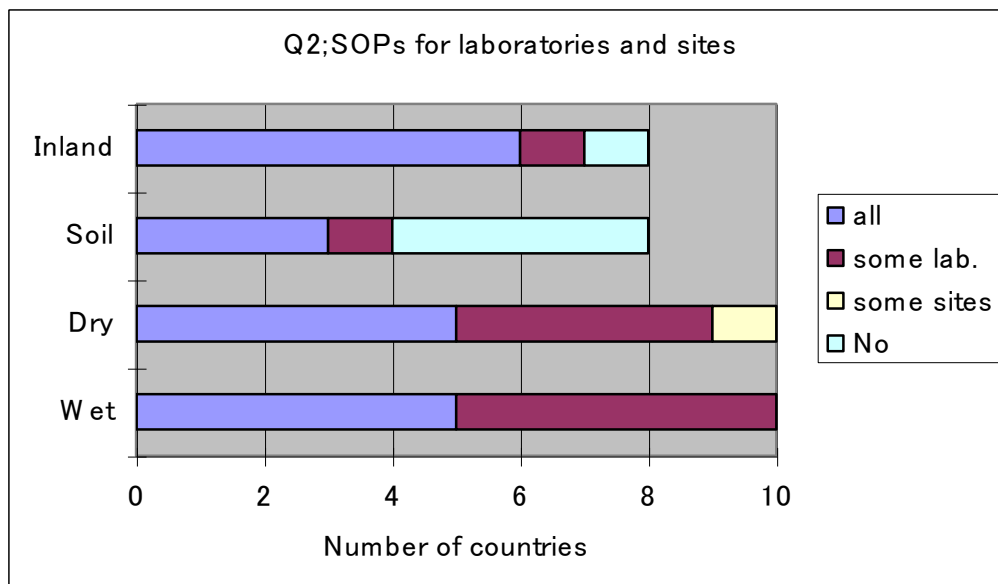


Figure 2 Preparing SOPs for laboratories and sites

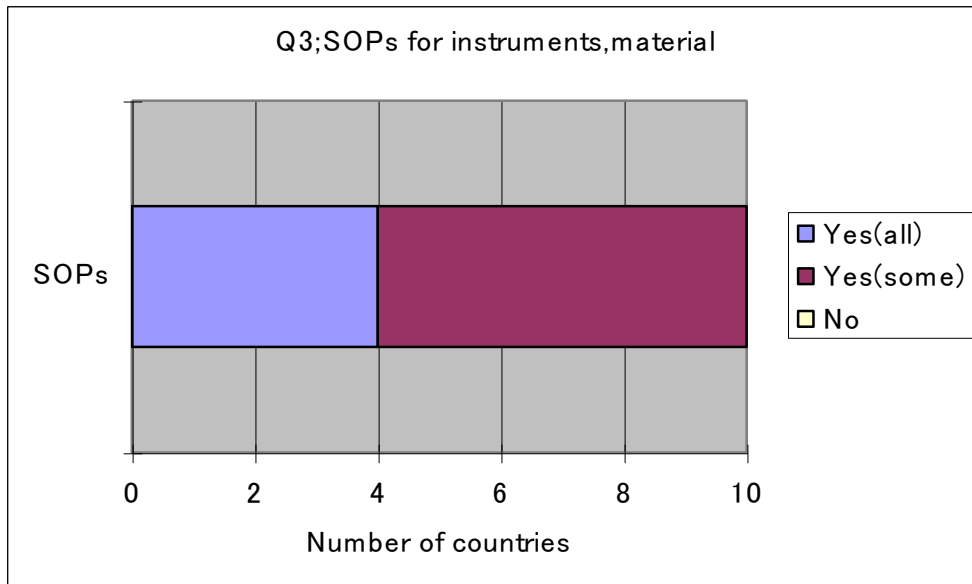


Figure 3 Preparing SOPs for instruments, materials etc.

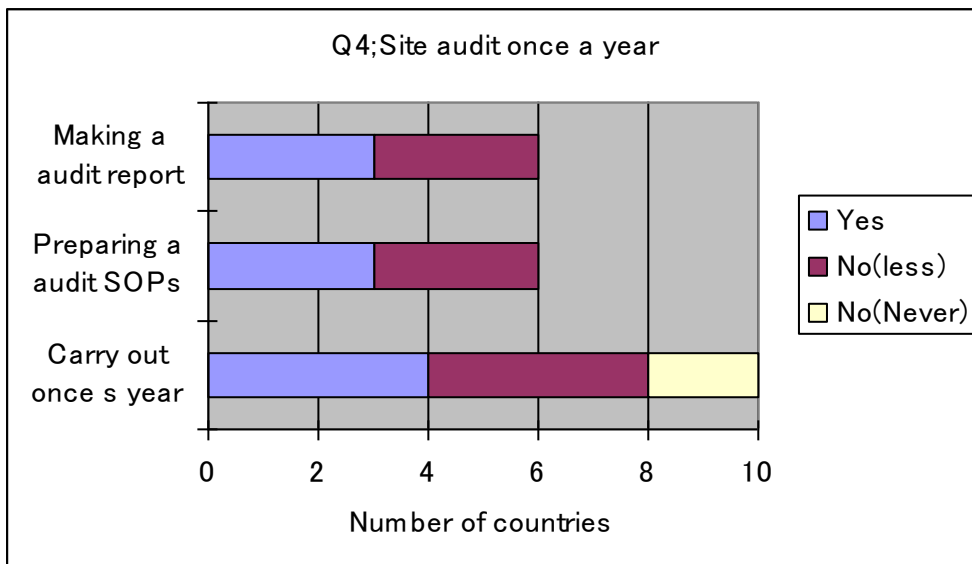


Figure 4 Conducting site audit once a year

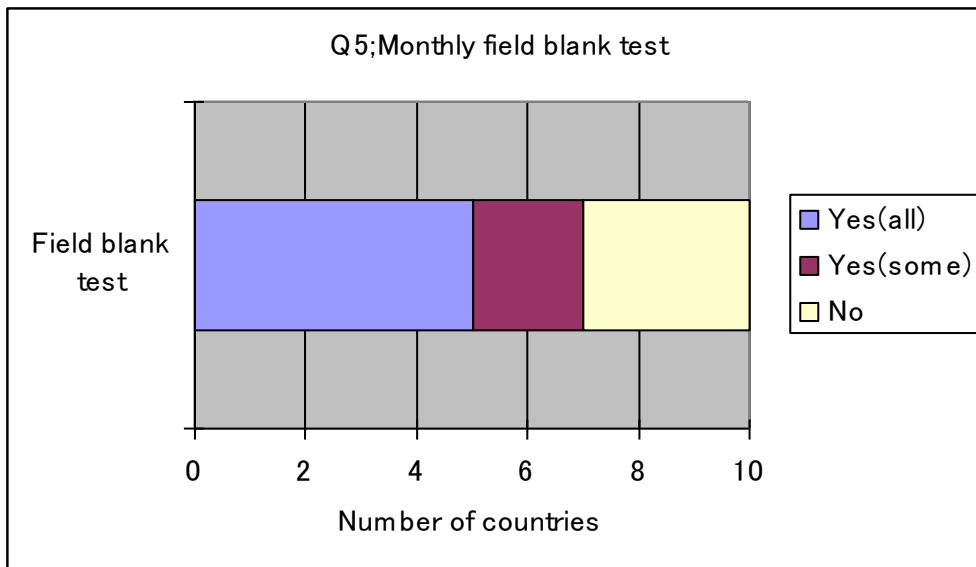


Figure 5 Carrying out field blank tests

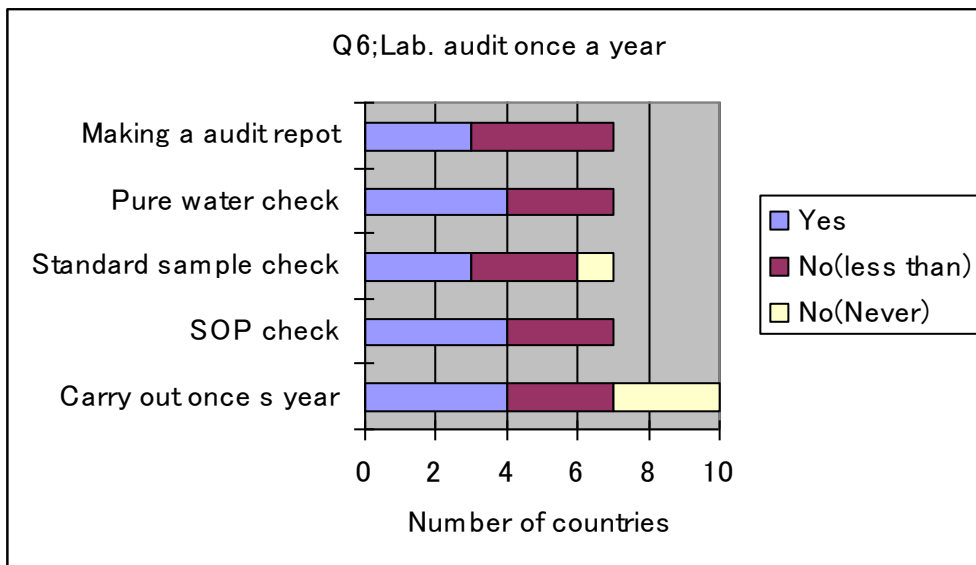


Figure 6 Conducting laboratory audit once a year

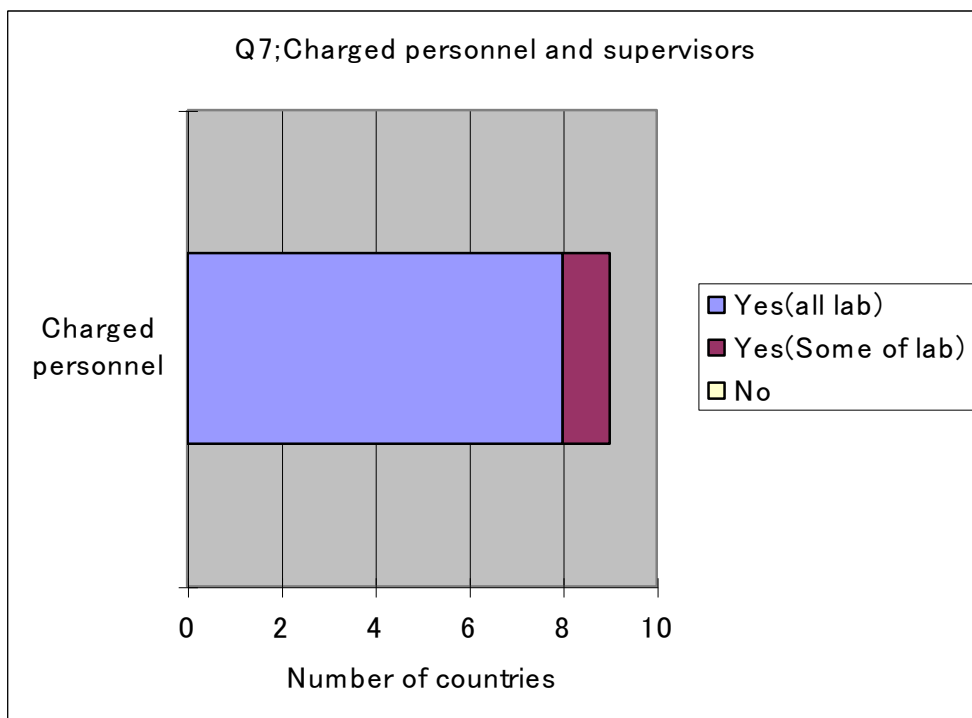


Figure 7 Having personnel and supervisor in charge of data management

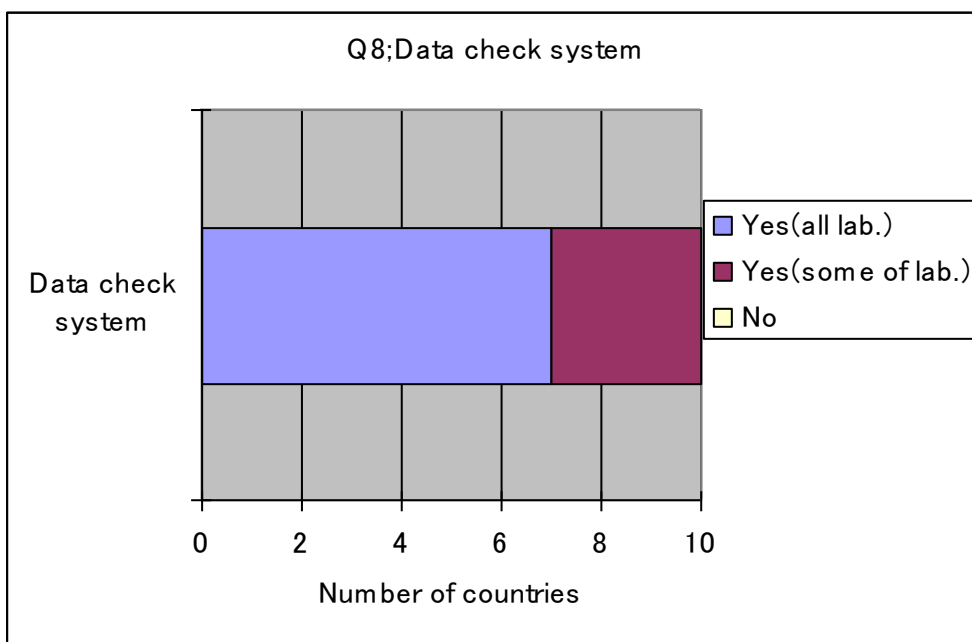


Figure 8 Having system of data check and approval

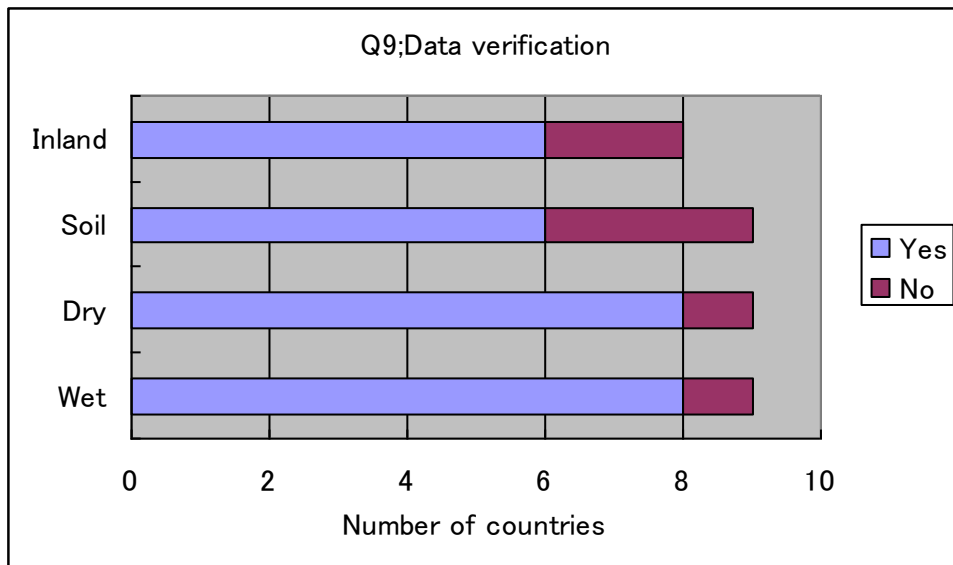


Figure 9 Having data verification activities

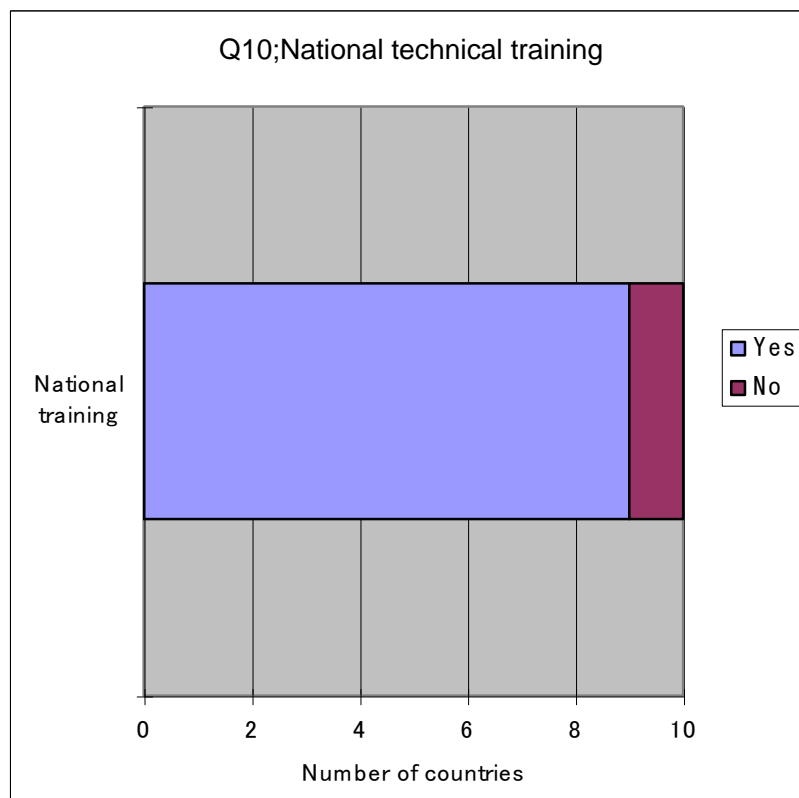


Figure 10 Carrying out national technical trainings

VI. SUMMARY TABLES

Table 1 Result of Questionnaire Survey of QA/QC activities in the participating countries

Question items				Number of Countries										Total
				China	Indonesia	Japan	Malaysia	Mongolia	Philippines	R. of Korea	Russia	Thailand	Viet Nam	
Q1) QA/QC program	A	Wet deposition	Yes	1		1	1		1	1	1		1	7
			No		1			1				1		3
	B	Dry deposition	Yes			1	1		1	1	1			5
			No	1	1			1				1	1	5
	C	Soil/ Vegetation	Yes		1	1							1	3
			No	1			1	1	1	1	1	1		7
	D	Inland Aquatic	Yes		1	1	-		1		1		1	5
			No	1			-	1		1		1		4
Q2) SOPs	A1	Wet	Yes (all)	1		1	1		1		1			5
	A2	Wet	Yes (some lab.)		1			1		1		1	1	5
	A3	Wet	Yes (some site)											0
	A4	Wet	No											0
	B1	Dry	Yes (all)	1		1	1		1	1				5
	B2	Dry	Yes (some lab.)					1			1	1	1	4
	B3	Dry	Yes (some site)		1									1
	B4	Dry	No											0
	C1	Soil/Veg	Yes (all)	1	1	1	-	-						3
	C2	Soil/Veg	Yes (some lab.)				-	-					1	1
	C3	Soil/Veg	Yes (some site.)				-	-						0
	C4	Soil/Veg	No				-	-	1	1	1	1		4
	D1	Inland	Yes (all)	1	1	1	-	-	1		1	1		6
	D2	Inland	Yes (some lab.)				-	-					1	1
	D3	Inland	Yes (some site)				-	-						0
	D4	Inland	No				-	-		1				1

APPENDIX 1

Questionnaire on QA/QC activities for Acid Deposition Monitoring in the Participating Countries of EANET.

Country: Organization and Position: Name:
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1. The national QA/QC programs

Q1. Has your country prepared the national QA/AC programs?

- a) For wet deposition monitoring Yes No
- b) For dry deposition monitoring Yes No
(Automatic instruments for gas concentration monitoring)
- c) For soil/vegetation monitoring Yes No
- d) For monitoring of inland aquatic environment Yes No

Remarks

2. Standard operating procedures (SOPs)

Q2. Have SOPs for acid deposition monitoring been prepared for the relevant laboratories and sites?

- a) For wet deposition monitoring
 Yes (all of them) Yes (some of laboratories) Yes (some of sites) No
- b) For dry deposition monitoring
 Yes (all of them) Yes (some of laboratories) Yes (some of sites) No
- c) For soil/vegetation monitoring
 Yes (all of them) Yes (some of laboratories) Yes (some of sites) No
- d) For inland aquatic environment
 Yes (all of them) Yes (some of laboratories) Yes (some of sites) No

Remarks

Q3. Especially do they have SOPs for the management of sampling instruments, laboratory, and the management of measurement/analysis instrument, materials (glassware and polyethylene), and reagents?

Yes (all of them) Yes (some of them) No

Remarks

3. Site performance audits

Q4. Does the National Center conduct a site performance audit at least once a year for each monitoring site in your country?

Yes No (Once in more than one year)

a) Does the National Center have the SOP for site performance audits?

Yes No

b) Are the results of each audit documented and stored at the National Center?

Yes No

No (The Network Center has never conducted site performance audits.)

Remarks

4. Field blank tests in collection and handling of samples for wet deposition monitoring

Q5. Does each relevant laboratory carry out monthly field blank tests on the rainfall collectors based on the technical documents for wet deposition monitoring?

Yes (all of them) Yes (some of them) No

Remarks

5. Laboratory audits

Q6. Does the National Center conduct laboratory audit once a year for each relevant laboratory in your country?

- Yes No (Once in more than one year)
- a) During the audit do they check whether the laboratory has prepared the SOPs for the management of apparatus, materials and reagents?
 Yes (every time) Yes (sometimes) No
- b) During the audit do they check whether the laboratory uses standard samples, having guaranteed traceability?
 Yes (every time) Yes (sometimes) No
- c) During the audit do they check whether the laboratory uses water with conductivity less than 0.15 mS/m for analyses, dilution of precipitation samples, and cleaning?
 Yes (every time) Yes (sometimes) No
- d) Are the results of each audit documented and stored at the National Center?
 Yes No
- No (The Network Center has never conducted laboratory audits.)

Remarks

6. Data control and reporting

Q7. Have personnel in charge of data management and reporting, and their supervisors been appointed in each relevant laboratory?

- Yes (all of lab.) Yes (some of lab.) No

Remarks

Q8. Has each relevant laboratory established a system of data check and approval?

- Yes (all of them) Yes (some of them) No

Remarks

Q9. Do you have data verification activities for EANET monitoring data in your country?

- a) For wet deposition monitoring Yes No
b) For dry deposition monitoring Yes No
c) For soil/vegetation monitoring Yes No
d) For monitoring of inland aquatic environment Yes No

Remarks

7. Training

Q10. Has your country carried out national technical training specifically for the implementation of the monitoring activities or as a part of more general training in your country?

- Yes No

Remarks

APPENDIX 2

**Questionnaire on QA/QC activities for Acid Deposition Monitoring
in the Participating Countries of EANET.**
[EXAMPLE]

Country: XXXXXX

Organization and Position: XXXXXX

XXXXXX

Name: XXXXXX

1. The national QA/QC programs

Q1. Has your country prepared the national QA/AC programs?

- a) For wet deposition monitoring Yes No
- b) For dry deposition monitoring Yes No
(Automatic instruments for gas concentration monitoring)
- c) For soil/vegetation monitoring Yes No
- d) For monitoring of inland aquatic environment Yes No

Remarks

The national QA/QC programs for wet deposition and dry deposition were issued in 1998. We are now developing the programs for soil/vegetation monitoring and inland aquatic environment monitoring.

2. Standard operating procedures (SOPs)

Q2. Have SOPs for acid deposition monitoring been prepared for the relevant laboratories and sites?

- a) For wet deposition monitoring
 Yes (all of them) Yes (some of laboratories) Yes (some of sites) No
- b) For dry deposition monitoring
 Yes (all of them) Yes (some of laboratories) Yes (some of sites) No
- c) For soil/vegetation monitoring
 Yes (all of them) Yes (some of laboratories) Yes (some of sites) No
- d) For inland aquatic environment
 Yes (all of them) Yes (some of laboratories) Yes (some of sites) No

Remarks

One laboratory for soil/vegetation and one for inland aquatic environment have not prepared the SOPs. Following the advice of National Center, they are now developing SOPs.

Q3. Especially do they have SOPs for the management of sampling instruments, laboratory, and the management of measurement/analysis instrument, materials (glassware and polyethylene), and reagents?

Yes (all of them) Yes (some of them) No

Remarks

The SOPs contain SOPs for the management of sampling instruments, laboratory, and the management of measurement/analysis instrument, materials (glassware and polyethylene). But the SOP for management of reagents has not been prepared yet.

3. Site performance audits

Q4. Does the National Center conduct a site performance audit at least once a year for each monitoring site in your country?

Yes No (Once in more than one year)

a) Does the National Center have the SOP for site performance audits?

Yes No

b) Are the results of each audit documented and stored at the National Center?

Yes No

No (The Network Center has never conducted site performance audits.)

Remarks

The National Center conducts a site performance audit every two years for each monitoring site, because the budget is not enough to do once a year.

4. Field blank tests in collection and handling of samples for wet deposition monitoring

Q5. Does each relevant laboratory carry out monthly field blank tests on the rainfall collectors based on the technical documents for wet deposition monitoring?

Yes (all of them) Yes (some of them) No

Remarks

The relevant laboratories analyze the field blank sample and report the results of the field blank tests to the National Center once a year when they submit the monitoring data. If the concentration of the chemical species in the field blank is obviously higher than the usual values, they clean the funnel and/or replace tubes.

5. Laboratory audits

Q6. Does the National Center conduct laboratory audit once a year for each relevant laboratory in your country?

Yes No (Once in more than one year)

a) During the audit do they check whether the laboratory has prepared the SOPs for the management of apparatus, materials and reagents?

Yes (every time) Yes (sometimes) No

b) During the audit do they check whether the laboratory uses standard samples, having guaranteed traceability?

Yes (every time) Yes (sometimes) No

c) During the audit do they check whether the laboratory uses water with conductivity less than 0.15 mS/m for analyses, dilution of precipitation samples, and cleaning?

Yes (every time) Yes (sometimes) No

d) Are the results of each audit documented and stored at the National Center?

Yes No

No (The Network Center has never conducted laboratory audits.)

Remarks

The traceability of guaranteed standard samples and the water are checked in round robin analysis survey as well.

6. Data control and reporting

Q7. Have personnel in charge of data management and reporting, and their supervisors been appointed in each relevant laboratory?

Yes (all of lab.) Yes (some of lab.) No

Remarks

The relevant laboratories report the names of personnel and supervisors to the National Center when they submit the monitoring data.

Q8. Has each relevant laboratory established a system of data check and approval?

- Yes (all of them) Yes (some of them) No

Remarks

In each laboratory the head of the laboratory appoints the personnel responsible for data check and approves the data.

Q9. Do you have data verification activities for EANET monitoring data in your country?

- a) For wet deposition monitoring Yes No
b) For dry deposition monitoring Yes No
c) For soil/vegetation monitoring Yes No
d) For monitoring of inland aquatic environment Yes No

Remarks

The National Center requires some experts to check the monitoring data from a scientific viewpoint.

7. Training

Q10. Has your country carried out national technical training specifically for the implementation of the monitoring activities or as a part of more general training in your country?

- Yes No

Remarks

We have a national technical training program for the environment every year (two month duration). In the program there are classes for acid deposition monitoring for two weeks.