

The Sixth Session of the Senior Technical Manager's Meeting
on Acid Deposition Monitoring Network in East Asia
17-29 July 2005, Hanoi, Viet Nam

QA/QC activities on Filter Pack Method of EANET

1. Introduction

Technical Document for Filter Pack Method was endorsed at the Third Session of Scientific Advisory Committee (SAC3). In the committee, Network Center (NC) presented the report on the review of existing QA/QC activities on filter pack method. SAC3 recommended implementing inter-laboratory comparison on filter pack method as one of the QA/QC activities. SAC3 also suggested that the activities should be started after the test studies in NC.

After SAC3, NC has implemented a) filter stability test and b) addition and recovery test using standard materials. The tests were performed only for alkali-impregnated filter (F2) and acid-impregnated filter (F3) because it is difficult to keep free them from contamination comparing with other filters (F0 and F1).

The results of these studies were summarized and preliminary plan of 1st inter-laboratory comparison survey was proposed at the Fourth Session of Scientific Advisory Committee (SAC4). Based on the process mentioned above, NC made the draft program of 1st inter-laboratory comparison survey as follows.

2. The draft program of 1st inter-laboratory comparison survey

NC conducted the test to confirm filter stability during sample shipping, and we had good results for filter stability by changing shipping method.

Taking the test results into account, NC made the draft program of 1st inter-laboratory comparison survey as follows.

1) Participating laboratories

Laboratories in charge of chemical analysis for filter pack method on dry deposition monitoring in the participating countries of EANET.

2) Analytical parameters

All participating laboratories shall conduct chemical analysis for distributed samples and then submit the results for three parameters: sulfate (SO_4^{2-}), chloride (Cl), and ammonium (NH_4^+).

3) Sample Preparation

NC will prepare two kinds of impregnated filter (F2:K₂CO₃,F3:H₃PO₄), on which two kinds of standard solution with high and low concentrations are added previously, and impregnated filter with no addition of standard solution will be prepared for blank analysis. These filters will be kept in centrifuging tube and stored in aluminum foil bags.

Type and numbers of filters are shown in table 1.

Table 1 Outline of the samples for inter-laboratory comparison survey on Filter Pack Method
(Type and numbers of filters)

Filter Type	Type and Number of Filter		
	High Conc.	Low Conc.	Blank
Alkali-impregnated filter (F2, K ₂ CO ₃)	3	3	3
Acid-impregnated filter (F3, H ₃ PO ₄)	3	3	3

4) Distribution

Three kinds of impregnated filters will be distributed to participating laboratories under normal temperature.

5) Analysis

Analytical procedure are conducted according to “Technical Document for Filter Pack Method in East Asia”.

- i) Extraction: Pour extract solution into the tubes and shake the sample tubes using a shaker or an ultrasonic bath. Then samples are extracted into the solution
- ii) Analysis: Basically, each sample will be measured three times for individual parameters.
- iii) Calibration: It is preferable that calibration curve will be constructed from at least 5 working standard solution including the zero concentration.
- iv) Analysis of Detection Limit and Determination Limit: Detection Limit and Determination Limit are determined by 3 s and 10 s which can be calculated by the results of repeat analysis of the lowest standard solution

6) Time schedule

- i) First survey will start in December or November 2005.
- ii) Distribution of samples will be done at the same time with the survey of wet deposition.
- iii) Samples should be analyzed within 3 months.

7) Report submission

Format for data submission will be sent to participating laboratories.

Submission materials are as follows;

- a. Questionnaire on data report
- b. Detection Limit and Determination Limit
- c. Report summary
- d. Measurement results (SO_4^{2-} , Cl^- , NH_4^+)
- e. The copies of the calibration curve
- f. The copies of measurement charts for standard solution
- g. The measurement charts of the sample