



### Objectives of the SOP manual

- SOP manual is a document where required **procedures for various aspects of the monitoring programme are available as easy steps** in one place
- SOP manual is an outline that **NIAs may use to develop their own national SOP manuals**
- SOP manual is meant to **standardize data collection, handling and reporting**
- SOP manual will **help in QA/QC to achieve generation of high quality decision support data**

### SOP for monitoring acid deposition

- Scope
  - Criteria for sites
- DQO values for wet and dry deposition monitoring
 

Accuracy	Precision	Precipitation	Completeness
≤±15%	≤±15%	≥90%	≥80% - Precipitation & diffusive samples At least 4 valid TSPM/PM10 samples/month

Accuracy: Ratio of the difference between the certified and the analytical values to the certified value in QA/QC, expressed as a percent.


Precision: Relative standard deviation (Ratio of the standard deviation to average value in repeated measurements).

Precipitation: Ratio of the amount of precipitation collected by wet only/bulk collectors to that collected by a standard rain gauge.

Completeness: Ratio of the valid sample (measured as time or sample volume) to maximum sample that could have been collected.
- Preparation of national SOPs
  - Major items to be included in a national SOP
  - Who should use the SOP and where should it be available
  - Human resources

### SOP for instruments

- Scope
- Sources for maintenance and operations
- Instrument placement and installation
- Maintenance checks

Subject	Item	Maintenance interval	
		Weekly	Monthly
 Collection funnels and other water receiving parts No overflow of precipitation in collection bottle No bird droppings on collector Hood is not cracked	Rinse & clean	o	
	Check	o	
	Check	o	
	Check		o

- Operational procedures
- Vendor's contact

### Revisions to SOP

- Analytical methods for anions & cations integrated into single SOPs
- Minor gaps plugged
- Table for recording field experience of problems encountered and how they were solved
 

Description of problems	Frequency	How the problem was solved	Notes
- All comments & suggestions made re the SOP have been take care of, except:
  - Definition of site
  - Use-friendliness of SOP
- These require further discussion

- Technical manual
  - Vol 1 Introduction to the Malé Network
  - Vol 2 Basic concepts
  - Vol 3 Instruments and analytical methods for the field measurements
  - Vol 4 Instruments and analytical methods for the laboratory
  - Vol 5 Data reporting procedure and formats
  - Vol 6 Quality assurance and control

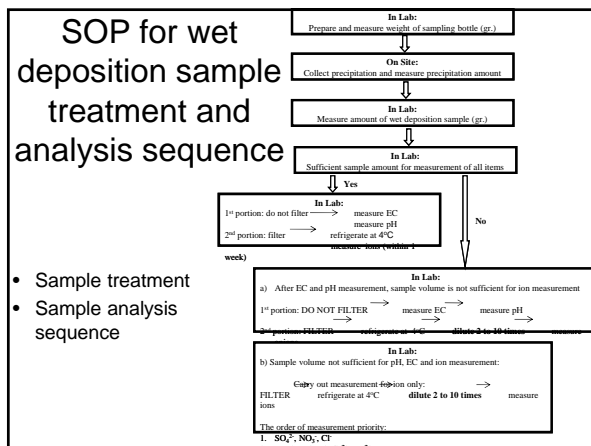
	Primary vols	Secondary vols
Field data collectors	3, 5	1, 2, 6
Lab scientists	4, 5	1, 2, 6
NIA manager	1, 5, 6	2, 3, 4

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- Major items suggested to be included in a national SOP
- Sampling
    - Appointment of sampling staff and their supervisors
    - Check for possible changes around the sampling sites
    - Check of sampling instruments apparatus
    - Sampling methods
  - Sample transport & storage
    - Transport
    - Storage
  - Measurement & chemical analysis
    - Appointment of staff and supervisors for each item
    - Training plan
    - Deionized water
    - Measurement by instruments
    - Operating procedures for instruments
    - Treatment of measurement results

- QA/QC
  - Evaluation of sample collection
  - Evaluation of reliability
  - Evaluation of results
- Management of instruments, reagents & glassware
  - Lab management
  - Instrument management
  - Management of reagents, standards, etc
  - Management of glassware, plastic vessels
- Audits
  - Internal audits
  - External audits

- ### SOP for Lab management
- Scope
  - Reference for management method
  - Equipment maintenance
  - Management of reagents



- ### SOPs for various measurements
- Scope
  - Reference for measurement
  - Range of sensitivity
  - Interferences
  - Laboratory equipment/Apparatus
  - Standard conditions
  - Precision and accuracy
  - Reagents/Solutions
  - Experiment/Measurement
  - Computations
  - Checking instrument performance
  - Calibration
  - Precautions
  - Causes for errors
  - Cleaning method

### SOP for QA/QC

- Scope
- References
- Data quality objectives
- Valid sample
- Quality control
- Quality assurance

### SOP for data reporting & management

- Scope
- Data types
- Data reporting
- Data reporting formats
- Data storage
- Malé Network secretariat

Thank you

+91 40 2753 6128

[sagdhara@gmail.com](mailto:sagdhara@gmail.com)