

Project Summary

Guideline for Design, Installation, Operation, and Quality Assurance for Dry Deposition Monitoring Networks

Linda F. Porter

This manual provides basic, practical, field-tested guidance on the installation, operation, maintenance, calibration, and auditing of dry deposition measurement systems. The information provided is based primarily on EPA's experience in installing, operating, maintaining, and auditing the National Dry Deposition Network. It has been supplemented with information gathered from personnel involved in other acid deposition and some non-acid deposition monitoring networks, and by a review of present research and development efforts. The information presented is current and correct as of August 1988. The manual is a succinct presentation of the essential information needed from the time monitoring is planned until the monitoring project and the data assessment are completed. It is intended for both experienced and inexperienced monitoring personnel. Each section of the manual first describes the activities covered by the topic area, then it describes the quality control activities that apply, and finally discusses the quality assurance activities that can be done to ensure the quality control activities are being done.

This Project Summary was developed by EPA's Atmospheric Research and Exposure Assessment Laboratory, Research Triangle Park, NC, to announce key findings of the research project that is fully docu-

mented in a separate report of the same title (see Project Report ordering information at back).

In response to public concern over the possible adverse effects of acidic deposition on natural environments, materials, wildlife, and public health, Congress passed the Acid Precipitation Act of 1980 (P.L. 96-294 Title VII). This act resulted in an explosion of monitoring activity in the area of acid deposition. Numerous research projects, sampling networks, and studies, for example, the National Dry Deposition Network (NDDN), the Mountain Cloud Chemistry Program (MCCP), the Forest Response Program (FRP), the Operation Evaluation Network (OEN), the Acid Model Operational Diagnostic Evaluation Study (ACID MODES), and the National Atmospheric Deposition Program/National Trends Network (NADP/NTN), were initiated to monitor and study acid deposition. Because it was a new area of research, many of the organizations carrying out these projects had little experience in measuring acid gases, acid particulates, and meteorological parameters under the conditions encountered when measuring acid deposition. Not surprisingly, most of these projects are measuring many of the same parameters.

This manual provides basic, practical, field-tested guidance on the installation, operation, maintenance, calibration, and auditing of dry deposition measurement systems. The information provided is based primarily on EPA's experience in

installing, operating, maintaining, and auditing the National Dry Deposition Network. It has been supplemented with information gathered from personnel involved in other acid deposition and some non-acid deposition monitoring networks, and by a review of present research and development efforts. The information presented is current and correct as of August 1988. However, because dry deposition monitoring is a relatively new area of research, the methodology is continually being modified and improved in the areas of data assessment, quality assurance and measurement. Thus, this guidance document is expected to be updated in approximately three years as our knowledge of acid deposition improves. In the interim, it is hoped that the widespread use of the guidance in this manual will improve the comparability of measurements across all acid deposition monitoring projects. Users are encouraged to submit their comments concerning additions, deletions, and other modifications that will improve the usefulness of this manual. This information can be sent to the author.

The manual is a succinct presentation of the essential information needed from the time monitoring is planned until the monitoring project and the data assessment are completed. It is intended for both experienced and inexperienced monitoring personnel and is divided into sections and appendices covering the following topics:

1. Monitoring Project Design and Implementation
2. Site Selection
3. Procurement and Testing of Materials and Equipment
4. Site Installation
5. Site Operations
6. Training
7. Laboratory Operations
8. Data Management

Each section of the manual is organized as follows. First, the activities that are covered by the topic area are described. Then, the types of quality control procedures that apply to these activities are described in detail. Finally, quality assurance procedures that can be used to assure that these quality control activities are being done are presented. Samples of practical, field-tested auditing procedures are described in detail in the appendices for illustrative purposes.

Although the document addresses dry deposition monitoring, the techniques

and information presented should also prove helpful to those planning to establish other monitoring networks in such areas as global climate change, stratospheric ozone, and greenhouse effect assessment.

The manual contains 98 pages of text and 17 Appendices. The titles of these appendices are:

Appendix	Title
A	Siting Criteria for Dry Deposition Trends Monitoring Networks
B	Siting Criteria for Regionally Located Wet Deposition Collection Sites
C	Siting Criteria for Urban-Influenced Wet Deposition Collection Sites
D	NDDN Site Suitability Evaluation Form
E	NDDN Site Acceptance Checklist
F	NDDN Field Performance Audit Observables
G	NDDN Field Systems Audit Report Form
H	NDDN Systems Audit Questionnaire ESE Chemistry Laboratory
I	Mountain Cloud Chemistry Project (MCCP) Systems Audit Questionnaire
J	NADP/NTN Systems and Performance Survey Questionnaire
K	Standard Operating Procedure for Performance Auditing Meteorological Instruments at Dry Deposition Monitoring Sites
L	Standard Operating Procedure for Performance Auditing Ozone Analyzers at Dry Deposition Monitoring Sites
M	Standard Operating Procedure for Performance Auditing SO ₂ Analyzers at Mountain Cloud Chemistry Sites
N	Analysis of Dry Deposition Filter Extracts by Ion Chromatography
O	EPA Method 350.7 for the Measurement of Ammonium in Wet Deposition Samples by Autoanalyzer
P	Acronyms and Abbreviations
Q	Glossary



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The complete report, entitled "Guideline for Design, Installaiton, Operation, and Quality Assurance for Dry Deposition Monitoring Networks," (Order No. PB 89-127 492/AS; Cost: \$36.95, subject to change) will be available only from:

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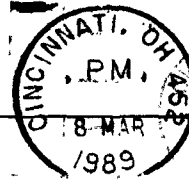
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