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Standard Guide for Choosing Locations and Sampling Methods to Monitor Atmospheric Deposition at Non-Urban Locations[1]

This standard is issued under the fixed designation D5111; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This guide assists individuals or agencies in identifying suitable locations and choosing appropriate sampling strategies for monitoring atmospheric deposition at non-urban locations. It does not purport to discuss all aspects of designing atmospheric deposition monitoring networks.

1.2 The guide is suitable for use in obtaining estimates of the dominant inorganic constituents and trace metals found in acidic deposition. It addresses both wet and dry deposition and includes cloud water, fog and snow.

1.3 The guide is best used to determine estimates of atmospheric deposition in non-urban areas although many of the sampling methods presented can be applied to urban environments.

1.4 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D1356 Terminology Relating to Sampling and Analysis of Atmospheres

D1357 Practice for Planning the Sampling of the Ambient Atmosphere

D3249 Practice for General Ambient Air Analyzer Procedures

D4841 Practice for Estimation of Holding Time for Water Samples Containing Organic and Inorganic Constituents

D5012 Guide for Preparation of Materials Used for the Collection and Preservation of Atmospheric Wet Deposition

3. Terminology

3.1 For definitions of terms used in this guide, refer to Terminology D1356.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *collocated sampling*—the use of more than one sampling device within a monitoring site.

3.2.2 *event sampling*—a special form of intermittent sampling (Terminology D1356) where the duration of a sampling period is defined as a single, discrete occurrence of precipitation, dew, fog or frost.

3.2.3 *fetch*—a vector within the local area which describes the direction and area of, or within, an air mass that will be sampled by a sampling device.

3.2.4 *filter-pack*—a sampling device comprised of one or more filters in series where each filter is designed to sample an atmospheric chemical species or remove interferences to a subsequent filter. Filters may be of different design; material; or be coated or impregnated to obtain the specificity of chemical species required.

3.2.5 *inferential sampling*—an indirect sampling method that utilizes a mathematical model to quantify an unmeasurable or difficult to measure property of atmospheric deposition.

3.2.6 *local area*—an area of a few square kilometers which describes an area of common vegetation, land-surface form and land use surrounding the monitoring site and defines the local characteristics surrounding the sampling device, see Fig. 1.

3.2.7 *monitoring site*—a radius of a few decameters which immediately surrounds the sampling device, see Fig. 1.

3.2.8 *regional area*—an area between the local area and a threshold that defines where any single local area characteristic can not be distinguished from regional characteristics, see Fig. 1.

3.2.9 *sequential sampling*—withdrawal of a portion of the atmosphere over a period of time with continuous analysis or with separation of the desired material continuously and in a linear form. Such a sample may be obtained with a considerable concentration of the contaminant but it still indicates fluctuations in that property which occur during the period of sampling (Terminology D1356; see *sample, running*).

[1] This guide is under the jurisdiction of ASTM Committee D22 on Air Quality and is the direct responsibility of Subcommittee D22.03 on Ambient Atmospheres and Source Emissions.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

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