CHAPTER 16

Techniques for Measuring Dry Deposition. Summary of WMO Expert Meeting on Dry Deposition, April 18—22, 1977, Gothenburg

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There are, in principle, three ways of determining dry deposition. They may be referred to as (1) direct accumulation, (2) flux-gradient, and (3) eddy correlation techniques.

Direct accumulation techniques use some kind of sampling surface – either natural or artificial – and determine the amount of material on the surface, or an adjacent bulk, before and after exposure. As they are easy to make, many of these samplers are home-made and there are therefore many different designs. However, only two (HASL and HARWELL methods) were described that had been used to any greater extent for dry deposition. Most were used for the sum of wet and dry deposition. The samplers discussed and their principal design are listed in Table 16.1.

TABLE 16.1 Summary of Accumulation Techniques for Measuring Dry Deposition of Particles

Type of sampler	Specifications	Principal sketch of sampler	Tests of performance
Bucket	HASL: aperture diameter = 300 mm (Volchok, 1977)		Sr^{90} against grass (Volchock, 1977)
Bucket	NILU: aperture diameter = 200 mm		Correlations with deposition on moss (Skärby, 1977)
Bucket	BERGERHOFF: aperture diameter = 90 mm (VDI, 1971a). Turbulence shielded		

TABLE 16.1 (continued)

Type of sampler	Specifications	Principal sketch of sampler	Tests of performance
Bucket	HIBERNIA: aperture diameter = 250 mm (VDI, 1971b)		compared with each other (Köhler and Fleck, 1963)
Bucket	BRITISH STANDARD DEPOSITE GAUGE: aperture diameter = 300mm (BSI, 1969). Turbulence shielded		BS tested in wind tunnel (Ralph and Barrett, 1976)
Bucket	LÖBNER: aperture diameter = 290 mm (VDI, 1971b)		
Vertical gauge	CERL: tube diameter = 75 mm, opening width = 45 mm (BSI, 1972)		Wind tunnel (Ralph and Barrett, 1976)
Plane surface	HARWELL METHOD: filter under cover (Pattenden, 1977)		
Natural surfaces	Growing moss (Rühling and Tyler, 1971), mossbags (Goodman *et al.*, 1979), snow (Dovland and Eliassen, 1976), water, trees		

The flux-gradient technique requires determination of the concentration gradient and the turbulence.

For the eddy correlation technique, continuous determination of the concentration and the vertical component of wind speed is needed. The last two techniques have been used almost exclusively for gases.

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