

Water quality —

Part 6: Sampling —

Section 6.8 Guidance on sampling of wet deposition

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Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Environment and Pollution Standards Policy Committee (EPC/-) to Technical Committee EPC/44, upon which the following bodies were represented:

- Association of Consulting Scientists
- British Association for Chemical Specialities
- British Gas plc
- Chemical Industries Association
- Convention of Scottish Local Authorities
- Department of the Environment (Water Directorate)
- Department of the Environment for Northern Ireland
- Department of Trade and Industry (Laboratory of the Government Chemist)
- Electricity Association
- Industrial Water Society
- Institution of Gas Engineers
- Institution of Water Officers
- Institution of Water and Environmental Management
- National Rivers Authority
- Royal Institute of Public Health and Hygiene
- Royal Society of Chemistry
- Scottish Association of Directors of Water and Sewerage Services
- Soap and Detergent Industry Association
- Society of Chemical Industry
- Water Companies Association
- Water Research Centre
- Water Services Association of England and Wales

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

- Automatic Vending Association of Great Britain
- British Geological Survey
- Department of Trade and Industry (Warren Spring Laboratory)
- Industrial Water Society
- Institute of Oceanographic Sciences
- Power Generation Contractors Association (BEAMA Ltd.)
- Society for General Microbiology
- University of Bradford

This British Standard, having been prepared under the direction of the Environment and Pollution Standards Policy Committee, was published under the authority of the Standards Board and comes into effect on 15 June 1993

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National foreword

This Section of BS 6068, which has been prepared under the direction of the Environment and Pollution Standards Policy Committee is identical with ISO 5667-8:1993 *Water quality — Sampling — Part 8: Guidance on the sampling of wet deposition* published by the International Organization for Standardization (ISO).

The international standard was prepared by Technical Committee 147, Water quality, of the International Organization for Standardization (ISO) with the active participation and approval of the UK.

BS 6068 is being published in a series of Parts subdivided into Sections that will generally correspond to particular international standards. Sections are being, or will be, published in Parts 1 to 7, which together with Part 0, are listed below.

- *Part 0: Introduction;*
- *Part 1: Glossary;*
- *Part 2: Physical, chemical and biochemical methods;*
- *Part 3: Radiological methods;*
- *Part 4: Microbiological methods;*
- *Part 5: Biological methods;*
- *Part 6: Sampling;*
- *Part 7: Precision and accuracy.*

This Part of BS 6068 is one of a group of standards dealing with the sampling of specific types of water. It should be read in conjunction with BS 6068-1, BS 6068-2 and BS 6068-3, which deal respectively with the design of sampling programmes, sampling techniques and the preservation and handling of samples. The general terminology is in accordance with BS 6068-1 and in particular Section 1.2.

Cross-references

International standard	Corresponding British Standard
ISO 5667-1:1980	BS 6068 <i>Water quality</i> Section 6.1:1981 <i>Guidance on the design of sampling programmes</i> (Identical)
ISO 5667-2:1991	Section 6.2:1991 <i>Guidance on sampling techniques</i> (Identical)
ISO 5667-3:1985	Section 6.3:1986 <i>Guidance on the preservation and handling of samples</i> (Identical)
ISO 6107-2:1989	Section 1.2:1990 <i>Additional terms relating to types of water, and treatment and storage of water and waste water, and terms used in sampling and analysis of water</i> (Identical)

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 10, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope

This part of ISO 5667 provides guidance on the design of sampling programmes and the choice of instrumentation and techniques for the sampling of the quality of wet deposition. It does not cover measurement of the quantity of rain.

This part of ISO 5667 does not cover dry deposition or other types of wet deposition such as mist, fog and cloudwaters, since their measurements are still at research stages. However, their importance should be noted, since research results suggest that, in some cases their loading can be comparable with, or exceed, wet precipitation. Therefore, wet precipitation data alone are rarely sufficient for calculating total loadings.

The main objectives are outlined in 1.1 and 1.2.

1.1 Control of local emissions

Determination of loadings (i.e. mass/area/time) by wet deposition to a particular ecosystem requires information on emissions, transformation and transport of pollutants from point or area sources. This information, together with assessment of the relative loadings from distant and local sources, when combined with studies on the effects of the pollutant on the ecosystem, can be used to arrive at acceptable emission control regulations.

1.2 Long range transport of airborne pollutants

Determination of temporal and spatial variations in the constituents of precipitation on a regional scale requires that the stations which are selected are representative, and are remote from local point or area sources.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 5667. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 5667 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 5667-1:1980, *Water quality — Sampling — Part 1: Guidance on the design of sampling programmes*.

ISO 5667-2:1991, *Water quality — Sampling — Part 2: Guidance on sampling techniques*.

ISO 5667-3:1985, *Water quality — Sampling — Part 3: Guidance on the preservation and handling of samples*.

ISO 6107-2:1989, *Water quality — Vocabulary — Part 2*.

3 Definitions

For the purposes of this part of ISO 5667, the following definitions apply.

3.1

wet deposition

water precipitated from the atmosphere in either the liquid (rain) or solid state (snow/ice)

NOTE 1 In cold climates, winter precipitation is usually in the frozen or solid state. The precipitation may also include liquid contaminants in addition to water. Apart from the difficulties encountered with snow sampling (see 6.4.2), there are additional factors to be considered when interpreting the results.

3.2

dry deposition

dry deposition is the deposition of all compounds except water in the particulate, liquid or gaseous state and of particulate matter by gravitational and turbulent processes

4 Determinants

4.1 Main components

The majority of the precipitation monitoring networks in use at the present time are designed to measure the main components such as major ions and nutrients, together with other parameters such as pH, acidity and conductivity.

4.2 Trace inorganic and trace organic compounds

Many trace inorganic materials, including radioactive materials, are released to the atmosphere during the combustion of various fuels and as a result of industrial activities. Many trace metals are adsorbed by flying ash particles, which are easily scavenged by precipitation or deposited to earth by gravitational settling.

Trace organic compounds are important in that many of them are toxic to aquatic biota. While the rate of deposition is low, the process is continuous and can lead to significant accumulation over time. Atmospheric transport is also one of the major pathways for the distribution of organic contaminants in the environment. The wet removal of airborne trace elements can occur when they provide suitable nuclei on which rain droplets can form (where the substance is in particulate or fine aerosol form), as well as by scavenging of particles and vapour partitioning in the atmosphere.