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Water quality — Sampling —

Part 22: Guidance on the design and installation of groundwater monitoring points

Qualité de l'eau — Échantillonnage —

Partie 22: Lignes directrices pour la conception et l'installation de points de contrôle des eaux souterraines

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 5667-22 was prepared by Technical Committee ISO/TC 147, *Water quality*, Subcommittee SC 6, *Sampling (general methods)*.

ISO 5667 consists of the following parts, under the general title *Water quality — Sampling*:

— *Part 1: Guidance on the design of sampling programmes and sampling techniques*

— *Part 3: Guidance on the preservation and handling of water samples*

— *Part 4: Guidance on sampling from lakes, natural and man-made*

— *Part 5: Guidance on sampling of drinking water from treatment works and piped distribution systems*

— *Part 6: Guidance on sampling of rivers and streams*

— *Part 7: Guidance on sampling of water and steam in boiler plants*

— *Part 8: Guidance on the sampling of wet deposition*

— *Part 9: Guidance on sampling from marine waters*

— *Part 10: Guidance on sampling of waste waters*

— *Part 11: Guidance on sampling of groundwaters*

— *Part 12: Guidance on sampling of bottom sediments*

— *Part 13: Guidance on sampling of sludges from sewage and water treatment works*

— *Part 14: Guidance on quality assurance of environmental water sampling and handling*

— *Part 15: Guidance on the preservation and handling of sludge and sediment samples*

— *Part 16: Guidance on biotesting of samples*

— *Part 17: Guidance on sampling of bulk suspended solids*

— *Part 19: Guidance on sampling of marine sediments*

— *Part 20: Guidance on the use of sampling data for decision making — Compliance with thresholds and classification systems*

— *Part 21: Guidance on sampling of drinking water distributed by tankers or means other than distribution pipes*

— *Part 22: Guidance on the design and installation of groundwater monitoring points*

— *Part 23: Determination of priority pollutants in surface water using passive sampling*

Introduction

The guidance contained in this part of ISO 5667 covers design and installation of groundwater quality monitoring points (GQMPs). It should be used in parallel with other guidance on sampling groundwater and for investigating contaminated or potentially contaminated sites, as any groundwater sampling from such sites is likely to form part of a much wider investigation programme.

Groundwater sampling, in general, is carried out to determine whether or not the groundwater in or beneath a site is contaminated. It can also be used to:

a) establish whether any migration of contaminants, derived from the site, is occurring and characterize the spatial extent (both laterally and vertically) of any contamination and its form;

b) determine the direction, rate and variability of groundwater flow and contaminant migration;

c) provide data for undertaking a risk assessment;

d) provide an early warning system for the impact of contaminants on the quality of groundwater resources, surface waters and other potential receptors in the vicinity of the site;

e) monitor the performance and effectiveness of remedial measures or facility design;

f) demonstrate compliance with licence conditions, or collect evidence for regulatory purposes;

g) assist in the selection of remedial measures and remediation process design.

The design and installation of groundwater monitoring points is critical to ensure that representative measurements are to be made of groundwater quality. A wide range of methods and materials is currently used with no, or very little, guidance on their applicability to the issues being addressed. This results in data and information that are at best difficult to interpret as well as being highly misleading; at worst, they are completely useless. The costs involved in installation, sampling and analysis are significant and the potential impacts of incorrect decisions made on poor quality data even greater. There is therefore a need to develop best practice guidance to establish a framework that can be adopted to ensure a much greater level of confidence in groundwater quality data.

Prescriptive guidance on methods and applications is not possible. Therefore, this guidance provides information on the most commonly applied and available techniques, and lists their advantages, disadvantages and limitations of use where these are known. When considering design of sampling strategies, the properties of potential sources of contaminants, pathways for migration, receptors, the purpose of the investigation and the environment into which the installations are to be emplaced need to be considered.