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Soil quality - Sampling - Part 203: Investigation of potentially contaminated sites

Qualité du sol - Échantillonnage - Partie 203: Investigation des sites potentiellement contaminés

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Part 203:

Investigation of potentially contaminated sites

*Qualité du sol — Échantillonnage —**Partie 203: Investigation des sites potentiellement contaminés*

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

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.

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ISO 18400-203 was prepared by Technical Committee ISO/TC 190, *Soil quality*, Subcommittee SC 2, *Sampling*.

This first edition cancels and replaces together with ISO 18400-104 and ISO 18400-202 (under preparation) the first edition of ISO 10381-5:2005, which has been technically and structurally revised. The new ISO 18400 series is based on a modular structure and cannot be compared to ISO 10381-5 clause by clause.

ISO 18400 consists of the following parts, under the general title *Soil quality — Sampling*:

- *Part 100: Umbrella*
- *Part 101: Framework for the preparation and application of a sampling plan*
- *Part 102: Selection and application of sampling techniques :*
- *Part 103: Safety*
- *Part 104: Strategies (under preparation)*
- *Part 105: Packaging, transport, storage and preservation of samples*
- *Part 106: Quality control and quality assurance*
- *Part 107: Recording and reporting*
- *Part 201: Physical pretreatment in the field*
- *Part 202: Preliminary investigations (under preparation)*

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- *Part 203: Investigation of potentially contaminated sites*
- *Part 204: Guidance on sampling of soil gas* (under preparation)
- *Part 205: Guidance on the procedure for investigation of natural, near-natural and cultivated sites* (under preparation)

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Introduction

This part of ISO 18400 is one of a series of standards dealing with various aspects of site investigation and sampling. It should be used in conjunction with the other parts of ISO 18400 (see Foreword). The role/position of the individual standards within the total investigation programme is shown in Figure 1.

Whilst serious cases of soil contamination mostly occur at urban and industrial sites, serious contamination of agricultural land can also occur (for example, due to pesticides usage, long-term irrigation and application of organic wastes). In addition, it is important to recognise that agricultural, near-natural and wooded sites etc. are sometimes developed on deposited wastes or suffer severe aerial deposition when close to industrial sites. In such cases, a combination of the methodologies of ISO 18400-203 and ISO 18400-205 would be appropriate.

An understanding of the surface water, groundwater and soil gas regimes is essential to the assessment of the potential risks to human health and safety and to other potential receptors including, for example, groundwater resources. However the provision of detailed guidance on the investigation of groundwater, surface water and soil gas falls outside the scope of this part of ISO 18400. For more information on groundwater and surface water sampling, see ISO 5667. Information on the sampling of soil gas is provided in ISO 18400-204.

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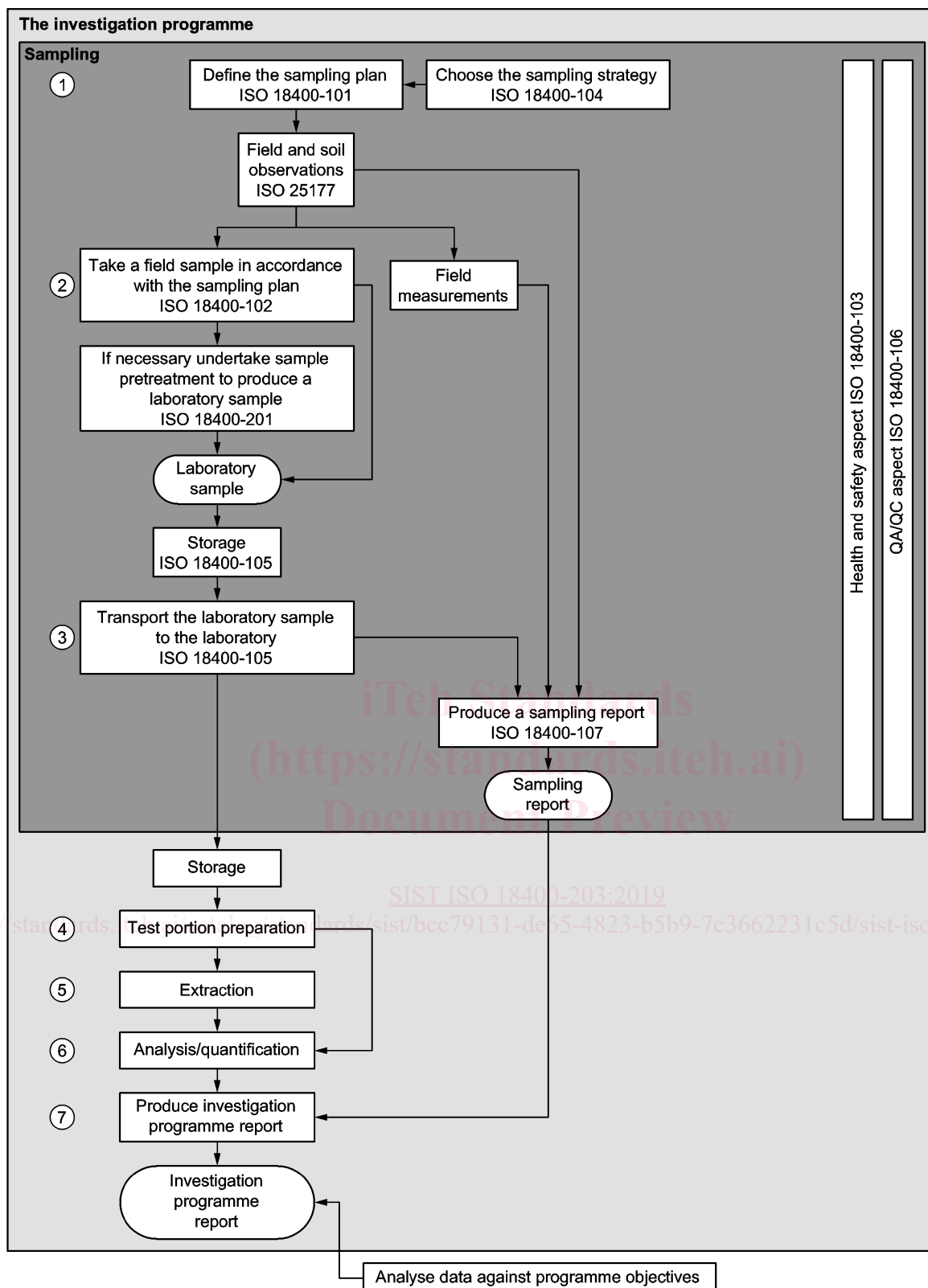


Figure 1 — Links between the essential elements of an investigation programme

NOTE 1 The numbers in circles in Figure 1 define the key elements (1 to 7) of the investigation programme.

NOTE Figure 1 displays a generic process which can be amended when necessary.

Soil quality — Sampling — Part 203: Investigation of potentially contaminated sites

1 Scope

This part of ISO 18400 gives guidance on the:

- investigation of sites, where either it is known that soil contamination is present, or the presence of soil contamination is suspected;
- investigation of sites where no soil contamination is expected, but the soil quality is to be determined (e.g. to make sure that there is no contamination present);
- the collection of information that is necessary for risk assessment and/or the development of remedial action plans (e.g. whether remediation is required and suggestions as to how this might be best achieved).

Although the information on soil quality for the risk assessment and/or the development of remedial action plans is gathered by applying this part of ISO 18400, this document does not give guidance on the decisions and actions that follow from a site investigation, for example, risk assessment and decisions about the requirements for remediation (if any), although other International Standards could be helpful in this regard (see 4.1).

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 11074, *Soil quality — Vocabulary*

ISO 11464, *Soil quality — Pretreatment of samples for physico-chemical analyses*

ISO 14507, *Soil quality — Pretreatment of samples for determination of organic contaminants*

ISO 18400-101, *Framework for the preparation and application of a sampling plan*

ISO 18400-104, *Strategies and statistical evaluations*

ISO 18400-202, *Preliminary investigations*

3 Terms and definitions

For the purposes of this document, the terms and definitions of ISO 11074 apply.

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4 Objectives

4.1 General

This international standard provides a framework for the various stages and phases that in the investigation of potentially contaminated sites. The resulting determination of the contamination status can then lead to risk assessment and where necessary facilitate the selection and application of appropriate remedial actions. Guidance on data and information requirements for particular purposes is provided in a number of International Standards including ISO 11504, ISO 15175, ISO 15176, ISO 15799, and ISO 15800.

Whilst many investigations will be carried out with a motivation to identify and deal with contamination (e.g. site where it is known or believed there might be unacceptable risks to humans or other receptors – sometimes called “problem” sites) it should be recognised that investigations for contamination are often incidental to plans for the redevelopment of sites (e.g. of an industrial site for housing) or, especially in urban areas, because it is known that possibly contaminated soils will have to be excavated and removed from the site (e.g. because basements are to be formed, utilities installed or underground infrastructure built). The guidance provided in this standard should be adapted as appropriate.

NOTE 1 Contamination is defined in ISO 11074 as a result of human influences; however, the methods described for investigation are also applicable where there are naturally high concentrations of potentially harmful substances.

NOTE 2 With respect to remediation, this part of ISO 18400 only provides guidance on the information required in general. It is emphasized that specific remediation methods could need additional information.

NOTE 3 This part of ISO 18400 deals only with the investigation of the ground. It is important to recognize that on old urban and industrial sites, there could be derelict buildings and/or industrial plants awaiting demolition, dismantling or refurbishment. Failure to investigate these buildings before demolition could put the safety of workers at risk or lead to the spread of contamination on and around the site. The investigation of derelict buildings or remnant foundations falls outside the scope of this part of ISO 18400.

NOTE 4 In many situations there is a close relation between the contamination of the soil, groundwater, soil gas and, to a lesser extent, surface water. Consequently, an understanding of the surface water, groundwater and soil gas regimes is essential to the assessment of the potential risks to human health and safety and to other potential receptors including, for example, groundwater resources. However the provision of detailed guidance on the investigation of groundwater, surface water and soil gas falls outside the scope of this part of ISO 18400. For more information on groundwater and surface water sampling, see ISO 5667. Information on the sampling of soil gas is provided in ISO 18400-204.

4.2 Definitions of objectives

The reasons for an investigation and hence the objectives can vary widely but are generally to:

- identify and assess the risks to those using the site, and in the event of redevelopment, to subsequent users and occupiers of the site;
- identify and assess the risks presented to the environment including adjacent land, surface and groundwater, ecosystems and public health;
- identify and assess the risks which could be presented to workers who are involved in investigation, remediation, redevelopment or maintenance of the site;
- enable proper management of excavated materials especially on urban sites;