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Soil quality — Sampling —

Part 5:
Guidance on the procedure for the investigation of urban and industrial sites with regard to soil contamination

Qualité du sol — Échantillonnage —

Partie 5: Lignes directrices pour la procédure d'investigation des sols pollués en sites urbains et industriels

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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.

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/IEC 10381-5 was prepared by Technical Committee ISO/TC 190, *Soil quality*, Subcommittee SC 2, *Sampling*.

ISO/IEC 10381 consists of the following parts, under the general title *Soil quality — Sampling*:

- *Part 1: Guidance on the design of sampling programmes*,
- *Part 2: Guidance on sampling techniques*,
- *Part 3: Guidance on safety*,
- *Part 4: Guidance on the procedure for investigation of natural, near-natural and cultivated sites*,
- *Part 5: Guidance on the procedure for the investigation of urban and industrial sites with regard to soil contamination*,
- *Part 6: Guidance on the collection, handling and storage of soil for the assessment of aerobic microbial processes in the laboratory*,
- *Part 7: Guidance on sampling of soil gas*,
- *Part 8: Guidance on sampling of stockpiles.*

Introduction

This part of ISO 10381 is one of a group of standards dealing with various aspects of site investigation and sampling. It should be used in conjunction with the other parts of ISO 10381 (see Foreword).

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 such cases, a combination of the methodologies of ISO 10381-4 and ISO 10381-5 may be appropriate. When the objective of an investigation is related to plant growth, reference should be made to ISO 10381-4.

The general terminology used is in accordance with that established in ISO/TC 190 “Soil quality” and more particularly with the terminology given in ISO 11074.

The investigation of ground water, soil gas and surface water falls outside the scope of (this part of) ISO 10381. For more information on ground water and surface water sampling, see ISO 5667. Information on the sampling of soil gas is provided in ISO 10381-7.

Soil quality — Sampling —

Part 5:
Guidance on the procedure for the investigation of urban and industrial sites with regard to soil contamination

1 Scope

This part of ISO 10381 gives guidance on the procedure for the investigation of urban and industrial sites, where either it is known that soil contamination is present, or the presence of soil contamination is suspected. It is also applicable where there is a need to establish the contamination status of the site, or there is a need to establish the environmental quality of the site for other purposes.

This part of ISO 10381 includes guidance on 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). However, it only provides guidance on the information required in general. It is emphasized that specific remediation methods may need additional information.

This part of ISO 10381 is also applicable to 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).

Although the sites considered in this document have been defined as urban and industrial sites, the guidance contained in this part of ISO 10381 is equally applicable to any site where the degree and extent of contamination needs to be established.

NOTE 1 Contamination is defined 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 A number of different objectives for soil sampling are listed in Annex A, along with references to the relevant parts of ISO 10381.

NOTE 3 Although the general part of the information for the risk assessment and/or the development of remedial action plans is gathered by applying this part of ISO 10381, 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).

NOTE 4 This part of ISO 10381 deals only with the investigation of the ground. It is important to recognize that on old urban and industrial sites, there may be derelict buildings and/or industrial plants awaiting demolition, dismantling or refurbishment. Failure to investigate these buildings before demolition may 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 10381.

NOTE 5 In many situations there is a close relation between the contamination of the soil, ground water, soil gas and — to a lesser extent — surface water.

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*

3 Terms and definitions

For the purpose of this part of ISO 10381, the terms and definitions of ISO 11074 apply.

4 Objectives

4.1 General

This guidance provides a framework for the various stages and phases that can be taken in the investigation of land. 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 15175, ISO 15176, ISO 15799, and ISO 15800.

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;
- to identify and assess the risks presented to the environment including adjacent land, surface and groundwater, ecosystems and public health;
- to identify and assess the risks which may be presented to workers who may be involved in investigation, remediation, redevelopment or maintenance of the site;
- to identify and assess the potential for adverse effects on building materials;

so that decisions can be made about the importance of the risks and whether it is necessary to take any form of action to deal with them.

From the principal objectives of the investigation, a number of subsidiary objectives can be derived. These may include the following:

a) determine if any immediate action is required to protect exposed receptors;

b) identify compounds that are, or may be, present that may represent a risk to one or more actual or potential receptors;

c) identify receptors (e.g. human, ecosystems, groundwater) that are or may in the future be at risk;

d) identify pathways by which particular receptors may be exposed to the contaminants;

e) provide the data and other information to use in a risk assessment;

f) provide information to aid the design of protective or remedial measures;