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Soil quality — Guidance on the ecotoxicological characterization of soils and soil materials

Qualité du sol — Lignes directrices relatives à la caractérisation écotoxicologique des sols et des matériaux du sol

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 190, *Soil quality*, Subcommittee SC 4, *Biological characterization*.

This second edition cancels and replaces the first edition (ISO 15799:2003), which has been technically revised. The main changes compared to the previous edition are as follows:

— standardized forms of recommended test systems in Annex A have been amended and updated (e.g. ISO 20963 deleted and ISO 18311, ISO 18187 added).

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Most of the existing ecotoxicological test methods (biotests) that are being internationally harmonized were developed to describe the ecotoxic potential of a test substance when added to a soil/soil material. These methods can be used with some modifications for the ecotoxicological characterization of soils and soil materials with respect to their function depending on the intended use. For substances with properties resulting in toxic effects, biotests are a complement to conventional chemical analysis. Results from chemical analysis can be used for ecotoxicological assessments based on information on the substances identified, including properties of the chemicals, e.g. their bioaccumulation potential. This information is often scarce (if it exists at all) and it does not include possible interactions (synergy/antagonism) between chemicals and the complex soil matrix. Furthermore, an exhaustive identification and quantification of substances is impractical. Therefore, ecotoxicological testing of soils can be used for investigating the potential toxicity of complex chemical mixtures. The extrapolation from laboratory tests to field conditions requires adequate consideration of important environmental factors within the test conditions and the selection of suitable ecotoxicological end points.

Soil quality — Guidance on the ecotoxicological characterization of soils and soil materials

1 Scope

This document is one of a family of International Standards providing guidance on soils and soil materials in relation to certain functions and uses including conservation of biodiversity. It applies in conjunction with these other standards. It provides guidance on the selection of experimental methods for the assessment of the ecotoxic potential of soils and soil materials (e.g. excavated and remediated soils, refills, embankments) with respect to their intended use and possible adverse effects on aquatic and soil dwelling organisms.

NOTE This is a reflection of the maintenance of the habitat and retention function of the soil. In fact, the methods listed in this document are suitable for usage in a TRIAD approach, i.e. for an ecological assessment of potentially contaminated soils (see ISO 19204).

This document does not cover tests for bioaccumulation.

The ecological assessment of uncontaminated soils with a view to natural, agricultural or horticultural use is not within the scope of this document. Such soils can be of interest if they can serve as a reference for the assessment of soils from contaminated sites.

The interpretation of results gained by applying the proposed methods is not in the scope of this document.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1 Types of soil and other soil materials

3.1.1
soil
upper layer of the Earth's crust composed of mineral particles, organic matter, water, air and organisms

[SOURCE: ISO 11074:2015, 2.1.11, modified — The definition has been slightly modified and the Note 1 to entry has been deleted.]

3.1.2
soil material
material which includes *excavated soil* (3.1.3), dredged materials, manufactured soils, treated soils and fill materials