

This is a preview of "ISO 16133:2018". [Click here to purchase the full version from the ANSI store.](#)

Second edition  
2018-12

---

---

## **Soil quality — Guidance on the establishment and maintenance of monitoring programmes**

*Qualité du sol — Lignes directrices pour l'établissement et l'entretien de programmes de surveillance*



Reference number  
ISO 16133:2018(E)

© ISO 2018

This is a preview of "ISO 16133:2018". [Click here to purchase the full version from the ANSI store.](#)



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2018

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
CP 401 • Ch. de Blandonnet 8  
CH-1214 Vernier, Geneva  
Phone: +41 22 749 01 11  
Fax: +41 22 749 09 47  
Email: [copyright@iso.org](mailto:copyright@iso.org)  
Website: [www.iso.org](http://www.iso.org)

Published in Switzerland

This is a preview of "ISO 16133:2018". [Click here to purchase the full version from the ANSI store.](#)

## Contents

Page

<b>Foreword</b> .....	<b>iv</b>
<b>Introduction</b> .....	<b>v</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>1</b>
<b>4 Monitoring objectives</b> .....	<b>2</b>
4.1 General.....	2
4.2 Examples of monitoring purposes.....	2
<b>5 Monitoring programme</b> .....	<b>3</b>
5.1 General considerations.....	3
5.2 Elements of a monitoring programme.....	4
5.2.1 Status of the monitoring sites.....	4
5.2.2 Changes at the monitoring sites.....	4
5.2.3 Interpretation of status and changes.....	4
5.2.4 Statistical sampling design.....	4
5.2.5 Selection of sites in space.....	5
5.2.6 Resampling in time.....	5
5.3 Sampling and measurement.....	6
5.3.1 General.....	6
5.3.2 Site design and identification.....	6
5.3.3 Soil and site description.....	6
5.3.4 Sampling.....	6
5.3.5 Field and laboratory measurements.....	6
5.3.6 Specimen banking.....	6
5.3.7 Time interval between samplings.....	7
<b>6 Data quality and quantity</b> .....	<b>7</b>
<b>Bibliography</b> .....	<b>9</b>

## 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](http://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](http://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 on 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 the following URL: [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 190, *Soil quality*, Subcommittee SC 7, *Impact assessment*.

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](http://www.iso.org/members.html).

This second edition cancels and replaces the first edition (ISO 16133:2004), which has been technically revised. The main changes compared to the previous edition are as follows:

- [Clause 2](#) has been updated;
- [Clause 3](#) has been updated, definitions that were not used in the document have been deleted;
- new subclauses have been introduced regarding sampling designs ([5.2.4](#)), sampling in space ([5.2.5](#)) and in time ([5.2.6](#));
- all examples of monitoring programmes described in Annex A have been deleted as part were outdated.

This is a preview of "ISO 16133:2018". [Click here to purchase the full version from the ANSI store.](#)

## Introduction

Monitoring is the process of repetitive observation, for defined purposes, of one or more components of the environment according to pre-arranged schedules in space and time using comparable methods for environmental sensing and data collection<sup>[14][15]</sup>. Monitoring schemes are used all over the world for a large number of purposes. Soil monitoring, particularly, is a long-term undertaking. The quality and the utility of the information from the monitoring is to a large degree determined by the choice of monitoring sites and by their maintenance over the years, and by appropriate quality control at all stages of the process.

Monitoring associated with industrial (contaminated) sites can involve many specific considerations, including legal requirements. The guidance in this document is not designed or intended to cover such situations.