
**Water quality — Determination of the
toxic effect of sediment and soil samples
on growth, fertility and reproduction of
Caenorhabditis elegans (Nematoda)**

*Qualité de l'eau — Détermination de l'effet toxique d'échantillons de
sédiment et de sol sur la croissance, la fertilité et la reproduction de
Caenorhabditis elegans (Nématodes)*



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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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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 10872 was prepared by Technical Committee ISO/TC 147, *Water quality*, Subcommittee SC 5, *Biological methods*.

Introduction

Nematodes are the most abundant and species-rich group of metazoans in sediments and soils^{[1][2]} and play an important role in benthic and soil food webs^{[3][4]}. Nematodes are endobenthic organisms that are found at various trophic levels due to the evolution of different feeding types (bacterivorous, algal feeder, omnivorous, predators).

The test organism *Caenorhabditis elegans* (Maupas, N2 var. Bristol) is a bacterivorous nematode that is found primarily in terrestrial soils but it also occurs in aquatic sediments of polysaprobial fresh-water systems^{[5][6]}. *C. elegans* is a well-studied organism and very easy to cultivate^[7].

The test is designed for measurement of the response to dissolved and particle-bound substances^{[8][9][10]}. It applies to the testing of sediments, soils, waste, pore water, elutriates and aqueous extracts.

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WARNING — Persons using this International Standard should be familiar with normal laboratory practice. This International Standard does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and to ensure compliance with any national regulatory conditions.

IMPORTANT — It is absolutely essential that tests conducted according to this International Standard be carried out by suitably trained staff.

1 Scope

This International Standard specifies a method for determining the toxicity of environmental samples on growth, fertility and reproduction of *Caenorhabditis elegans*. The method applies to contaminated whole fresh-water sediment (maximum salinity 5 ‰), soil and waste, as well as to pore water, elutriates and aqueous extracts that were obtained from contaminated sediment, soil and waste.

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 5667-16, *Water quality — Sampling — Part 16: Guidance on biotesting of samples*

ISO 7027, *Water quality — Determination of turbidity*

ISO 10390, *Soil quality — Determination of pH*

ISO 10523, *Water quality — Determination of pH*

ISO 11465, *Soil quality — Determination of dry matter and water content on a mass basis — Gravimetric method*

3 Terms and definitions

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

3.1

agar plate

Petri dish filled with NGM agar (5.8)

3.2

aqueous control

water that serves as negative control for tests in aqueous samples