ISO 15799:2019 (E)

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

Contents

Foreword

Introduction

1 Scope

2 Normative references

3 Terms and definitions

4 Field of application

4.1 Soils and areas of soil use where ecotoxicity tests should be considered
4.2 Soils and areas of soil use where ecotoxicological tests are not necessary

5 Selection of tests according to the use/re-use of soils and soil materials and soil functions

5.1 Use of ecotoxicity tests
5.2 General criteria for selection of tests
5.3 Considerations for the examination of soil functions
5.3.1 Retention function
5.3.2 Habitat function
5.3.2.1 General
5.3.2.2 Soil material used as control for bioassays on solid matrices
5.3.2.3 Soil as substrate (medium) for soil microorganisms
5.3.2.4 Soil as substrate for plant growth
5.3.2.5 Soil as substrate for soil-inhabiting fauna

6 Sampling, transport, storage and sample preparation

7 Limitations of proposed biotests for soils/soil materials

Annex A (informative) Standardized forms of recommended test systems

A.1 Terrestrial test methods
A.1.1 Soil fauna
A.1.1.1 Collembola — Effects on reproduction
A.1.1.2 Earthworms — Acute toxicity
A.1.1.3 Earthworms — Effects on reproduction
A.1.1.4 Enchytraeid — Effects on reproduction
A.1.1.5 Nematoda — Effects on growth, fertility and reproduction
A.1.1.6 Snails — Effects on growth
A.1.1.7 Bait lamina — Acute effects
A.1.2 Soil flora
A.1.2.1 Soil flora — Inhibition of root growth
A.1.2.2 Soil flora — Effects on emergence and growth
A.1.2.3 Soil flora — Effects on emergence and growth
A.1.2.4 Soil flora — Vicia faba micronucleus test
A.1.2.5 Soil flora — Germination and early growth of higher plants
A.1.3 Soil microorganisms
A.1.3.1 Mineralization and nitrification
A.1.3.2 Ammonium oxidation — Rapid test
A.1.3.3 Soil respiration
A.1.3.4 Enzyme activities using a microplate method with lyophilised fluorogenic substrates
A.1.3.5 Dehydrogenase activity using triphenyltetrazolium chloride (TTC)
A.1.3.6 Dehydrogenase activity using iodotetrazolium chloride (INT)

A.1.3.7 Arthrobacter globiformis — Solid contact test using dehydrogenase activity
A.1.3.8 Biomass — SIR method
A.1.3.9 Biomass — FE method
A.1.3.10 Determination of soil microbial diversity (PLFA and PLEL analyses)
A.1.3.11 Determination of microbial group abundance in soil by quantitative PCR
A.2 Aquatic test methods
A.2.1 Daphnia magna — Inhibition of mobility
A.2.2 Freshwater algal growth inhibition test
A.2.3 Freshwater fish acute toxicity test
A.2.4 Fish egg test
A.2.5 Marine algal growth inhibition test
A.2.6 Daphnia magna reproduction test
A.2.7 Chronic toxicity to Ceriodaphnia dubia
A.2.8 Chronic toxicity to Brachionus calyciflorus in 48 h
A.2.9 Vibrio fischeri — Luminescent bacteria test
A.2.10 Marine copepods — Acute toxicity test
A.2.11 Lemna minor — Growth inhibition test
A.2.12 umu-test
A.2.13 Salmonella/microsome test

Page count: 50