

Characterization of waste - Preparation of waste samples for ecotoxicity tests

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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 14735:2005 sisaldab Euroopa standardi EN 14735:2005 + AC:2006 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 29.09.2005 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 14735:2005 consists of the English text of the European standard EN 14735:2005 + AC:2006.</p> <p>This document is endorsed on 29.09.2005 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p>Käsitlusala: This European Standard describes the necessary steps to be performed before carrying out ecotoxicity tests on wastes.</p>	<p>Scope: This European Standard describes the necessary steps to be performed before carrying out ecotoxicity tests on wastes.</p>
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ICS 13.030.01

Võtmesõnad:

English Version

Characterization of waste - Preparation of waste samples for ecotoxicity tests

Caractérisation des déchets - Préparation des échantillons
de déchets en vue d'essais écotoxicologiques

Charakterisierung von Abfällen - Herstellung von
Abfallproben für ökotoxikologische Untersuchungen

This European Standard was approved by CEN on 27 June 2005.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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Foreword

This European Standard (EN 14735:2005) has been prepared by Technical Committee CEN/TC 292 "Characterization of waste", the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 2006, and conflicting national standards shall be withdrawn at the latest by February 2006.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

0 Introduction

Ecotoxicity can be estimated using two approaches: a chemical-specific approach and a toxicity-based approach. Chemical analyses are compared, in the first case, to quality criteria or threshold values to estimate ecotoxicity. In the second one, ecotoxicity is measured directly using biological tests. These two approaches complement each other, however, determination of pollutants in complex mixtures of unknown composition, that is a characteristic of many wastes, does not allow a relevant estimation of ecotoxicity. For such samples, the toxicity based approach is usually recognised to be appropriate to assess potential toxicity. Bioassays integrate, indeed, the effects of all contaminants including additive, synergistic and antagonistic effects. They are sensitive to the bioavailable fraction of the contaminants only. Finally, bioassays integrate the effects of all contaminants, including those, not considered or detected by chemical analyses.

Ecotoxicity tests can be applied to wastes to identify their potential hazardous properties with respect to the environment for classification purposes or to assess the risk related to a site-specific exposure scenario.

0.1 Identification of properties potentially hazardous to the environment for classification purposes

A classification system, based on the assessment of intrinsic properties, should be independent of an exposure scenario. The main requirement, in order to establish a relevant system for classifying wastes and for assessment of hazard properties, is to obtain comparable test results. This can only be obtained if the ecotoxicity tests on wastes are carried out according to a unique procedure describing more or less conventional test conditions (an exclusive dilution medium for terrestrial tests, a unique L/S ratio for preparation of water extracts, a unique liquid / solid separation step etc). This procedure should be applicable to a very wide range of waste materials whatever their physical properties are.

Any strategy for the assessment of properties potentially hazardous to the environment used in a classification system should include test organisms representing the terrestrial and the aquatic compartment. Both types of tests should be considered because they expand the range of effect expression due to differences in species sensitivity and exposure. For this specific purpose, the water extracts preparations for toxicity testing do not simulate leaching from wastes under environmental conditions but measure the water available fraction of the toxic components of the wastes.

0.2 Site-specific exposure scenario

The second application of ecotoxicity tests to wastes refers to a risk assessment approach. In this particular case, the test strategy should model site specific exposure conditions and should take into account the transfer of contaminants via the food chain and to surface and ground water by run-off or leaching. This application concerns firstly the definition of generic scenarios frequently encountered (e.g. wastes deposit in stockpiles, re-use of wastes) and focus on the relevant way of exposure to terrestrial and aquatic organisms.

This European Standard describes the necessary steps to be performed before carrying out ecotoxicity tests on wastes within the context of assessment of ecotoxic properties used in a classification system.

1 Scope

This European Standard describes the necessary steps to be performed before carrying out ecotoxicity tests on wastes. The purpose of this European Standard is to provide guidance on the taking of the sample, transport, storage of wastes and to define preparation, for the determination of ecotoxicological properties of wastes under the conditions specified in this European Standard by biological testing either as raw wastes or water extracts from wastes. Sample preparation for other applications (e.g. assessment of waste effects on aquatic and terrestrial organisms in a disposal scenario) is not considered.

Specifying a test battery to characterize ecotoxicological properties of wastes is not in the scope of this European Standard.

This European Standard is applicable to solid and liquid wastes.

2 Normative references

The following referenced documents are indispensable for the application of this European Standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

prEN 14899, *Characterization of waste - Sampling of waste materials - Framework for the preparation and application of a Sampling Plan*

EN 12457-2:2002, *Characterization of waste – Leaching – Compliance test for leaching of granular waste materials and sludges – Part 2: One stage batch test at a liquid to solid ratio of 10 l/kg for materials with particle size below 4 mm (without or with size reduction)*

EN ISO 5667-3, *Water quality - Sampling - Part 3: Guidance on the preservation and handling of water samples (ISO 5667-3:2003)*

ISO 10390, *Soil quality – Determination of pH*

ISO 11268-1, *Soil quality – Effects of pollutants on earthworms (Eisenia fetida) – Part 1: Determination of acute toxicity using artificial soil substrate¹⁾*

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

ISO 14238:1997, *Soil quality – Biological methods – Determination of nitrogen mineralization and nitrification in soils and the influence of chemicals on these processes*

1) Definition of soil substrate.