

English Version

Characterization of waste - Guidance on the use of ecotoxicity tests applied to waste

Caractérisation des déchets - Recommandations sur
l'utilisation des essais d'écotoxicité appliqués aux
déchets

Charakterisierung von Abfällen - Anleitung zur
Anwendung von Ökotoxizitätsprüfungen auf Abfälle

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European foreword

This document (CEN/TR 16110:2024) has been prepared by Technical Committee CEN/TC 444 “Environmental characterization of solid matrices”, the secretariat of which is held by NEN.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes CEN/TR 16110:2010.

CEN/TR 16110:2024 includes the following significant technical changes with respect to CEN/TR 16110:2010:

- The reference to the assessment of hazardous property HP 14 “Ecotoxic” in place of basic ecotoxicological characterization
- The inclusion of an annex that summarizes the national practices to assess the hazardous property HP 14 'Ecotoxic' and the addition of the main conclusions of this survey in subclause 8.1.

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

Introduction

Ecotoxicity can be estimated using two approaches: a chemical-specific approach and a toxicity-based approach. In the first situation, chemical analyses are compared to quality criteria or threshold values to estimate toxicity. In the second case, toxicity is measured directly using toxicity tests. These two approaches complement each other. However, determination of pollutants in complex mixtures of unknown composition (a characteristic of many wastes) does not allow a relevant estimation of toxicity. For such samples, the toxicity-based approach is usually recognized to be the best approach to assess toxicity. Ecotoxicity tests integrate the effects of all contaminants including additive, synergistic and antagonistic effects. They are sensitive to the bioavailable fraction of the contaminants only and 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 hazardous properties (*i.e.* HP 14) in accordance with Council Regulation (EU) 2017/997 [22] or to assess the risk related to a site-specific exposure scenario. Determining the hazard classification of waste for hazardous property HP 14 “Ecotoxic” by applying calculation formulae, generic cut-off values, as defined in Regulation (EC) No 1272/2008 [24] is out of the scope of this document.

The majority of existing ecotoxicity tests being internationally harmonized were developed to describe the ecotoxic potential of a test substance when added to water or to soil/soil material, of wastewater or of eluates. These methods can be applied with some modifications for the ecotoxicological characterization of wastes. Nevertheless, users of these methods should be aware that the validation of the methods is not complete. Several studies as well as an International ring test have been conducted to validate some test methods for waste samples and the results have been used as background information.

1 Scope

Ecotoxicity tests can be applied to wastes to identify their potential hazardous properties with respect to the environment or to assess the risk related to a site-specific exposure scenario. This document provides guidance for the selection and use of ecotoxicity tests for both applications.

This document focuses on the following selected field of applications:

- a) hazardous properties (*i.e.* HP 14);
- b) Site-specific exposure scenario;
- c) Landfill management:
 - a. monitoring of leachates;
 - b. mineral waste going to non-controlled landfill sites.
- d) Re-use of waste:
 - c. use of sludge in agriculture;
 - d. use of mineral waste in road construction.

Other fields of application can also be covered by ecotoxicological testing not being in the scope of the document. The ecotoxicological assessment of waste within other scenarios might need the development of other test strategies.

With regard, more specifically, to the assessment of hazardous properties, this document focuses on the ecotoxicological characterization of waste using biotests.

Depending on the waste type and the assessment goal, relevant criteria are described for the selection of a test strategy and the suitable ecotoxicity test(s).

This document also provides guidance for ecotoxicity test protocols to meet the specific demands of waste testing (e.g., limitations, test design, confounding factors). The proposed tests represent a minimum test battery that can be completed by additional tests or even be replaced by others according to the waste, the intended use or protection goal envisaged.

2 Normative references

There are no normative references in this document.