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Sludge recovery, recycling, treatment and disposal — Beneficial use of biosolids — Land application

Valorisation, recyclage, traitement et élimination des boues — Utilisation bénéfique des boues d'épuration — Épandage

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

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Contents

Page

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).

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).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of 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 www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 275, *Sludge recovery, recycling, treatment and disposal*.

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.

Introduction

Biosolids are organic–based materials from industrial or municipal sludge and municipal biosolids derived products, in the form of solids, semi–solids, semi–liquids, and liquids which have been treated to meet applicable standards, guidelines or requirements including the reduction of pathogens, vector attraction and contaminant criteria.

The land application of biosolids, which is considered an integrated approach to sustainable management of this resource, can be beneficial in many ways such as:

— increasing soil organic matter;

— increasing biological activity in soil;

— decreasing soil bulk density and improving soil porosity;

— improving water infiltration rate, water holding capacity and erosion prevention;

— improving soil aggregate stability;

— increasing cation exchange capacity, which can result in a lower frequency of fertilizer application;

— increasing soil pH;

— providing additional nutrients to the soil for plant growth;

— recovering phosphorus from the urban and industrial environment;

— providing potential for carbon sequestration in soil; and

— decreasing the use of mineral fertilizers and related greenhouse gas (GHG) emissions related to production and application of mineral fertilizers.

This document does not prioritize, or suggest a hierarchy amongst various beneficial use options, but aims to identify and address the different criteria that could be considered to develop a sustainable and environmentally successful land application programme. These criteria include the nature of the treatment process, the selection of an appropriate application site, the method of application, the rate of application and the establishment of protective barriers or setbacks to environmentally and socially sensitive areas such as surface water and residences.

Control of non–beneficial substances, odour and potential risk to human, animal and environmental health are important parts of any beneficial use strategy. These can be managed by employing tools such as point source control, appropriate treatment methods and land–use restrictions.

Application of this document presupposes awareness of applicable legal requirements.

Sludge recovery, recycling, treatment and disposal — Beneficial use of biosolids — Land application

1 Scope

This document provides guidance on the conditions of beneficial use of biosolids produced from industrial and municipal sludge and municipal biosolids derived products (e.g. composts, growing media) in the production of food and feed crops, energy crops, forestry crops and for the remediation of disturbed sites.

This document applies to biosolids for land application and includes biosolids from wastewater treatment (municipal, industrial and private onsite systems).

This document does not apply to hazardous sludge that originates from wastewater which, due to its nature, physical, chemical or infectious properties, is potentially hazardous to human health and/or the environment during use, handling, storage or transportation and which requires special disposal techniques to eliminate or reduce the hazard.

This document includes:

— general guidelines for the land application of biosolids and biosolids derived products;

— specific guidelines for the land application of biosolids and biosolids derived products for food and feed crop production and for non–food and non–feed crop production (e.g. horticulture, fibre for bio–mass, silviculture, etc.); and

— specific guidelines for the land application of biosolids and biosolids derived products for other beneficial uses (e.g. land reclamation or rehabilitation).

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
alkaline stabilized biosolids
biosolids or non–toxic sludge which has undergone alkaline treatment to meet specific requirements for reduction of pathogens and vector attraction

3.2
alkaline treatment
process where biosolids or non–toxic sludge is mixed with alkaline additives to enhance wastewater solids stabilization by increasing the pH of the biosolids up to 12 or higher for a minimum amount of time