# SLOVENSKI STANDARD
# SIST-TS CEN/TS 13714:2013

**01-september-2013**

**Nadomešča:**
**SIST-TP CEN/TR 13714:2010**

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**Karakterizacija blata - Ravnanje z blatom pri uporabi ali odlaganju**

Characterization of sludges - Sludge management in relation to use or disposal

Charakterisierung von Schlämmen - Management von Schlamm zur Verwertung oder Beseitigung

Caractérisation des boues - Gestion des boues en vue de leur valorisation ou de leur élimination



**Ta slovenski standard je istoveten z: CEN/TS 13714:2013**

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**ICS:**

13.030.20 Tekoči odpadki. Blato Liquid wastes. Sludge

**SIST-TS CEN/TS 13714:2013** **en,fr,de**

TECHNICAL SPECIFICATION

SPÉCIFICATION TECHNIQUE

TECHNISCHE SPEZIFIKATION

# CEN/TS 13714

July 2013

ICS 77.060; 93.140

Supersedes CEN/TR 13714:2010

English Version

# Characterization of sludges - Sludge management in relation to use or disposal

Caractérisation des boues - Gestion des boues en vue de leur valorisation ou de leur élimination

Charakterisierung von Schlämmen - Management von Schlamm zur Verwertung oder Beseitigung

This Technical Specification (CEN/TS) was approved by CEN on 27 August 2012 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

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Ref. No. CEN/TS 13714:2013: E

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## Foreword

This document (CEN/TS 13714:2013) has been prepared by Technical Committee CEN/TC 308 “Characterization of sludges”, the secretariat of which is held by AFNOR.

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

This document supersedes CEN/TR 13714:2010.

This document gives recommendations for good practice, but existing national regulations remain in force.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to announce this Technical Specification: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

# Introduction

The purpose of this Technical Specification is to outline the management of sludges both upstream and downstream of the treatment process to ensure that it is suitable for the outlets available. Sludge is the inevitable residue of treating raw potable water and municipal and industrial wastewaters. This Technical Specification refers to all types of sludge covered by CEN/TC 308 including sludges from treating industrial wastewater similar to urban wastewater and from water supply treatment work plants. In considering the likely quality of sludges, it should be remembered that municipal wastewater sludges are composed of materials that have already been disposed of and are consequently likely to be more variable than many industrial sludges that arise from sourced materials or water treatment sludges arising from surface water or groundwater.

The quality of the sludge should match the requirements of the outlets whether that be to land, thermal processing or as a last resort landfill. As a general rule a high quality sludge is likely to be acceptable to a large range of outlets giving greater operational flexibility. High quality sludges are likely to be suitable for those outlets associated with maximum sustainability and minimum environmental pollution. The management of sludges will become increasingly more complex as environmental standards become more stringent and if outlets become more constrained by legislation and public attitudes.

Sludge quality is central to the development of good practice for sludge production in relation to its destination (use or disposal). Sludge quality depends on the composition of the upstream materials and the type of treatment including post-treatment storage.



Sludge quality can be characterised by its different properties; biological, chemical and physical:

a) biological properties include the microbiological stability of the organic matter in the sludge, odour and hygienic characteristics;



b) chemical properties include:

   1) content of potentially toxic substances (PTSs) which include inorganic (metals, metalloids, and other minerals), and organic pollutants;

   2) concentrations and form (availability) of plant nutrients and the main components of the sludge;

c) physical properties include whether liquid, semi-solid (pasty-like) or solid, and aesthetic factors associated for instance with removal of unsightly debris by effective screening. Calorific value is a quality criterion if the sludge is to be incinerated or used as a fuel. Other physical properties include, thickenability and dewaterability.

The consistency of these different properties is a critical aspect of the sludge quality and of the ability to determine its end destination (use or disposal).

Standard methods should be used where these are available to measure the quality parameters of sludge. There is a continuing need to develop a full set of standardised and harmonised methods which the manager and operator can use to evaluate the quality of sludge for treatment process design and operational purposes.

This Technical Specification considers the management of sludges against the waste hierarchy, the management of sludge quality and an option evaluation process to determine the options available.

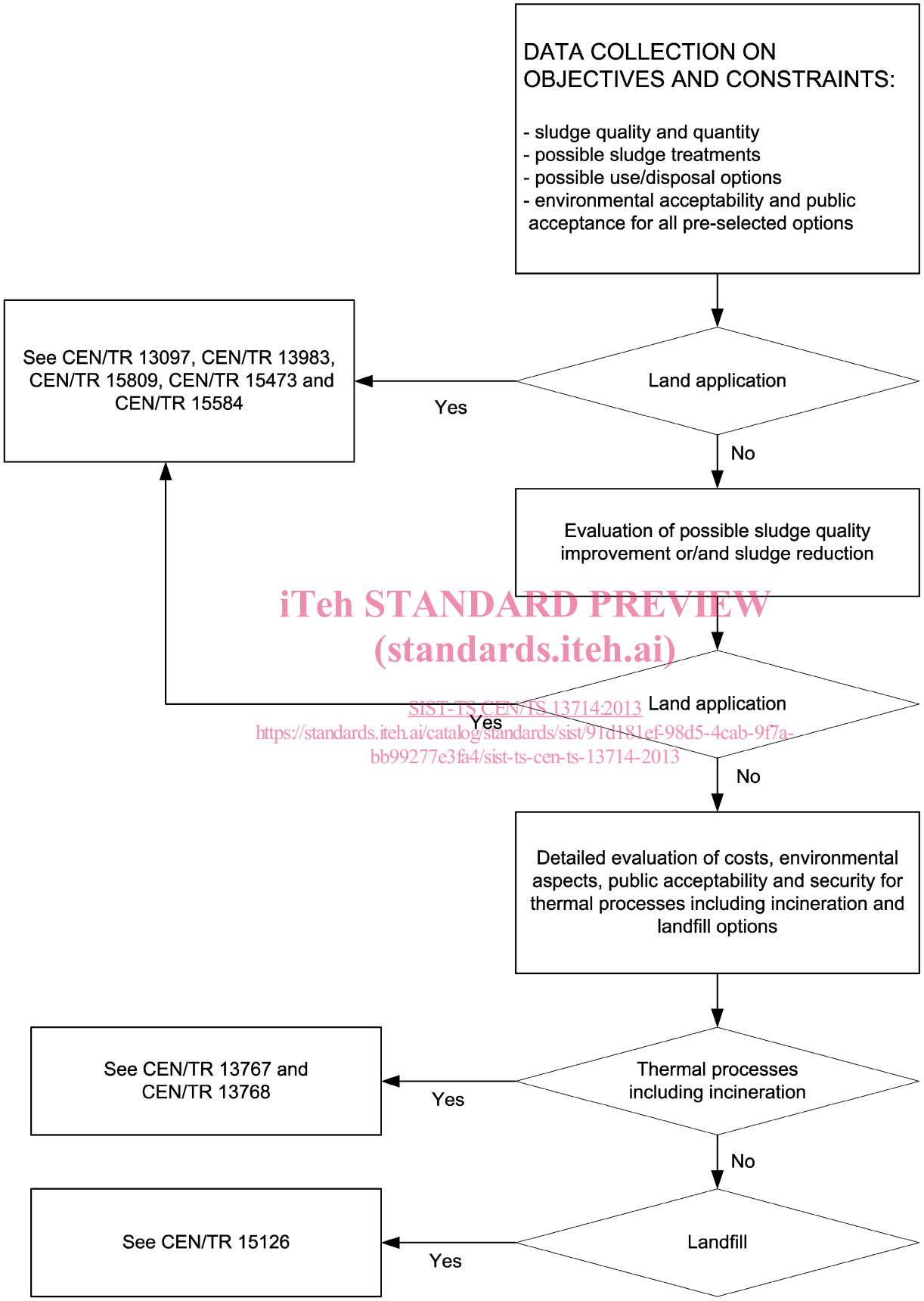




**Figure 1 — A basic scheme for deciding on sewage sludge use/disposal options and the relevant CEN/TC 308 guidance documents**

# 1 Scope

This Technical Specification gives guidance for dealing with the production and control of sludge in relation to inputs and treatment and gives a strategic evaluation of recovery, recycling and disposal options for sludge according to its properties and the availability of outlets.

This Technical Specification is applicable for sludges from:

— storm water handling;

— night soil;

— urban wastewater collecting systems;

— urban wastewater treatment plants;

— treating industrial wastewater similar to urban wastewater (as defined in Directive 91/271/EC [1]);

— water supply treatment plants;

but excluding hazardous sludges from industry.

# 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.



EN 1085:2007, *Wastewater treatment — Vocabulary*



EN 12832:1999, *Characterization of sludges — Utilization and disposal of sludges — Vocabulary*

# 3 Terms and definitions and abbreviated terms

## 3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1085:2007 and EN 12832:1999 and the following apply.

**3.1.1**
**industrial wastewater**
**trade wastewater**
**trade effluent**
wastewater discharge resulting from any industrial or commercial activity

**3.1.2**
**urban wastewater**
**municipal wastewater**
wastewater from municipal areas consisting predominantly of domestic wastewater and which may additionally contain surface water, infiltration water, trade or industrial wastewater

## 3.2 Abbreviated terms

The following abbreviated terms, necessary for the understanding of this specification, apply:

— BOD: Biochemical Oxygen Demand

— BPEO: Best Practicable Environmental Option

— COD: Chemical Oxygen Demand

— EQO/EQS: Environmental Quality Objectives/Environmental Quality Standards

— PTS: Potentially Toxic Substance

# 4 Waste hierarchy

## 4.1 General

In order that the management of waste be conducted in an increasingly sustainable manner, the EU encourages a waste hierarchy as a framework by which Member States should develop their strategy for waste management (EU Directive 75/442/EEC (see [2]) as amended by 91/156/EEC (see [3])).

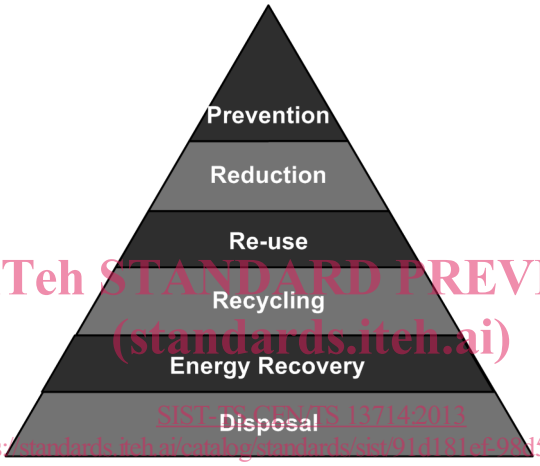




**Figure 2 — The waste hierarchy — Including sludges**

This hierarchy encourages:

a) firstly, the prevention or reduction of waste production and its harmfulness, in particular by:

   1) development and implementation of clean technologies more sparing in their use of natural resources;

   2) technical development and marketing of products designed so as to make no contribution or to make the smallest possible contribution, by the nature of their manufacture, use or final disposal, to increasing the amount or harmfulness of waste and pollution hazards;

   3) development of appropriate techniques for the final disposal of dangerous substances contained in waste destined for recovery;

b) secondly, the best possible use of waste:

   1) recovery of waste by means of recycling, re-use or reclamation or any other process with a view to extracting secondary raw materials;

   2) or the use of waste as a source of energy.

The hierarchy places disposal as the last management choice.

Four of the stages within the hierarchy can be applied to sludges, namely reduction, recycling, recovery and disposal. Obviously, the latter is the least desirable and efforts should be made to minimise the proportion of sludge which is disposed of, by the adoption of clean technologies, recycling and recovery strategies.

The waste hierarchy can be applied equally to activities upstream of the sludge production process and to the processes employed within the treatment process. These are discussed separately below. In considering what management options should be selected, all stages in the sequence of sludge production and its ultimate fate should be scrutinised.

### 4.2 Context

The overall objective of a sludge management strategy should be to find outlets for the sludge which are safe, environmentally acceptable (carbon foot print), secure and economic. The availability of outlets (see Clause 8) determines how sludge should be treated.

In order to do this, it is important to address quality (Clause 5) and management processes (Clause 6) and operational practices (Clause 7).

## 5 Management of sludge quality - Upstream processes

### 5.1 General

The significant difference between municipal sludges and industrial sludges and to a certain extent water treatment sludges is the degree and complexity of control over the inputs.



Industrial sludges usually arise from the processing of sourced materials and control over their content and consequently the quality of sludge can often be made by analysis of the materials and in many cases by the imposition of quality standards on them. This may not always be possible for instance in the amount of bacteriocides and fungicides in paper waste collected for recycling which could vary from batch to batch. River waters can carry a range of pollutants which could enter the sludge and operators should be aware of the potential pollutants that could enter the river upstream.



### 5.2 Municipal wastewater sludges

For municipal wastewater sludges strict limits should be imposed on industrial and commercial discharges to the sewer so that the sludge produced from wastewater is ‘clean’ or as free as possible of contaminants of industrial origin.

Industrial point sources of contaminants discharging to the sewer should be identified and restricted or stopped. Key factors are careful discharge consent settings (see below) monitoring and inspection backed by enforcement. Quality assurance in support of the consent requires adequate sampling to check compliance. The extent of sampling of effluent from industrial premises should be decided on a risk assessment basis taking account for instance of size of operation and quantity of chemicals in use.

The "polluter pays" principle should be used to oblige industries failing to produce acceptable effluents to investigate and implement remedial measures. This may entail a change in the production process or the installation on the industrial premises of effluent treatment plant. Often the cost of this is offset by reduced payments for effluent discharge and the recovery and reuse of valuable chemicals that would otherwise have been discharged to the sewer. Experience has shown that by progressively identifying and controlling point source discharges, the quality of sludge can be substantially improved by reducing its content of PTS.

Emergency planning should make provisions to deal with accidental discharges of large amounts of polluting chemicals to the sewer so that contamination of sludge is minimised, and the biological treatment processes of wastewater and sludge are protected.

Conventional wastewater treatments remove most of the organic polluting load of the wastewater; this is measured in terms of BOD or COD. These processes also transfer much of the non-treatable polluting load, consisting of non-degradable or persistent residues, out of the wastewater and into the sludge. This is