PD CEN/TR 16788:2014

BSI Standards Publication

Characterization of sludges — Guideline of good practice for thermal processes

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National foreword

This Published Document is the UK implementation of CEN/TR 16788:2014. It supersedes PD CEN/TR 13767:2004 and PD CEN/TR 13768:2004 which are withdrawn.

The UK participation in its preparation was entrusted to Technical Committee EH/5, Sludge characterization.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Compliance with a British Standard cannot confer immunity from legal obligations.

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Characterization of sludges - Guideline of good practice for thermal processes

Caractérisation des boues - Lignes directrices relatives aux bonnes pratiques pour les procédés thermiques

Charakterisierung von Schlämmen - Anleitung für die gute fachliche Praxis thermischer Prozesse

This Technical Report was approved by CEN on 25 November 2014. It has been drawn up by the Technical Committee CEN/TC 308.

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Foreword

This document (CEN/TR 16788:2014) has been prepared by Technical Committee CEN/TC 308 “Characterization of sludge”, the secretariat of which is held by AFNOR.

This document supersedes CEN/TR 13767:2004 and CEN/TR 13768:2004.

Introduction

It is recognized that wastewater sludge is a potential source of valuable resources. Material recycling is higher in the waste hierarchy (ref. 2008/98/EC Directive) than recovery (energy and material). Sludge incineration and other organic matter treatments by thermal processes (gasification, pyrolysis and wet oxidation) should deal with materials which do not meet beneficial use requirements. They represent a consistent year round solution. To decide which type of solution is appropriate for a particular sludge, Figure 1 should be consulted.

Thermal processes involve, among others, reduction of volume and weight, highest destruction of toxic organic compounds, possible recovery of phosphorus and other useful materials. Drawbacks include high costs and complexity of plant operation.

In all cases, the energy balance (including energy for removing water etc.) and carbon footprint of the processes should be calculated to verify the environmental benefit of the process.

A good performance of a thermal processing plant also depends upon the provision of proper auxiliary equipment and devices, which include receiving and storage systems, pre-treatments equipment, feeding system, flue gas cleaning, heat recovery, ash handling, wastewater disposal and process monitoring.

The purpose of this Technical Report is to describe good practice for sludge incineration and other organic matter treatments by thermal processes in order to ensure a safe and economical operation. The main goals are to:

— describe the principal design parameters relevant to different process schemes;

— assess the operating procedures able to perform optimal energy balance, emissions control and equipment durability;

— provide the responsible authorities with well-established and easily applicable protocols for control purposes;

— promote the diffusion of good practice;

— contribute to taking appropriate decisions.

Priority should be given to reduction of pollutants at the origin and to recover, if technically and economically feasible, valuable substances (e.g. phosphorus) from sludge and derived products.

As part of a process and company quality approach, the relevant issues are therefore:

— exploiting the operating data and the statutory inspections carried out;

— rendering the process reliable, optimizing and of perpetuating it, as well as guaranteeing a permanent development;

— maintaining a climate of confidence between the authorities, the sludge producers, the transporters, the incineration plant and waste disposal site operators and allowing the services to be provided on a contractual basis.

The local considerations to be taken into account are:

— the adoption of a more convenient solution with respect to other options;

— the geographical context, the client population and therefore the potential input material as well as the expected developments;

— the proximity of the sewage treatment plant and the local transportation network;

— the capacity of treatment plants.

All of the recommendations of this document constitute a framework within which the thermal processes can be proposed in addition to and/or as a substitution for land utilization, landfilling when allowed, or any other process when relevant situations occur and appropriate conditions are met.

The management of sludges both upstream and downstream of the treatment process to ensure that it is suitable for the outlets available is outlined in CEN/TS 13714:2013.

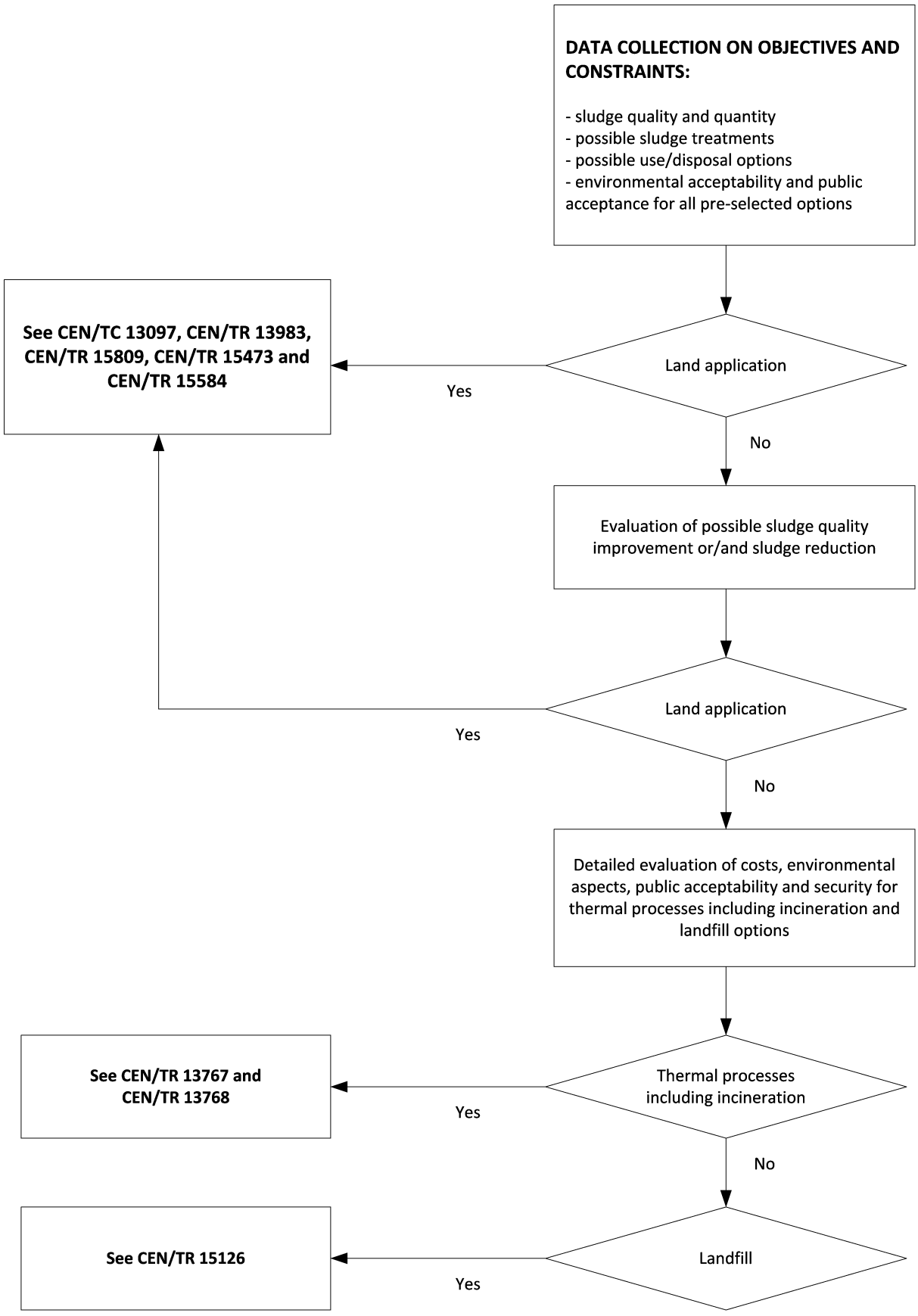

Figure 1 — A basic scheme for deciding on sewage sludge use/disposal options and the relevant CEN/TC 308 guidance documents

1 Scope

This Technical Report describes good practice for the incineration and other organic matter treatment by thermal processes of sludges.

Thermal drying, thermal conditioning and thermal hydrolysis are excluded.

This Technical Report is applicable for sludges described in the scope of CEN/TC 308 specifically derived 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/EEC);

but excluding hazardous sludges from industry.

2 Normative references

Not applicable.

3 Terms and definitions

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

3.1
thermal treatment
reduction of organic matter by incineration, gasification, pyrolysis and wet air oxidation

3.2
thermal process
technique for the application of thermal treatment

3.3
combined thermal treatment
thermal treatment of sludge and other waste in the same device

3.4
pyrolysis
thermal treatment without supply of oxygen

3.5
gasification
thermal treatment with less than the stoichiometric supply of oxygen or air (partial combustion)

3.6
furnace
enclosed chamber where combustion of organic matter takes place