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Secretariat: DS

Sludge, treated biowaste, and soils in the landscape – Sampling – Framework for the preparation and application of a sampling plan

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Contents

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Foreword

This European Standard (prEN XXXX) has been prepared by Technical Committee CEN BT TF151 “Horizontal”, the secretariat of which is held by DS.

This document is currently submitted to the CEN Enquiry.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, B, C or D, which is an integral part of this document.

The following TCs have been involved in the preparation of the standard:

CEN/TC292 Characterization of waste

This standard is applicable for several types of matrices. The table below indicates which ones.

Material	Validated	Document
Sludge		
Treated biowaste		
Soil		

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.

Introduction

Sludge and treated biowaste can be applied to land for the purpose of beneficial land use. The testing of sludge, treated biowaste and soil enables informed decisions to be made on whether land application is appropriate (or not). To undertake valid tests a (number of) representative sample(s) of the sludge, treated biowaste or land will be needed.

The potential scope of a testing programme can be complex; the process flowchart in Figure 1 defines 7 key steps that make up the essential elements of the testing programme. The principles outlined in this European Standard provide a framework that can be used to design and develop a sampling plan, which is the first of the 7 key steps.

To achieve the objectives of a testing programme methods of sampling need to be selected or designed that ensure availability of appropriate samples representative for the purpose of the tests to be performed. The testing programme design often involves iterative discussion between the involved parties, i.e. those individuals and organizations with an interest.

A sampling plan is defined by the specific objectives of the testing programme and how those objectives can be practically achieved with reference specifically to the sampling activities for the situation and material under investigation. Additionally, this European Standard deals with actual sampling in accordance with the sampling plan and the development of the sampling report. More than one sampling plan might be required to fulfil all the objectives of the testing programme. A sampling plan should detail all the information pertinent to a particular sampling exercise.

The procedural steps that need to be considered to complete key step 1 ‘The preparation and application of a sampling plan’ are detailed in Figure 2. These procedures provide the basic framework for those involved in developing a sampling plan to meet the requirements of any testing programme.

Essential information for the application of this European Standard can be found in the following five Technical Reports:

CSS99058: Sludge, treated biowaste, and soils in the landscape – Sampling – Part 1: Guidance on selection and application of criteria for sampling under various conditions

CSS99057: Sludge, treated biowaste, and soils in the landscape – Sampling – Part 2: Guidance on sampling techniques

CSS99032: Sludge, treated biowaste, and soils in the landscape – Sampling – Part 3: Guidance on sub-sampling in the field

CSS99059: Sludge, treated biowaste, and soils in the landscape – Sampling – Part 4: Guidance on procedures for sample packaging, storage, preservation, transport and delivery

CSS99060: Sludge, treated biowaste, and soils in the landscape – Sampling – Part 5: Guidance on the process of defining the sampling plan

The first four Technical Reports provide guidance on completing the key steps in the preparation and application of the sampling plan. Further information on the relationship between the production of a sampling plan and the testing programme objectives can be found in prCEN/TR xxxx-5.

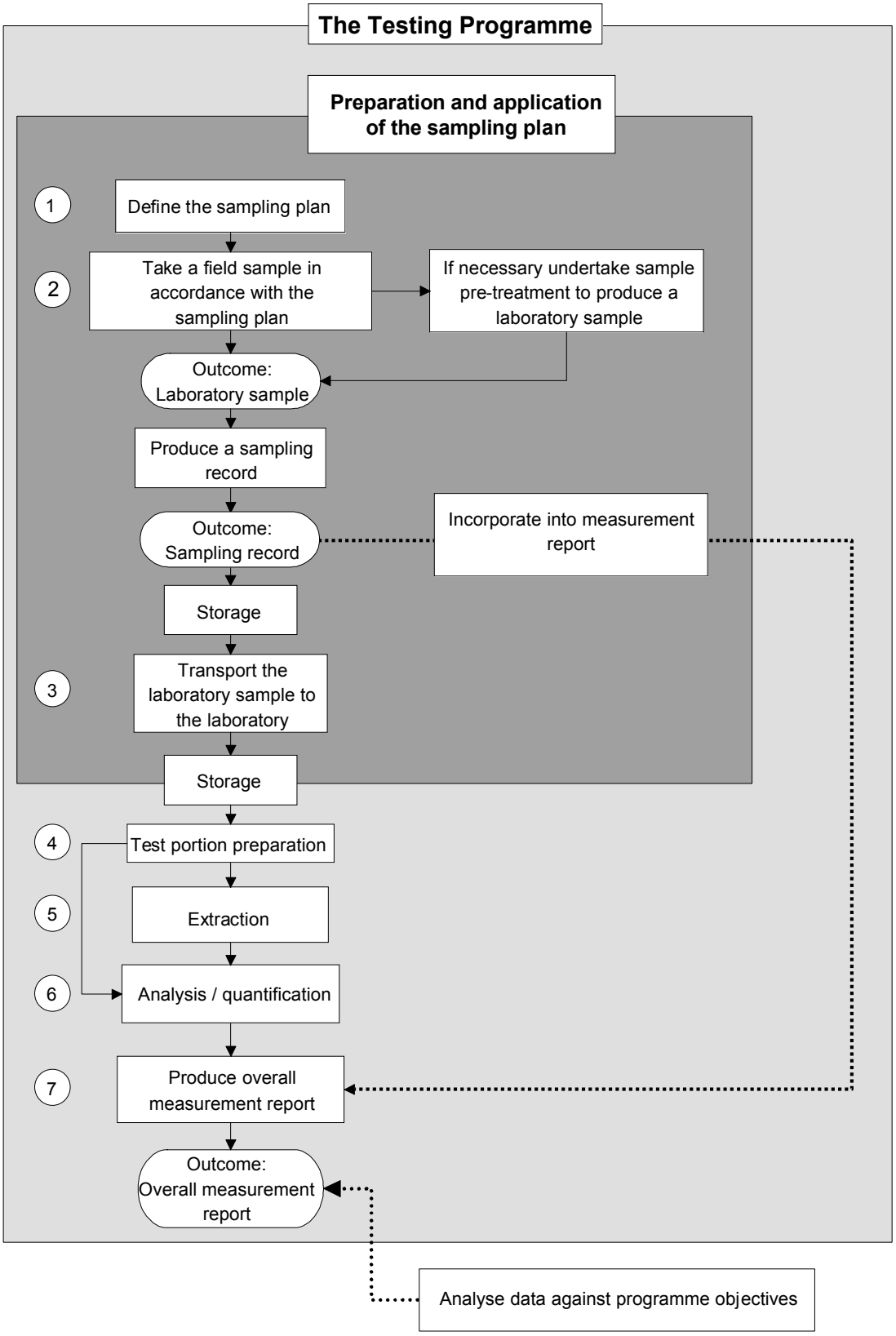
The Testing Programme
Preparation and application of the sampling plan
1
Define the sampling plan
2
Take a field sample in accordance with the sampling plan
If necessary undertake sample pre-treatment to produce a laboratory sample
Outcome: Laboratory sample
Produce a sampling record
Outcome: Sampling record
Incorporate into measurement report
Storage
3
Transport the laboratory sample to the laboratory
Storage
4
Test portion preparation
5
Extraction
6
Analysis / quantification
7
Produce overall measurement report
Outcome: Overall measurement report
Analyse data against programme objectives

Figure 1 – Links between the essential elements of a testing programme

NOTE Stages 1-7 define the seven key steps that make up a testing programme.

1 Scope

This European Standard specifies the procedural steps to be taken in the preparation and application of a sampling plan. The sampling plan describes the method of collection of the laboratory sample necessary for meeting the objective of the testing programme.

This European Standard is applicable to sampling of sludge, treated biowaste, and soil in the landscape.

There might be a need for more than one sampling plan to meet all the requirements of the testing programme. Ultimately the sampling plan provides detailed instructions on how sampling should be carried out.

NOTE Although this European Standard in most cases refers to the taking of one sample or increment or the preparation of one laboratory sample, it should be noted that often this might be more than one. For simplicity reasons this European Standard uses singular terms; plural terms can also be inferred.

2 Normative references

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

prEN ZZZZ: Sludge, treated biowaste, and soils in the landscape – Sampling – Vocabulary

3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in prEN ZZZZ and the following apply.

NOTE This European Standard avoids the use of the terms ‘sampling protocol’ and ‘sampling strategy’ as they are both known to represent conflicting concepts in a number of countries.

3.1
biowaste
waste that is derived from a biological source material

NOTE Such as food and garden waste, and paper and paperboard. (See Annex A.7, Council Directive 1999/31/EC Article 2.m.)

3.2
sludge
mixture of water and solids separated from various types of water as a result of natural or artificial processes

[EN 12832:1999, definition 3.1]

NOTE Attention is drawn to the fact that the term ‘sludge’ is partially defined in the Directives 86/278/EEC and 91/271/EEC.

4 Preparation of a sampling plan

4.1 Principle

A sampling plan shall be completed prior to undertaking any sampling.

By providing specific and practical instructions, the sampling plan defines the boundaries and logistics of the sampling element of the testing programme.

The principles laid out in this European Standard can be used to produce a sampling plan for any testing programme.

This process can be used in:

- the production of standardized sampling plans for use in more routine circumstances;
- the production of a sampling plan to meet the specific requirements of European and national legislation;
- the design and development of a sampling plan for use on a case by case basis.

In the process of defining a sampling plan the key elements of the testing programme (as shown in Figure 2) shall be addressed. The definition process shall:

a) identify those individuals and organizations with an interest and detail the proposed sampling design agreed through consultation with those involved parties (see 4.2.1);

b) identify the requirements arising from other key steps in the testing programme;

c) establish specific instructions for when and where, and how many increments are to be taken;

d) identify all safety precautions that are to be taken.

NOTE 1 The specific details contained within any sampling plan will differ according to the objectives of the testing programme.

NOTE 2 In the process of defining a sampling plan the specific objectives of the sampling programme are translated into practical instructions. The sampling plan therefore details all the information pertinent to a particular sampling exercise and describes how the sampling is to be carried out. Basically, the sampling plan specifies how the objectives of the testing programme can be achieved for the situation and material type under investigation. However, as the objectives of the testing programme are in most cases only remotely related to the practical instructions that are essential for sampling to be undertaken, the sampling plan normally does not list the objectives of the testing programme.

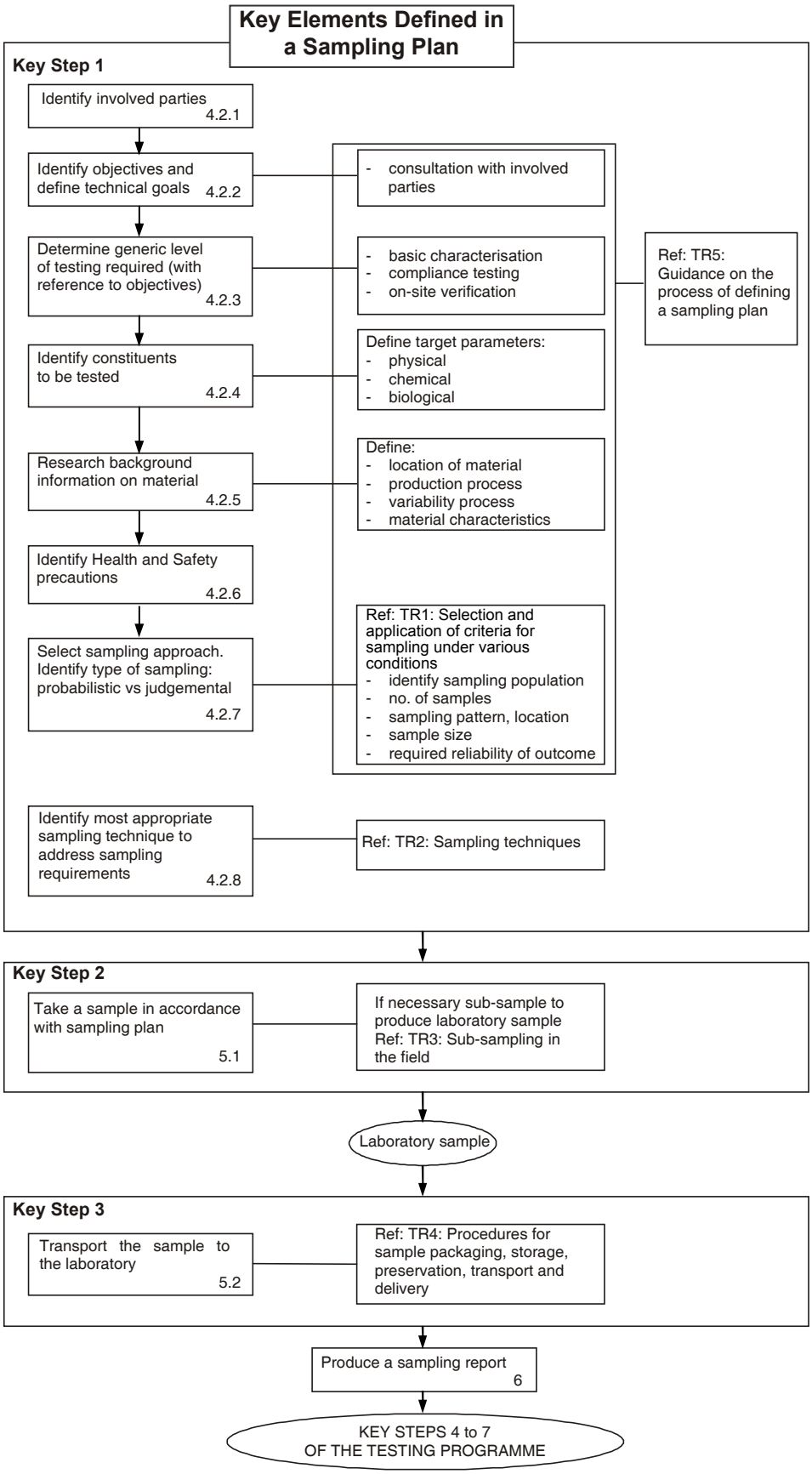

Figure 2 – Key elements of a sampling plan

4.2 Key elements of a sampling plan

4.2.1 Involved parties

The sampling plan shall be prepared in consultation with all appropriate individuals and organizations with an interest. Such involved parties include, for example: the sampler; the analyst; the client; the regulator and the producer or owner of the material.

NOTE The materials to be tested dictate pertinent involved parties.

4.2.2 Objectives of the testing programme

Definition of the objective of the testing programme is an essential step towards defining the type and quality of information that is to be obtained through sampling.

NOTE 1 In some circumstances, it might be possible to meet a number of testing objectives using a single sampling plan; however, more commonly a separate sampling plan will be defined for each objective.

NOTE 2 The objectives of the testing programme might include:

- necessity to compare the quality of the test material with quality levels defined in (inter)national legislation;
- the need to characterize the material as a consequence of a change in ownership of the material;
- determining the (re)usability of the material;
- determining the leachability / total composition of the material;
- assessing the human health and / or environmental risks posed by the material;
- assessing the agronomic and horticultural properties.

The defined objective of the testing programme is an essential input to the definition of the sampling plan. The sampling plan(s) shall translate and document the objective of the testing programme into practical and achievable technical goals that take into account the physical state, accessibility and size of the material to be sampled. These technical goals can be linked to specific data analysis requirements and a select number of statistical analytical tools that provide a consistent means of assessing and interpreting testing data. Such tools ultimately provide the means to verify whether the testing objective(s) have been met or not.

NOTE 3 This diversity of technical goals affects the location and minimum requirements for the sampling exercise as well as the number and volume of the samples. It is therefore important that both the objective and derived technical goals of the testing programme are clearly identified to ensure that the collected samples meet the objective.

The sampling plan shall identify any anticipated restrictions or limitations which relate to the sampling steps identified in Figure 2 that might impact on the reliability of the testing data.

4.2.3 Testing level

The sampling plan shall identify the level of testing required to meet the technical goals of the testing programme. These will dictate the different types and frequency of investigation to be performed. It may specify a quantified level of uncertainty for the contribution of the sampling steps to the overall uncertainty of the testing programme.

NOTE Examples of testing levels could include:

- basic characterization, consisting of a thorough determination of the behaviour and properties of interest of the material;
- compliance testing, consisting of (periodic) testing to determine compliance with specific conditions or reference conditions e.g. legislation or contract;
- on-site verification to establish consistency with other tests or other formulated documentation.

4.2.4 Identify constituents to be tested

The sampling plan shall, within the boundary conditions of the appropriate test level, identify the characteristics or constituents to be investigated, based when applicable on:

- the origin of the material and therefore relevant target constituents;
- intended end-use of the material;
- total volume of material (the population) to be assessed;
- the requirement to conform to local, national, or European regulations;
- information and requirements specified in contract;
- information ascertained from knowledge of process or material involved;
- information agreed between involved parties.

The target constituents shall be specified in the sampling plan.

4.2.5 Background information on material

4.2.5.1 Site details

The sampling plan shall identify details of the site location and restrictions to access. Any additional access problems encountered during sampling shall be recorded in the sampling record in order that any impacts on the quality of the collected samples can be evaluated.

4.2.5.2 Production process or origins of material

The sampling plan shall contain a general description of the circumstances in which the material occurs, based on either:

- direct knowledge of the primary process to which the material is related;
- inspection of the process to which the material is related, or where the material originated.

4.2.5.3 Material type and dimensions

The sampling plan shall identify relevant information relating to the type of material and dimensions of the batch or land area to be sampled, e.g.

For sludge solids and treated biowastes:

- stream or batch;
- if static, contained or in heaps;
- if static, type of container : truck, silo, etc.;

— quantity, measured in kilos, tonnes, etc.;

— number of containers.

For liquids:

— stream (e.g. in a pipe) or contained;

— if static, type of container: tank, lagoon etc.;

— size, measured in litres or cubic metres, etc.;

— physical and chemical characteristics.

For soils in the landscape:

— area, measured in hectares;

— depth, measured in centimetres;

— land use phase, e.g. ploughed, fallow, or standing crop;

— previous crop and next crop.

The sampling plan should list all known physical, chemical, and biological characteristics of the material that are relevant, including significant hazards. The sampling plan shall identify operational procedures that could alter the chemical, biological or physical properties of the material and affect the characteristics of the sample that are to be measured.

In the absence of sufficient information, a preliminary investigation shall be instigated.

NOTE General information on material to be sampled might be available. This information might include details on whether the material is granular, monolithic, shaped, liquid, etc.; is available in stream, in static form or in batches, etc. Some indication of the liquid content/ physical condition of the material can be helpful in the development of a sampling plan, e.g. the liquid content of sludges can vary greatly.

4.2.6 Health and safety

The sampling plan shall identify all safety precautions that need to be adhered to. For further information on general health and safety aspects of sampling see ISO 10381-3:2001.

A risk assessment shall be carried out prior to undertaking the work and safety precautions shall be identified to minimize risks.

NOTE Compliance with this European Standard does not in itself confer immunity from (inter)national health and safety regulations and site specific regulations.

4.2.7 Select sampling approach

4.2.7.1 General

The sampling plan shall take into account the variability within the sub-population and, if detailed, the necessary degree of uncertainty in the results when specifying a sampling approach. The necessary degree of uncertainty in the results shall be agreed with the involved parties except when it is specified in legislation or by the regulator. The selected approach will dictate, how, when and where the samples are to be taken to obtain, where possible, a representative and manageable quantity of sample that meets all testing requirements.

The sampling plan shall specify either ‘probabilistic’ sampling or ‘judgemental’ sampling depending on the sampling objective. The sampling plan shall include a justification for the selected sampling approach.

4.2.7.2 Probabilistic sampling

The basis of probabilistic sampling is that each element within the population to be assessed has an equal chance of being selected by the sampling process.

Where the selections are made independently, this approach is known as ‘simple random sampling’. Another common type of probabilistic sampling, whereby the intervals between the samples are regularly spaced once the first sample has been selected at random, is known as ‘systematic sampling’.

NOTE 1 For further information on the choice of an appropriate sampling approach and on the selection of an appropriate sampling pattern see prCEN/TR xxxx-1.

Probabilistic sampling is necessary to obtain a quantifiable level of reliability of the results for the population being tested. Therefore probabilistic sampling should be chosen in preference to judgemental sampling unless it is impracticable to do so.

NOTE 2 Probabilistic sampling can be performed stepwise. The number of samples can be increased by taking additional random samples, and so increasing the confidence in the results generated.

4.2.7.3 Judgemental sampling

The basis of judgemental sampling is that elements of a population are selected based on prior knowledge rather than probability-based sampling. The term ‘convenience’ or ‘ad hoc’ sampling is sometimes applied to this type of sampling.

The most common reason for selecting judgemental sampling is that probabilistic sampling (i.e. with an appropriate uncertainty for the purpose of the testing programme) from the whole population is not possible, given the available resources or practical restraints.

The method is not random and it cannot be guaranteed to be representative. The validity of the judgement cannot be proven, so the reliability of the test results cannot be quantified. Confidence in the results of judgemental sampling is highly dependent on the quality of the background information, on which any judgement is based.

NOTE 1 Further information on the use of judgemental sampling is provided in prCEN/TR xxxx-1.

NOTE 2 For specific sampling situations there might be a preference to judgemental sampling deviating basically from probabilistic sampling, for example in spot sampling.

The use of judgemental sampling will nearly always result in samples being taken from a sub-population that is substantially more restrictive than the whole population. But within that sub-population it is feasible that the sampling could be probabilistic. This means that provided that the sampling is indeed probabilistic for that sub-population, the results will still be representative for the sub-population sampled (within which the conditions for probabilistic sampling are met), though it still runs the risk of exhibiting a larger uncertainty for the whole population.

In contrast when sampling from the sub-population is undertaken on the basis of accessibility, expediency, cost, efficiency, or for other reason not directly concerned with sampling parameters, there is no way of assessing the uncertainty in any subsequent data that results from the sampling steps.

NOTE 3 The adoption of judgemental sampling at this level therefore can have severe financial and/or environmental consequences.

4.2.7.4 Defining the approach

The sampling plan shall identify when, where, and how samples shall be taken and collected to ensure that the sample is appropriate to meet the sampling objectives. The quantity of material sampled shall be sufficient to complete all other steps in the testing programme, including sample preparation, quantification, and storage in cases where retesting might be required. If required, the sampling plan shall specify provision for replicate samples.

The sampling approach shall address, as a minimum:

- increment size;
- sample size;
- use of individual samples or composite samples;
- number of samples;
- sampling locations;
- sampling frequency (when valid) (with dates clearly specified).

NOTE 1 Individual sample size is dictated by the grain size, heterogeneity, and the volume of material to be sampled.

NOTE 2 Where several target constituents are identified, the sampling operation should be designed so that the constituents most affected by the adopted sampling have the most influence. If this is not possible, e.g. the required precision for each constituent cannot be achieved, separate sampling operations for each group of constituents should be identified.

NOTE 3 Information on the determination of the increment and sample size, and the number of samples linked to a specified level of uncertainty is given in prCEN/TR xxxx-1.

4.2.8 Identify sampling technique

4.2.8.1 General

The sampling plan shall identify the technique(s) selected to collect the sample, and shall identify the consequences of deviation from the designated sampling technique or equipment.

NOTE Information on the type and use of sampling techniques is given in prCEN/TR xxxx-2.

4.2.8.2 Procedures for sub-sampling in the field

The sampling plan shall identify any requirements for the production of composite samples from incremental samples and for sub-sampling in the field. The methods required to complete these procedures to produce the laboratory sample(s) shall be stated in the sampling plan.

NOTE Information on methods to reduce the sample size for presentation to the laboratory is given in prCEN/TR xxxx-3.

4.2.8.3 Procedures for packaging, preservation, storage, transport and delivery

The sampling plan shall identify the procedure(s) selected for packaging, preservation, storage, and transport of the laboratory sample, taking into account the requirements the other steps in the testing programme.

NOTE Information on methods for sample packaging, preservation, storage, transport and delivery is given in prCEN/TR xxxx-4.

5 Sampling

5.1 Taking the sample

Before sampling begins all elements of the sampling plan shall be checked and a visual description of the material to be sampled shall be made and checked against any information in the sampling plan.

A record shall be made of the location and status of the material to be sampled.

NOTE This information could be supplemented with photograph(s) of the sampling location.

Unforeseen practical considerations can make it necessary to change the sampling plan. The severity of the required change will have different consequences:

a) changes that do not affect the objective of the testing programme in that the required samples are obtained and remain representative at the pre-defined level. This level of change can be undertaken on-site;

b) changes which (could) affect the objective of the testing programme (e.g. resulting in a different quantity of samples / results). This level of change cannot be undertaken on-site. The effect of the required change on the testing programme shall be assessed and the sampling plan shall be redrafted.

It is important that the person undertaking sampling is in a position to know what changes are possible without affecting the testing programme.

The sample(s) shall then be taken and collected in accordance with all instructions provided in the sampling plan.

All identified safety requirements shall be adhered to during the sampling exercise.

Having obtained the sample, it shall be stored in a suitable sample container immediately or after appropriate sub-sampling in the field.

On completion of sampling a sampling record and, if necessary, a chain of custody form shall be completed (see 6.2).

5.2 Delivery

The sample(s) shall be delivered to the testing laboratory. The address of the testing laboratory shall be specified in the sampling plan.

A copy of the sampling record and, if necessary the chain of custody form, shall be made available to the laboratory.

NOTE Information on procedures for sample delivery is given in prCEN/TR xxxx-4.

6 Reporting

6.1 Document sampling plan

The final specification for the testing programme shall be documented in the sampling plan, an example of which is provided in Annex A.

The complexity of the sampling plan will vary with the testing programme. As a minimum it shall record information that will enable interpretation of the results in an appropriate context and enable a comparable sampling programme to be repeated, if required, in the future.

6.2 Sampling Record

On completion of sampling a sampling record shall be completed. All changes to the agreed final sampling plan shall be recorded in the sampling record, an example of which is provided in Annex A.

The sampling plan shall specify that the following information is recorded in the sampling record:

a) copy of the sampling plan;

b) all procedures and observations from the sampling exercise;

c) all variations from the intended sampling plan (including authority for the variations);

d) unique sampling number (e.g. reflect site location, material and date);

e) date and time of sampling;

f) place and point of sampling (include e.g. the depth of sampling [top, bottom], distance from the bank [of lagoon]);

g) persons present (if witnesses are present, including name and address);

h) difficulty of access (obstacles), including information on those areas or volumes of the material that are sampled or not sampled;

i) condition of material:

   — colour;

   — consistency/homogeneity/grain size (uniform or diverse);

   — observations during sampling;

j) details of on-site determinations (e.g. pH and conductivity measurements);

k) identify sample amount (estimate volume and mass);

l) sub-sampling methodology (recording which samples are mixed, in what volumes, time and date) (if undertaken);

m) name of sampling personnel;

n) place, date and signature.

The sampling plan shall specify that any measurements carried out on the sample in the field shall be recorded in the field data and appended to the sampling record.

If specified in the sampling plan, an analytical request form shall be completed and accompany each set of samples submitted for testing. An example of an analytical request form is given in Annex A.

NOTE 1 A sampling record is used to record all procedures and results from the sampling exercise. The sampling record will reiterate much of the sampling plan but contains space for recording visual observations made in the field and any deviations from those procedures identified in the sampling plan.

NOTE 2 Whilst it is good practice that the sampling plan specifies the completion of a chain of custody form for each sampling exercise, at the time of sampling, this is not always necessary. An example of a chain of custody form is given in Annex A.

NOTE 3 It is good practice that the sampling plan specifies that a copy of the completed sampling record and chain of custody form be made available with each sample.

Annex A
(informative)

Table A.1 – Example of a sampling plan

SAMPLING PLAN	
GENERAL INFORMATION	
Sampling plan completed by:	On behalf of:
Client (Company): Contact:	Material producer: Contact:
Other involved parties:	
Sampling to be carried out by (company):	Specify name of sampler:
SAMPLING OBJECTIVE	
MATERIAL	
Type of material:	Location: (address)
Form and nature of material:	
Detailed specification:	
Identify access problems that might affect sampling programme:	
Identify sampling approach and identify type of sampling:	
SAMPLING METHODOLOGY	
Specify detailed sampling location: (e.g. a specific chute or conveyor or pile)	
Define sub-population or consignment to be sampled:	
Define place and point of sampling: (include e.g. the depth of sampling [top, bottom], distance from bank [of lagoon])	
Specify date and time(s) of sampling:	
Specify persons to be present (record name and address):	
Identify sampling technique:	
Identify equipment:	
Specify no. of increments/samples to be collected:	
Specify increment size/sample size:	
Detail requirements for on-site determinations:	
Identify sample coding methodology:	
Identify safety precautions:	
SUB-SAMPLING	
Detail procedure:	
PACKAGING, PRESERVATION, STORAGE AND TRANSPORT REQUIREMENTS	
Packaging:	
Preservation:	
Storage:	
Transport:	
ANALYTICAL LABORATORY	
Company details: Contact:	Delivery Date:
Analysis required:	

Table A.2 – Example of a sampling record

SAMPLING RECORD	
Sample code: (Reflect site location, material type and date of collection)	
Date of sampling:	
Signature of sampler:	
GENERAL INFORMATION	
Producer: Contact:	Client (company): Contact:
Location of sampling:	Carried out by (company): Sampler:
SAMPLING OBJECTIVE	
MATERIAL	
Type of material:	Estimated moisture content:
Description:(colour, odour, consistency/homogeneity/grain size – uniform or diverse)	
SAMPLING METHODOLOGY	
Describe/define sub-population or consignment sampled:	
Place and point of sampling:	
Access problems that affected areas or volumes of material sampled:	
Date and time of sampling:	
Persons present (record name and address of witnesses present where appropriate):	
Procedure (describe procedure adopted):	
Equipment used:	
Number of increments/samples collected:	
Increment size/sample size:	
Observations during sampling:	
Details of on-site determinations: (if undertaken complete field record sheet and append to sampling record)	
Safety measures taken:	
SUB-SAMPLING & PRE-TREATMENT	
Identify location: e.g. on-site or fixed laboratory facility (describe whether open air or enclosed)	
Procedure:	
PACKAGING, PRESERVATION, STORAGE AND TRANSPORT DETAILS	
Packaging:	
Preservation:	
Storage:	
Transport:	
DEVIATIONS FROM SAMPLING PLAN	
Detail:	
DELIVERY TO ANALYTICAL LABORATORY	

Company: Delivery Date:	
Received by:	Signature:

Table A.3 – An example chain of custody form

Title: Sample Custody Form	
Issued by:	
Contact name & number:	

External laboratories: Please attach a copy of this form with reported results

Site visited: Site owner:	Site address: Tel no. Contact name:
Analysis subcontracted to: Laboratory name: Quotation ref. No.	Address: Tel: Contact name:
Carrier:	Address: Tel. No:
Sample collected by: Name: Signature: Sampling protocol used:	Date: Location:
Samples delivered by: Name: Signature: Date: Time:	Samples accepted at laboratory by: Name: Signature: Date: Time:
Sample description:	Sample hazard rating: (Use relevant national standard)
Additional comments/instructions:	

External laboratory sample job no:
Date sample received:
Sample storage time:
Date analysis undertaken:

Table A.4 – An Example Sample Analysis Request Form

Protocol ref. no.
Title: Sample Analysis Record
Issued by:

Analysis required by: [Client name]		Date:	

Location:	

Sample Codes	Determinands	Minimum detection limit required (Specify units)	Bottle type G = Glass P = Polyethylene	Pre-treatment undertaken e.g. filtering or preservation Y = Yes N = No	Comments

Completed by:
Reported detection limits and measurement uncertainty:

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[8] EN 12832:1999 Characterisation of sludges – Utilisation and disposal of sludges – Vocabulary

[9] ISO 10381-3:2001, Soil quality – Sampling – Part 3: Guidance on safety

[10] prCEN/TR XXXX-1: Sludge, treated biowaste, and soils in the landscape – Sampling – Part 1: Guidance on selection and application of criteria for sampling under various conditions

[11] prCEN/TR XXXX-2: Sludge, treated biowaste, and soils in the landscape – Sampling – Part 2: Guidance on sampling techniques

[12] prCEN/TR XXXX-3: Sludge, treated biowaste, and soils in the landscape – Sampling – Part 3: Guidance on sub-sampling in the field

[13] prCEN/TR XXXX-4: Sludge, treated biowaste, and soils in the landscape – Sampling – Part 4: Guidance on procedures for sample packaging, storage, preservation, transport and delivery

[14] prCEN/TR XXXX-5: Sludge, treated biowaste, and soils in the landscape – Sampling – Part 5: Guidance on the process of defining the sampling plan