



*We start at
10:00 CET*

Addressing environmental issues in testing standards

CEN-CENELEC Guide 33

Webinar of 2016-11-17

Addressing environmental issues in testing standards

Your presenters



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Addressing environmental issues in testing standards



Content

- Reasons for the development of the guide
- How to use the CEN-CENELEC Guide 33?
 - The guide step by step
 - Examples
- Key learning points
- Q & A

The rationale of the development of the guide

The rationale of the development of the Guide



- Technical Committees needed **more guidance on addressing environmental aspects in testing** standards
- CEN/SABE initiative - **development of a supplement to CEN Guide 4** “Guide for addressing environmental issues in product standards (2008)”
- **CEN/SABE Environmental aspects in Testing Standards Project Team**
- Project Team - **involves CENELEC**
- **CEN-CENELEC Guide 33** [“Guide for addressing environmental issues in testing standards”](#) – published in April 2016
- CEN-CENELEC Guide 33 – offered to **ISO and IEC**

How to use the CEN-CENELEC Guide 33

Use of CEN-CENELEC Guide 33



CEN Guide 4 addresses environmental issues in product standards, e.g. Clause 3 “Basic principles and approaches” and Clause 4 “Environmental aspects”.

Similarly, testing standards should address and reduce the environmental impacts of testing. This guide is to give specific guidance to standard writers involved in drafting and revision of testing standards, and encourage them to:

- **identify and understand basic environmental aspects and impacts related to testing;**
- **determine when environmental aspects need to be addressed in a testing standard.**

Scope of Guide 33



This Guide applies to the **testing procedure**.

Aspects not in scope (unless specified as part of the testing procedure):

- operating conditions of laboratories;
- environmental impact of test reports (e.g. use of paper).

Aspects considered already through use of CEN Guide 4:

- testing that is part of the production process;
- life cycle of testing equipment.

Scope of Guide 33



This Guide is to help **reduce environmental impacts** of testing by providing guidance on how to address environmental issues in **testing standards**.

Not in scope:

- Environmental improvement of the **product** to be tested are addressed in CEN Guide 4;
- **Climate change considerations** are dealt with in “CEN/CENELEC Guide 32 addressing climate change adaptation in standards”;
- **Workers protection** and **Occupational health and safety** conditions, these are addressed e.g. in labour laws.

Content of the Guide



1. Scope in detail
2. Terms and definitions
(e.g. product, item under test, sample)
3. General considerations
(examples, which aspects to address where)
4. Stages of testing
(incl. illustration of testing stages as a cycle)
5. Environmental considerations on testing per stage
(incl. checklist for testing standards)
6. Annex A: Example testing standards
7. Annex B: Example legislations and guides
8. Bibliography

General considerations



What do to: Testing standards should

- address environmental impacts of the testing.
- describe **tolerances** and required level of **accuracy, reliability and repeatability,**
- taking into account **feasibility, affordability and environmental impact** of the selected option.

Outcome:

- Allow selection of the least impactful sampling, sample preparation, test, test equipment and disposal.
- Understand limitations of testing equipment (note e.g. required calibration of testing equipment).

General considerations



What do to: Testing standards should

- take into account the environmental impacts of
 - the usage of the **item under test** during the test,
 - the usage of **test equipment**, and
 - the **environmental conditions** specified by the test method.

Outcome:

- Allow a full “test cycle view” of impacts of testing.

Example:

- A car testing with specific climatic test cycles:
fuel consumption of car + energy for test equipment,
including energy for climate conditioning.

General considerations



What do to: Testing standards should

- **Consider automation** in sampling, sample preparation and testing.

Outcome:

- reduce human exposure to harmful effects (e.g. chemicals),
- **reduce human error** which might lead to a higher risk of harmful emissions to the environment or a higher risk of the tests having to be repeated, causing additional emissions.

Note: Balance potential impacts from

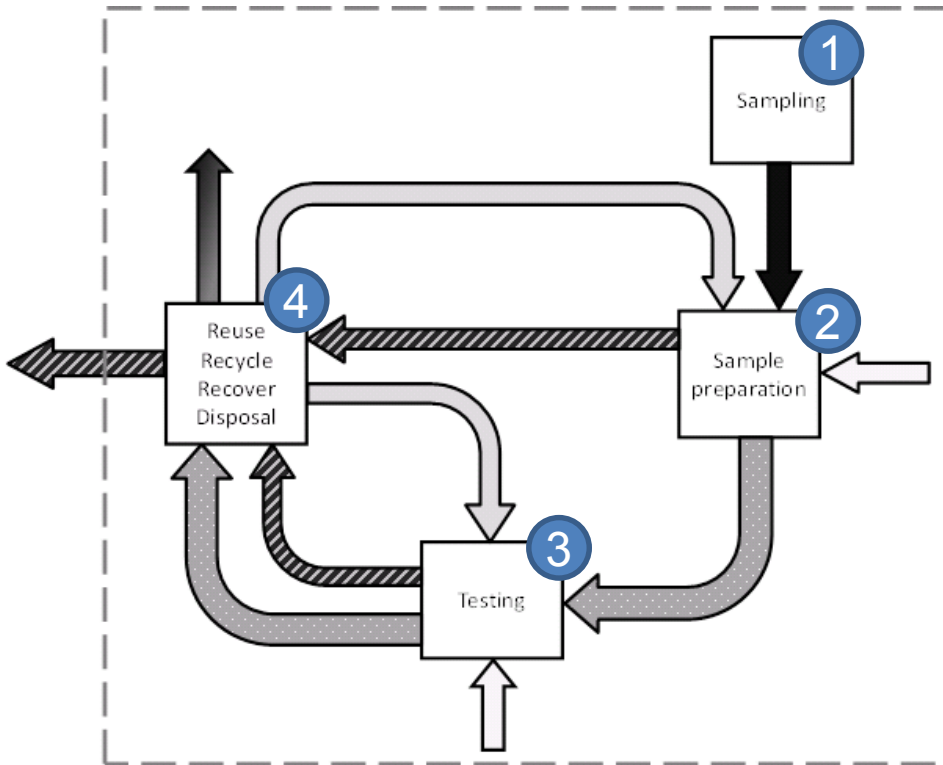
- manual procedures and above actual and potential effects
- and (additional) energy and consumables of automation.

Practical ideas










- **Choose best test method** in case of alternative methods;
- Replace actual tests by **simulation or mathematic models**;
- Consider **balance** between **in-situ and lab-testing**;
- Apply **statistical processes** instead of sample testing;
- Use **non-destructive testing**, when possible;
- **Use gravimetric** instead of volumetric methods;
- Consider **resource efficiency** aspects, e.g. sample size;
- **Training/expert support** on environmental issues of tests;
- Optimize **testing conditions** to reduce e.g. sample size, test duration, test intensity, consumption of test agents, consumption of energy, etc.

Stages of testing



Key

-  Sample – fresh
-  Sample – RRR
-  Sample – prepared/tested
-  reagent/energy/consumable – fresh
-  reagent/energy/consumable – RRR
-  Residues
-  Scope of this guide

RRR = reused, recycled, recovered

Testing stage: Sampling



Environmental improvements by

- **avoiding sampling** by direct measurement/on-line monitoring (e.g. pH testing in-situ instead of sampling and lab-testing);
- **reduction of sample size** in order to reduce amount of waste, chemicals, energy, etc.;
- sampling with **minimum impact** on the environment (e.g. combination of multiple sample collections in one trip);
- select appropriate tools and containers to **ensure the quality of the sample** with minimum environmental impact.

Note limitations of volumetric compared to gravimetric sizing.

Testing stage: Preparation



Environmental improvements by

- promote the most environmental friendly **storage and preservation** method;
- reduce sample preparation **size**;
- reduce storage **time**;
- select **low impact testing agents**;
- reduce impacts of testing agents by **reuse or recycling**;
- **homogenization** of samples might reduce the amount of the tests, as it ensures **representativeness**;
- minimize **emissions and spillages**.

Testing stage: Test



Environmental improvements by

- reduce **amount of testing agents**;
- **reuse, recycling or recovery** of testing agents;
- **selection** of testing agents with minimum environmental impact;
- **minimize spillages** of testing agents;
- reduction of the **test duration**;
- **reusable testing equipment**, accessories, consumables;
- reduce emissions by improving the efficiency of tests and use the most efficient testing equipment;
- try to assess multiple parameters in one test.

Note limitations of volumetric compared to gravimetric measuring.

Testing stage: Reuse, recycling, recover, disposal



Environmental improvements by

- **separate waste streams** to promote easier reuse, recycling, recovery or disposal;
- **reuse, recycle or recover** samples or testing agents and equipment;
- **avoiding** the release of **substances with adverse effects** on health or the environment;
- **neutralizing testing agents** for disposal (e.g. pH-value);
- minimizing the ability of the agents to react;
- **cleaning** of testing area.

Note: Good laboratory practice (GLP) should be respected.

Environmental Checklist



Use the environmental checklist template to assess whether

- the proposed testing standard **covers relevant environmental aspects of testing** and, if so, **how** they are dealt with in the draft.
- The environmental checklist may be **adapted** before use.
- The checklist should be completed, updated as appropriate and **attached to drafts** of a standard.
- The environmental checklist could be published as an **appendix** of the standard.
- In case of alternative test methods use **one checklist for each method**, to evaluate and select the best method.

Environmental Checklist



How to use the Environmental Checklist:

- identify each **environmental aspect**, adapt the template;
- Answer “yes” if it’s a significant environmental aspect of the testing and “no” if there is no significant environmental aspects;
- in each box with a "yes", identify whether this aspect of testing can be **addressed** in the standard and mark it;
- note the numbers of the clauses in the standard, where the environmental aspects of testing are addressed;
- Provide additional information in a **“comments”** box.

Environmental Checklist

CEN-CLC Guide 33:2016 (E)

Table 1 — Environmental checklist for testing standards

Document number (if available):		Title of standard:		TC/SC/WG number:	
Work item number (if available):		Version of the environmental checklist:		Date of last modification of the environmental checklist:	
Environmental aspect	Stages of testing				
	Sampling	Preparing the test	Test	Reuse, recycling, recover or disposal of sample, testing agents and consumables	

	Product sample	Sample from the environment (e.g. soil, water)	Physical preparation of the sample	Preparation of testing agents and materials	Application of testing agents/material	Item under test	Use/cleaning of testing equipment	Use of testing agents	Use of consumables	Reuse	Recycling/Recovery	Disposal
Inputs												
Materials												
Water												

Examples



See Guide Annex A for examples of testing standards.

See Guide Annex B for examples of legislation and guides.

Key learning points



- 1) Take a holistic view on your testing standard.
- 2) Describe tolerances and required level of accuracy, reliability and repeatability, taking into account feasibility, affordability and environmental impact of the selected option.
- 3) Make use of the checklist to address all relevant aspects.
- 4) Efficiency improvements are likely to optimize user acceptance as well.



Addressing environmental issues in testing standards



Time for questions



Addressing environmental issues in testing standards



**Please fill out
the short exit survey !**

It will take 2 minutes

THANK YOU !



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