SLOVENSKI STANDARD
SIST EN ISO 18557:2020

01-maj-2020

Načela za opisovanje lastnosti zemljin, zgradb in infrastruktur, kontaminiranih z radionuklidi, za potrebe sanacije (ISO 18557:2017)

Characterisation principles for soils, buildings and infrastructures contaminated by radionuclides for remediation purposes (ISO 18557:2017)

Charakterisierungsgrundsätze für mit Radionukliden kontaminierte Böden, Gebäude und Infrastrukturen zu Sanierungszwecken (ISO 18557:2017)

Principes de caractérisation des sols, bâtiments et infrastructures contaminés par des radionucléides, à des fins de réhabilitation (ISO 18557:2017)

Ta slovenski standard je istoveten z: **EN ISO 18557:2020**

ICS:

13.020.40	Onesnaževanje, nadzor nad onesnaževanjem in ohranjanje	Pollution, pollution control and conservation
13.280	Varstvo pred sevanjem	Radiation protection

SIST EN ISO 18557:2020 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 18557

February 2020

ICS 13.020.40; 27.120.30

English Version

Characterisation principles for soils, buildings and infrastructures contaminated by radionuclides for remediation purposes (ISO 18557:2017)

Principes de caractérisation des sols, bâtiments et infrastructures contaminés par des radionucléides, à des fins de réhabilitation (ISO 18557:2017)

Charakterisierungsgrundsätze für mit Radionukliden kontaminierte Böden, Gebäude und Infrastrukturen zu Sanierungszwecken (ISO 18557:2017)

This European Standard was approved by CEN on 6 January 2020.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

The text of ISO 18557:2017 has been prepared by Technical Committee ISO/TC 85 "Nuclear energy, nuclear technologies, and radiological protection" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 19361:2020 by Technical Committee CEN/TC 430 "Nuclear energy, nuclear technologies, and radiological protection" the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2020, and conflicting national standards shall be withdrawn at the latest by August 2020.

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

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Endorsement notice

The text of ISO 18557:2017 has been approved by CEN as EN ISO 18557:2020 without any modification.

INTERNATIONAL STANDARD

ISO 18557

First edition
2017-09

Characterisation principles for soils, buildings and infrastructures contaminated by radionuclides for remediation purposes

Principes de caractérisation des sols, bâtiments et infrastructures contaminés par des radionucléides, à des fins de réhabilitation

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Foreword

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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).

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For an explanation on 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 the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 85, *Nuclear energy, nuclear technologies, and radiological protection*, Sub-committee SC 5, *Nuclear fuel cycle*.

Introduction

The remit of WG 13 covers all aspects of the decommissioning phase, and thus it interfaces with other Sub-Committees and Working Groups whose work intersects with this phase.

Figure 1 below indicates some of the topics that could be included in SC 5 and/or WG 13. It provides a view of how the scope of this ISO Standard links with both generic and more detailed topics.

This document contains both guidance and references to documents which may be useful in relation to this work area. Read in conjunction with the supporting references, it gives a generic approach to the topic. It also may have connections with many other blocks across the whole diagram (e.g. Decommissioning strategy, Waste Management, Site remediation, Dismantling/Demolition, Cost issues, Safety).

Moreover, it was not intended to establish this document as a stand-alone document. When a member country already has national tools in this field (e.g. regulatory requirements, national standards), these requirements and national standards are applicable in conjunction with this document.

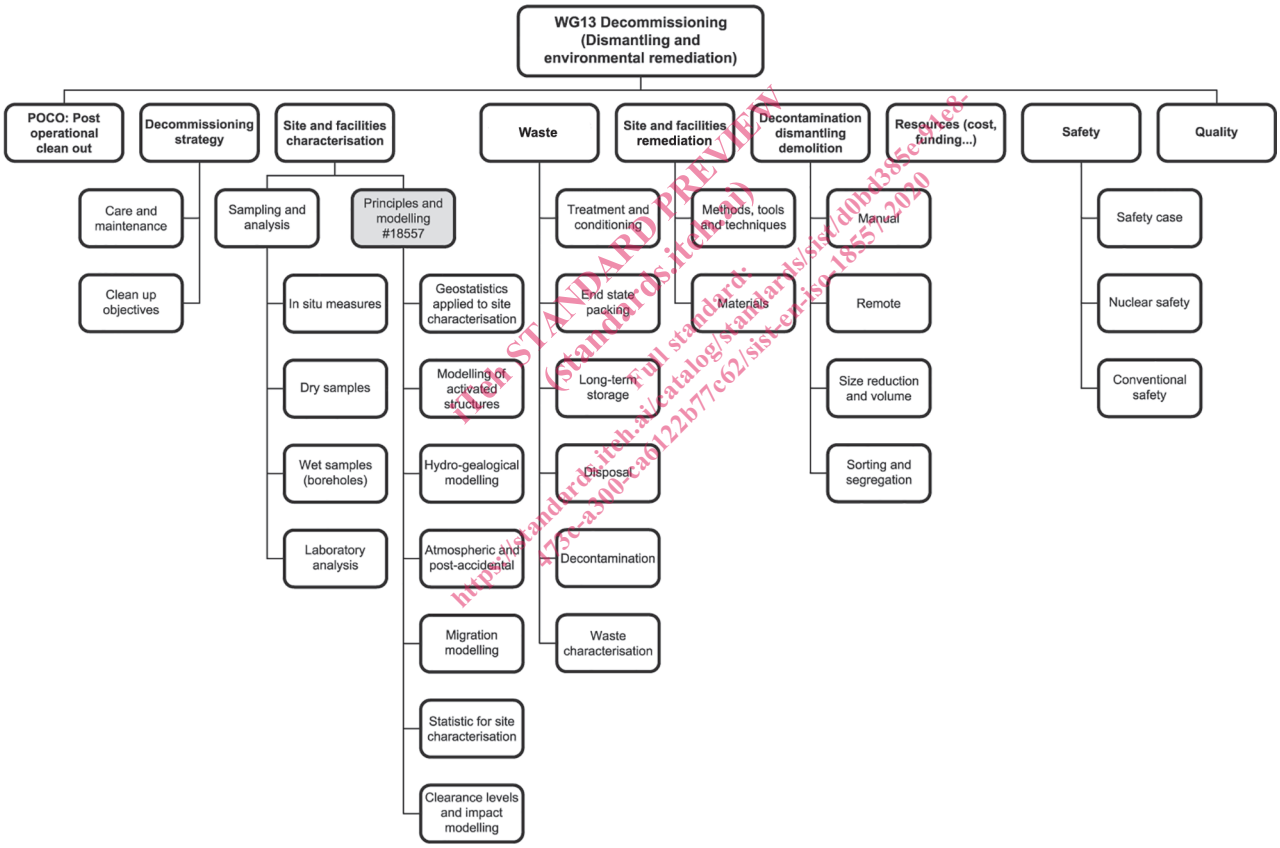

Figure 1 — Indicative chart of the topics included in WG 13, showing how this document is linked to other topics

This work stream structure can be used to clarify the scope of WG publications and to ensure that areas of joint interest between ISO teams and working groups are coordinated. The ISO shadow committee for a member body identifies proposals for further work and, if appropriate, submits them to the Working Group for international consideration as potential new work items. Figure 1 can be a useful prompt in this process. This document is part of an overall decommissioning and environmental remediation strategy including, for example, the monitoring and/or remediation of groundwater which might be addressed in a new work item.

Since the discovery of radioactivity at the end of the 19th century, numerous laboratories and facilities have dealt with radioactive substances (notably radium). In addition, the development and considerable expansion of the nuclear industry, both civilian and defence, has generated many nuclear facilities built since the 1940s, resulting today in legacy sites.

More recently, nuclear operators and state organisations have intensively undertaken the dismantling and remediation of shutdown nuclear facilities. Remediation projects also concern former mining sites, other legacy sites and industrial sites having produced NORM (Naturally Occurring Radioactive Material) and TENORM (Technologically Enhanced NORM) waste, where the main issue is the large volume of waste involved. The aim is primarily to demonstrate that the entire nuclear cycle is well managed. A large number of issues need to be considered:

— The nuclear regulatory framework did not exist at the beginning and it has evolved over time (release procedures, health and safety, environmental considerations…). In addition, there is more and more stakeholder involvement today, and this needs to be considered at the early stages of any project.

— The availability of waste management facilities and disposal sites varies between countries and through time. The classification based on activity levels: e.g. very low level waste (VLLW), low level waste (LLW), intermediate level waste (ILW), high level waste (HLW) and nuclide half-lives (short-lived or long-lived radionuclides) impacts remediation projects. These factors sometimes result in the partial clean-up of sites, due to the absence of a final solution for waste disposal. Waste may also have had to be temporarily stored on site for economic reasons.

— Remediation costs and schedules are optimized and rationalized using a graded approach, as these projects are generally expensive and time consuming. They also need to be securely funded and planned.

— In order to optimize waste categories, volumes and costs, characterization is a crucial issue enabling the best knowledge of the radiological state of the site (soils, buildings and infrastructures) to be obtained before making project decisions.

Lessons learned from the first sites to be remediated have demonstrated that poor characterization (based on incomplete historical information and too limited a number of data points or samples) strongly impacts the success of a remediation project, with inappropriate choices having been made (over-estimation of volumes and over-categorization of waste, unexpected contamination).

As a consequence, it is now recognized that accurate characterization is the key to successful dismantling and remediation projects. There are many characterization steps necessary throughout a project, each with specific objectives.

The main potential improvement concerns the sampling effort, sample representativeness and assessment of activity levels assessments. Combined with data analysis and processing, all the uncertainties involved are combined to deliver a result with a corresponding confidence interval. Therefore the characterization strategy and programme should be set well before the actual measurements, to ensure efficiency.

The preparation of any nuclear facility's remediation programme requires knowledge of its operational history. This covers the entire period from design, licensing and through to final shutdown, in order to establish the nature and location of potential or known radioactive contamination, together with possible associated chemical products, with the appropriate accuracy. The overall remediation strategy requires an estimation of the quantity and the volume of waste to be produced, and an assessment of its level of contamination. This enables appropriate optimized waste management.

In addition, a final characterization is compulsory for sites to be released and/or re-used in order to demonstrate compliance with remediation objectives (clearance levels, if any, or a release threshold set by, or agreed with, the regulatory body).

This document outlines the principles of characterization for remediation purposes of soils, buildings and infrastructures contaminated by radionuclides and possible associated chemical pollutants.

