

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

G. Granier

► To cite this version:

G. Granier. Characterisation principles for soils, buildings and infrastructures contaminated by radionuclides for remediation purposes. International Organization for Standardization (ISO) - Technical Committee 85 - Subcommittee 5 - Working Group 13, May 2015, Buenos Aires, Argentina. cea-02500823

HAL Id: cea-02500823 https://cea.hal.science/cea-02500823

Submitted on 6 Mar 2020 $\,$

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers. L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés. DE LA RECHERCHE À L'INDUSTRIE

MEETING ISO/TC85/SC5 BUENOS AIRES JUNE, $26^{TH} - 28^{TH}$, 2015

WG 13 DECOMMISSIONING

G GRANIER





www.cea.fr

DEN/DRCP/CETAMA





DIS 18557

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

Principles for sampling strategy and characterisation to assess the contamination of soils, buildings and infrastructures, prior to remediation and/or to check that the remediation objectives have been met (final release surveys).

- Applications to site remediation after major accident, in this case input data will be linked to the accident.
- **Complements** existing Standards, notably concerning sampling, sample preservation and transport, treatment and laboratory measurements, but also on those related to insitu chemical and radiological measurements.
- But this Standard does not apply to sampling and characterisation of waste conditioned or unconditioned, waste package.

2013



NEW WORK ITEM	W WORK ITEM PROPOSAL	
Closing date for voting	Reference number (to be given by the Secretariat)	
Secretariat	ISO/TC 85 / SC 5 N 587	
6		

A proposal for a new work ten within the scope of an existing committee shall be submitted to the secretariat of that committee with a copy to the Central Secretariat and in the case of a subcommittee, a copy to the secretariat of the parent technical committee. Proposals not within the scope of an existing committee shall be submitted to the secretariat of the ISO Technical Management Board.

The proposer of a new work item may be a member body of ISO, the secretariat itself, another technical committee or subcommittee, or organization in factor in the Technical Management Board or one of the advisory groups, or the Secretary-General.

The propositive of the P-members of the technical committee or subcommittee for voting, and to the O-members for information.

IMPORTANT NOTE: Proposals without adequate justification risk rejection or referral to originator.

Guidelines to proposing and justifying a new work item are contained in Annex C of the ISO/IEC Directives, Part 1.

Proposal (to be completed by the proposer)

Title of the proposed deliverable. (in the case of an amendment, revision or a new part of an existing document, show the reference number and current title)		
English title	Sampling and characterization of sites, land, buildings and infrastructures contaminated by radionuclides or chemical products for remediation purposes	
French title (if available)	Méthodologie d'échantillonnage et de caractérisation pour la réhabilitation des bâtiments, infrastructures et sols radiologiquement et chimiquement contaminés	

Partners : Canada, England, Sweden, Italy and France





- January 2013 NWIP accepted.
- June 2013 Meeting ISO WG13 « Decommissionning » du TC 85 à Atlanta
- **2013-2014 Writing document to reach stage CD Comettee Draft**
- 2014 Ballot CD (Draft International Standard) August 2014

Result of voting

Ballot Information	
Ballot reference	ISO/CD 18557
Ballot type	CD
Ballot title	Sampling and characterization of sites, land, buildings and infrastructures contaminated by radionuclides or chemical products for remediation purposes
Opening date	2014-07-08
Closing date	2014-09-08
Note	

CD BALLOT RESULT

Answers to Q.1: "Do you agree to the circulation of the draft as a DIS?"

9 x	Yes	Bulgaria (BDS) China (SAC) France (AFNOR) India (BIS) Iran, Islamic Republic of (ISIRI) Korea, Republic of (KATS) Pakistan (PSQCA) Ukraine (DTR) United Kingdom (BSI)
3 x	Yes with comments	Russian Federation (GOST R) Sweden (SIS) United States (ANSI)
2 x	No	Canada (SCC) Netherlands (NEN)



	Comments from	Voters		
Member:	Comment:		Date:	
Canada (SCC)	Comm	ent File	2014-08-22 18:11:57	
CommentFiles/ISO_CD	18557_SCC.doc			
Italy (UNI)	Comment		2014-09-03 14:47:41	
no reply from those cond	erned			
Netherlands (NEN)	Comm	ent File	2014-09-01 14:40:15	
CommentFiles/ISO_CD	18557_NEN.doc			
Russian Federation (GOST R)	Comm	ent File	2014-09-05 12:40:40	
CommentFiles/ISO_CD 18557_GOST R.doc				
file:///C /Users/GG102022/AppDat D_18557.zip/ISO_CD%2018557/Cor 18557_GOST R.doc	/Local/Temp/Temp1_ISO_C ImentFiles/ISO_CD	ent File	2014-08-29 13:26:21	
CommentFiles/ISO_CD	18557_SIS.doc			
United States (ANSI)	Comm	ent File	2014-09-05 21:51:46	
CommentFiles/ISO_CD	18557_ANSI.doc			



- November 2014 further standardisation work in order to integrate comments
- June 2015
 - Registration DIS (Draft International Standard) and proposal vote with comment integration
 - Meeting with international experts



Hosted by

IRAM

CNEA

(Instituto Argentino de Normalización y Certificación) (Comisión Nacional de Energía Atómica)





26 – 29 of May 2015 Centro Atómico Constituyentes <u>Avda.Gral.Paz</u> y Constituyentes – <u>Pcia.Buenos</u> Aires



DE LA RECHERCHE À L'INDUSTRIE

Cea

WORK FLOW WG 13 DECOMMISSIONING



DE LA RECHERCHE À L'INDUSTR

MAIN WG 13 TOPICS AND LINK WITH OTHERS WG



DE LA RECHERCHE À L'INDUSTRIE

Cea

Focus on Chapter 4



ISO/TC 85/SC 5 N 18557

Date: 2015-03-08

ISO/WD.0

ISO/TC 85/SC 5/GT 13

Secretariat: AFNOR

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

4	Strategy applied to the remediation of contaminated sites	. 2
4.1	Principle	. 2
4.2	Characterisation and remediation objectives	. 3
4.3	Historical analysis	. 4
4.4	Functional analysis	. 5
4.5	Preliminary characterisation	. 5
4.6	Definition of the zones of interest and contamination tracers	. 5
4.7	Surface and/or volumetric characterisation program	. 6
4.8	Data processing and contamination diagnosis	. 6
4.9	Results compatibility with characterisation objectives	. 7
4.10	Remediation program	. 7
4.11	Final characterisation	. 8

4-1 Principle



• Objectives:

- \checkmark to draw up a diagnosis of contamination
- \checkmark to dimension the remediation project to be carried out

• Devoted to:

Recipients: managers, program heads, and project managers.

• Why:

 to give them a global vision of the characterization (radiological, chemical, etc.)



□ To know as thoroughly as possible the radiological and physical state of facilities

□ To determine the quantity of radioactive waste to be sent on to a storage facility

□ To demonstrate during final checks that the remediation objectives of the clean-up of all or part of a site have been reached

4-3 Historical analysis



Objectives:

- to know the different industrial activities or operation processes implemented over the years
- to search any incidents occurring during operation (on site and outside the site) and their consequences.

Action

 Look for priority on documentary archives and interviews



4-4 FUNCTIONAL ANALYSIS

□ Objectives:

✓ to note the different industrial processes used on the site

□ Action:

 ✓ to set up a quantitative and qualitative inventory of the radioactive substances and chemical products or reagents likely to be present in significant quantities

□ How:

 To search in the process/operating record books or in any synthesis document containing facility



4-5 Preliminary characterisation

Objectives:

 To strengthen information gathered by the historical and functional analysis

- To reveal any radionuclides or contaminants potentially present and to give a brief estimation of their activity or concentration
- By onsite visit associated to sampling and characterization on the basis of an expert judgment

4-6 DEFINITION OF ZONE OF INTEREST AND CONTAMINATION TRACERS

Objectives:

 Definition of the zones of interest and contamination tracers

- ✓ to create an inventory with the locations of at-risk areas where potential contamination may exist
- ✓ Developping a characterization program



4-7 Surface and/or volumetric caracterisation objectives

Objective

 To arrange a characterization program and selection of measurement methods

- ✓ To define a sampling program with:
 - indications of the methods used,
 - the numbers and locations of in situ measurements (non destructive)
 - number of samples for laboratory analysis

DE LA RECHERCHE À L'INDUSTRI

4-8 Data processing and contamination diagnosis



✓ To obtain quantities measured concerning mainly :

- mass, surface, and volume activities
- Dose rates
- Pollutant concentrations

□ Action:

✓ To Collect all results and get in shape to allow a suitable statistical treatment



4-8 Data processing and contamination diagnosis

Objectives:

✓ To obtain preliminary estimation for the remediation project

- ✓ Data processing with:
 - Statistical tests
 - Establishment of typical spectra (fingerprint)
 - Migration profile analyses
 - ✤ Geostatistical 2D 3D processing
 - Calculation of forecast impact



4-10 Result compatibility with characterization objectives

Objectives:

 Comparison between data processing and characterization objectives

Action:

 Iterative and adaptation phase compared with constraint (budget,time...)

4.10 REMEDIATION PROGRAMM



✓ To define a remediation program according to cleaning objectives

□ Action:

✓ To set up a business characterization program and establish a first reasonable evaluation of the project



Objectives:

 To ensure that the site has been adequately remediated and can be released for unrestricted or restricted use, depending on what has been agreed with the regulator and stakeholders.

- ✓ a systematic approach to sampling should be applied in order to give a representative image of the final site status.
- ✓ This systematic approach will enable the production of data on which statistics might be applied.