

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

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CETAMA



MEETING ISO/TC85/SC5 BUENOS AIRES JUNE, 26TH - 28TH, 2015

WG 13 DECOMMISSIONING

G GRANIER



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DEN/DRCP/CETAMA

DIS 18557

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

THIS STANDARD PRESENTS

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 in-situ 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 PROPOSAL

Closing date for voting	Reference number (to be given by the Secretariat)
Date of circulation	**ISO/TC** 85 / **SC** 5 **N** 587
Secretariat	☐ **Proposal for new PC**

Accepted

A proposal for a new work item 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 liaison, the Technical Management Board or one of the advisory groups, or the Secretary-General.

The proposal will be circulated to 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 for 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

SCHEDULE

- 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)

CD COMMENTS

Comments from Voters		
Member:	Comment:	Date:
Canada (SCC)	***Comment 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 concerned		
Netherlands (NEN)	***Comment File***	2014-09-01 14:40:15
CommentFiles/ISO_CD 18557_NEN.doc		
Russian Federation (GOST R)	***Comment File***	2014-09-05 12:40:40
CommentFiles/ISO_CD 18557_GOST R.doc		
Swe file:///C|/Users/GG102022/AppData/Local/Temp/Temp1_ISO_CD_18557.zip/ISO_CD%2018557/CommentFiles/ISO_CD 18557_GOST R.doc	***Comment File***	2014-08-29 13:26:21
CommentFiles/ISO_CD 18557_SIS.doc		
United States (ANSI)	***Comment 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
(Instituto Argentino de Normalización y Certificación)

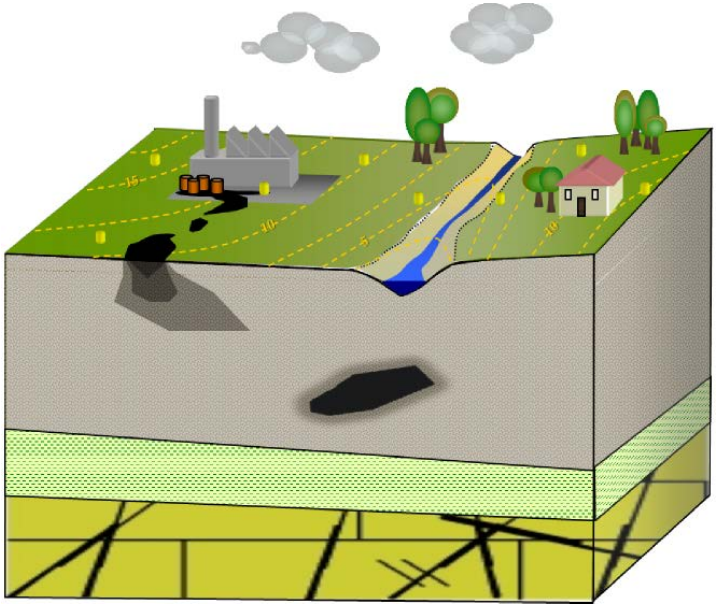
CNEA
(Comisión Nacional de Energía Atómica)

26 – 29 of May 2015

Centro Atómico Constituyentes

Avda.Gral.Paz y Constituyentes – Pcia.Buenos Aires

Characterisation strategy



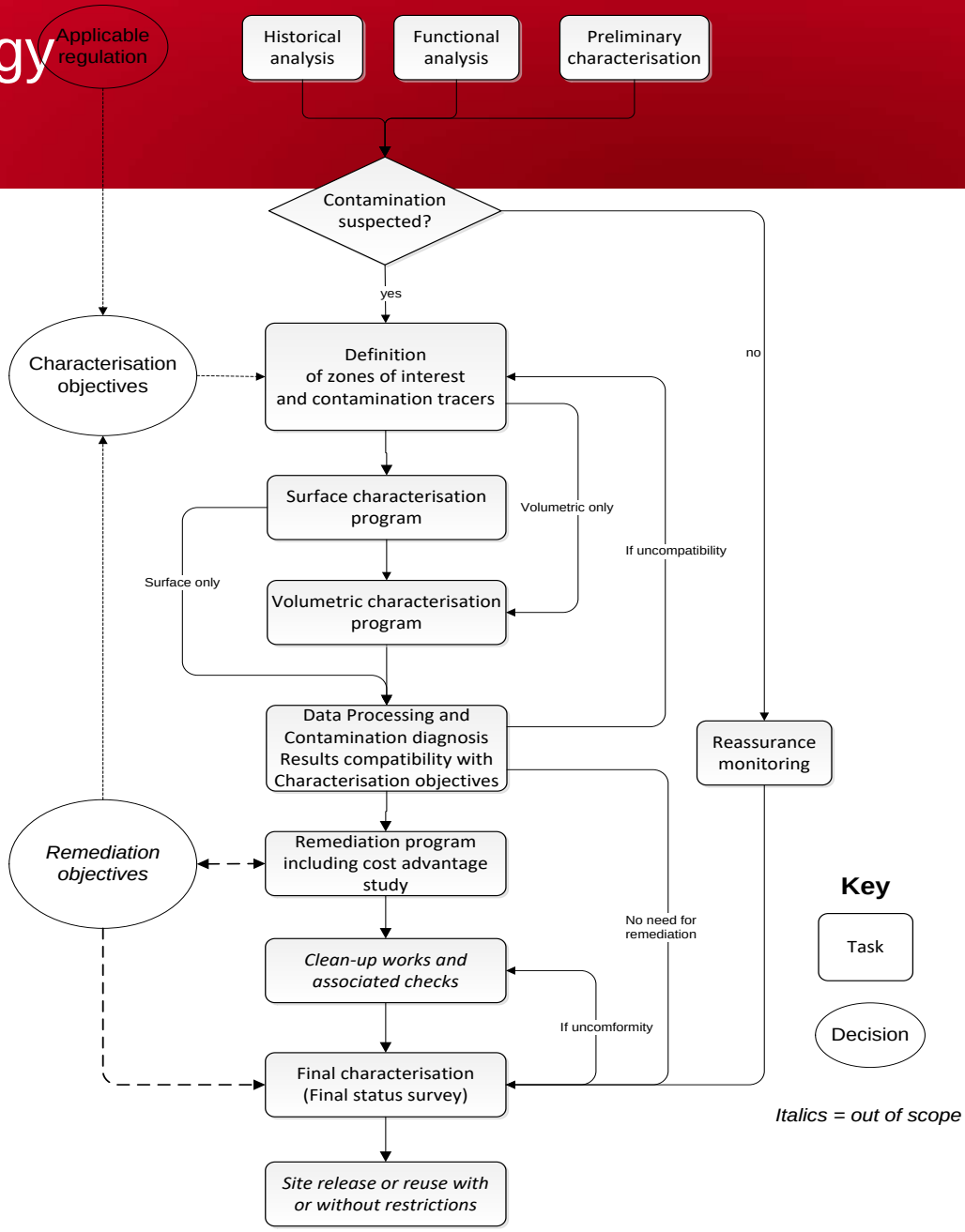
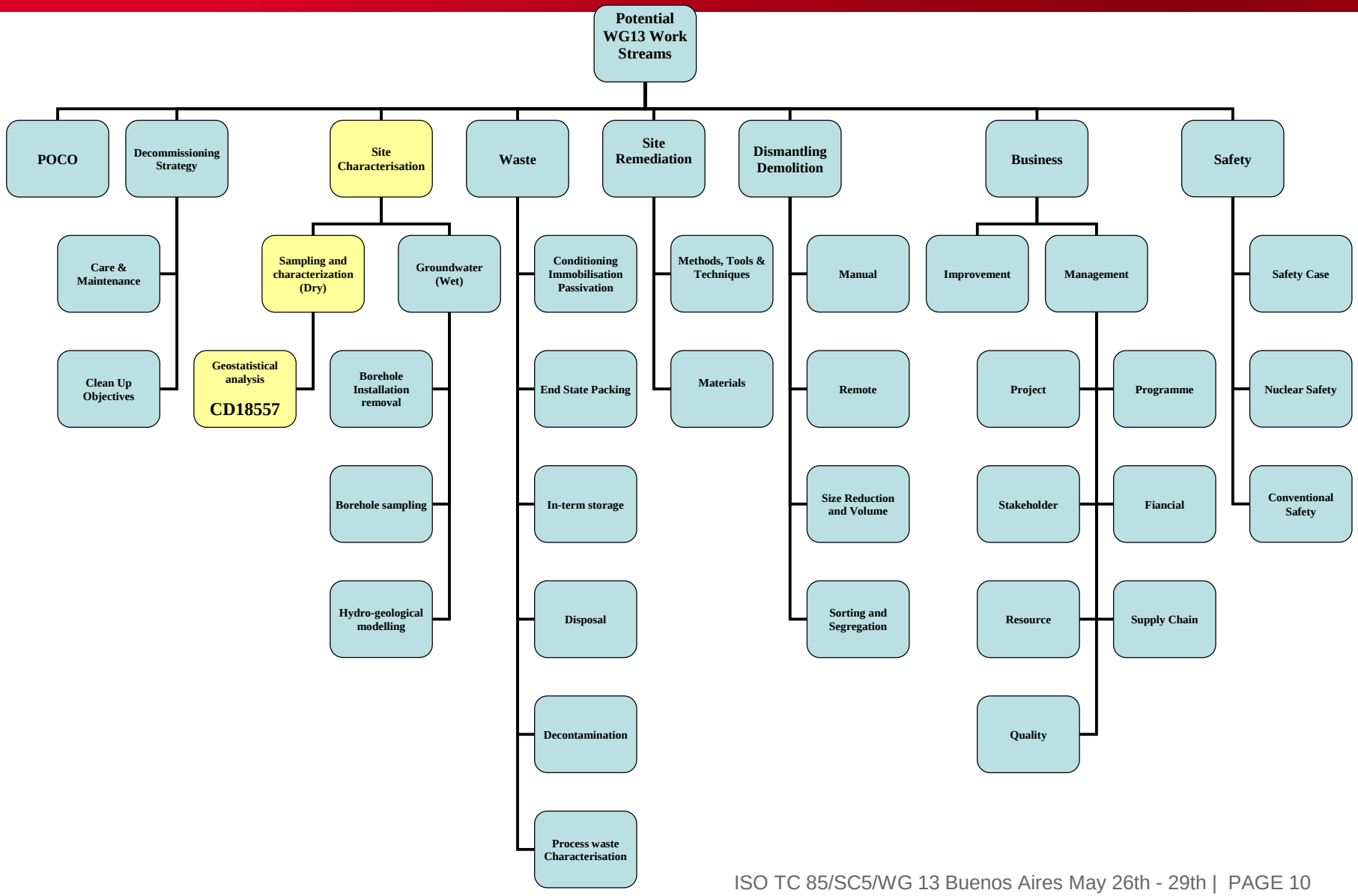


Fig 1 Characterisation strategy logic diagram applied to the remediation of sites and soils contaminated by radioactive substances

WORK FLOW WG 13 DECOMMISSIONING



MAIN WG 13 TOPICS AND LINK WITH OTHERS WG

Decommissionning strategy

- Care and Maintenance
- Clean up objectives

Site Characterisation

- **Soil building and infrastructures**
- Ground water

Dismantling/ Demolition

- Manual
- Remote
- Size and volume reduction
- Sorting and segregation

Post operative Clean Out (POCO)

Safety

- Safety Case
- Nuclear safety
- Conventional safety

Waste

Link WG 5

- Conditioning/ Immobilisation/ Passivation
- End state packing
- In-term storage
- Disposal
- Decontamination
- Process waste characterisation
- Waste characterisation for disposal
- Transportation of materials

Business

- Project Management
- Programme Management
- Financial Management
- Resource Management
- Supply chain management
- Stakeholder Management
- Quality Management
- Business improvement

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

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4-1 Principle

- **Objectives:**
  - ✓ to draw up a diagnosis of contamination
  - ✓ 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.)



4-2 Characterisation objectives

- 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

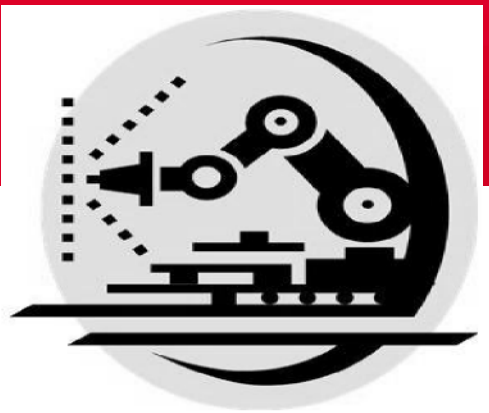
❑ Objectives:

- ✓ 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

❑ Action:

- ✓ 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



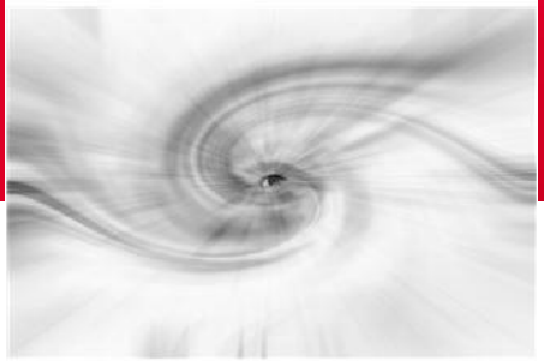
4-6 DEFINITION OF ZONE OF INTEREST AND CONTAMINATION TRACERS

❑ Objectives:

- ✓ Definition of the zones of interest and contamination tracers

❑ Action:

- ✓ 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
- **Action:**
  - ✓ 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

4-8 Data processing and contamination diagnosis



❑ Objectives:

✓ To obtain quantities measured concerning mainly :

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

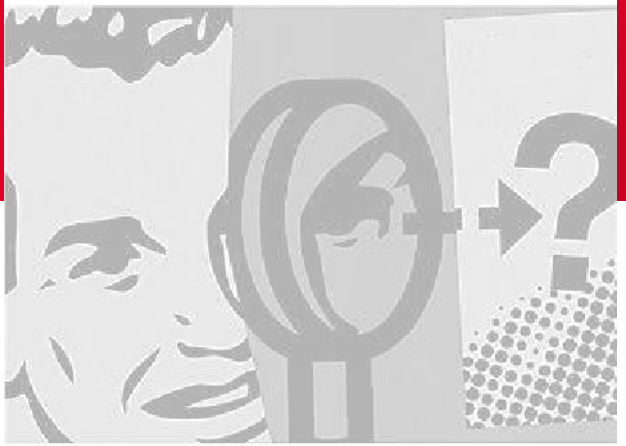
❑ Action:

✓ 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
- **Action:**
  - ✓ 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

❑ Objectives:

✓ 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



4.11 FINAL CHARACTERISATION

❑ 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.

❑ Action:

- ✓ 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.