Strategies for Radiological Characterisation in Decommissioning of Nuclear Facilities

Key findings of the TGRCD - a task group of the Working Party on Decommissioning and Dismantling (WPDD)

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Background

- Characterisation is one of the most important activities in decommissioning
- NEA WPDD initiated in 2010 a project on *"Strategies for Radiological Characterisation in Decommissioning of Nuclear Facilities"*
- The project **(Phase I)** completed in 2013
- In 2014 a new mandate **(Phase II)** was given on *…waste and materials end-state perspective"*

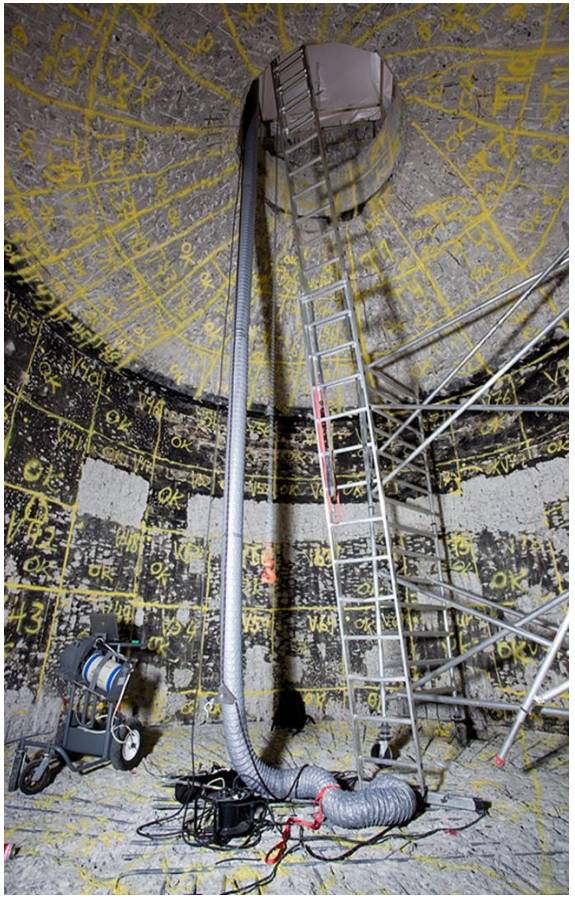

Photo: F Ekenborg, AB SVAFO

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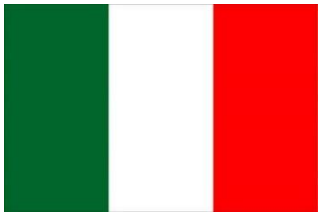
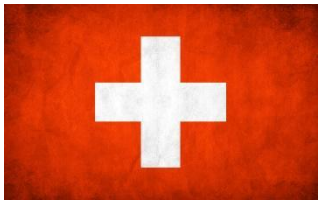
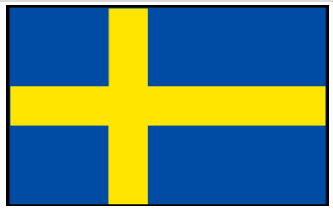
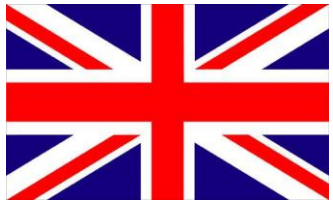
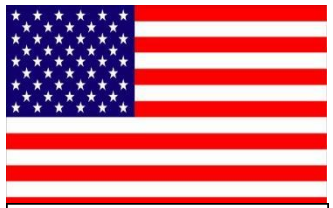
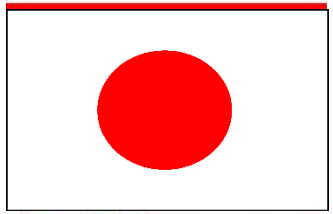




Presentation of task group

Task group composed of:

- Independent experts
- Decommissioning organisations
- Regulators
- Repository organisations
- Specialist consultants
- Utilities
- Waste Management organisations

Representatives from 11 countries

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ACKNOWLEDGEMENTS

- Phase I task group:
  Boby Abu-Eid (USA), Caroline Andrieu (France), Thierry Boisserie (France), Yvon Desnoyers (France), Alister A. Dunlop (UK), Henrik Efraimsson (Sweden), Lars Håkansson (Sweden), Sean Jarman (UK), Nieves Martin (Spain), Catherine Ollivier Dehaye (France), Peter Orr (UK), Ivan Rehak, Frédéric Tardy (France), Stefan Thierfeldt (Germany, editor of the report), Arne Larsson (Sweden, chairman of task group)

- Phase II task group:
  Boby Abu-Eid (USA), Massimo Altavilla (Italy), Caroline Andrieu (France), Yvon Desnoyers (France), Alister Dunlop (UK), Matthew Emptage (UK), Manuel Pantelias Garcés (Switzerland), Michael Knaack (Germany), Daniela Manes (Italy), Nieves Martin Palomo (Spain), Chantal Mommaert (Belgium), Marie-Delphine Salsac (France), Denis Pombet (France), Andrew Szilagyi (USA), Hiroaki Takahashi (Japan), Naeem Ul Syed (Norway), Inge Weber (OECD/NEA); Arne Larsson (Sweden, chairman)

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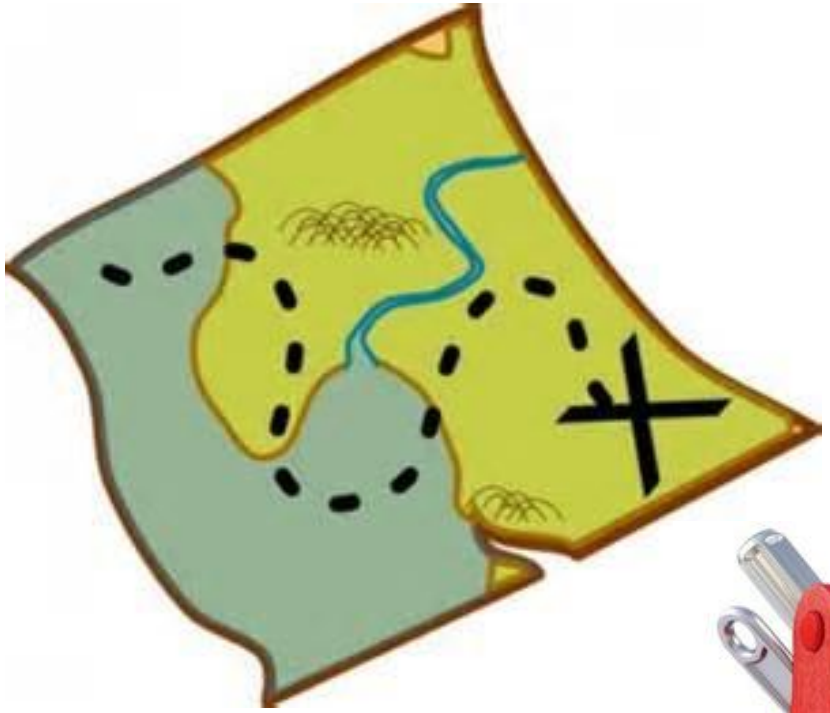
A lot of questions



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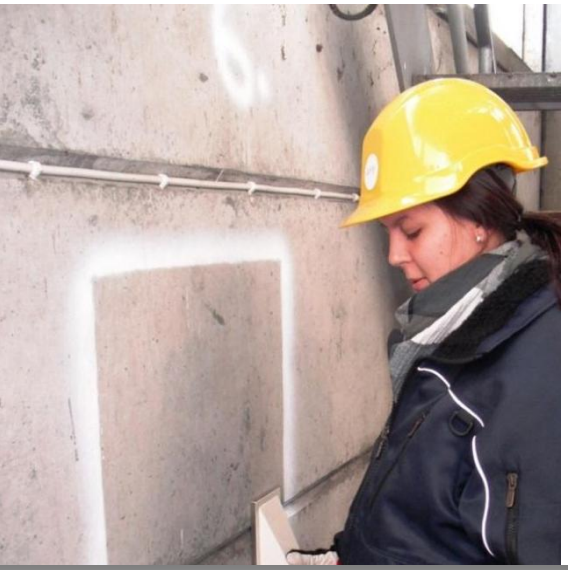
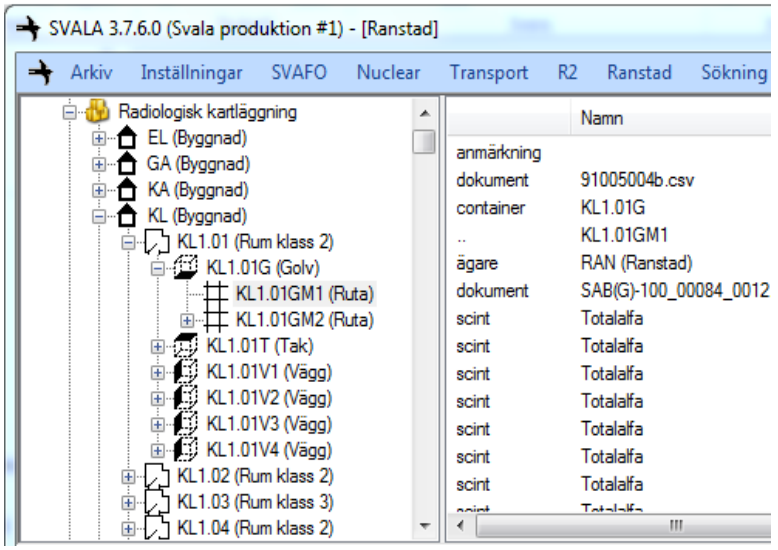
Phase I (2011-2013)

Overall strategies
General characterisation issues





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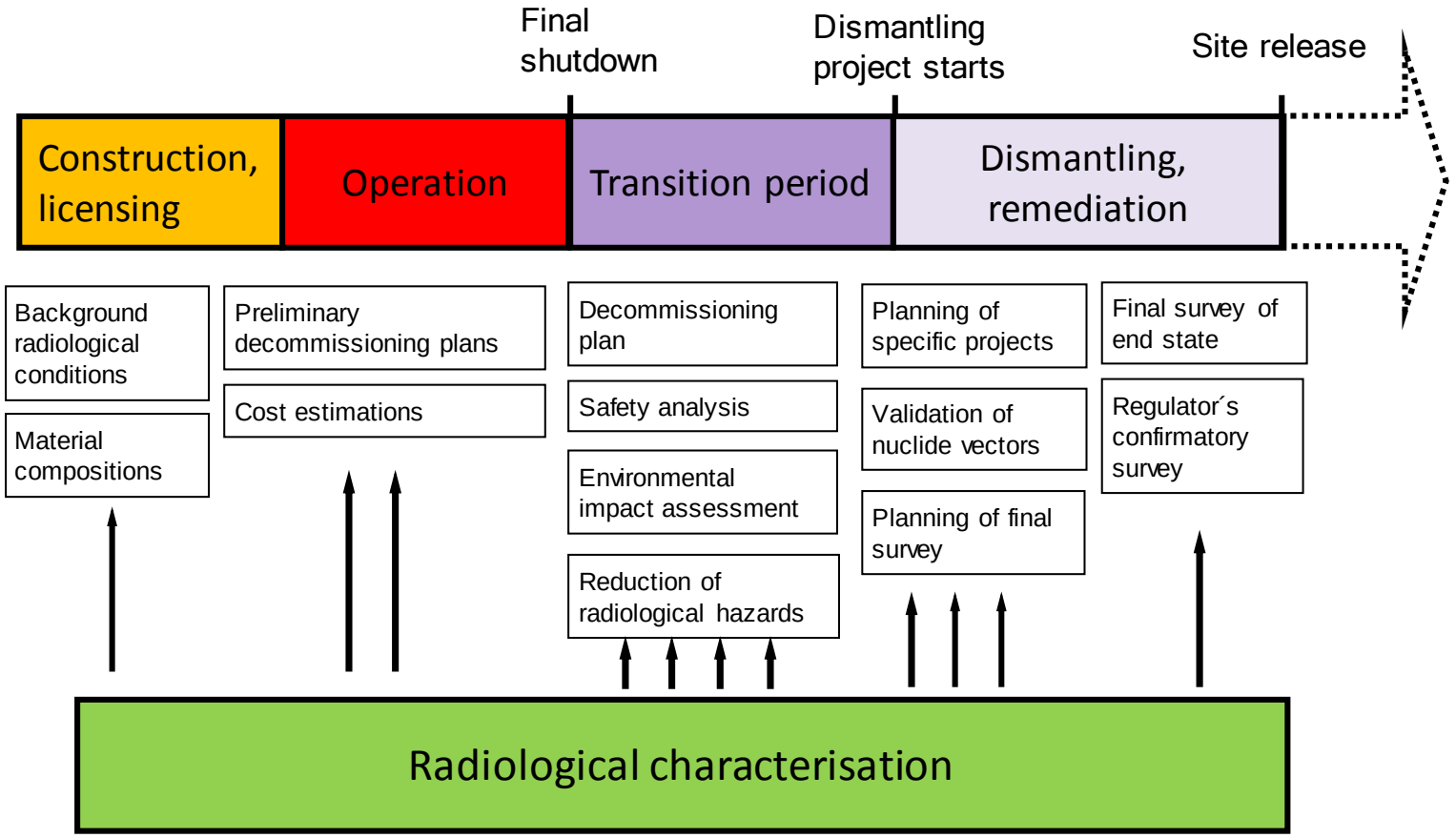
Characterisation – in a life cycle perspective



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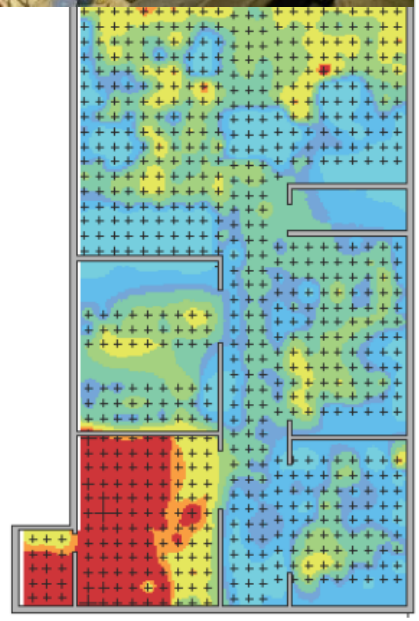
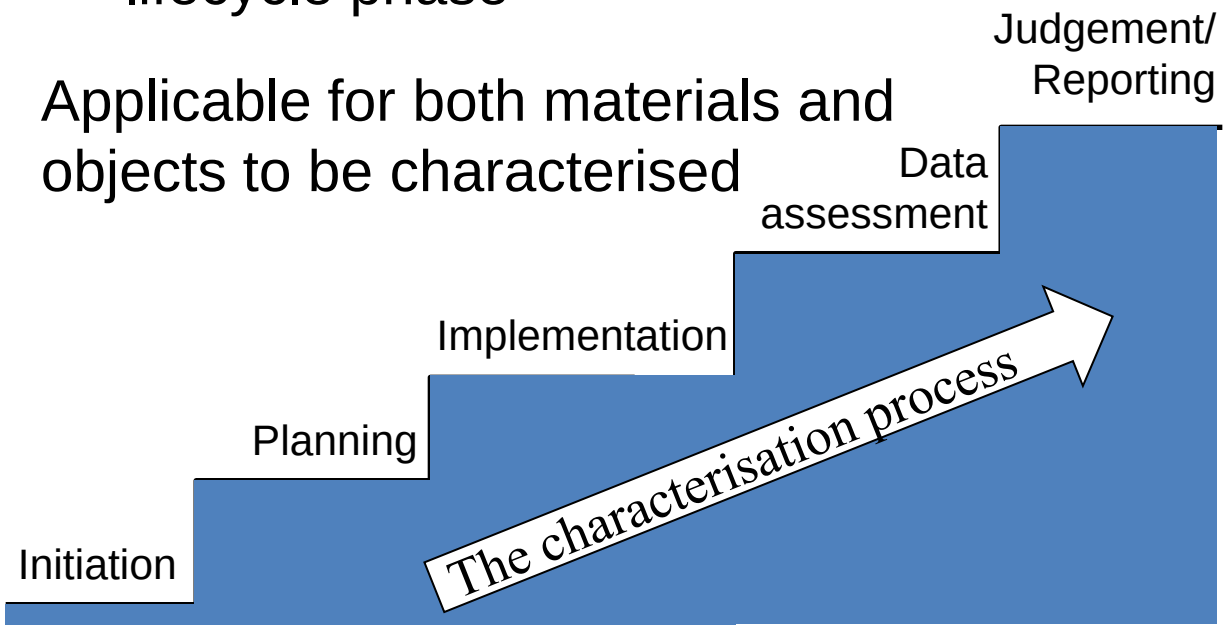
The characterisation process

- Generic steps exist
  - relevant for all characterisation projects
  - independent of size
  - independent of the nuclear facility lifecycle phase
- Applicable for both materials and objects to be characterised





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The final report (NEA WPDD Status Report)

Focus: Strategic approaches and issues – no detailed descriptions

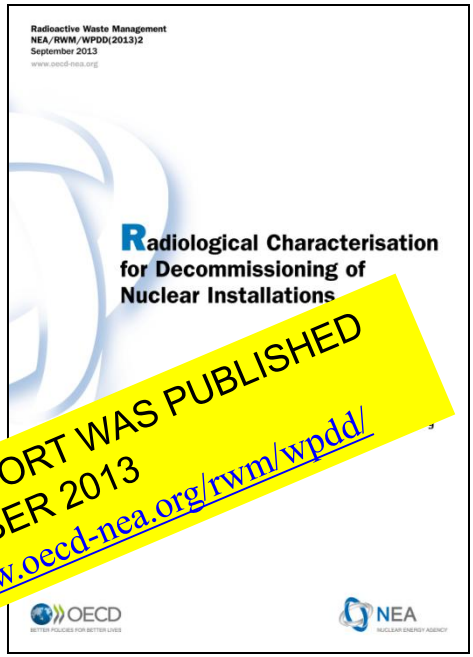
Target group: Decision makers, executives and others looking for an overview

Aim

- Identify and present the best practice at different stages of decommissioning
- Point out areas that could or should be developed further via international cooperation and coordination.

Table of contents

- Role and significance of radiological characterisation in decommissioning
- Key activities
- Management aspects and selection of strategies
- Experiences/lessons learned



FINAL REPORT WAS PUBLISHED SEPTEMBER 2013
http://www.oecd-nea.org/rwm/wpdd/

9

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Phase I – summary and conclusions

- Well defined objectives and a structured approach is essential
- Radiological characterisation is a key activity in all phases of decommissioning
- Characterisation activities to support the future decommissioning should start very early
- Gathering and appropriate evaluation of historical data and knowledge is crucial. Do not wait initiating this process.
- Do not get lost in technical details when forming strategies and plans

Read the report – gives a good overview of identified Best Practice

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Phase II (2014-2016)

Strategies for optimization of radiological characterization in a waste and materials end-state perspective

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Phase II - Objective

Identify strategic approaches, good practice, issues and risks related to disposal of radioactive waste and clearance of materials, like

- **what** information should be collected (type, quality, quantity), considerations variations etc.
- **why** the information is needed
- **how** the information could be gathered and managed
- **when** the information could/should be gathered

Focus areas:
- Strategic approaches
- Issues and risks (threats and opportunities)
- Observations of good practice

Target groups: Technical managers of decommissioning projects, Waste management agencies, Regulators

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Main activities – Phase II

- Questionnaire to gather views on Good Practice
- Collect and analyze regulations, standards and guiding documents
- Identify current strategies and practices for
  - defining objectives
  - planning and implementation
  - managing and analyzing information
  - reporting
  - knowledge management (up to disposal of the waste)
- Case studies
- Define Good Practice and areas for further development
- Arrange an international workshop
- Development of NEA WPDD status report

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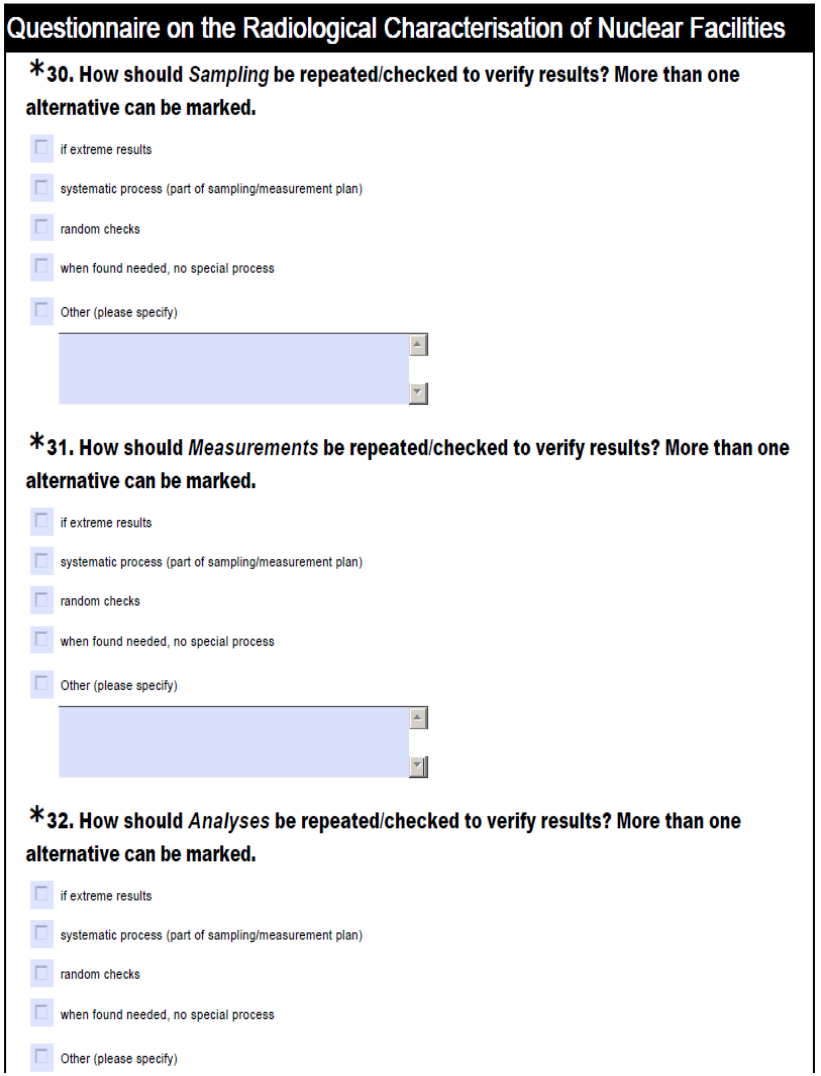
Questionnaire

Two versions

- Facility owners
- Regulators

In overall focus on Good Practice



Questionnaire on the Radiological Characterisation of Nuclear Facilities

***30. How should *Sampling* be repeated/checked to verify results? More than one alternative can be marked.**

- if extreme results
- systematic process (part of sampling/measurement plan)
- random checks
- when found needed, no special process
- Other (please specify)

***31. How should *Measurements* be repeated/checked to verify results? More than one alternative can be marked.**

- if extreme results
- systematic process (part of sampling/measurement plan)
- random checks
- when found needed, no special process
- Other (please specify)

***32. How should *Analyses* be repeated/checked to verify results? More than one alternative can be marked.**

- if extreme results
- systematic process (part of sampling/measurement plan)
- random checks
- when found needed, no special process
- Other (please specify)

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Set-up of the survey

	Regulator	Owners
Responder role and experience	X	X
National context and overview	X	
Initiation phase	X	X
Planning phase		X
Implementation phase		X
Data assessment phase	X	X
Quality assurance	X	X
Reference project (Case Study)		X

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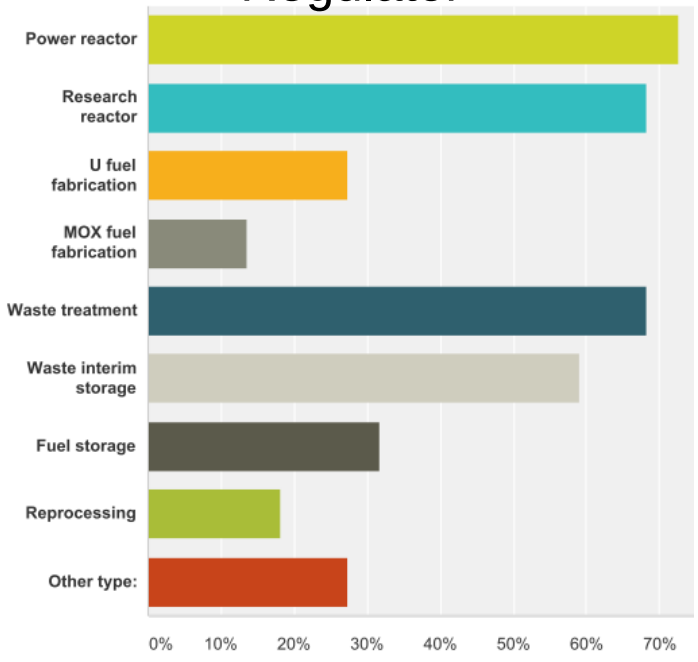
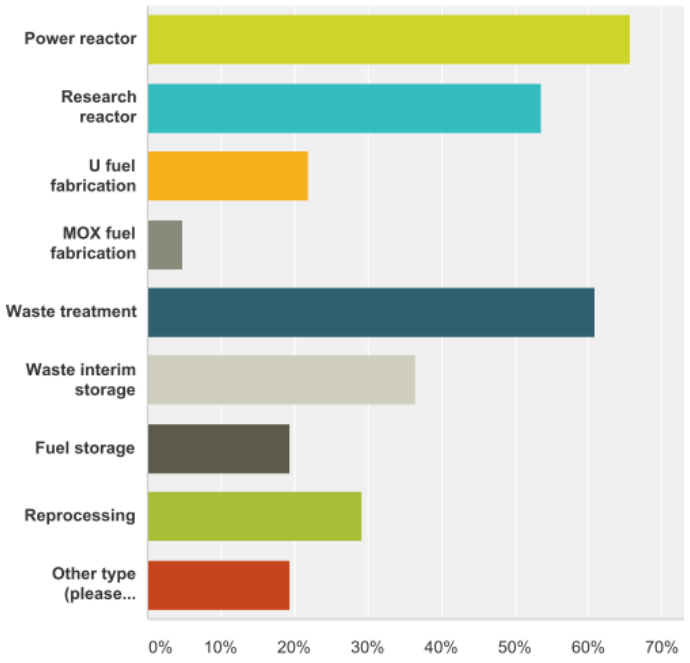
Response rate and responder experience

- Facility owner — 34 responses from 12 countries
- Regulator — 19 responses from 11 countries
- Geographical spread — Asia, Europe and North America

Regulator



Owners



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Questionnaire – overall conclusions

- Solid experience in radiological characterisation among regulators as well as owners
- A common view of regulators and owners/implementers on Good Practice
- Highest priorities:
  - Reducing uncertainty about waste and
  - Identification of waste classification
- Major differentiators:
  - National legislation on clearance
  - Set-up of the disposal programs

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Case studies

Objective:

- Gather information demonstrating unique and/or good practice for incorporation in the NEA Status Report

Content:

- Overview characterisation activities
- Historical data
- Characterisation approach
- Characterization methodology
- Lessons learned
- What would you have done differently if you did it again?

1) Background

Project:	
Decommissioning Strategy:	Schedule:
Actual Status:	
Waste "interim" storage/national repository (available or not):	
Experience from characterization in decommissioning projects:	

2) Characterization activities

Summary:

2.1) Historical data

Objective:
Methodology:
Documentation:
Results/Conclusions to satisfaction (yes/no, if not why):

2.2) Characterization approach

Objective:
Methodology:

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Case studies

Type of facilities:

- NPPs
- Research reactors
- Research facilities
- Uranium milling
- Contaminated sites

Countries covered:

- Belgium
- France
- Germany
- Italy
- Japan
- Norway
- South Korea
- Spain
- Sweden
- UK
- USA

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The phase 2 final report

- Input from TG members on the main activities defined
- Results of the questionnaire
- Exchange with other task groups
- Literature studies / personal communication
- Outcomes of the international workshop
- Findings from case studies

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