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IAEA-LABONET – International Network for Radioactive Waste Characterization – Support of the Non-Nuclear Industry at the characterization of NORM

Steering Committee

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What is LABONET?

- International Network for Nuclear Waste Characterization, founded in 2011 by the International Atomic Energy Agency (IAEA) and is part of the Waste Technology Section (WTS) of the Nuclear Energy Division.

Inaugural meeting IAEA 2011, Vienna

- LABONET has been created to support organizations, either currently engaged in or seeking to develop characterization programs for radiologically contaminated materials/waste, through their inclusion in a network to cooperate in and coordinate relevant actions, training and technical progress in radioactive waste characterization.

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The scope of LABONET encompasses all activities associated with the characterization of radioactive wastes.

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Objectives:

- LABONET intends to increase effectiveness and efficiency in sharing international experiences in the application of proven, quality assured practices for the characterization of very low, low and intermediate level radioactive waste.
- Facilitate the exchange of knowledge and experience.
- Support organizations or MSs with less advanced capabilities for characterization of radioactive waste.
- Develop and implement training and demonstration activities with a global, regional or thematic focus.
- Contribute waste characterization expertise to the IAEA and be a forum in which experts' advice and technical guidance may be provided to IAEA's relevant programs
- Propose Coordinated Research Projects (CRP) to the IAEA for relevant technical needs of MSs.

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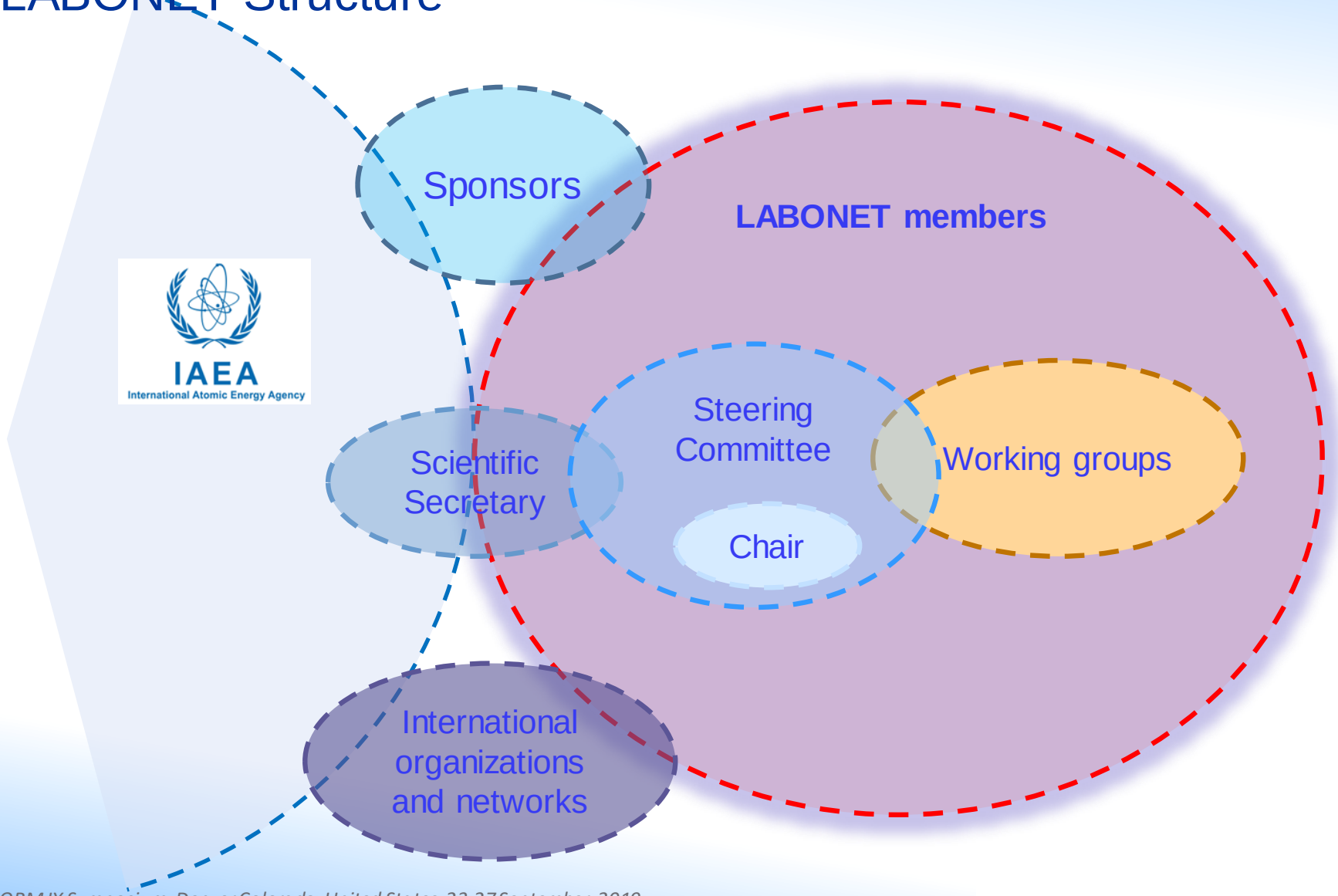
LABONET Structure



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Examples of topics discussed/presented at annual technical meetings:

- Minimization of waste e.g. segregation of historical ILW in ILW, LLW and free release
- Radio-chemical analysis methods
- Calibration including statistics
- Characterization and segregation of legacy waste streams
- Characterization of bulk waste streams
- Characterization challenges at Fukushima Daiichi NPP
- IAEA: updating of important Tecdoc's (in progress)
- IAEA: development of the CONNECT platform for LABONET (in development)
- IAEA: development of e-learning materials (in progress)

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Collaborative IAEA Projects of Potential Interest selected by MSs at the Annual LABONET meeting, May 2019

Catalogue of methodologies for demonstrating compliance with Waste Acceptance Criteria (WAC)	• Create a catalogue with recommended methodologies for a number of selected radwaste fluxes (immobilized or not) in combi with the according waste acceptance criteria. • Proposed outcome: IAEA Tecdoc or LABONET Wiki article.
Sampling of radioactive waste- A guidance	• Elaborate a guidance to establish sampling procedures for a characterization program. • Proposed outcome: IAEA Tecdoc or LABONET Wiki article.
Analysis of toxic, non-radioactive constituents in radioactive wastes or waste packages	• Elaborate a guidance to establish procedures and techniques for a characterization program to determine the inventories of the toxic, non-radioactive consituents in radioactive waste or radioactive waste packages. • Proposed outcome: IAEA Tecdoc or LABONET Wiki article.

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Catalogue of methodologies for demonstrating compliance with WAC (first idea to cope with this challenge)

WAC's are in principle established for storage of radioactive wastes at disposal (e.g. landfill) -, temporary storage – and final storage facilities.
WAC includes / covers in principal criteria dealing with the following topics:

- General (e.g. producer and package identification, etc.)
- Radiological (e.g. dose rate, contamination, rad. content, etc.)
- Mechanical (e.g. package, type, stability of eventual barriers, embedding material, etc.)
- Physical (e.g. density, stability/degradability, behavior under fire, etc.)
- Chemical (e.g. liquids, complexing agents , toxic gases, etc.)
- Biological (e.g. bio-degradation resistance; pathogenic, etc.)

NOTE: IAEA LABONET <u>will not define where, what and how to measure</u>, but will advice/help its members how a criterion can be characterized that fits a member best.

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IAEA BSS GSR 3 and EC Directive 2013/59/Euratom

(metrological view point)

- Both documents have in principle an equal approach on the "exemption and clearance" of a source or a mixed source. This source might contain artificial and as well as natural radionuclides.
- The criteria levels per nuclide for "exemption and clearance" might differ. In general the levels for artificial nuclides are more stringed in the EC Dir 2013/59.
- The criteria levels for natural nuclides (U238, U235, Th232 and K40) are equal.
- Building materials: IAEA BSS GSR 3 has no unique formula defined to be applied. The EC Directive has defined a formula and gives also the option to apply Th228 as substitute for Th232.

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IAEA BSS GSR 3 and EC Directive 2013/59/Euratom
(metrological view point)

Conclusion

- In both documents are made in principle no differences in regulation in exemption and clearance methodologies of radioactively contaminated materials originated by the nuclear industry or the non-nuclear industry.

- This means that “cost effective metrological methodologies” routinely applied in the nuclear industry should also be acceptable if applied by the non-nuclear industry.

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Support of the non-nuclear industry

- Exchange of knowledge and experiences:
  - “cost effective metrological methodologies” routinely applied in the nuclear industry
  - How to be in accordance with WAC
  - Sampling
  - Characterization destructive and non-destructive
  - Calibration
  - Selection of instrumentation
- Training

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Thank you!

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