Terms of Reference

INTERNATIONAL NETWORK OF LABORATORIES FOR NUCLEAR WASTE CHARACTERIZATION (LABONET)

This document is based on the deliberations of a Technical Meeting organized by the International Atomic Energy Agency (IAEA) in Vienna from 26 to 29 April, 2010 to discuss the formation of a network of laboratory-based centres of expertise involved in the characterization (by non-destructive and destructive testing) of low and intermediate level radioactive wastes. The terms of reference of this network as formulated during the course of that meeting are described in this document.

Background

The safe management and disposal of low and intermediate level radioactive waste is, in part, reliant upon the accurate and quality assured characterization by non-destructive and destructive methods, and determination of the radionuclide inventory, chemical, physical properties in the different steps of waste management. Relevant procedures, standards and laboratory practices have been developed and refined over the years in expert laboratories in some Member States.

However, a number of Member States with less developed programmes may not have such facilities and laboratories. For these countries, achieving satisfactory characterization programmes is a complex technical challenge requiring both intellectual and financial resources.

The IAEA is proposing to focus its support for low and intermediate level waste characterization via a forum (Network) for a prompt, open and efficient transfer and exchange of knowledge gained through learning from the experience of others. The Agency wishes to support organizations, either currently engaged in or seeking to develop, such characterization programmes, through their inclusion in a network to cooperate and coordinate relevant actions, training and technical advances.

Exchange of information and best practice in the operation of characterization laboratories is expected to underpin both public and regulatory confidence that radioactive wastes are being securely managed and responsibly stored and disposed.

The network will be non-commercial in developing its activities and will focus its attention on proven practices and successful implementation. The network will build on world class research and characterization activities both nationally and internationally by sharing information between Member States.

Name

International Network of Laboratories for Nuclear Waste Characterization (LABONET)
Objectives

The Network is being established to increase efficiency in sharing international experience in the application of proven, quality assured practices for the characterization of low and intermediate level radioactive waste included waste packages. In particular the IAEA intends to:

- Support organizations or Member States with less advanced nuclear programmes for characterization of radioactive waste, by facilitating access to (sharing of) the relevant skills, knowledge, management practices and approaches and expertise from Member States with mature operating nuclear facilities and characterization laboratories.

- Develop an expanded range of training and demonstration activities with a regional, inter-regional or thematic focus providing hands-on, user-oriented experience and disseminating proven procedures and technology.

- Facilitate cooperation and exchange of knowledge and experience among organizations with characterization facilities, in operation or planned, in pursuit of long term knowledge management.

- Create a forum in which experts’ advice and technical guidance may be provided on the Agency’s waste technology programme.

- Propose Coordinated Research Projects (CRP) for relevant technical needs.

Participation

- Partners: Laboratories that have a demonstrated mature expertise in low and intermediate level waste characterization, facilities suitable for development, demonstration and/or training and a willingness to share their experience through LABONET, will be identified as “LABONET Partners”.

- Participants: Laboratories that have responsibility for the characterization of low and intermediate level waste and waste packages, are actively engaged in planning, improving and implementing radioactive waste support laboratories, and who are willing to participate in the activities of LABONET will be identified as “LABONET participants”.

Activities & Methods of Work

Activities:

- Hosting of training courses

- Organization and delivery of relevant workshops
• Establishment of a website to facilitate a Community of Practice for characterization Laboratories
  o Database of procedures, standards, etc.
  o Contacts
  o Interactive exchange of information

• Define and coordinate staff exchanges and missions to member locations

• Provide qualified peers amongst the partners and participants of LABONET to support IAEA efforts on peer reviews and technical support

• Define and coordinate funded research projects, i.e. IAEA (CRPs)

Methods of Work (implementation of LABONET activities):

• Facilitation of LABONET goals will be based on a programme of activities determined and approved by members. An inaugural meeting will be held to define the initial programme and prioritization of listed topics. Thereafter, the achievement of the objectives and fulfilment of the programme will be periodically reviewed

• Plenary meetings or sessions will be organized for specific members as means of developing LABONET goals.

• An advisory committee, representative of LABONET, shall be formed by the IAEA; it shall meet as required.

• The IAEA will provide the administrative and secretariat services required by LABONET, including meeting facilities in Vienna, maintenance of records and distribution of documents. The IAEA will provide the services of a Scientific Secretary from within the Waste Technology Section.

• The Secretariat will record the outcome of meetings and other LABONET interactions.

• The establishment of a website to provide continuity of personnel interaction between meetings and facilitate training and exchange of good practices. The website will provide a forum for exchange of ideas and information. As well, a number of other practical objectives may be served by the website, such as to highlight upcoming events, facilitate on-line publication of technical and visual information, and promote individual contacts and their interests. The IAEA will assure the hosting and manage the updating of the website.

• Where a characterization laboratory has a demonstrated experience in a particular topic it may be proposed to lead LABONET work in that area. This will enhance both visibility and credibility of their activities promoting their proven technology.

• Specialist groups may be formed under the aegis of LABONET. These may cover topics or facility types of common interest. Where appropriate, CRPs or specific working groups may be formed to pursue these topics.
LABONET will take advantage of the approaches used and experience gained within the on-going IAEA Waste Technology Section (WTS) Networks on geological disposal, remediation, decommissioning and low level waste disposal.

**Funding**

The approach and experience of the four existing WTS Networks funding mechanisms will be used, i.e. IAEA Regular Budget and Technical Cooperation (TC) funding will be appropriately combined.
Schedule for launching LABONET

Consultancy meeting to prepare the draft of the terms of reference (May 2009)
Technical meeting to prepare the final terms of reference (April 2010)
Official IAEA letter sent to Members States (July 2010)
Creation of Website
Inaugural meeting in Vienna to formally launch LABONET in conjunction with both partners and participants (17-19 January 2011)
Preferred Approaches (potential activities to accomplish LABONET goals)

Providing training:
- Distribute training activities equally among members - plan activities and each member involvement
- Provide group activities (course, workshop, seminar) - plan training activities in accord with member’s capacity and with respect the IAEA preferences
- Share cost - major part born by the IAEA (TC projects)
- Members to provide in-kind contribution through:
  - Hosting a training course, a fellowship or a workshop,
  - Offering an expert as lecturer or review team member,
  - Presenting a demonstration, etc.

Creating Guides:
- Select relevant topic
- Agree upon and develop standard guidance documents
- Develop training syllabuses
- Coordination/publishing through the IAEA

Formulating proved practices (high level statements):
- Exchange information on practices used
- Agree on joint activities
- Cooperate in formulating proved practices
- Develop position document/statement
- Coordination/publishing through the IAEA

Benefits

a. IAEA
- Promote international cooperation of characterization laboratories
- Network will provide an expanded group of experts to address technical issues raised by Member States, i.e. optimal use of limited resources (financial, human)
- Demonstration of good stewardship and global citizenship in reaching out to help Member States with less developed programmes

b. Members

Membership offers the following advantages:
- Access to state-of-the-art characterization
- Access to new technology and method
- Access to specific equipment
- Access to proven and accepted methods
- Access to knowledge base
- Access to database
- Availability of participation in inter laboratory comparison
- Answer to non-routine problems
• Access to training and mentoring
• Access to peer review
• Organization of interregional conferences and workshops
• Organization of regional conferences and workshops
• Financial assistance
• Credibility and Prestige
Tentative Topics for Discussion at the Inaugural LABONET Meeting

This list to be discussed and prioritized at the inaugural meeting

- **Training**
  - Development of a database of physical, chemical and radiochemical methods and testing protocols
  - Training services

- **Workshops**
  - Definition and delivery of technical exchanges, including (regional/inter-regional) workshops/seminars

- **LABONET Website**
  - How to optimize network interaction and information sharing by modern methods of communication.
  - Website and interactive ‘community of practice’. open access and member access pages.

- **Staff Exchanges**
  - Staff exchanges – an opportunity for personal and personnel development through fellowships.
  - Technical liaisons (other IAEA networks, ENTRAP, academia, private sector suppliers)
  - Working level interactions in member organizations (partner-partner, partner-participant, participant-participant)

- **Peer Reviewers/Technical Support**
  - Fingerprinting waste streams (comparison of methods, commonalities)
  - Development of draft standard proposals (formalize in conjunction with standards development organizations, e.g. ISO, ASTM International)
  - New methods (efficiency, accuracy, speed of result, turnaround times)
  - Quality assurance, quality control, accreditation and sharing experience.
  - Control monitoring of used sources, orphan material and material from emergencies.
  - Free release monitoring
  - Very low level waste substances of low activity determination.
  - Measurement issues regarding naturally occurring radioactive material and its technically enhanced material (NORM and TENORM, uranium mining and milling)
  - Suitably qualified and experienced personnel and expert missions
• **Funded Research Projects**
  o Definition of projects (CRPs)
  o Inter laboratory comparisons (proficiency tests, “round robins”)

• **Other Topics**
  o Characterization of large components for disposal
  o Sampling techniques and protocols for homogeneous and heterogeneous raw wastes, treated wastes, waste forms and packages.
  o Total measurement uncertainties
  o Actual analytical needs (number of samples, sampling frequency, etc) to support compliance with waste acceptance criteria
  o Mobile laboratories – design and implementation
  o Equipment exchange.