42nd Meeting of the Waste Safety Standards Committee

28 November – 1 December 2016

Agenda item W 6.6

Patrick O’Sullivan
Decommissioning Specialist
Waste Technology Section / Division of Nuclear Fuel Cycle and Waste Technology / Nuclear Energy Department
Objective: to document and analyze the current status and forward trends in radioactive waste and spent fuel management, including providing information on current inventories and on future arisings.

Method of Working: Status and Trends Joint Working Group (JWG) comprising representatives of Member States, steered by a Coordinating Group.

Source Data: Data will represent the best information available to the Working Group. Wherever possible, data will be obtained from NEWMDB (Net Enabled Waste Management Database).

Timeframe: 2014-2016
- Reference date for data – End December 2013
- Finalization of report - December 2016
- Publication – Q1 2017
Membership of Joint Working Group (JWG) : through nomination by governments (many MS have nominated the NEWMDB country coordinator)

Coordinating Group: Chair and 5-6 experts

Secretariat: IAEA , OECD-Nuclear Energy Agency & European Commission

Meetings

  o One full JWG meeting each year (Vienna, Paris, Brussels/Luxembourg)
  o One (at least) additional Coordinating Group meeting each year

Resourcing

  o Each government covers own costs (some financial support available for less advanced programmes and Coordinating Group)
Justification:

- improve quality of data in public domain
- alleviate reporting workload for individual countries
- reduce overlap of similar reports

Data collection:

- Use NEWMDB data to the extent possible
- Joint Working Group (JWG) tasked with ensuring consistency of reporting from different countries
- JWG may use expert judgement when satisfactory data not available
Table of Contents:

1. Introduction and Scope
2. International Legal Instruments and Safety Standards
3. Sources of Spent Fuel and Radioactive Waste
4. Institutional Frameworks for management and regulation of radioactive waste and spent fuel (allocation of roles and responsibilities, institutional arrangements, financing, national strategies)
5. Legal and Regulatory Frameworks (including national waste classification systems)
Technical Publication ‘Radioactive Waste and Spent Fuel Management: Status and Trends’ (5)

- Table of Contents:
  - 6. Waste Management and Spent Fuel Programmes, current practices and technologies for different waste classes and sealed sources
  - 7. Current radioactive waste and spent fuel inventories
  - 8. Forecasts of future inventories
  - 9. Trends, Achievements and Challenges
  - 10. Annex: Country Profiles (according to a standard format – similar to that use by NEA for its country profiles)
Country Profiles:

- b. National legal and regulatory framework;
- c. Waste management and spent fuel strategy and current practices and technologies;
- d. Waste classification, waste and spent fuel quantities (inventory) and disused sources;
- e. Tabulation of existing processing, storage and disposal facilities, capacities and status.
Country Profiles:

- f. Trends and future prospects (volumes of radioactive waste and spent fuel arisings, spent sealed sources, radioactive waste and spent fuel management facilities)

- g. Sources of data (especially for future forecasts) and references
Coordinating Group

- Hans Forsström, SKB (Chair);
- Douglas Tonkay, USDOE;
- Mike Garamszeghy, NWMO;
- Arnaud Leclaire (ANDRA);
- Markus Schmidt (BfS); and
- Sergey Deryabin (Rosatom)
- Bengt Hedberg (ENSREG)
- Vladimir Lebedev (OECD-NEA) [Scientific Secretary for OECD-NEA]
- Borislava Batandjieva (EC DG-ENER) [Scientific Secretary for EC]
IAEA General Conference Side Event (September 2015)

IAEA, NEA, EC Project Tracks Global Status & Trends of Spent Fuel and Radioactive Waste – 16 September 2015
Mikhail Chudakov
"An important element of gaining increased public confidence is that the risks presented by different categories of radioactive waste are clearly explained," said Mikhail Chudakov.
"This must be accompanied by the necessary infrastructure to ensure their safe management throughout the timeframe while the materials remain hazardous," he added. "An important aim of the Status & Trends project is to bring greater clarity to this issue."

Hans Forsström
The Status & Trends project has two purposes:
- To compile a vast amount of information into a readable report that provides a global overview;
- To prepare an IT tool to help simplify the reporting by Member States and ensure consistency in data reporting.

Mr Forsström said the task was carried out by an enthusiastic working group representing most Member States with large inventories of radioactive waste and spent fuel.
Massimo Garribba
"The Status & Trends project is very timely," said Massimo Garribba….[He] saw two specific benefits of the initiative:
• Improved transparency of information on management practices for spent fuel and radioactive waste, and thus improved public confidence on the issue.
• The development of better methods and tools for providing an overview of the global situation.
Current Waste Inventories (1)
Current Waste Inventories (2)

Global Totals of Wastes in Storage and Disposal (m³)

Radioactive Wastes in Disposal (m³)

Radioactive Wastes in Storage (m³)
Current Waste Inventories (3)

Total Waste Volumes (Storage and Disposal)

- LLW: 69%
- VLLW: 29%
- Other: 2%
- ILW: 1.63%
- HLW: 0.06%

Typical Radioactivity Distribution

- HLW: 95%
- ILW: 3%
- Other: 2%
- LLW: 1.5%
- VLLW: 0.5%

2013 Waste Inventory by Origin - Storage

- Decommission Remediation: 58%
- Defense: 3%
- Fuel Fabric Enrichment: 3%
- Nuclear Power: 3%
- Nuclear Application: 3%
- Other: 10%
- Reactor Operation: 4%
- Reprocessing: 4%

2013 Waste Inventory by Origin - Disposal

- Decommission Remediation: 69%
- Defense: 12%
- Fuel Fabric Enrichment: 5%
- Nuclear Power: 7%
- Nuclear Application: 3%
- Other: 2%
- Reactor Operation: 2%
Way Forward (1):

- Development of NEWMDB
  - Collaboration with European Commission (/NEA) to develop a specification for a joint reporting tool (taking NEWMDB as a starting point) with the aim of presenting a proposal to MS at the June meeting of the JWG
  - Provide NEWMDB source code to SSM (Swedish regulator) as soon as possible and work with SSM to implement as a pilot
  - Meeting between international organisations to decide implementation in practice (November 2016)
Future Harmonized Reporting Arrangements

- Bilateral discussions with EC, and IAEA participation in NEA EGIRM
  - Draft Data Template ("working material", developed recently by IAEA/EC) tabled as a basis for discussion
  - Includes consideration of Joint Convention requirements
  - Expectation of further consideration by ENSREG
  - IAEA/EC/NEA meeting envisaged during Q3/Q4 (e.g. to develop a common data specification)

- Objective – common template meeting all requirements
  - Standard software for data submission

Status & Trends Project
## Key Future Milestones

<table>
<thead>
<tr>
<th>Date</th>
<th>Joint Convention</th>
<th>European Commission</th>
<th>Status &amp; Trends</th>
<th>Joint Reporting Tool</th>
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<tbody>
<tr>
<td>Dec 2016</td>
<td>Base date - inventories</td>
<td>Base date – inventories Report to Parl.</td>
<td>Base date – inventories</td>
<td>Finalize Spec. / begin development</td>
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<td>Oct 2017</td>
<td>JC reports</td>
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<td>Test MS version</td>
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<td>Dec 2017</td>
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<td>May 2018</td>
<td>Review Meeting</td>
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<td>Aug 2018</td>
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<td>MS Reports on Directive implementation</td>
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<td>Jun 2019</td>
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<td>Report to Parl.</td>
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<td>Jan 2020</td>
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<td>Second Report</td>
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Thank you!
Specification of a Common Reporting Framework

- Level of aggregation, location or country
- Content – volumes or also activity
- What kind of volumes to be reported (as stored, as disposed, other) and how to convert to disposed volumes
- Conversion from national classification (to GSG-1)
- Volumes in foreign countries – as EGIRM
- Forecasts and frequency (every 10 years??)
- Quantities of SF already reprocessed