



## THE NET ENABLED WASTE MANAGEMENT DATABASE AS AN INTERNATIONAL SOURCE OF RADIOACTIVE WASTE MANAGEMENT INFORMATION

G.W. Csullog<sup>(1)</sup>, V. Friedrich<sup>(1)</sup>, S.T.W. Miaw<sup>(1)</sup>, D. Tonkay<sup>(2)</sup>, A. Petö<sup>(3)</sup>,

<sup>(1)</sup> International Atomic Energy Agency, Vienna, Austria

<sup>(2)</sup> United States Department of Energy, Germantown, Maryland, USA

<sup>(3)</sup> Hungarian Atomic Energy Authority, Budapest, Hungary

### Abstract

The IAEA's Net Enabled Waste Management Database (NEWMDB) is an integral part of the IAEA's policies and strategy related to the collection and dissemination of information, both internal to the IAEA in support of its activities and external to the IAEA (publicly available). The paper highlights the NEWMDB's role in relation to the routine reporting of status and trends in radioactive waste management, in assessing the development and implementation of national systems for radioactive waste management, in support of a newly developed indicator of sustainable development for radioactive waste management, in support of reporting requirements for the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, in support of IAEA activities related to the harmonization of waste management information at the national and international levels and in relation to the management of spent/disused sealed radioactive sources.

### 1. The importance of disseminating waste management information

The evolution of radioactive waste management is, fundamentally, no different than the evolution of waste management in other industrial sectors, such as the chemical industry. Like waste management in other sectors, radioactive waste management was not a high priority in the early days of nuclear research and development. Now it is often viewed as a critical factor that helped decide the fate of the nuclear industry in some Member States and it could help decide the fate of the nuclear industry in others.

Over the last couple of decades, the evolution of radioactive waste management has focused on the development and implementation of technological solutions to problems. From the mid-1990s onward, there has been an ever increasing focus on non-technical aspects of radioactive waste management [1], [2].

In 1998 the European Commission (EC) conducted a survey to determine the interest, knowledge and feelings of European citizens about radioactive waste management [3]. How well informed does the average European citizen think he/she is informed about radioactive waste? The answer, not very well. How much do European citizens actually know about radioactive waste? The answer, not a lot [4].

A recent report by the Union of the Electricity Industry (Eurelectric) stated "*The basic problem concerning radwaste... .. originates from the lack of public support... ..Public*

*information should be reinforced to improve the public perception and political support” [5].*

The IAEA attaches a high importance to the dissemination of information that can assist its Member States. The IAEA’s commitment to the information exchange is described in Article VIII of the Statute of the IAEA and in its Medium Term Strategy [6].

The above indicates the keen interest that nuclear power providers, the EC and the IAEA have in the dissemination of information to the public and other stakeholders. In addition, it indicates the importance of timely and reliable information to support IAEA activities that serve the needs of its Member States.

Section 2 of this paper describes the role of the IAEA’s Net Enabled Waste Management Database (NEWMDB) in the collection and dissemination of information about waste management programmes and activities in its Member States [7], [8]. The dissemination of information is carried both internal and external to the IAEA.

## **2. The role of the NEWMDB in the collection and dissemination of waste management information**

### *Internal Dissemination of Information*

The IAEA’s Country Files System (CFS) is an internal co-ordinated information tool that allows IAEA staff to retrieve information from in-house databases and other information sources on a country-by-country basis. Use of the CFS is restricted to Agency staff. The current (5<sup>th</sup>) version of the CFS provides access to information such as energy and economic data, nuclear facilities, uranium deposits and radioactive waste inventories. The CFS data are derived from a variety of IAEA databases, such as the Power Reactor Information System and the Waste Management Database.

The CFS provides an “information portal” that IAEA staff rely upon to make the informed decisions that are necessary for programmes and activities that support Member States.

### *External Dissemination of Information*

**Status and Trends Report Series:** In 2001, to support the IAEA’s information strategy, the first volume in a new series of reports entitled “Radioactive Waste Management Status and Trends was issued [2]. The objectives of the report are:

- 1. to identify subject areas deemed to be of interest to Member States and the Agency,*
- 2. to report the status of and trends in radioactive waste management according to these subject areas, and*
- 3. to base this reporting, to the greatest extent practicable, on quantitative data.*

One of the main reasons for developing the NEWMDB was to achieve objective 3. Volume 2 of the Status and Trends report, in preparation at time of writing, has already benefited from information collected during the NEWMDB’s first data collection cycle. However, as indicated in a companion paper [7], the level of participation by Member States in the first cycle was quite low. To achieve objective 3, full and effective co-operation of Member States is required during future NEWMDB data collection cycles.

**Scorecard for National Systems for Radioactive Waste Management:** Article 18, “Implementing Measures”, of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (the Joint Convention) [9] states:

*“Each Contracting Party shall take, within the framework of its national law, the legislative, regulatory and administrative measures and other steps necessary for implementing its obligations under this Convention.”*

Article 19, “Legislative and Regulatory Framework”, of the Joint Convention states:

*“1. Each Contracting Party shall establish and maintain a legislative and regulatory framework to govern the safety of spent fuel and radioactive waste management.*

*2. This legislative and regulatory framework shall provide for (i) the establishment of applicable national safety requirements and regulations for radiation safety.”*

The IAEA Safety Fundamentals document “The Principles of Radioactive Waste Management” [10], which is cited in the Preamble of the Joint Convention, states:

*“The timely creation of an effective national legal and associated organizational structure provides the basis for appropriate management of radioactive waste”.*

The implementation of national systems for radioactive waste management has, historically, been different in each Member State. While some mechanisms exist to document national activities [11] to [13], previously there had been no formal, systematic mechanism to assess international progress in establishing national systems for radioactive waste management. This issue has been addressed by the NEWMDB, which provides a mechanism to report this progress in a concise manner that would be easy to digest by policy and decision makers [7]. The “General Information” component of the NEWMDB is used by Member States to identify who regulates their radioactive wastes, the laws and regulations that are relevant to radioactive waste management, significant milestones in radioactive waste management in their countries, and radioactive waste management policies. Member States answer up to 80 policy related questions (some questions are conditional “if” questions, where “Yes” answers require additional questions to be answered). Simple “point-and-click” actions are required to answer the policy questions. The results can be readily compiled into a scorecard to assess the status of and the progress towards the implementation of national systems for radioactive waste management in IAEA Member States [14].

***The NEWMDB and the Joint Convention:*** One of the objectives for developing the NEWMDB was to conform, to the greatest extent practicable, with the reporting requirements of the Joint Convention. Contracting Parties to the Joint Convention are required to “establish... ..guidelines regarding the form and structure of the national reports to be submitted pursuant to Article 32”, where Article 32, “Reporting”, states:

*“1. ...each Contracting Party shall submit a national report... ..This report shall address...:*

- i. spent fuel management policy;*
- ii. spent fuel management practices;*
- iii. radioactive waste management policy;*
- iv. radioactive waste management practices;*
- v. criteria used to define and categorize radioactive waste.*

2. This report shall also include:

- i. a list of the spent fuel management facilities...;
- ii. an inventory of spent...;
- iii. a list of the radioactive waste management facilities...;
- iv. an inventory of radioactive waste...;
- v. a list of nuclear facilities... ..being decommissioned and the status....

The use of an international database, like the NEWMDB, to collect the full scope of information required under Joint Convention reporting requirements is currently not feasible. Member States would have to expend a great deal of effort to provide the full scope of information to the NEWMDB and in many cases they may not be able (or may be unwilling) to report this information within the requirements of NEWMDB data collection cycles. The objective set out was “to conform, to the greatest extent **practicable**, with the reporting requirements of the Joint Convention”. The extent of this conformance is described in detail in Tables VI and VII in Reference [8]. Of note, the current implementation of the NEWMDB does not request information on spent fuel (management policies, practices, facilities or inventories), uranium mine/milling facilities, contaminated sites, radionuclide inventories (except for spent/disused sealed radioactive sources) and facility decommissioning.

The first data collection cycle has shown that the NEWMDB can be used to collect part of the information required for Contracting Party reports under the Joint Convention. As such, Member States that are Contracting Parties and also participate in NEWMDB data collection cycles could attach NEWMDB reports [14] to their Contracting Party reports to minimize the costs and efforts for reporting.

A major reason for seeking conformance with the Joint Convention is that the availability of Contracting Party reports is a decision that will be made by the Contracting Parties themselves. If the decisions are made that (a) the reports will not be publicly available and (b) reporting will only be done under the Joint Convention and not to the NEWMDB, much of the information that would be publicly available via the NEWMDB would disappear from the public domain. This would be contrary to all recent activities to improve the availability of waste management information.

***The NEWMDB and the Indicator of Sustainable Development for Radioactive Waste Management:*** One of the objectives for developing the NEWMDB was to provide support for an indicator of sustainable development for radioactive waste management (ISD-RW). The first data collection cycle with the NEWMDB has shown that it can be used to collect and compile much of the same nationally-based information that would be needed by countries to compute the ISD-RW. However, the first data collection cycle indicated that many IAEA Member States had difficulty identifying their waste classification schemes and with comparing these schemes with the IAEA’s proposed waste classification scheme [15]. Since the identification of waste classes used by a country is an integral part of the ISD-RW, capacity building is warranted to address this issue. Details of the NEWMDB in the context of the ISD-RW are provided in a companion paper [16].

***The Harmonization of National and International Waste Management Information:*** Recently, IAEA Member States that have implemented information systems in support of nationally-based activities in radioactive waste management have begun to focus efforts on the harmonization of the various information systems that have been implemented. This will facilitate the collection and management of information by their national bodies. However, many IAEA Member States either do not have waste management related information systems or they have not begun to deal with multiple, incompatible information systems. Additionally,

many Member States have paid little attention to the exchange of information at the international level.

A recent paper presented at an IAEA sponsored conference [17] describes the IAEA's efforts to improve and harmonize international reporting in the area of radioactive waste management, to provide technical guidance on developing and implementing nationally-based information systems and to develop software tools for use by developing Member States. The objective of the IAEA's efforts is to ensure that its Member States consider factors such as the reporting information to international organizations, the exchange of information between organizations within their country, the exchange of information between countries (for example, in support of international repositories) and the passing of information to future societies after repository closure.

The harmonization of information at the national level will facilitate the collection of data for the NEWMDB. It will also help ensure that the NEWMDB information that is distributed internally and externally to the IAEA is traceable and verifiable.

***The NEWMDB and Information about Spent/Disused Sealed Radioactive Sources (SRS):***

Two recent events have re-focused attention on the need for the safe management of spent/disused SRS. First, Article 28.1 of the Joint Convention states that each "*Contracting Party shall, in the framework of its national law, take the appropriate steps to ensure that the possession, re-manufacturing or disposal of disused sealed sources takes place in a safe manner.*" Second, the IAEA has recently developed, and is currently implementing the "Revised Action Plan for the Safety of Radiation Sources and the Security of Radioactive Materials" [18]. Security measures prevent unauthorized access to, and loss, theft and unauthorized transfer of radioactive sources.

The above events are in addition to the IAEA's on-going activities in support of the management of spent/disused SRS, which have been ongoing since the late 1980's. These activities have focused on two areas - the provision of technical guidance and direct, technical assistance to Member States.

The NEWMDB is used to collect several types of information about the management of spent/disused SRS, namely:

- the location and types of dedicated spent/disused SRS facilities for SRS declared to be or managed as radioactive waste (Note: the term "dedicated" is defined in the NEWMDB's On Line Glossary [19]),
- Member State policies towards spent/disused SRS management, and
- inventories of spent/disused SRS in dedicated spent/disused SRS facilities (see Reference [7] for details).

The NEWMDB is the only publicly available, international source of information about the management and inventories of spent/disused SRS when these sources are declared to be or are managed as radioactive waste and categorized according to the IAEA's newly published source categorization scheme [20]. Due to the low participation rate in the first NEWMDB data collection cycle, the amount of information about these SRS is limited. The full and effective co-operation of Member States is required during future NEWMDB data collection cycles to ensure that more data become available.

### 3. Summary

The NEWMDB is an integral part of the IAEA's policies and strategy related to the collection and dissemination of information, both internal to the IAEA in support of its activities and external to the IAEA (publicly available). In the context of publicly available information, the NEWMDB provides support to the routine reporting of status and trends in radioactive waste management and for a newly developed indicator of sustainable development for radioactive waste management. The NEWMDB is also the only publicly available source in information about spent/disused SRS categorized according to a newly developed categorization scheme.

The NEWMDB could also be used by Contracting Parties to help prepare reports required under the Joint Convention. The NEWMDB is a significant component of the IAEA's strategy to promote the harmonization of radioactive waste management information at both the national and international levels. The NEWMDB also provides the means to assess the implementation of national systems for radioactive waste management.

Participation by Member States was low during the first data collection cycle and needs to be significantly increased. To achieve its full potential, the full and effective co-operation of Member States is required during NEWMDB data collection cycles.

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