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# **Application of the Safety Assessment Methodologies for Near Surface Disposal Facilities (ASAM)**

*Regulatory Review Working Group Report*

*1<sup>st</sup> Research Coordinating Meeting,  
11 to 15 November 2002, Vienna, Austria*

**December 2002**

*RW-IRCM*



## Review and Regulatory Aspects Working Group: Summary Report

The Regulatory Review Working Group held three sessions during the First ASAM Research Coordinating Meeting, 11-15 November 2002 according to the agenda enclosed in Appendix A. The group comprised of 26 representatives from 17 countries (see Appendix B), the large majority of whom were from regulatory authorities and organisations providing regulatory support.

### **I Scope of the Working Group Activities**

*The group considered the proposed draft scope of work.* There was discussion on whether to concentrate as originally proposed on low-level waste (LLW) and intermediate-level waste (ILW). It was suggested to consider also very LLW (VLLW) and waste containing enhanced concentrations of natural radionuclides. The group decided to include consideration of VLLW but that its **primary focus would be on LLW and ILW**.

There was discussion on whether to concentrate on near-surface disposal, as opposed to deep geological disposal. The group saw no problems for developing regulatory review procedures in learning lessons from deep disposal programmes. The group decided to **focus primarily on safety cases and assessments for near-surface disposal** but also to draw lessons from reviews of safety cases for other systems (e.g., Yucca Mountain) where relevant.

There was discussion of the proposed work to consider confidence building activities. The group decided to retain the aim of examining confidence building and to address it in two ways, i.e.:

- By including in the guidance to be developed on regulatory review the assessment of any confidence building activities reported within the safety case; and
- By suggesting that a wider ASAM group considers holding a separate meeting with invited speakers on with experience in risk assessment and stakeholder dialogue and involvement.

There was discussion on how regulatory activities relate to review of safety assessment for near surface disposal facilities; how these activities could be prioritised and on the need to be selective in conducting such reviews. There was discussion of risk-informed approaches to prioritisation of review activities. There was an agreement that the group would prefer to focus on developing **guidance on the review of safety cases**.

### **II Working Group Activities**

*The group reviewed the proposed activities and tasks presented in the “ASAM – The International Project on Application of Safety Assessment Methodologies for Near Surface Waste Disposal Facilities: Proposed Working Group Activities”.* The working group agreed that Activity 1 will focus on regulatory review of the post-closure safety assessment, Activity 2 will focus on the wider safety case and Activity 3 on confidence building.

1. Activity 1 will cover the following three tasks:



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- a. Task 1 – Review of National and International Approaches for regulatory review of safety assessment for near surface disposal facilities;
  - b. Task 2 – Development of guidance/procedure for regulatory review of a post-closure safety assessment; and
  - c. Task 3 – Illustration of the review procedure.

2. Activity 2 will comprise of the following four tasks:

- a. Task 1 – Definition and identification of components of the safety case for review;
- b. Task 2 – Integration of safety assessment in safety case;
- c. Task 3 – Development/application of review procedure for the review of the safety case; and
- d. Task 4 – Illustration of the review procedure on existing safety case.

3. Activity 3 will cover the following two tasks:

- a. Task 1 – Review of existing documentation (ISAM, NEA, etc.); and
- b. Task 2 – Guidance on building confidence in different steps of safety assessment process.

This will lead to the following draft working documents:

- A review procedure for the review of the post-closure safety assessment.
- A review of existing national approaches to safety case review and licensing / authorisation.
- A description of the components of the safety case and guidance on their consideration.
- Topical issues on building confidence in demonstration of safety of disposal of LILW; and
- Summary of findings of the practical application of the ASAM review procedure.

It was decided to review the proposed activities after the first six months of the groups' work, which could be performed at the Joint ASAM Working Group meeting in June, 2-6, 2003 in Vienna.

### **Activity 1 Regulatory Review Procedure**

It was agreed that the review procedure should be general so that it could be applied to existing and new facilities. It was agreed that the procedure should lead to recommendations for consideration during a licensing/authorisation of near surface disposal facilities, review rather than directly to limits or conditions for inclusion in the licence or authorisation.

The procedure to be developed under Activity 1 will apply to the review of the safety assessment; the review of the wider aspects of the safety case will be considered under Activity 2, later in the group's work.



The structure of the procedure was discussed and it was decided to add a further section on regulatory interactions with the proponent / operator. This was one way of integrating the consideration of confidence building topics within Activities 1 and 2. It was decided that the structure of the areas of review would be based on the ISAM methodology for the assessment. There was discussion of the need to consider issues such as the prioritisation of review activities (e.g., through the use of risk-informed processes) and to give guidance on the use of suitably qualified reviewers. It was noted that the document should include definitions based on common understanding of terms such as “risk-informed process”.

### III National Presentations

Additionally three national presentations were made during the Regulatory Review Working Group sessions:

- Ralph Cady (USA) presented a summary of the US NRC’s approach to the review of the post-closure safety case for the proposed disposal of spent fuel and high-level waste at Yucca Mountain;
- David Bennett (UK) summarised the Environment Agency’s approach to the review of the 2002 post-closure safety case for the Drigg disposal facility; and
- Carlos Torres (Spain) summarised CSN’s preparations for the review of the 2003 post-closure safety case for the El Cabril disposal facility.

Discussions around these presentations focused on:

- The definition and use of risk-informed approaches. The need to be selective in conducting regulator reviews was expressed by several members of the group, including representatives from the IAEA and the Canadian, US, and UK programmes. There was also discussion on whether it is possible to determine what are the key issues using only the proponent’s or operator’s information. Some of the group felt that it was necessary to undertake independent studies (assessment calculations) to confirm that the proponent’s modelling results were sensible and to identify uncertainties in system and/or sub-system behaviour. It was agreed that the group should seek to develop a common understanding of risk-informed approaches and to consider how issues identified using such quantitative or semi-quantitative methods could be compared and balanced against issues identified on a qualitative basis.
- The scale of review effort. The review of the Yucca Mountain safety case may involve approximately 100 staff. The review of the Drigg safety case may involve approximately 15-20 staff. Resources for safety assessment and regulatory review in many countries are very limited and this needs to be considered.
- How to train and manage review staff so that they remain focussed on key issues.
- The evaluation of impacts on non-human species.
- The involvement of the public in licensing/authorisation processes.
- The derivation of waste acceptance criteria (WAC) and limits or conditions on repository construction and operation. This discussion centred on those WAC and conditions, which are apparently unrelated to calculated disposal system performance (e.g., package strengths, exclusion of volatile chemical species). It was suggested that assumptions in the safety case often did form the basis for such conditions.



The Working group agreed D. Bennet to assist the undertaking of the groups' activities as a deputy leader.

#### **IV Work Plan**

The group discussed the main activities to be conducted in short and long-term and agreed to the following meetings before the second RCM in February 2004:

- a. Regulatory Review WG preparatory meeting in first quarter of 2003, possibly 17-19 March 2003; and
- b. Joint ASAM working group meeting from 2 to 6 June 2003.



International Atomic Energy Agency

**1<sup>st</sup> Research Coordination Meeting**

***Application of Safety Assessment Methodologies for Near Surface  
Waste Disposal Facilities (ASAM)***

**11 – 15 November 2002**

**AGENDA  
OF  
REGULATORY REVIEW WORKING GROUP**

**Tuesday, 12 November**

**Afternoon**

*Working session 1:*

- 1. Definition of the detailed scope and specific activities of the working group. Iterative session allowing attendees to participate in the definition of the scope of the working group and identification of activities.***

Presentation Overview of the proposed scope, objectives and outcomes: Regulatory review of the safety of near surface low-level waste disposal facilities, including the definition and analysis of the safety case and activities aiming aimed at to building confidence ion the safety assessment and safety case.

Presentation of proposed approach to be adopted and planned activities:

To develop and illustrate a procedure for regulatory review of the safety assessment.

To develop the concept of a safety case; and

Building confidence in the development and review of safety assessment and safety case

- 2. Participants proposals and discussion***

**Wednesday, 13 November**

**Afternoon**

*Working session 2:*

- 3. Presentations on national experience and examples: (e.g. USA; UK, Spain, Russian Federation, and other countries)***
- 4. Decision of issues identified in the national presentations aimed at defining issues to be addressed in the project***
- 5. Definition of working group priority***



Thursday, 14 November

**Afternoon**

*Working session 3:*

**6. *Development of a procedure for the regulatory review of a post closure safety assessment of a near surface low and intermediate level waste (LILW) disposal facility.***

- 6.1 Purpose, areas and approaches of review
- 6.2 Definition of acceptance (technical and other) criteria
- 6.3 Development of content of a review procedure content

**7. *Development of work plan***

- 7.1. Duration of the project (2002-2005); and
- 7.2. Up to the following 2<sup>nd</sup> RCM.



International Atomic Energy Agency

**1<sup>st</sup> Research Coordination Meeting**

***Application of Safety Assessment Methodologies for Near Surface  
Waste Disposal Facilities (ASAM)***

**11 – 15 November 2002**

**IAEA Board Room C04, Vienna, Austria**

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