

# Radiation Health & Safety Advisory Council

an advisory body to the CEO of ARPANSA, established under the ARPANS Act 1998  
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## Council Advice on Radioactive Waste

### Introduction

In a letter dated 17 July 2000, the CEO of ARPANSA, Dr Loy, requested that Council provide advice 'on radiation protection and nuclear safety in Australia as it applies to waste disposal and storage in the light of the present Australian strategy for a national low-level waste repository and an intermediate-level waste store'. The CEO also advised that at a later time, he would expect to seek formally the advice of Council on strategies for the long term management and eventual permanent disposal of Australia's long-term, intermediate-level nuclear wastes.

Current and past activities in Australia involving radioactive material have inevitably resulted in some unwanted material for which no further use could be envisaged, which therefore was classified as radioactive waste. More can be expected to arise in the future for as long as radioactive materials continue to be used in Australian society. At present it seems likely that a myriad of beneficial uses of radioactive materials will continue. Consequently it is important for a sustainable management strategy to be developed that will ensure that Australia's people and environment are protected from harmful effects of our radioactive waste, and no undue burden is placed on future generations by our present action or inaction.

### Council consideration of Radioactive Waste Issues

In the course of its deliberations of the radioactive waste issue Council sought information on:

- Classification;
- Origins and types of radioactive waste throughout Australia;
- Australia's current waste management arrangements;
- International perspective, including recommendations, conventions, and current practices;
- Projected radioactive waste production;
- Transport issues, including local codes and regulations;
- Public concerns and attitudes to radioactive waste management.

Having collected a considerable amount of information on the above topics through discussion at working party and regular Council meetings, Council has concluded its review with a number of recommendations. Some of these recommendations may fall outside the responsibilities of ARPANSA, but are included as they represent Council's views at this point in time.

Council's opportunity to explore the issue of radioactive waste was beneficial in that it informed members of the wide range of issues relevant to this topic, and a range of projected work that will be necessary over the coming years.

At the first meeting of the newly appointed Council on 15 November 2002 it was considered prudent to now provide you with the recommendations that are the result of Council's deliberations on this matter. These have been prepared under three categories as follows:

- Those we consider can be appropriately addressed by ARPANSA;
- Those applicable to transport of radioactive material in general, including radioactive waste;
- Those that are not fully within ARPANSA responsibilities.

Council would appreciate your response to the recommendations that can be considered and acted upon by ARPANSA. Following this response, Council would appreciate the opportunity for discussion of the various issues raised, and would be pleased to consider forwarding more detailed advice, where required.

### **Council Recommendations to the CEO of ARPANSA on Radioactive Waste**

**Recommendation 1:** *ARPANSA should coordinate the development of national guidance on handling and disposal of waste from Naturally Occurring Radioactive Material (NORM) and Technologically Enhanced Naturally Occurring Radioactive Material (TENORM).*

The mining, mineral processing and oil/gas industries produce large volumes of waste material containing NORM and TENORM. Council considered that there is a need for national guidance on management of this type of material.

**Recommendation 2:** *ARPANSA should develop a guidance document on the pre-disposal management of spent fuel considering relevant international experience and recommendations.*

As there are specific technical issues applicable to spent fuel that are generally not relevant to other radioactive materials (the most obvious being criticality control), it is appropriate to draft a separate guidance document on the pre-disposal management of spent fuel, rather than include it in the pre-disposal management guidance proposed in other recommendations.

**Recommendation 3:** *ARPANSA should develop a long-term strategy for regulation of the ultimate disposal of Australian long-lived intermediate level waste (LLILW). Considering that a disposal solution may not be required for several decades, ARPANSA should monitor overseas and international efforts to inform that strategy.*

This strategy would ensure that Australia maintained a current knowledge of and expertise in LLILW disposal facilities research, development and regulation, and allow Australia to learn from overseas experience prior to commencing its own intensive domestic program.

**Recommendation 4:** *ARPANSA should, through the Radiation Health Committee, comprehensively review international experience and recommendations, including publications of the IAEA's Radioactive Waste Safety Standards (RADWASS) Program, to revise/create relevant definitions/codes on radioactive waste, and develop a guidance document addressing all aspects of the pre-disposal management of low level and short and long lived intermediate level radioactive waste (not including spent fuel).*

*In reviewing the radioactive waste definitions, consideration should be given to the following issues:*

- *Defining exempt waste;*
- *Defining Low and Intermediate Level waste as a single category, with two sub-categories; short lived and long lived low and intermediate level waste consistent with the IAEA Safety Guide on Classification of Radioactive Waste;*
- *Including the consideration of the thermal power of the waste in classification system;*
- *Defining waste categories quantitatively.*

*Conditioning criteria should address the following issues:*

- *Set specific activity limits for waste packages, and clearly define how the specific activity is to be calculated;*
- *Identify and set requirements in regard to the physical stability, chemical toxicity and reactivity, and biological pathogenicity of the waste;*
- *Radioactive waste contained in individual waste packages should have similar radiological and non-radiological characteristics. In particular, it should be ensured that waste in a particular waste package is compatible, for example, to avoid chemical interactions within the package.*

Some of Australia's guidance on radioactive waste was produced before the IAEA Basic Safety Standards and the IAEA Safety Guide on the classification of Radioactive Waste. Consequently, the definitions used should be reviewed to determine whether they are consistent with international guidelines. In addition, conditioning criteria for radioactive waste should be set, with which the waste accepted by the National Radioactive Waste Repository (NRWR) and National Radioactive Waste Store (NRWS) must comply. These criteria should relate to the radioactivity, physical, chemical, and any other relevant properties of the waste.

***Recommendation 5:*** *ARPANSA should revise the Code of Practice for the Disposal of Radioactive Waste by the User (RHS13) to ensure it is consistent with the most recent and relevant international recommendations and any new guidance prepared by ARPANSA on pre-disposal management of radioactive waste.*

The current code, published in 1985, requires revision to bring it up to date with relevant international guidance and to make it consistent with other guidance from ARPANSA.

***Recommendation 6:*** *ARPANSA should review its regulatory assessment criteria document in the context of the NRWR and NRWS. ARPANSA should endeavour to finalise the guidance document prior to the National Radioactive Waste Repository being constructed.*

There is a need for ARPANSA to be prepared for licence applications made by the Department of Education, Science & Training assuming the Environmental Impact Statement is approved. The ARPANSA Regulations provide the framework for information requirements, issues to be considered by the CEO of ARPANSA etc in connection with licence applications, however more detailed guidance on licensing processes for the NRWR are required.

***Recommendation 7:*** *ARPANSA should act to facilitate Australia's ratification of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management.*

Ratification of the Joint Convention in time to participate in the first review meeting, scheduled for late 2003, would allow Australia to benefit from the experience of other countries, and from peer review of Australian approaches.

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**The following recommendation relates to the transport of radioactive material in general, but is also applicable to transport of radioactive waste.**

**Recommendation 8:** *ARPANSA should promote uniformity in the implementation of requirements for transport of radioactive material, including radioactive waste, by convening regular meetings of transport competent authorities: These meetings would assist in resolving the following issues identified by competent authorities:*

- *Clarification of the issue of “Commonwealth” transport of radioactive material within another competent authority jurisdiction, and clarify jurisdictional issues at airports;*
- *Development of a detailed proposal for certification of Type B(U) containers, special form material and special arrangements;*
- *Development of inter-jurisdictional arrangements for transport incident response;*
- *Development of a document outlining the roles and responsibilities of competent authorities for use by the competent authorities;*
- *Arrangements for the register of approved Australian transport packages to be made available on the ARPANSA web site.*

The main issues confronting Australia in relation to transport of radioactive material, including radioactive waste, are that with so many jurisdictions and competent authorities, uniformity and cross-jurisdictional issues arise in the implementation of the Transport Code within different regulatory frameworks. The recommendation includes issues identified by an earlier meeting of Transport Competent Authorities, on which there has been little progress.

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**The following recommendations, while addressing aspects of radioactive waste management that are not fully within ARPANSA responsibilities are forwarded to provide advice on areas where ARPANSA should cooperate with other agencies.**

**Recommendation 9:** *ARPANSA should contribute to the establishment of a clear policy position on issues associated with the ongoing development of a spent fuel management strategy with other government agencies. That policy position should specifically address the relevant recommendations of the Minister for the Environment and Heritage in his assessment of the replacement reactor Environmental Impact Statement.*

ANSTO and the government need to have an ongoing spent fuel management strategy, as the long-lived intermediate level waste arising from reprocessing in Scotland or France will be returned to Australia, the first instalment expected within the next ten to twenty years. The fuel type to be used in the reactor is but one of the issues to be considered in the context of the development of an ongoing spent fuel management strategy.

**Recommendation 10:** *ARPANSA should seek advice from relevant agencies, for example from within the Health Portfolio and from National Occupational Health & Safety Commission, to ensure that the characteristics used to preclude radioactive waste from being accepted by the NRWR and NRWS are consistent with the non-radiological requirements of other agencies.*

In addition to radiological hazards, waste that potentially could be accepted by the NRWR and NRWS may also be chemically toxic or pathogenic, and these hazards must also be considered.

***Recommendation 11:*** *ARPANSA should participate in discussions addressing the issue of conditioning facilities and collection points for conditioned waste destined for the NRWR with the states/territories and the Department of Education, Science and Training.*

In considering the operational aspects of a NRWR, establishment of a suitable collection point for conditioned waste within each jurisdiction may be required, as will consideration of operational aspects of conditioning. While this is not strictly within ARPANSA's regulatory role, ARPANSA should participate in discussions on these issues.