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NUCLEAR WASTE  
MANAGEMENT  
ORGANIZATION

SOCIÉTÉ DE GESTION  
DES DÉCHETS  
NUCLÉAIRES

# Asking the

# Right

The Future Management  
of Canada's Used  
Nuclear Fuel

# Questions?

# Executive Summary

**“Asking the Right Questions? The Future Management of Canada’s Used Nuclear Fuel,”** is the first Discussion Document issued by the Nuclear Waste Management Organization (NWMO). It is an invitation for Canadians to reflect on the complex issues posed by used nuclear fuel and to provide their perspectives on various approaches for its long-term management and how those approaches should be evaluated.

Canada’s 22 licensed commercial power reactors have produced about 1.7 million used nuclear fuel bundles since the first unit began generating electricity more than 30 years ago. If all of the bundles were piled like cordwood, end-to-end and to the top of the boards, they would fit into five standard hockey rinks. Approximately 85,000 additional bundles are generated each year. And, if the existing reactors run to the end of their currently projected lives, it is estimated that about 3.6 million bundles of used fuel will result.

Used nuclear fuel is highly radioactive and is very dangerous to humans and the environment if it is not properly managed. In Canada, used nuclear fuel is safely managed by its owners in wet or dry storage facilities at reactor sites, meeting or exceeding regulatory requirements of the Canadian Nuclear Safety Commission. Current storage provisions at the reactor sites are intended as an interim solution. Like many other countries, Canada is now on a path to carefully consider a long-term management approach.

The NWMO was created by Canada’s major owners of used nuclear fuel to meet their obligations under the *Nuclear Fuel Waste Act*, 2002. The organization’s mandate is to conduct a comprehensive study of approaches for the long-term management of used nuclear fuel, to recommend a preferred approach to the Government of Canada, and

to implement the approach approved by the Government on the recommendation of the Minister of Natural Resources.

The NWMO has committed to “develop collaboratively with Canadians a management approach that is socially acceptable, technically sound, environmentally responsible, and economically feasible.” The *Nuclear Fuel Waste Act* requires the organization to consider three methods: deep geological disposal; storage at nuclear reactor sites; and centralized storage, either above or below ground. The NWMO may also consider other methods. This first Discussion Document describes additional options which could be considered, including some methods that are receiving international attention and several others which have been proposed at different times but are of little interest today.

A broad range of individuals and communities of interest are being engaged in an open and transparent dialogue to build the analytical framework the NWMO will use to assess the various management approaches it considers. The framework will consist of a series of questions to be asked and answered for each of the approaches, and a process for comparing the alternatives.

To ensure that development of the analytical framework is driven, from the outset, by the values of Canadian society as a whole, as well as those communities of interest who have chosen to engage on this issue, and that it captures the particular perspectives of aboriginal peoples, the NWMO convened the following activities:

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**Early Conversations.** In an early phase of activity, public opinion research was conducted across Canada and a series of Conversations About Expectations was initiated with more than 250 individuals and organizations to learn about the issues that mattered to Canadians and to seek views about how the study should be conducted.

**Envisioning the Future.** In late Spring 2003, 26 individuals were drawn from a variety of backgrounds and communities across Canada and constituted as an NWMO Scenarios Team. The team developed a number of possible future scenarios as background for further testing of the adequacy of various long-term nuclear waste management approaches being considered.

**Exploring Concepts.** The NWMO commissioned a series of papers to explore several key concepts which are often used to understand and identify solutions to difficult public policy issues. The topics are closely related to many issues and challenges raised with us during the early conversations with Canadians.

**Alternative Perspectives.** Another series of commissioned papers and expert workshops identified broad questions and requirements in a host of expert knowledge areas including: ethics, traditional aboriginal knowledge, environment, nuclear waste host communities, science and technology, finance and law, and international best practice.

The activities described above were aimed at identifying issues, concerns, challenges and uncertainties expressed by Canadians in preliminary discussions. From this foundation an early sense of the questions that will form the backbone of the ana-

lytical framework is emerging. In time, answers to questions like these will provide a basis for comparing various management approaches.

The listing of questions outlined in this Discussion Document is intended to spark discussion and generate feedback. (See next page.)

Once the key questions are determined, detailed criteria will be developed – all of which will have to be addressed and their relative significance established as we assess the different management approaches. Direction on the scope and weighting of the questions will come from further engagement with experts, stakeholders, and Canadians at large.

The NWMO is committed to sharing its thinking as it evolves. Its dialogue will proceed in stages with periodic reporting points, allowing people to think through issues over time and contribute their reflections to shape the study.

A second major Discussion Document, “Understanding the Choices”, will be issued in Mid-2004. It will further develop the analytical framework as modified through dialogue with Canadians, and it will provide a preliminary comparative assessment of the management approaches.

In early 2005, the Draft Final Report, “Choosing a Way Forward – Draft”, will be released. It will provide a refined comparative assessment of the management approaches, propose implementation strategies, and present a draft set of recommendations for review prior to their finalization and submission to the Minister of Natural Resources Canada by November 15, 2005.

KEY QUESTIONS	
OVERARCHING ASPECTS	
Q-1. Institutions and Governance	Does the management approach have a foundation of rules, incentives, programs and capacities that ensure all operational consequences will be addressed for many years to come?
Q-2. Engagement and Participation in Decision Making	Does the management approach provide for deliberate and full public engagement through different phases of the implementation?
Q-3. Aboriginal Values	Have aboriginal perspectives and insights informed the direction, and influenced the development of the management approach?
Q-4. Ethical Considerations	Is the process for selecting, assessing and implementing the management approach one that is fair and equitable to our generation, and future generations?
Q-5. Synthesis and Continuous Learning	When considered together, do the different components of the assessment suggest that the management approach will contribute to an overall improvement in human and ecosystem well-being over the long term? Is there provision for continuous learning?
SOCIAL ASPECTS	
Q-6. Human Health, Safety, and Well-being	Does the management approach ensure that people's health, safety, and well-being are maintained (or improved) now and over the long term?
Q-7. Security	Does this method of dealing with used nuclear fuel adequately contribute to human security? Will the management approach result in reduced access to nuclear materials by terrorists or other unauthorized agents?
ENVIRONMENTAL ASPECTS	
Q-8. Environmental Integrity	Does the management approach ensure the long-term integrity of the environment?
ECONOMIC ASPECTS	
Q-9. Economic Viability	Is the economic viability of the management approach assured and will the economy of the community (and future communities) be maintained or improved as a result?
TECHNICAL ASPECTS	
Q-10. Technical Adequacy	Is the technical adequacy of the management approach assured and are design, construction, and implementation of the method(s) used in the management approach based on the best available technical and scientific insight? (By method, we mean the technical method of storage or disposal of the used fuel.)

Following the publication of each report, the NWMO will actively seek public comment, critique and dialogue before taking the next step. The NWMO will pursue a wide scope of opportunities to engage Canadians on the issues raised in Discussion Document 1, including roundtables, meetings, consultations with aboriginal peoples and nuclear reactor site communities, as well as activities focused on the perspectives of the general public. Central to the organization's outreach to the public will be web-based activities including e-dialogues, ongoing on-line deliberative surveys, and the opportunity to make on-line electronic submissions. National Citizens' Dialogues will be conducted in 2004, to provide further insights into the values closely held by Canadians across the country.

Through these formal and informal activities, the NWMO intends to pursue several key questions with Canadians:

**Has the problem been described correctly?**

Are the descriptions of the issue, the challenge facing Canada today, and the characteristics of Canada's nuclear fuel inventory clear and understandable? Is there anything that should be added?

**Have the appropriate ways to deal with the problem been identified?** Given limited time and resources, on which technical methods should the NWMO focus? Is the preliminary depiction of these methods accurate? Is the proposed list of methods to be studied a fair basis for developing an approach for Canada?

**Have the right questions been asked?**

Importantly – as different methods are assessed, are the issues that matter being captured? Are the correct parameters and questions suggested in

Discussion Document 1? Are there specific issues that should be considered as different technical methods are assessed? What are some considerations for an implementation plan and overall management approach?

**Is the proposed decision-making process understandable and appropriate?** Have the key elements been captured? Are there other considerations that should be included?

The NWMO will use the input it receives to further develop and refine the management approaches and to then apply the analytical framework in preparation for publication of the preliminary comparative analysis of options in its second Discussion Document.

The NWMO website [www.nwmo.ca](http://www.nwmo.ca) is the main repository of information about NWMO activities. The NWMO invites the active participation of Canadians, and looks forward to receiving comments.

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