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Modernizing Canada's Radioactive Waste Policy

ENGAGEMENT SUMMARY REPORT 1

Preliminary Report on Engagement Results (November 16, 2020 -
February 19, 2021)

The feedback in this report is reflective of what we have heard from interested participants so far, but does not reflect policy direction, nor Natural Resources Canada's intent.

Context

On November 16, 2020, the Honourable Seamus O'Regan Jr., Canada's Minister of Natural Resources, launched an inclusive engagement process to review and modernize Canada's radioactive waste policy.

Canada has been a leader in the development and application of nuclear technologies for over half a century. While all radioactive waste is being managed safely, the intent of this review is to ensure we have a strong Radioactive Waste Policy in place that is based on the best available science, continues to meet international practices, and reflects the values and principles of Canadians.

To continue to manage radioactive waste in a responsible, safe, and environmentally friendly way, the Government of Canada is engaging with Indigenous peoples, the general public, stakeholders, experts, and any other interested parties to review and modernize Canada's Radioactive Waste Policy for future generations. Officials from Natural Resources Canada (NRCan) are leading the engagement process and policy review with the support of other federal government departments with responsibilities for the management of radioactive waste in Canada.

This policy review provides an opportunity to stimulate discussion on the safe, effective and environmentally responsible management of radioactive waste in Canada, as well as to listen and obtain views from Canadians on what should be included in a modernized radioactive waste policy to provide clearer direction and greater leadership on radioactive waste management over the long-term.

About this Report

This report is the first of two engagement summary reports intended to provide a snapshot of some of the main points of feedback that NRCan has received. It includes comments received between November 16, 2020 and February 19, 2021. The aim is to help participants build on the conversation by having a window into some of the key ideas introduced so far, and ensure transparency. The ideas presented here are in addition to the online [discussion forums](#), which can be viewed at any time, for a complete picture of the conversation happening there. It does not mean to suggest through this report that there is any consensus on major issues, as there is not. This is highlighted in numerous areas throughout the report. It is likely that the engagement sessions held from February 22 through to May 31, 2021, will provide even further views that differ from what is presented here, and NRCan commits to listening to all ideas and perspectives.

How are we engaging?

In the fall, NRCan began outreach to Indigenous peoples and interested parties through emails, phone calls, and virtual meetings and information sessions to inform interested participants of the process, and seek their views on how they would like to be engaged. We have been incorporating that feedback in our approach, and working with various organizations to help ensure we have fulsome representation at our engagement meetings and roundtables.

Our engagement process is structured around three key avenues of engagement:

- An online engagement forum at <http://www.radwastereview.ca/> featuring discussion papers on some key topics, including waste minimization, waste storage facilities, decommissioning and waste disposal, and an open forum available to all Canadians to suggest ideas and discuss issues.
- Written submissions from individuals and organizations – Natural Resources Canada will consider all written submissions from interested parties submitted via the engagement forum or by email.
- A series of over 90 meetings and virtual engagement sessions to date with participants such as environmental groups, interested organizations and citizens, Indigenous peoples, industry, other levels of government, youth, and academics.

Next Steps

The engagement phase will continue until May 31, 2021. NRCan will publish a second engagement summary report, similar to this one, reflective of the feedback received from February 22 through to May 31, 2021. In addition, the department is accepting written submissions through its website and by email, and will take into account all perspectives as it moves forward with policy modernization.

Following engagement on the discussion papers, a “What We Heard” report that encompasses everything heard throughout the engagement process and draft policy will be released for public comment. NRCan will ensure there is sufficient time, following the release of the report, for meaningful feedback from Canadians and Indigenous peoples.

General Feedback – What We Heard

We received views and perspectives on the big picture with respect to a radioactive waste policy, focusing on overarching principles that should inform the policy, roles and responsibilities, and general comments on the policy beyond the focused discussions on minimization, storage, decommissioning, and disposal detailed below in this report. Key ideas we heard are:

The engagement sessions were **organized around some key themes, but it was clear that the issues don't fall neatly and discretely into those categories**. For example, we heard Canada might wish to consider a policy of prompt decommissioning, but some feel that without decisions on disposal sites, this simply isn't possible, and has implications for storage and other policy areas. Overall, we heard that there is a high degree of interdependence amongst the big issues, and it can be difficult to resolve these questions in a sequential manner.

We heard that an **integrated federal approach** involves all of the departments – such as Environment and Climate Change Canada, Health Canada, Global Affairs Canada, Transport Canada and others – with a stake in this important issue. NRCAN may be the policy lead, but there are other considerations, and complementary legislative and regulatory mandates, which have an important bearing and which reflect the complexity of radioactive waste management.

With respect to the overall context of the policy review, we heard that a notable change since the advent of the current policy in the 1990s is the **evolving challenge of climate change** and the role of nuclear energy in that context. Today, nuclear energy is a pathway to decarbonization in some jurisdictions, and there is a better understanding of its role with respect to addressing climate change. It also plays an important role in producing radioisotopes used for medical diagnostics in the health sector, which have helped many Canadians and others around the world. This, of course, does not mean that there is a consensus endorsement of nuclear energy in Canada. However, it is important to understand the potential climate and health benefits derived from nuclear energy when considering an approach to radioactive waste.

The policy for radioactive waste needs to **consider the implications of evolving technologies**, and make allowances for innovations yet to come, that provide appealing solutions to radioactive waste management we can't envision today. However, this does not mean a policy that is ambiguous with respect to difficult and complex safety and non-proliferation considerations for potentially novel forms of waste, or that puts off the tough decisions to the next generation. Canada should navigate an approach that, of course, prioritizes safety and environmental protection, but allows Canada to benefit from future innovation.

We heard that **flexibility in the policy will be important**. Radioactive waste policy should focus on principles, objectives, and delivering safety and environmental protection. The policy should not be overly prescriptive in terms of how waste owners fulfill their obligations, especially if overly prescriptive approaches prevent Canada from adopting innovative practices and technologies to manage radioactive waste.

Radioactive waste policy, and nuclear energy policy in general, has crucial social, environmental, and economic elements that affect a wide number of constituencies. Radioactive waste policy is therefore about more than just a scientific or engineering challenge, and involves **engagement with Indigenous peoples, communities and interested parties**. The industry needs to earn and maintain public trust, and the new policy should enable that process. Respondents were clear that doing so requires true, two-way engagement, and is not just an exercise in telling people that "nuclear is safe". Instead, it is important to understand and address concerns from all sides, including listening to divergent voices.

From a governance perspective, it is important to build in **regular evaluation of the policy**. Since the inception of the existing policy framework for radioactive waste, there has not been a formal evaluation. The existing approach can make it difficult to identify areas that need improvement, and areas that are working well. The government should consider building in some form of evaluation process into the new policy.

Radioactive waste is an international issue, and clearly **understanding Canada's place in the international system** would be informative. This understanding would guide ideas and approaches that are in place around the world. This includes both technical approaches to radioactive waste management, and practices for Indigenous and public engagement, communications, policy renewal, and more.

Nuclear energy and radioactive waste are often discussed in isolation. It is more useful, though, to contextualize the conversation by comparing against other forms of energy production and other forms of waste. Canadians need access to **information presented in ways that allow risks to be evaluated** comparatively.

We heard a desire for **strong action and direction now**. We have a responsibility to deal with radioactive waste today and to design systems that do so into the future, and not to defer decisions and let the next generation deal with the burden.

The operators of tomorrow may differ from the current generation of nuclear operators in that we may see the emergence of a more diverse set of smaller, commercial operators entering the industry, as contrasted with the large, government owned or backed operators of the previous generation. This means that we will have to consider the implications for policy in the context of a system where operators may not have the same level of long-term operation and continuity. **The role of governments in such an environment will be important as a backstop** that enables smaller operators to contribute.

There is a clear need for an **independent and trusted source for information about the nuclear industry**, and radioactive waste policy and practices. The federal government – particularly NRCAN, but with the support of other federal departments such as Environment and Climate Change Canada, Health Canada and others – is poised to play this role, provided that it maintains and is seen to maintain its clear independence from the nuclear industry. We also heard concerns that roles and responsibilities of NRCAN, the Canadian Nuclear Safety Commission, and the NWMO are unclear, particularly around policy and strategy, and that NRCAN needs to clearly articulate and delimit its role. The public requires reliable and trustworthy sources of information in order to engage effectively.

Theme: Minimization – What We Heard

We asked Canadians and engagement session participants for their views on the role of radioactive waste minimization in the future policy. This discussion was informed by a short discussion paper, found at the [radioactive waste policy review website](#). In the context of this discussion paper, we asked some key questions, featured below. Highlighted feedback includes:

Limits of minimization

We heard from many that, overall, the concept of the waste hierarchy is appropriate, and that minimization of radioactive waste as a key part of our policy going forward makes sense. There is a debate, and differing views, on the desired extent of radioactive waste minimization. That is, some participants told us that they have expectations of significant, absolute minimization of the volume of waste, including down to zero (this includes those who feel that Canada should exit nuclear generation entirely and transition to other energy sources). Others cautioned that minimization is a good principle to follow, but that mandating specific targets could counter our overall progress, and that minimization should be understood in the context of the evolving state of nuclear energy in Canada.

Optimization

Some suggested that “optimization” is a better articulation of our true shared goal: delivering social benefits while protecting human and environmental health. In this sense, minimization is focused on minimizing risks and hazards, not just waste volumes alone. In discussing the general approach that government should take, we heard support for the ALARA – as low as reasonably achievable – principle that currently underlies Canada’s approach to radiation.

We heard that minimization is a natural priority for waste producers and owners, as waste entails significant cost. Especially with a shortage of permanent disposal options, and costs for storage being prohibitive, there are strong market factors in favour of waste minimization. An even clearer understanding of the costs of waste production, storage, and disposal might create even stronger economic incentives for waste minimization. Some other jurisdictions have clear costs for various functions that allow operators to see where minimization can help the bottom line, to the benefit of everyone.

Market incentives are not sufficient on their own; we heard feedback that government has an important role to play in setting objectives, and enacting requirements that drive waste minimization.

Education and information sharing

How Canada communicates its approach to radioactive waste management and minimization is important. Canadians need a shared understanding of what waste minimization is in practice, especially because – without clear definition – the concept of “minimization” can look very different to different people.

Theme: Minimization Discussion Questions

What are your views on waste minimization?
Should Canada continue to use the concept of the waste hierarchy?

What should be the role of government, regulator and waste owners with respect to minimizing radioactive waste?

Are there other principles, beyond those identified by the International Atomic Energy Agency, that you feel are important to consider when designing and implementing a waste minimization program?

Engagement

Science and social expectations come together when we talk about minimization – it is important for Canada to engage with and visibly meet the expectations of Canadians around waste minimization, even if that means going beyond the minimum measures required from a purely scientific perspective. The overall sense around waste production in general is that minimization is always a good starting point, and we should endeavour to meet this expectation in the nuclear context as well.

Waste classification

How we classify waste can make an important difference in understanding and achieving minimization goals. Today's definitions of waste streams and types can be difficult to implement at a practical level and can entail an over-classification of waste. We heard in particular that other jurisdictions have done a good job of implementing a "very low level" waste category that can lead to better outcomes and a clearer focus on higher levels of waste. In addition, we heard that waste streams are not homogenous, and may demand different approaches to minimization. With respect to classification, over-classified waste also entails additional cost; there is an economic benefit to focusing resources where they are most needed. It was suggested that the policy should allow for consideration of the specific nature of waste at a particular site or operation. There is significant variety and one size does not fit all.

New technologies

It was noted that minimization goals may overlap with approaches to disposal, in that future technologies may allow us to further minimize the waste of today. Thus, we may wish to give consideration to long term storage requirements that waste be accessible to future recycling technologies. In effect, the approach taken with respect to storage and disposal can enable future minimization efforts. In this same vein, promoting and supporting innovation, and allowing for innovative approaches, will be an important part of minimization strategy. It was suggested that this could entail direct government funding, innovation challenges, community engagement to drive innovation, and much more.

We heard suggestions that the policy could require owners to routinely evaluate how they are achieving minimization goals, which is currently assessed by the regulator, particularly as new technologies become available, so that we have greater assurance that we are actually benefitting from innovation.

Theme: Storage – What We Heard

We asked Canadians and engagement session participants for their views on the role of radioactive waste storage in the future policy. This discussion was informed by a short discussion paper, found at the [radioactive waste policy review website](#). In the context of this discussion paper, we asked some key questions, featured below. Highlighted feedback includes:

Implications of SMRs on storage and transportation

We heard that the move toward small modular reactors (SMRs) is going to necessitate clear direction on storage that adapts to the SMR reality. Up until now storage on site has generally been chosen, which is made easier in light of a nuclear industry based on a relatively small number of large facilities. SMRs will potentially mean a larger number of smaller facilities, with many located in areas that are either remote, or not proximate to existing facilities. In addition, we have an idea of what SMR adoption may look like, but in 10-20 years things may be different than our current projection.

It was noted that a key consideration of the SMR-storage question is transportation of radioactive waste, as the current on-site-based model may not be ideal in an SMR context, especially in northern communities or ecologically sensitive areas. However, moving away from on-site storage necessarily involves the transportation of materials, potentially over significant distances (as a simple function of Canada’s vast geography). We also heard that transportation and some degree of consolidation of waste storage can address roadblocks to SMR adoption and make it easier for northern and remote communities to participate in the benefits offered by that technology. Should waste – especially from SMRs – be stored on site? Decontaminated on site? Transported? If so, under what conditions?

Transportation

We heard that transportation of waste is of particular interest because it has the potential to concern many communities along the route, as opposed to fixed facilities with a relatively delimited area of direct effect/interest. As well, community engagement and consensus-seeking is more focused for fixed facilities as compared to transportation routes that can implicate many peoples, communities, and jurisdictions. Indigenous, government, stakeholder, and community engagement will be particularly important in defining direction on transportation in the service of storage and other goals.

Storage is highly dependent on other decisions or take action now

We heard that the policy should be definitive and drive toward action, and not simply defer decisions on key questions to the next generation. There is an obligation to address issues in the here and now. This is particularly relevant when considering policy direction with respect to storage.

Storage policy is linked to disposal options, and delayed decisions on disposal have real consequences. Interim storage solutions and infrastructure have a finite lifetime, and delay means stretching that usable life, incurring more cost, and using additional storage capacity that in turn creates more waste. Waiting for a long-term solution on disposal isn’t necessarily a neutral decision without risks of its own, and has a direct impact on storage.

Theme: Storage Discussion Questions

What are your views on how radioactive waste is currently stored in Canada?

What should be the roles and responsibilities of government, the regulator, and waste owners with respect to radioactive waste storage?

Federal role

Some respondents cautioned that an inability to make decisions about radioactive waste disposal results in a sort of stalemate that creates the need for more storage. In terms of a federal role, then, we heard that the federal government should define and shepherd a process that allows for definitive decisions. In that context, participants told us that nuclear energy and radioactive waste management are national issues, requiring national engagement and decision-making. These broad questions may not be effectively resolved by players at the local level.

People and skills matter

The availability of critical skilled labour will be key in maintaining effective radioactive waste storage. The nuclear sector is evolving and growing, and we may face an important shortage of skilled labour – science, engineering, and skilled trades – to allow the sector to flourish in Canada. Government may want to consider actions to ensure that the pipeline of the next generation of workers is ready to step into this critical work.

Understanding Canada in an international context

International comparison and context can help us understand the storage issue in Canada, and enable better public engagement. Just looking at raw volumes of stored materials can be difficult to contextualize; the government should portray what Canada is doing and where it sits relative to its peers, as well as provide clear information for non-specialists to understand the nature of stored waste materials.

Theme: Decommissioning – What We Heard

We asked Canadians and engagement session participants for their views on the role of radioactive waste management in the decommissioning of sites in the future policy. This discussion was informed by a short discussion paper, found at the [radioactive waste policy review website](#). In the context of this discussion paper, we asked some key questions, featured below. Highlighted feedback includes:

Preferred timelines and flexibility

Participants talked about the three proposed timelines and approaches for decommissioning: prompt, deferred, and *in situ*. Canada might wish to consider the adoption of prompt decommissioning; however, several factors add more context to this policy approach. First, blended approaches might actually be preferable for various reasons. For example, prompt decommissioning of certain facilities on a site, while deferring action for others, might optimize results.

In addition, some degree of deferral can materially reduce radiation levels and increase worker safety. In these cases, the reasonable desire for prompt action runs up against safety considerations and points to an important principle: making allowances for case-by-case evaluation and the development of decommissioning plans that suit the site in question.

Decommissioning Delays

The above notwithstanding, we heard concern that Canada has delayed some decommissioning action, either while waiting for technologies to advance, or stalling for other reasons. This type of delay is not strategic deferral, and in such cases we should have a preference for dealing with issues and not waiting interminably. Deferral makes sense if it reduces risks and improves outcomes, but not if it just kicks the can down the road, so to speak.

Dependence on storage and disposal

Decommissioning strategies are bound up with the availability of storage and disposal facilities. Canada's policy should acknowledge that decisions around decommissioning are not taken in the abstract, and must align with the availability of the enabling infrastructure that makes decommissioning possible. It therefore follows that a desire for prompt decommissioning entails clear policy and direction on storage and disposals. These are not discrete, isolated issues.

Transparent financial planning and resourcing

We heard that operators and waste owners should provide a full cost accounting of decommissioning plans at the outset of projects, and that financial resources need to be in place to make this possible. It was further suggested that costed decommissioning plans be regularly updated to provide a clear picture of expectations and evolving plans.

Theme: Decommissioning Discussion Questions

What do you feel are important policy considerations that should influence the choice of decommissioning strategies by nuclear operators and should be considered as part of Canada's radioactive waste policy?

In what ways should Canada's policy address the setting of end-state objectives for decommissioning?

Flexibility for legacy sites

Canada has older sites, designed generations ago before existing regulations, which never included decommissioning in their plans. For such legacy sites it may be appropriate – and useful – for the policy to adopt decommissioning strategies that differ from Canada’s general approach, acknowledging the unique challenges of particularly older sites.

Desired decommissioning end states

With respect to desired end states, it was suggested that the policy recognize that end states will vary based on factors such as location, design, age, Indigenous interests, safety and environmental considerations, community engagement, and more. Furthermore, the concept of decommissioning should include both the facilities and the remediation of the associated environment as well.

In thinking about desired end states, existing nuclear facilities – given their location and connection to transmission lines and other infrastructure – may be ideal sites for future energy generation (nuclear or non-nuclear) or industrial purposes.

Canada may need some way to affect the transfer of institutional control from one body to another, in scenarios where the unconditional release of a site is not fully realized. The policy should reflect various approaches for implementing sound institutional controls in such contexts.

Making decommissioning expertise and knowledge management a strategic asset

Canada’s approach to decommissioning can become an important asset. Our country is a small part of the global decommissioning market, and we may be able to develop waste management technologies and services to answer the demands of a global marketplace. Radioactive waste policy should therefore consider how we can create value from domestic decommissioning activities, and market Canadian expertise abroad.

Knowledge sharing and knowledge management are extremely important for decommissioning, especially as projects can span generations, and workers with extensive knowledge of facilities retire or move on. There may be a government role in enabling knowledge management to ensure that key legacy knowledge is captured and shared effectively.

Theme: Disposal – What We Heard

We asked Canadians and engagement session participants for their views on radioactive waste disposal in the future policy. This discussion was informed by a short discussion paper, found at the [radioactive waste policy review website](#). In the context of this discussion paper, we asked some key questions, featured below. Highlighted feedback includes:

Consultation & Engagement

The importance of consultation and engagement with Indigenous peoples, communities, and stakeholders was a theme that ran through all of the discussion topics. This was especially so for the question of disposal. There exists a strong view around the need to engage all affected parties in discussion and decision-making around disposal plans. Moreover, we heard that there is a gap in this area today, in terms of building trust and meeting expectations for engagement processes, and in terms of enabling high-quality discussions based on a commonly agreed upon understanding of the options, scientific grounding, and social impacts.

Education & information sharing

We heard that there is a strong need for a neutral party to present information on nuclear issues generally, and on disposal issues and decision-making in particular. The public needs a clear sense that long-term oversight is being affected at an appropriate level. This is a difficult challenge, however, in that no party is universally perceived as “neutral”. For some, a government that even presents information on efficacy of nuclear and its safety is advocating a position. This means that Canada will need to think deeply about how it designs engagement and education on nuclear and radioactive waste management more broadly, and how it involves diverse voices in a way that builds public trust and enables decision-making. We heard clearly that any party simply going out to the public and saying “look at the great job Canada is doing” is not enough, and will in fact erode, not build, trust.

Decisive action today vs. enabling future technologies

The discussion on disposal highlighted two core principles that sit in some possible tension with one another. First, we heard clear views that Canada should take decisive action on disposal, and not dither and delay today’s issues into the next generation. Simultaneously, we heard views that disposal policy should actively enable future technologies to recycle and repurpose what today is waste, but what might tomorrow be fuel or other useful products. A possible answer might be found in allowing for the selection of different options for different sites and waste streams.

Theme: Disposal Discussion Questions

What do you feel are important policy considerations that should influence the choice of disposal approaches by waste owners and should be considered as part of Canada’s radioactive waste policy?

What should be the roles and responsibilities of government, the regulator, and waste owners with regards to radioactive waste disposal facilities, including:

- Funding?
- Closure of a disposal facility and its institutional control?
- Indigenous and public engagement and involvement in site selection and post-closure?

Import & export

We heard strong views that Canada should not become a radioactive waste disposal site for the world. Many respondents were clear and forceful on this point, and in not wanting to see Canada take on additional risk if it can be avoided. We heard further that the policy should be clear on this point. If we do choose to allow for the import of waste, we should not hide or obscure this direction and leave the public to discover this on its own.

At the same time, we heard that if nuclear energy is a key to fighting climate change, and if Canada can provide critical disposal solutions for jurisdictions that – absent those options domestically – would otherwise continue using high-emitting energy sources, it might be in our strategic, global interest to accept some waste for disposal. Moreover, as an exporter of nuclear materials, there is some argument that we have a responsibility to help ensure the long-term stewardship of the products we export.

Flexibility driven by geography

Whatever direction is adopted at a high level, some degree of flexibility is desirable in the policy, in light of our diverse geography and waste streams. Importantly, Canada differs from many of its geographically smaller international peers in this regard, and may therefore require different approaches that meet the different demands of our diverse context. But allowing for flexibility should not imply that Canada never makes decisions and keeps its options open through an absence of decision.

In that context, if we do take differing approaches at different sites, we need to be clear as to why. Without clear and detailed explanations of the differing circumstances it can look like our decisions are ad hoc or that some disposal options have more or less integrity than others.

Collaboration

We heard that Canada should strive to achieve a minimal number of disposal sites, but that doing so should not imply only one site for the entire country. Regardless, policy direction that enables some degree of collaboration, within appropriate frameworks, would be helpful. The federal role here is clear as the single body positioned to convene key players, and more to drive national decision-making on disposal through policy. Participants told us that a national framework for disposal is necessary; leaving such questions to individual communities or operators will continue the current dynamic of unclear direction and low coordination.

Clear Roles and Responsibilities

The policy should provide a sense of timing with respect to responsibility and ownership. It can be confusing to reconcile the idea that radioactivity is present for extremely long periods of time, versus when responsibility for a site ends. Clarity on timing, expectations, and criteria is desirable. When is disposal complete? When the site is greenspace? When radiation decays to a certain point?