



Supplementary Information

Presentation from the Canadian Environmental Law Association

In the Matter of the

Canadian Nuclear Laboratories (CNL)

Application from the CNL to amend its Chalk River Laboratories site licence to authorize the construction of a near surface disposal facility

Commission Public Hearing Part 2

May 30 to June 3, 2022

Renseignements supplémentaires

Présentation de l'Association canadienne du droit de l'environnement

À l'égard des

Laboratoires Nucléaires Canadiens (LNC)

Demande des LNC visant à modifier le permis du site des Laboratoires de Chalk River pour autoriser la construction d'une installation de gestion des déchets près de la surface

Audience publique de la Commission Partie 2

30 mai au 3 juin 2022

Final Environmental Impact Statement for CNL's Proposed Near Surface Disposal Facility at Chalk River Laboratories

CNSC Hearing Reference (Ref. 2022-H-07)

Canadian Environmental Law Association

May 30 - June 3, 2022

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I. Interest and Expertise of the Intervenor

Canadian Environmental Law Association (CELA) is a non-profit, public interest law organization. CELA is funded by Legal Aid Ontario as a specialty legal clinic to provide equitable access to justice to those otherwise unable to afford representation for environmental injustices.



I. Interest and Expertise of the Intervenor

Dr. Tanya Markvart is an environmental consultant with expertise in strategic sustainability planning. She holds a P.H.D. in Planning from the University of Waterloo and a B.F.A. from Concordia University.

Dr. Ian Fairlie is an independent citizen scientist who has specialised on radioactivity in the environment with degrees in chemistry and radiation biology. His doctoral studies at Imperial College, UK and Princeton University, US examined nuclear waste technologies. He formerly was scientific Secretary to the UK Government's committee on internal radiation risks. One of his areas of expertise is the dosimetric impacts of nuclear reactor emissions, in particular tritium.

II. Summary of Findings

- CNL's Final Environmental Impact Statement does not:
 - Capture the **intergenerational and intragenerational justice** concerns surrounding the distribution of economic, health and safety, and environmental costs, risks, and burdens of the project over its lifetime
 - Pay adequate attention to the **precautionary principle**

II. Summary of Findings

- CNL and CNSC staff’s “adverse environmental effects” assessment is unreasonable as it does not meet the purposes of CEAA 2012 (Recommendations 1-6)
- CNL and CNSC staff have failed to adequately consider key factors required under CEAA 2012 (Recommendations 7-8)
- CNL’s EIS and CNSC staff’s EA Report insufficiently demonstrate compliance with the NSCA and its regulations, including the *General Nuclear Safety and Control Regulations*, *Class I Nuclear Facilities Regulations* and *Nuclear Security Regulations* (Recommendations 9-12)
- CNL’s final EIS and CNSC staff’s EA Report fail to adequately consider sustainable development (Recommendations 13-16)
- There are critical omissions related to the human health impacts of the proposed NSDF in CNL’s final EIS, CNSC staff’s EA Report and associated documents (Recommendations 17-24)

CNL’s Final EIS contains insufficient information for the CNSC to make a determination that the NSDF is not likely to cause significant adverse environmental effects as required under section 7 of CEAA 2012

III. Detailed Findings

A. CNL and CNSC Staff’s “Adverse Environmental Effects” Assessment Does not Meet the Purposes of the Canadian Environmental Assessment Act, 2012

- CNL’s EIS and CNSC staff’s EA Report’s consideration of “environmental effects” are grossly inadequate as they:
 1. Reach a finding of “no significant adverse environmental effects” based on incomplete and insufficient environmental data;
 2. Disregard the purpose of the Act requiring the application of the precautionary principle for matters of uncertainty and potential risk per section 4(b) of CEAA 2012;
 3. Are based on sustainability evaluation criteria which are insufficient to maintain a healthy environment and a healthy economy per section 4(h) of CEAA 2012; and
 4. Ignore serious deficiencies in CNL’s human health analysis.

Purposes

4 (1) The purposes of this Act are

- (a) to protect the components of the environment that are within the legislative authority of Parliament from significant adverse environmental effects caused by a designated project;
- (b) to ensure that designated projects that require the exercise of a power or performance of a duty or function by a federal authority under any Act of Parliament other than this Act to be carried out, are considered in a careful and precautionary manner to avoid significant adverse environmental effects;
- (c) to promote cooperation and coordinated action between federal and provincial governments with respect to environmental assessments;
- (d) to promote communication and cooperation with aboriginal peoples with respect to environmental assessments;
- (e) to ensure that opportunities are provided for meaningful public participation during an environmental assessment;
- (f) to ensure that an environmental assessment is completed in a timely manner;
- (g) to ensure that projects, as defined in section 66, that are to be carried out on federal lands, or those that are outside Canada and that are to be carried out or financially supported by a federal authority, are considered in a careful and precautionary manner to avoid significant adverse environmental effects;
- (h) to encourage federal authorities to take actions that promote sustainable development in order to achieve or maintain a healthy environment and a healthy economy; and
- (i) to encourage the study of the cumulative effects of physical activities in a region and the consideration of those study results in environmental assessments.

A. CNL and CNSC Staff’s “Adverse Environmental Effects” Assessment Does not Meet the Purposes of the Canadian Environmental Assessment Act, 2012

Recommendations

Recommendation No. 1: Given the significant lack of a detailed inventory, the CNSC cannot make a finding under section 7 of the CEAA 2012 that the NSDF is not likely to cause significant adverse environmental effects. CNL should be required to provide a detailed inventory of the wastes in question given the stated interest of the public in this project and its impact on findings of adverse environmental effects.

Recommendation No. 2: The final EIS should explain why long-lived radionuclides cannot be separated from the waste stream, including why a more suitable design was not chosen in order to reduce the risk of significant adverse environmental effects in the centuries to come.

Recommendation No. 3: CNL should be required to explain the significant amount of Cobalt-60 in the NSDF waste inventory, as well as how the NSDF is expected to contain this to avoid significant adverse environmental effects.

A. CNL and CNSC Staff’s “Adverse Environmental Effects” Assessment Does not Meet the Purposes of the Canadian Environmental Assessment Act, 2012

Recommendations

Recommendation No. 4: To ensure adherence to the purposes set out in sections 4(1)(b) and 4(2) of CEAA 2012, greater attention must be paid to the precautionary principle, including by incorporating the notion of reversibility into the consideration of alternatives and by ensuring that future retrievability of the waste is possible no matter what design is chosen.

Recommendation No. 5: To reflect the purpose set out in section 4(1)(h) of CEAA 2012, CNL’s sustainability evaluation criteria must be broadened to make it clear that appropriate attention has been devoted to the NSDF project’s potential intergenerational and intragenerational distributive justice impacts, including economic risks and burdens.

Recommendation No. 6: CNL should be required to provide a detailed explanation of the models it is relying on, as well as the large uncertainties in its radiation doses and risks. Furthermore, given the uncertainty and the estimated high doses to workers, the CNSC cannot conclude that adequate protection of human health is ensured per the NSCA, and thus cannot grant a licence amendment to CNL.

B. CNL and CNSC Staff Fail to Consider Key Factors Required Under the Canadian Environmental Assessment Act, 2012

- Opportunities have not been provided for meaningful public participation, contrary to the purposes of CEAA 2012 and the factors which ought to inform an EA
- The “alternatives assessment” conducted by CNL fails to undertake a transparent comparison of all alternatives with the aim of identifying the best option as required under section 19(1)(g) of CEAA 2012

Factors

19 (1) The environmental assessment of a designated project must take into account the following factors:

- (a) the environmental effects of the designated project**, including the environmental effects of malfunctions or accidents that may occur in connection with the designated project and any cumulative environmental effects that are likely to result from the designated project in combination with other physical activities that have been or will be carried out;
- (b) the significance of the effects referred to in paragraph (a);**
- (c) comments from the public** – or, with respect to a designated project that requires that a certificate be issued in accordance with an order made under section 54 of the National Energy Board Act, any interested party – that are received in accordance with this Act;
- (d) mitigation measures** that are technically and economically feasible and that would mitigate any significant adverse environmental effects of the designated project;
- (e) the requirements of the follow-up program** in respect of the designated project;
- (f) the purpose of the designated project;**
- (g) alternative means of carrying out the designated project** that are technically and economically feasible and the environmental effects of any such alternative means;
- (h) any change to the designated project** that may be caused by the environment;
- (i) the results of any relevant study** conducted by a committee established under section 73 or 74; and
- (j) any other matter relevant to the environmental assessment** that the responsible authority, or – if the environmental assessment is referred to a review panel – the Minister, requires to be taken into account.

B. CNL and CNSC Staff Fail to Consider Key Factors Required Under the Canadian Environmental Assessment Act, 2012

Recommendations

Recommendation No. 7: All comments in this submission should be addressed to ensure the EA process reflects the requirements in sections 4(1)(e) of CEAA 2012, which requires opportunities be provided for “meaningful public participation during an environmental assessment”, and 19(1)(c), which requires an EA to account for comments received from the public.

Recommendation No. 8: CNL’s final EIS fails to undertake a transparent comparison of all alternatives with the aim of identifying the best option. As such, CNL’s consideration of alternative means does not live up to the requirement set out in section 19(1)(g) of CEAA 2012 and further explained in the CNSC’s RegDoc 2.9.1 and Generic Guidelines. CNL should be required to provide a more fulsome comparison of alternatives, in line with expectations set out in these legislative and policy documents.

C. CNL's EIS and CNSC Staff 's EA Report Insufficiently Demonstrate Compliance with the NSCA and its Regulations

- CNSC staff's assessment disregards the statutory object of the CNSC which requires they “prevent unreasonable risk, to the environment and to the health and safety of persons, associated with that development, production, possession or use” as set out in the *Nuclear Safety and Control Act*
- CNL has not demonstrated they will “make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed” as required under section 24(4)(b) of the NSCA
- The licence application and final EIS lack key information required under section 3(1)(j) of the General Regulations, including the names, forms, and origins of many of the waste types that may result from the activity to be licenced

C. CNL's EIS and CNSC Staff 's EA Report Insufficiently Demonstrate Compliance with the NSCA and its Regulations

Recommendations

Recommendation No. 9: In accordance with the international law principle of justification, CNL must be required to justify the radiation exposures to people living nearby from the routine emissions of the proposed facility. The CNSC must also ensure it considers in its own decision-making whether the benefits of the proposed facility to individuals and society outweigh the risks posed by increased radiation exposures from the facility.

Recommendation No. 10: The CNSC must ensure its decision-making aligns with the precautionary principle and thus, only licence CNL's activities to the extent they are carried out in a way which ensures protection of the environment and human health and safety.

C. CNL's EIS and CNSC Staff 's EA Report Insufficiently Demonstrate Compliance with the NSCA and its Regulations

Recommendations

Recommendation No. 11: The CNSC cannot grant the licence amendment until the licence application contains all information required by section 3 of the *General Nuclear Safety and Control Regulations*.

Recommendation No. 12: The CNSC should not grant the licence amendment until the information which demonstrates compliance with section 3 of the *Class I Nuclear Facilities Regulations* is provided by CNL.

D. CNL's Final EIS and CNSC Staff's EA Report Fail to Adequately Consider Sustainable Development

Recommendations

Recommendation No. 13: CNL must adopt a comprehensive set of sustainability evaluation criteria and context-specific sustainability concerns throughout assessment and planning. CNL's three evaluation criteria (technical feasibility, economic feasibility, likely environmental effects) do not constitute a full suite of generic sustainability issues rooted in possible project impacts. Notably, CNL must adopt evaluation criteria that adequately capture the intergenerational and intragenerational justice concerns surrounding the distribution of economic, health and safety, and environmental costs, risks, and burdens of the project over its lifetime.

Recommendation No. 14: CNL must undertake a transparent comparison of all alternatives with the aim to identify the best option. CNL identifies the preferred NSDF option using a flawed evaluation method that allows for the systematic elimination of facility type and facility design options based on one criterion or two criteria, as opposed to a comparative evaluation of options based on a comprehensive set of sustainability criteria, weighing the relative costs and risks of all options in this light. This stepwise, criteria-based process of eliminating options to select the preferred option does not constitute a full comparative analysis and it is unacceptable.

D. CNL's Final EIS and CNSC Staff's EA Report Fail to Adequately Consider Sustainable Development

Recommendations

Recommendation No. 15: CNL's failure to devote appropriate attention to retrievability in the design of the project is a critical flaw. CNL's final EIS must incorporate a discussion about how the NSDF's disposal cell system will be designed to ensure that present and future generations will be able to retrieve the waste. This discussion must devote attention to a range of accidents and malfunctions and environmental impacts related to the key components of the NSDF design, notably the engineered containment mound and its passive safety features (base liner system, final cover system, and perimeter berm).

Recommendation No. 16: CNL must devote appropriate attention to the preservation of records, knowledge, and memory across generations to transfer vital information from one generation to the next. This failure rests in part on CNL's inadequate project timeframe and lack of planning for the post-institutional control period. CNL must develop a transparent, justifiable, and traceable procedure to select and manage a set of essential records for future generations.

E. There are Critical Omissions Related to the Human Health Impacts of the Proposed NSDF in CNL's Final EIS, CNSC Staff's EA Report and Associated Documents

Recommendations

Recommendation No. 17: CNL should be required to address CELA's comments on CNL's first draft, which are listed in Part VI.A. above. These comments are still relevant, but have not been answered in CNL's final EIS.

Recommendation No. 18: CNL's EIS should address the large uncertainties involved in CNL's estimates of radiation doses and risks, including an explanation of why these uncertainties arise in the first place.

Recommendation No. 19: CNL's EIS should take into account the findings of the INWORKS studies, which provided strong evidence, inter alia, that radiation risks exist even at very low dose rates, and that the risks of leukemia/lymphoma, solid cancers and circulatory disease are higher than current risk estimates.

E. There are Critical Omissions Related to the Human Health Impacts of the Proposed NSDF in CNL's Final EIS, CNSC Staff's EA Report and Associated Documents

Recommendations

Recommendation No. 20: The CNSC should set a lower and more protective maximum dose limit that is in line with the IAEA's guidance of 20 mSv/year, averaged over 5 years (i.e., a limit of 100 mSv in 5 years). The CNSC should furthermore set a lifetime dose limit to ensure that workers do not end up receiving an overly high dose over the course of a long career in the nuclear industry.

Recommendation No. 21: With many of the radionuclides proposed to be disposed of being millions of times larger than the "safe" regulatory thresholds, it is imperative that CNL's documents, including the final EIS itself and NSDF waste inventory document, provide detailed information about the wastes, especially their names, forms, and origins.

E. There are Critical Omissions Related to the Human Health Impacts of the Proposed NSDF in CNL's Final EIS, CNSC Staff's EA Report and Associated Documents

Recommendations

Recommendation No. 22: The CNL should provide a comparison of the numerical concentrations of the various long-lived nuclides in the wastes with the limits recommended by the international and national agencies e.g., the IAEA and CSA. Long-lived nuclides should be separately assessed and, if necessary, placed in a suitable repository designed to prevent their escape for much longer periods of time than the NSDF.

Recommendation No. 23: The extremely large quantity of Co-60 should not be placed in what CNL itself admits is essentially a landfill site. The form and origin of the Co-60 should also be described.

E. There are Critical Omissions Related to the Human Health Impacts of the Proposed NSDF in CNL's Final EIS, CNSC Staff's EA Report and Associated Documents

Recommendations

Recommendation No. 24: More thought should be given to the consideration of alternatives. While the NSDF may be the cheapest solution, a more permanent facility would be better suited to ensure the long-term containment of the included ILW. The proposed NSDF suggests that more suitable alternatives were discarded due to a lack of focus on very long-term containment and protection of the environment and human health.

IV. Order Requested

Order Requested (1)

CELA seeks an order:

1. Finding CNL's EIS is inadequate and there is not the requisite information to find the project will not cause significant adverse environmental effects;
2. Prohibiting “any act or thing in connection with the carrying out” of the NSDF at Chalk River by virtue of not having an EA decision statement finding the project will not likely cause significant adverse environmental effects;

Order Requested (2)

3. Denying CNL's request to amend the nuclear research and test establishment operating licence for the Chalk River Laboratories ; and
4. An order to the proponent remitting the licence application with direction that all deficiencies noted in this submission be remedied and the information demonstrating fulfillment of all statutory preconditions and regulatory requirements be clearly set out prior to moving forward with a licence amendment request.

Thank you.