

BRIEFING NOTE ON SASKATCHEWAN RESEARCH COUNCIL SLOWPOKE REACTOR DECOMMISSIONING – AUGUST 2019

The Canadian Nuclear Safety Commission has issued an amended Notice of a Public Hearing on the Saskatchewan Research Council (SRC) application to amend their license for the SLOWPOKE-2 reactor on the campus of the University of Saskatchewan from an operating license to a decommissioning license. The deadline for public comment is August 26th with a hearing scheduled for September 26th, possibly in an online format. **Key issues include:**

- as much of the waste as possible will be classified for “unconditional release” and sent to the municipal landfill
- radioactive water from the reactor pool will be processed then released into the municipal sewage system
- the reactor pool will be “decommissioned” by filling it with concrete to the floor level
- the irradiated core will be transferred to a transportation flask while under water in the reactor pool
- the high level radioactive wastes (the reactor core) will be shipped to the U.S.
- low and intermediate level radioactive wastes will be shipped to Chalk River, in eastern Ontario
- beryllium oxide dust from SLOWPOKE-2 reactor components is a chemical and radiological hazard
- The collective dose for decommissioning is estimated to 2.7 mSv (compared to 0.26 mSv for U of Alberta)
- the decommissioning work is being contracted to CANDU Energy, a branch of SNC Lavelin
- a financial guarantee of \$5.76 M is in place, with SRC’s President/CEO is authorized to expend up to \$7.5M
- Six months of decommissioning begins after the CNSC approval; in 2020 SRC will apply for a Licence to Abandon
- SRC describes a low level of public interest, with only positive or neutral responses to the decommissioning plan
- CNSC staff determined that there is no duty to consult with Indigenous peoples about this project

A public hearing will be held at the offices of the Canadian Nuclear Safety Commission on September 26th, 2019

Comments on the decommissioning plan and the request to amend the license from an operating licence to a decommissioning license must be submitted to the Canadian Nuclear Safety Commission no later than August 26th.

Send your comments by August 26th to cns.interventions.ccsn@canada.ca or by fax to 613-995-5086

The CNSC hearing will be in Ottawa, but you can request to “appear” before the Commission by phone or video.

Documents are available on the [CNSC web site](#) or email northwatch@northwatch.org for a link to the [Google Drive](#) with the CNSC and SRC submissions and references.

Notes from CNSC Staff Submission CMD 19-H100: Application to Amend the License for SRC's SLOWPOKE-2 Reactor

- SRC’s current non-power reactor operating licence is valid until June 30, 2023. In December 2018, SRC decided to decommission the facility and submitted an application to the Canadian Nuclear Safety Commission (CNSC) to amend (Exec Summary)
- End state objectives are expressed variously: return the decommissioned areas of the facility to a state that allows for unrestricted use (Exec Summary), original state (p 5), “SRC’s end-state objective is to return the facility to a condition that allows for unrestricted use, and to request a Licence to Abandon, with no institutional control required.” (p 15)
- Operates on Highly Enriched Uranium (p.3)
- “The safety analysis for this reactor confirms that no credible event could result in any significant release that could be harmful to the public or the environment” (p 3)
- Reactor is in a concrete well beneath the floor or the reactor room (p 4)
- SRC notified CNSC staff of its intention to decommission the SLOWPOKE-2 reactor facility in May 2018 (p 4)
- “SRC plans to dismantle the reactor, segregate and remove the materials for storage or disposal at licensed waste management facilities, and restore the site to its original state for unrestricted use (referred to as the end-state).” (p 4-5)
- “The decommissioning project will include taking concrete core samples from the reactor pool for activation assessment. After the structural materials and inner surface coating are confirmed as below the clearance criteria, which are found in the *Nuclear Substance and Radiation Devices Regulations*, the reactor pool will be filled with concrete to the floor level.” (p 5); End-State

Report to CNSC staff AFTER project completion; sequence is Radiological survey by SRC, CNSC staff inspection, Reactor pool is filled with concrete, SRC reports, including survey results [it is unclear when CNSC gets survey results, how decision about clearance level is made]

- Fuel core removed and sent to “licensed facility”,
- Removal of fuel core and reactor waste authorized under operating license
- The transport of the spent fuel will be subject to a separate licence and considered by a Designated Officer (p 5)
- Performance ratings for all safety and control areas for 2013-2018 were “satisfactory”
- The decommissioning work will be performed by a small team of operating staff from CANDU Energy who are trained on these specific activities. (p 8)
- The Reactor Engineer and the Reactor Technician are CANDU Energy employees who support the reactor dismantlement. (p 8) THEREFORE: is it not only the licensee who must be qualified to carry out the activity, but CANDU Energy?
- Radiation protection measures will be required for activities that involve opening of the reactor container, handling of the components and equipment removed from the reactor pool, temporary storage of those materials prior to shipment from the SLOWPOKE-2 reactor facility, and pool cleanup. Personnel directly involved in decommissioning activities will be designated as NEWs and their required training is detailed in the *Decommissioning Training Plan* (p 10)
- The irradiated core will be transferred to the transportation flask while under water to take advantage of the shielding factor. Once the transportation flask and the core are removed from the pool, the fuel no longer represents a radiation hazard to workers. Integrated continuous air monitoring will be used to monitor ambient radioactivity levels to inform work planning and selection of protective equipment. (p 11)
- The beryllium components, when removed from the pool, are considered a radiological and chemical hazard to workers due to the beryllium oxide dust that forms when exposed to air. To minimize dispersal of beryllium dust, the beryllium components will be wrapped in plastic sheets once removed from the reactor pool. In addition to standard personal protective equipment (PPE) and using long handed tools, all staff directly handling, or in the vicinity of beryllium components are required to wear respirators to mitigate the dust exposure. An air sampling radiation monitor will be in operation to monitor for airborne contamination. All the beryllium components will be transferred into a dedicated beryllium shielded container. (p 11)
- The collective dose for the decommissioning project is estimated to 2.7 mSv [10]. For comparison, the collective dose for the University of Alberta SLOWPOKE-2 reactor decommissioning project was 0.26 mSv, and the highest dose to a worker was 0.15 mSv (p 11)
- During the decommissioning, the only source of liquid effluent will be the reactor pool water, after it is processed through ion exchange columns, and demonstrated to be free of contaminants. Prior to the planned release of this liquid, the water will be processed through the purification system until it meets the release criteria described in REGDOC-1.6.1: *Licence Application Guide: Nuclear Substances and Radiation Devices* and criteria specified in of the City of Saskatoon Sewage Use Bylaw No. 9466. Under these conditions, the liquid releases to the environment will be negligible (p 12)
- To minimize waste from decommissioning of the facility, SRC plans to decontaminate, segregate and remove non-radioactive, hazardous waste and chemicals, and reuse and recycle to the extent possible. The DWMP provides the waste clearance process, and contamination limits for unconditional release. (p 14)
- The decommissioning of the facility is expected to produce an estimated volume of eight cubic meters of solid radioactive waste, which will be transported to a licensed radioactive waste management facility. The fuel will be repatriated to the United States under the Canada-U.S. agreement to return spent HEU fuel to its country of origin. (p 14)
- CNSC staff have determined that the activities to be conducted will not cause an adverse impact on potential or established Indigenous and/or treaty rights. Therefore, the duty to consult does not arise in relation to the proposed licence application. (p 15)
- SRC has a financial guarantee in the amount of \$5.76 M, which will be used to fund a large proportion of the decommissioning project. SRC’s Board of Directors has approved the decommissioning of the SLOWPOKE-2 reactor and authorized the President/CEO to negotiate and execute any contracts required up to \$7.5M. (p 16)
- A factsheet and Frequently Asked Questions (FAQ) were posted along with contact information were posted on the SRC SLOWPOKE-2 webpage. In December 2018, SRC hosted a public meeting regarding the decommissioning of the SLOWPOKE-2 reactor facility. There has been a very low level of public interest regarding the facility in general. Responses received have been either neutral or positive. (p 16)
- Work to begin as soon as decision is rendered; SRC plans to execute the decommissioning activities over approximately six months ; SRC anticipates producing the End-State Report in January 2020 and apply to the Commission for a licence to abandon in June 2020. (p 16)
- CNSC staff conclude that Saskatchewan Research Council is qualified to carry out the activity authorized by the proposed licence (p 16) [but it is CANDU Energy who will be carrying out the work]