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BY EMAIL

December 6, 2011

c/o Louise Levert
Secretariat
Canadian Nuclear Safety Commission
280 Slater St., P.O. Box 1046
Ottawa, ON K1P 5S9
E-mail: interventions@cnsccsn.gc.ca

Dear Ms Levert:

**Re: Cameco Corporation's application to renew the Fuel Facility
Operating Licence for the Port Hope Conversion Facility**

Please find enclosed Lake Ontario Waterkeeper's comments on Cameco's application for a licence renewal for the Port Hope Conversion Facility. Waterkeeper intends for the attached to stand as a written intervention. If you have any questions or comments, please do not hesitate to contact my office at 416-861-1237.

Yours truly,

Mark Mattson
Waterkeeper & President

EXECUTIVE SUMMARY

Cameco Corporation owns and operates a uranium conversion facility in Port Hope, Ontario. The plant is located at the heart of one of Lake Ontario's most historic and environmentally vulnerable harbours. For decades, nuclear-related industrial pollution has affected water quality and the natural environment in and around Port Hope.

The company has applied for a five-year licence renewal for its conversion plant. A renewed licence would allow for operations until February 2017. The Canadian Nuclear Safety Commission [CNSC] must decide whether it should renew this licence, and if so, what terms and conditions should be imposed on Cameco to protect the environment over the five-year licence term.

In order to protect the environment, Waterkeeper recommends that:

- The licence should address stormwater emissions from the site, which currently contain more than twice the CNSC's internal limit on uranium discharges.
- The licence should include discharge limits for all other effluent sources, including non-contact cooling water. These limits should be commensurate with federal and provincial standards for the protection of aquatic life.
- The licence should not permit the discharge of process effluent to the environment.

CONTEXT

Cameco Corporation has applied for a renewal of the operating licence for its conversion facility in Port Hope, Ontario. The conversion facility is located on the shore of Lake Ontario, on a point of land that juts out where the Ganaraska River meets the Port Hope harbour. Two additional contaminated sites in Port Hope are covered by the conversion facility operating licence for storage purposes: 158 Dorset Street East and the Centre Pier.

Cameco's conversion facility is one of the most polluted sites in North America. It is contaminated with both historic pollution that pre-dates Cameco's control, and more recent or ongoing contamination from Cameco's operations. Soil and buildings on the site contain a plethora of pollutants, including uranium, petroleum hydrocarbons, vinyl chloride, trichloroethylene, ammonia, radium-226, and arsenic. The total estimated volume of contaminated soil on the conversion facility site alone is 87,500 m³, including 56,600 m³ of contaminated soil below the water table.¹

The potential environmental and health impacts of this industry's presence on the lake have weighed on local residents for generations. Environment Canada has formally identified the Port Hope Harbour as an "Area of Concern" on the Great Lakes due to the approximately 90,000 m³ of sediments contaminated with uranium, radionuclides, heavy metals, and PCBs that it contains.²

The conversion facility consists of two plants: one that converts uranium trioxide (UO₃) into uranium dioxide (UO₂), and a second that produces uranium hexafluoride (UF₆) for export to light water reactor fuel plants outside of Canada. Cameco's current licence allows for the production of up to 2800 tonnes of uranium as uranium dioxide (UO₂) and up to 12,500 tonnes of uranium as uranium hexafluoride (UF₆). The licence also allows for the production of up to 2000 tonnes of uranium metal as depleted or natural uranium metal and alloy, up to 1000 tonnes of uranium as UO₂, and up to 1000 tonnes of uranium as ammonium diuranate.

Licensing Requirements

The conversion facility is considered a Class 1B nuclear facility under section 1 of the *Class 1 Nuclear Facilities Regulations*, SOR/2000-204. Cameco requires an operating licence pursuant to s.24(2) of the *Nuclear Safety and Control Act*, S.C. 1997, c.9 ["NSCA"] to operate the Port Hope conversion facility.

¹ Cameco Corporation, Environmental Impact Statement, Vision 2010 Project (2011) at 3-25.

² Environment Canada, "Canadian Remedial Action Plans: Areas of Concern, Port Hope Harbour". Accessed November 2011 at <<http://www.ec.gc.ca/raps-pas/default.asp?lang=En&n=C8779909-1>>.

The CNSC last issued a five-year operating licence, number FFOL-3631.0/2012, to Cameco for the Port Hope Conversion Facility following a hearing in 2006. That licence will expire on February 29, 2012. Cameco has requested a five year renewal for the licence, which would cover the facility's operations from March 1, 2012 until February 29, 2017, unless suspended, amended, revoked, or replaced.

In order to renew Cameco's operating licence, s.24(4) of the NSCA specifies that the Commission must be satisfied that Cameco:

- (a) is qualified to carry on the activity that the licence will authorize the licensee to carry on; and
- (b) will, in carrying on that activity, **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.

In order to ensure that Cameco has made adequate provision for the protection of the environment, the Commission can include terms or conditions in the licence pursuant to section 24(5) of the NSCA.

Vision 2010 Project

In addition to the re-licensing that this submission addresses, Cameco's Port Hope conversion facility is the subject of a redevelopment plan known as Vision 2010. The plan involves demolishing certain buildings on the site, including on the Centre Pier, constructing new buildings, managing contaminated soil and waste, and transporting waste to AECL's Port Hope Longterm Low-level Radioactive Waste Management Facility.

The Vision 2010 plan is currently undergoing a federal environmental assessment [EA]. Lake Ontario Waterkeeper has been an active contributor to the EA for Vision 2010 since 2008. With funding provided by the Canadian Environmental Assessment Agency, LOW retained a hydrogeologist and a fish biologist to review the proposal. LOW staff and our retained experts met with Cameco representatives to discuss our recommendations in early July 2011. Based in part on that meeting, LOW submitted detailed recommendations to the CNSC and Cameco regarding the project's Environmental Impact Statement on July 11, 2011. LOW submitted a follow-up letter to the CNSC regarding the draft Comprehensive Study Report on October 20, 2011. Waterkeeper's main concerns with the Vision 2010 project are the containment of waste, contaminated soil, and contaminated water, in order to prevent any adverse impacts on Lake Ontario.

During the Vision 2010 review, it became apparent to Waterkeeper that certain issues identified as serious problems by our retained experts were considered outside the scope of Vision 2010 by Cameco and the CNSC. Particularly, the need for a stormwater management system that prevents contaminated stormwater from entering Lake Ontario was identified as a priority. As these issues have been deemed to be outside the scope of Vision 2010, it is appropriate to address them in the course of this relicensing process. These concerns and recommendations are reflected below.

COMMENTARY

Cameco's record of spills and leaks indicates the need for strict licensing conditions and regulatory oversight.

Cameco's submission to the CNSC supporting its licence renewal application states that, "environmental emissions are being controlled to levels that are a fraction of the regulatory limits".³ Cameco cites this compliance, along with the overall performance of the facility, as evidence that the company is qualified to carry out all activities permitted by the licence, stating that the application reaffirms Cameco's commitment to take "all reasonable precautions to protect the environment and the health and safety of employees and the public...".⁴

The company's environmental record, particularly in the five years since the last re-licensing hearing, does not support Cameco's submission with respect to environmental protection. While the area around Cameco is contaminated with waste produced by Cameco's predecessor, Eldorado Nuclear, new pollution has been released to the environment during Cameco's tenure. This pollution includes spills, leaks, and accidental releases, in addition to ongoing or routine emissions such as the contaminated stormwater emissions described above.

In the last four years alone, nine instances of major leaks or excessive levels of contamination at the facility have been reported by Cameco and the Port Hope press. Both of the plants comprising the Port Hope conversion facility were shutdown for some part of the most recent licensing period due to spills or contamination.

³ Cameco Corporation, "Written submission supporting the renewal of Port Hope Conversion Facility's Class IB Nuclear Fuel Facility Operating Licence Application", (3 November 2011) at 3.

⁴ Cameco Corporation, "Written submission supporting the renewal of Port Hope Conversion Facility's Class IB Nuclear Fuel Facility Operating Licence Application", (3 November 2011) at 3.

Uranium has been released to storm drains; uranium hexafluoride has been released in buildings; fluoride air contamination levels have been found to exceed action levels; hydrofluoric acid has leaked in the plant's loading zone;⁵ freon has leaked into the air and cooling water from the uranium hexafluoride plant;⁶ extensive contamination has been discovered under the uranium dioxide plant;⁷ and uranium hexafluoride contamination has been found below plant buildings, shutting down that part of the operation for more than a year.⁸

The emissions from Cameco's facility reflect the fact that pollution from this site is ongoing. A renewal of Cameco's operating licence should only be granted if terms and conditions are imposed that will ensure that continued operation of the facility does not add any new contamination to the lake or the surrounding environment.

The licence should include terms and conditions to address emissions and contamination that will not be addressed by the Vision 2010 Project.

In order to issue a licence renewal under the NSCA, the Commission must be satisfied that Cameco has made adequate provision to protect the environment. That includes ensuring that the company has taken, or plans to take, all reasonable steps to protect the environment. While Cameco has taken steps towards better environmental protection in recent years through its plans for the Vision 2010 project, accessible and reasonable steps remain untaken. Those steps should be mandated as conditions in a renewed facility operating licence.

Vision 2010 is a step in the right direction. It involves removing contaminated buildings and soil from the site, which will reduce contamination in groundwater and ultimately in Lake Ontario. However, Cameco has scoped fundamental problems with the site out of the Vision 2010 project. These gaps mean the conversion facility will continue to be a major pollution source on Lake Ontario until it is shutdown and decommissioned, which may not be for another 50 years. It is appropriate for the CNSC to address these gaps during the re-licensing process through the inclusion of terms and conditions protective of the environment.

⁵ Jennifer O'Meara, "Leaks at Cameco Spark Investigation", Northumberland News (15 October 2009), available at <<http://www.northumberlandnews.com/news/porthope/article/137677>>.

⁶ Joyce Cassin, "Cameco Reports Two Leaks", Northumberland News (8 July 2009), available at <www.waterkeeper.ca/2009/07/08/cameco-reports-two-leaks/>.

⁷ Jennifer O'Meara, "Cameco's late-2008 incidents brought to council" (16 April 2009), available at <<http://www.northumberlandnews.com/news/porthope/article/124146>>.

⁸ Cameco Corporation, "Cameco reports strong third quarter earnings" (31 October 2007) available at: <http://www.cameco.com/investors/financial_reporting/quarterly_reports/2007_q3/text/>.

The most significant of these gaps may be the lack of a stormwater management system on the property. Currently, neither stormwater quantity or quality is managed on the conversion facility site.⁹ Stormwater either runs through various outfalls or directly overland into the harbour.

The current quality of stormwater on the conversion facility site indicates how vital it is to address this issue. Stormwater should have the same chemical make-up as rainwater. It is not process water and should not be contaminated by plant activities. Cameco's 2009 Annual Compliance Report indicates that stormwater discharged from the facility has an average uranium concentration of 218 ug/L.¹⁰ This is more than 43 times higher than Ontario's Interim Provincial Water Quality Objective for uranium, which is only 5 ug/L.

The amount of uranium in Cameco's stormwater is also more than double the CNSC's Optimization Screening Objective [OSO] of 100 ug/L. The OSO was set by the CNSC to demonstrate when licensees have taken "all reasonable precautions...to control their releases of uranium to the environment".¹¹ The fact that stormwater from the Cameco site in Port Hope is more than twice as high as the OSO indicates that all reasonable steps to control uranium emissions are not being taken in Port Hope. **In fact, the level of uranium discharge in the Port Hope conversion facility's stormwater is significantly higher than the discharged process effluent from any uranium mine or mill in Canada.**¹²

One explanation for the level of uranium in the site's stormwater discharge is leakage into the system from surrounding groundwater. It indicates a pressing need for a complete upgrade to the stormwater system on the site. **At a minimum, stormwater should not be contaminated by contact with Cameco's property before discharge into the lake.**

The Vision 2010 project includes plans to install outflow control valves and to reduce the number of stormwater outfalls to the harbour. It does not include plans to add the capacity to hold or treat contaminated stormwater before discharge. As there is little extra room on

⁹ Cameco Corporation, Environmental Impact Statement, Vision 2010 Project (2011) at 5-62.

¹⁰ Cameco Corporation, 2009 Annual Compliance Report for the Port Hope Facility, "Table 7.3.9: Storm Water Monitoring 2009", accessed online at: <http://www.cameco.com/fuel_services/common/pdfs/Cameco_-_PHCF_2009_Annual_Compliance_Report.pdf> at 80.

¹¹ Canadian Nuclear Safety Commission and Environment Canada, "2008 Annual Report on Uranium Management Activities", at 5, accessed online: <http://publications.gc.ca/collections/collection_2011/ccsn-cnsc/CC171-9-2008-eng.pdf>.

¹² *Ibid.*, Table 1 at 15.

the property, Waterkeeper understands that Cameco may not be able to install settling ponds as would normally be used to collect and test water prior to discharge. However, Cameco could install an alternative technology, such as sub-surface tanks, to achieve the same objective.

Stormwater could be collected, allowed to settle, and tested. If it met provincial and federal water quality standards, the water could be discharged to the lake. If not, it could be transported to an appropriate liquid effluent disposal site.

It is an ideal time for the CNSC to require the installation of such a stormwater management system as a licensing condition. Much of the property will be cleared and excavated during the Vision 2010 project. Tanks could be installed with limited additional cost or interruption to Cameco's operations.

Recommendation 1: The licence should only be issued if the CNSC can ensure Cameco will stop discharging contaminated stormwater to Lake Ontario. The licence should require the collection and testing of stormwater prior to discharge. The licence should require the application of standards protective of the environment to stormwater prior to discharge, such as the Provincial Water Quality Objectives or, at a minimum, the CNSC's Optimization Screening Objective.

Effluent limits in Cameco's licence should be commensurate with provincial and federal standards.

Cameco's current operating licence allows far higher levels of contaminant discharge than those allowed under provincial or federal law. While process waste water is no longer directly discharged, Cameco continues to discharge cooling water effluent to the Port Hope harbour. This effluent, along with stormwater effluent discharge, should be subject to discharge standards commensurate with federal and provincial standards.

The current facility operating licence allows Cameco to discharge up to an average 300 ug/L of uranium as a daily action level, and up to an average of 150 ug/L every month. Both of these values far exceed Ontario's Interim Provincial Water Quality Objective for freshwater, which limits uranium to 5 ug/L. The licence limits also far exceed the Canadian Environmental Quality Guidelines for the Protection of Aquatic Life, which limit short-term (such as daily) concentrations to 33 ug/L, and long-term (such as monthly) concentrations to 15 ug/L.

The licensed limits for ammonia and fluorides also exceed the Canadian Environmental Quality Guidelines for the Protection of Aquatic Life. The ammonia licence limit allows 500 ug/L monthly or 1000 ug/L daily, while the Canadian limit is a maximum of 231 ug/L

depending on pH and temperature. The fluoride licence limit allows up to 1500 ug/L on average monthly, while the Canadian standard is only 120 ug/L.

The provincial and federal standards are set so as to protect aquatic life; these are lower than the standards set for drinking water quality. Discharge standards set at a level that exceeds federal and provincial aquatic protection standards are, necessarily, less protective of the environment.

Discharge limits should be imposed on *all* effluent discharged to the environment from the Cameco properties, whether non-contact cooling water or stormwater. The Commission should ensure that these licensing standards are at least as protective of aquatic life as federal and provincial standards.

Recommendation 2: Discharge standards for non-contact cooling water and stormwater effluent should be imposed as conditions of a renewed facility operating licence. Limits should be commensurate with both Provincial Water Quality Objectives and Canadian Environmental Quality Guidelines.

The licence should not permit the discharge process effluent to the environment.

Cameco's existing licence, FFOL-3631.0/2012, was issued in 2007. At the time, Cameco discharged process water into the harbour along with non-contact cooling water. This practice is reflected in licence conditions 5.5 and 5.6, which address the discharge of process water effluent into the harbour and/or the sanitary sewer:

- 5.5 The licensee shall control the quality of each process waste water effluent discharged from site 1 such that no discharge concentrations of pH limits stipulated in Column III of Appendix E to this licence are exceeded.
- 5.6 The licensee shall not discharge any process waste water effluent into the sanitary sewer system of the Municipality of Port Hope.

Additionally, Appendix E to the licence sets out maximum concentrations, pH limits, and action levels for process waste water effluent.

As of 2007, Cameco has been evaporating process water instead of discharging it to the lake. This method was adopted to address the ongoing non-compliance with MISA

standards that the company's sewage works demonstrated prior to the switch.¹³ The licence conditions permitting process water discharge should be removed from an updated licence. This is necessary to ensure that Cameco cannot revert to discharging process water without first returning to the CNSC for a licensing amendment and notifying the public.

Recommendation 3: Waterkeeper recommends that the Commission remove references to the discharge of process waste water in the licence to ensure Cameco cannot discharge process water to the environment. This change was also recommended by CNSC staff.

RECOMMENDATIONS

In accordance with the concerns summarized above, Lake Ontario Waterkeeper submits the following recommendations:

1. The licence should only be issued if the CNSC can ensure Cameco will stop discharging contaminated stormwater to Lake Ontario. The licence should require the collection and testing of stormwater prior to discharge. The licence should require the application of standards protective of the environment to stormwater prior to discharge, such as the Provincial Water Quality Objectives or, at a minimum, the CNSC's Optimization Screening Objective.
2. Discharge standards for non-contact cooling water and stormwater effluent should be imposed as conditions of a renewed facility operating licence. Limits should be commensurate with both Provincial Water Quality Objectives and Canadian Environmental Quality Guidelines.
3. Waterkeeper recommends that the Commission remove references to the discharge of process waste water in the licence to ensure Cameco cannot discharge process water to the environment. This change was also recommended by CNSC staff.

¹³ Between 2003 and 2007, Cameco reported 10 instances of exceeding environmental discharge limits on sewage output at its Port Hope facility to the Ministry of the Environment.¹³ On those ten dates, Cameco's sewage output at Port Hope resulted in acute lethality to daphnia, in contravention of the federal *Fisheries Act*.