Canadian Nuclear Safety Commission
Commission canadienne de sûreté nucléaire

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Your file *Votre référence*

Our file *Notre référence*

Regulatory Operations Branch

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Mr. John Miller
6083 Knoxville Road
Rural Road 4
Port Hope ON LIA 3V8

Dear Mr. Miller:

This is in response to your letter of October 26, 2008 in which you requested responses to outstanding questions (12) concerning Cameco's Port Hope Conversion facility. In my view, the President of the Canadian Nuclear Safety Commission (CNSC) and CNSC staff already provided adequate responses (Ref.: 1 and 2) to your questions raised. In this letter, CNSC staff, to the best of its knowledge, makes another sincere effort to provide you with its responses to your questions. In addition, the CNSC will be posting this response on our website.

In your letter, you indicated that you could not find on Cameco's website the following two technical reports which Cameco submitted to the CNSC and posted on it's website in September 2008:

1. "Update on Soil Characterization Beneath the UF_6 Plant (Building 50), Cameco Port Hope Conversion Facility", prepared by Golder Associates Ltd.
2. "Port Hope Conversion Facility Building 50 Risk Assessment", prepared by SENES Consultants Limited.

However, CNSC staff did confirm that these reports were available on Cameco's website and the precise links are included in the attachment for your information. CNSC staff has requested Cameco to provide you with these two reports. Although, these two study reports provide answers to several of your questions, CNSC staff is providing you with responses to your 12 questions (see attachment).

I trust this will help you to understand better CNSC's regulatory oversight of Cameco's Port Hope Conversion facility and serves to close this matter.

Yours sincerely,

Ramzi Jammal
Executive Vice-President
and Chief Regulatory Operation Officer

Canada

Attachment: CNSC Staff's Responses to your 12 Outstanding Questions

References: 1. CNSC letter dated June 6, 2008, from Mr. H. Rabski to you.
2. CNSC letter dated August 14, 2008, from Mr. M. Binder to you.

c.c.: A. Oliver (Cameco)
C. Cannon (Municipality of Port Hope)
M. Binder (CNSC)

ATTACHMENT

CNSC Staff's Responses to Mr. Miller's 12 Outstanding Questions

CNSC Staff's Response to Question No.1

Can you explain the technical, economic and environmental justification for the CNSC staff accepting Cameco's argument that removing any more soil will undermine the footings of the UF_6 building?

The CNSC's *General Nuclear Safety and Control Regulations* under its paragraph 12(1)(*f*) require licensees to take all reasonable precautions to control the release of nuclear or hazardous substances within the licensed site and into the environment as a result of its licensed activity. As a CNSC licensee, Cameco has an obligation to ensure that its licensed activities do not pose an unreasonable risk to the workers, the members of the public and the environment. In the case of subsurface contamination discovered beneath Cameco's uranium hexafluoride (UF_6) plant in Port Hope, any potential risks to the public or environment could only arise through the migration of contaminants off the Cameco site. The flow of ground water beneath the UF_6 plant was and remains the only means of mobilizing the contamination off site. There were many options available to Cameco to eliminate the risk of contaminants migrating off its UF_6 plant site, including the removal of all contaminated soil from beneath the UF_6 plant. All of these options would achieve the same end goal, elimination of risk to the environment and public. Cameco and its consultants prepared a matrix to assess the safety, practicality and reasonableness of the various options that would eliminate potential risks to the environment and the public. This matrix was reviewed by CNSC staff and based on their comments; Cameco updated and resubmitted it to the CNSC. This options matrix allows a risk-informed decision regarding the option that would achieve the desired goal in the safest, most practical and effective way. The assessment of options determined that a groundwater recovery system (a "pump and treat" system) along with some removal of soil from affected areas inside the plant building was the best overall remedial option. The installation and operation of the proposed pump and treat system alone would eliminate the migration of groundwater off-site (i.e., eliminates any potential risks to persons and the environment).

The decision to limit the excavation of contaminated soil from beneath the UF_6 plant building (see response to question no. 4) was primarily a safety issue. Geotechnical experts indicated that removing additional soil would compromise the structural integrity of the footings. This information is provided in the "Report on Subsurface Investigation Building 50 (UF_6Plant), Cameco Corporation Port Hope Conversion Facility" dated August, 2008 prepared by Golder Associates Ltd. Cameco submitted this report to CNSC staff on September 4 and posted on its website The precise link is a as follows:

http://www.cameco.com/port_hope/common/pdfs/news/Final%20Golder%20report%20on%20UF6%20subsurface%20investigation%20(September%202008).pdf

CNSC Staff's Response to Question No. 2

Were there soil tests? Did they come in safely under the Ontario government guidelines for industrial soil?

Soil testing was conducted during the course of the clean-up activity. This information was submitted to the CNSC on March 10, 2008 in a report titled, "Report on Update on

Soil Characterization Beneath the UF_6 Plant (Building 50), Cameco Port Hope Conversion Facility". This report was further updated by Golder Associates Ltd. and resubmitted to the CNSC under title; "Report on Subsurface Investigation Building 50 (UF_6 Plant) Cameco Corporation Port Hope Conversion Facility" mentioned above. As indicated in these reports, there are instances where the soil analysis indicates levels above the Ontario Ministry of the Environment (MOE) guidelines for industrial soil. MOE and CNSC staff reviewed these reports along with the applicable guidelines and concluded that Cameco's pump and treat system for containing and controlling the groundwater contamination was the best to protect the environment.

CNSC Staff's Response to Question No. 3

How did Cameco and the CNSC determine there was no risk to the environment or worker safety to leave the soil there?

A risk assessment study was completed by SENES Consultants Limited. A preliminary study was submitted to CNSC staff on December 20, 2007 under title, "Updated EMP". In addition, a SENES report titled; "Port Hope Conversion Facility Building 50 Risk Assessment" dated August, 2008 was submitted to the CNSC and the Ontario MOE on September 4, 2008. This report may be found at Cameco's website. The precise link is as follows:

http://www.cameco.com/port_hope/common/pdfs/news/Comprehensive%20risk%20assessment%20for%20UF6%20plant%20(September%202008).pdf

This risk assessment study found that there was no risk to the environment, the public or workers for leaving the remaining soil beneath Building 50.

CNSC Staff's Response to Question No. 4

What readings or data in those studies convinced your staff to let Cameco remove only the top 2 feet of soil under the building, when the contamination was tracked as deep as 7 metres?

As mentioned in the answer to question No.1, Cameco submitted a report titled, "Report on Update on Soil Characterization Beneath the UF_6 plant (Building 50), Cameco Port Hope Conversion Facility" to the CNSC and the Ontario MOE on March 10, 2008. Cameco targeted soil excavations to capture the contaminated soil in areas where the leaks to the subsurface occurred. In general, the two feet of soil excavated contained a substantial portion of the contamination. There were areas within the plant where

additional soil was excavated. For example, in the effluent treatment area, a 16x8 foot area was excavated to five feet deep; in the cell maintenance area, the original excavation was 11x16 feet and five feet deep; and in the cell room there were four excavation 15x20 feet and three feet deep. Again, geotechnical experts indicated that removing additional soil from beneath the UF_6 building, would compromise the structural integrity of its footings. Based on findings from site inspections and advice from independent geotechnical experts, CNSC staff accepted that the amount of soil removed under Building 50 is adequate to prevent risk to workers, the public and the environment.

CNSC Staff's Response to Question No. 5

Did the CNSC give permission for Cameco to restart its UF_6 facility (which it did on Sept. 12) before its staff reviewed the company's environmental investigation report and the accompanying risk assessment report (filed on Sept. 4 but not yet analyzed)?

The reports Cameco submitted to the CNSC on September 4, 2008 compiled all the previous information into final reports with same conclusions. CNSC staff's letter of September 12, 2008 allowing Cameco to resume it UF_6 plant operations was based on the findings from CNSC staff's site inspections conducted from January to August 2008, and taking into consideration conclusions and recommendations from all assessment reports received before September 12, 2008. CNSC staff's acceptance of Cameco's UF_6 plant start-up plan was based on the following facts:

- all leak sources were found and fixed,
- the required corrective actions to prevent such incidents were completed,
- the contaminated soil sources were excavated, and
- the groundwater contamination was contained and controlled by commissioning a pump and treat system.

CNSC Staff's Response to Question No. 6

Cameco originally estimated that it would remove 40 percent of the contaminated soil. What was the final percentage figure for soil removal?

As indicated in CNSC's letter dated August 14, 2008 to you (Ref. 2), the percent removal of contaminated soil under Building 50 is not the determining factor of a successful remediation. What is more critical is that there are measures in place to safely manage the residual contamination under Building 50.

Cameco's original estimate (40 percent uranium contaminated soil removed) was based upon the areas associated with potential leak points (i.e. Areas of Concern). These areas were the liquid effluent area, cell room, and cell maintenance room. The data provided in the July 15, 2008 report to the CNSC is the result of chemical analyses of the drummed soil that is being stored at Cameco's site. This is the most accurate information available for the estimated removal of soil contaminants. The estimated mass of uranium removed from the Areas of Concern is 151.5 kg, which is actually greater than the estimate provided in March 2008.

CNSC Staff's Response to Question No. 7

What is the location of the site where the excavated soil will be disposed of?

The actual disposal site for the excavated soil has not been confirmed by Cameco to date. However, the excavated soil is currently being stored safely at Cameco's Port Hope Conversion facility for future disposal at an appropriate facility in USA (yet to be selected by Cameco).

CNSC Staff's Response to Question Nos. 8 and 9

What is the volume and concentration of contaminated soil on Cameco's site outside the footprint of the UF_6 building?

How do those concentrations compare to the applicable Ontario water or soil quality guidelines?

Cameco is conducting a site-wide characterization of subsurface conditions to identify volume and concentration of contaminated soil on Cameco's entire site. Cameco is expected to complete this report by the end of 2008, but will continue addressing any new contamination found in a timely manner.

CNSC Staff's Response to Question No. 10

Cameco says it will not be removing any more soil contaminated by the spill. Why has the CNSC not made it do more?

Please see our response to Question No. 4.

CNSC Staff's Response to Question No. 11

Mr. Binder's letter to me said that "ground water and surface water monitoring data indicate that workers and members of the public are not exposed to levels of contaminants that represent a health risk". No mention is made of the effect on the environment. What is the CNSC's risk assessment of that?

The risk assessment completed by SENES Consultants Limited concluded that with the mitigation measures in place, there is no risk to the workers, the public, or the environment from the current operation of Cameco's UF_6 plant (Building 50). Additionally, Cameco has completed toxicity testing of water samples collected from the Port Hope harbour. All of these tests were conducted in accordance with the Ontario MOE's requirements and they passed. CNSC staff continues monitoring closely the start-up of the UF_6 plant and the operation of the groundwater collection and treatment system in place by Cameco.

CNSC Staff's Response to Question No. 12

Why has the CNSC said nothing about the reasons for letting Cameco restart the plant? Why does it not feel it owes an explanation to the people of Port Hope, who might see the decision to leave thousands of more cubic metres of contamination in the soil until decommissioning as repeating the mistakes of the past?

The actions required by Cameco prior to re-starting the UF_6 plant were discussed at the Commission's Public Meeting on May 14, 2008. This included the commissioning of the pump and treat water wells located to the south and east of the UF_6 plant. With the completion of all required corrective actions as mentioned in response to question no. 5, the CNSC allowed Cameco to re-start its UF_6 plant in mid September 2008.