

LICENCE RENEWAL BRIEFING GUIDE



Blind River Refinery

Licence Renewal Handbook

On September 30, 2020, Cameco's Blind River Refinery submitted its application to the Canadian Nuclear Safety Commission to renew its Class 1B Fuel Facility Operating Licence for a period of 10 years.

Cameco's Blind River Refinery (BRR) currently holds a Class 1B Fuel Facility Operating Licence (FFOL) issued by the Canadian Nuclear Safety Commission (CNSC).

The current licence FFOL-3632.00/2022, issued on February 28, 2012, is valid until February 28, 2022.

As an existing Class 1B Fuel Facility Operating Licence holder, we are rigorously regulated by Canada's nuclear regulator – the CNSC. The CNSC grants licences for a determined amount of time and licence holders must apply to the CNSC to request the licence be renewed.

This handbook has been developed to provide members of the public with an overview of Cameco's Blind River Refinery and information about the licence renewal process.

If there's any information you need, please contact us at [905.800.2020](tel:905.800.2020) or cameco_ontario@cameco.com and we will be happy to help you.



100% of Blind River residents surveyed in 2021 are aware of Cameco's Blind River Refinery and 96% are supportive of the refinery.



Contents

- 01 Who We Are
- 02 Message from the General Manager
- 03 The Nuclear Fuel Cycle
- 04 Our Current Licence
- 05 Application to Renew Our Licence
- 06 Canada's Nuclear Regulator
- 07 CNSC Licence Renewal Process
- 09 Participating in the Public Commission Hearing
- 10 Responsible and Safe Operations
- 12 Our Record of Strong Safety Performance
- 13 Environmental Protection
- 14 Water Emissions
- 15 Groundwater Monitoring
- 16 Air Emissions
- 17 Radiation
- 18 Environmental Risk Assessment
- 19 ERA Conclusions
- 20 Community
- 23 2021 Public Polling
- 24 Public Disclosure Protocol
- 25 Resources

Who We Are

Cameco Corporation (Cameco) is a major supplier of uranium processing services required to produce nuclear fuel for the generation of **safe, clean, and reliable electricity around the world.**

Cameco's Blind River Refinery ▾

More than half of Ontario's electricity is generated using the fuel products produced by Cameco's Fuel Services Division, right here in Ontario. We operate a refinery in Blind River, a conversion facility in Port Hope, and a fuel manufacturing operation with facilities in Port Hope and Cobourg, Ontario.

Our Blind River Refinery

Since 1983, Cameco's Blind River Refinery (BRR) has processed natural uranium ore concentrates into natural uranium trioxide (UO_3). BRR receives uranium ore concentrates from mines and mills worldwide. The majority of the UO_3 produced at BRR is shipped to Cameco's Port

Hope Conversion Facility, where it is converted to either uranium dioxide (UO_2) or uranium hexafluoride (UF_6). BRR also prepares and ships small quantities of UO_3 to other customers around the world who are licenced by the Canadian Nuclear Safety Commission (CNSC) or the equivalent authority in the respective country.

BRR is the world's largest refinery and is located approximately five kilometers to the west of the Town of Blind River in the District of Algoma. Our property covers an area of approximately 258 hectares in total, which includes a secured area of approximately 11 hectares, representing the CNSC licenced area. While located in Blind River, the refinery is also located adjacent to and south of the Mississauga First Nation, our closest neighbour.



100%
Cameco Ownership



140
Employees



Licensed to
2022
by the Canadian
Nuclear Safety
Commission



Licence Capacity
18m kgU
of UO_3

Message from the General Manager

The **Blind River Refinery** has been part of this community since it began safely operating in 1983. Our employees call Blind River and the surrounding area home, and we all take great pride in our work – both at the Refinery and in the community.

As the largest employer in Blind River, we understand the impact we make to the local economy and we understand how important it is that we operate safely and responsibly. This responsibility includes our environmental performance, our safety performance, our investments in the organizations that enhance our lives and community, and our responsibility to establish trust and build meaningful relationships with stakeholders and Indigenous groups.



At the Refinery, we safely process natural uranium ore concentrates into natural uranium trioxide (UO₃). This product moves through the nuclear fuel cycle and goes on to nuclear reactors in Ontario and around the world to power our lives and businesses.

In September 2020 we applied to Canada's nuclear regulator, the Canadian Nuclear Safety Commission to renew our operating licence for a 10-year period. This regulatory process is important, and it's important that you are informed about it, and know how you can participate.

We hope this booklet helps you understand our operations, the licensing process and how you can participate. If you have any questions about our operations at anytime, please reach out to us cameco_ontario@cameco.com or **1.905.800.2020**. Normally, we would encourage you to come visit us, but due to the ongoing COVID-19 pandemic we have temporarily suspended facility tours.

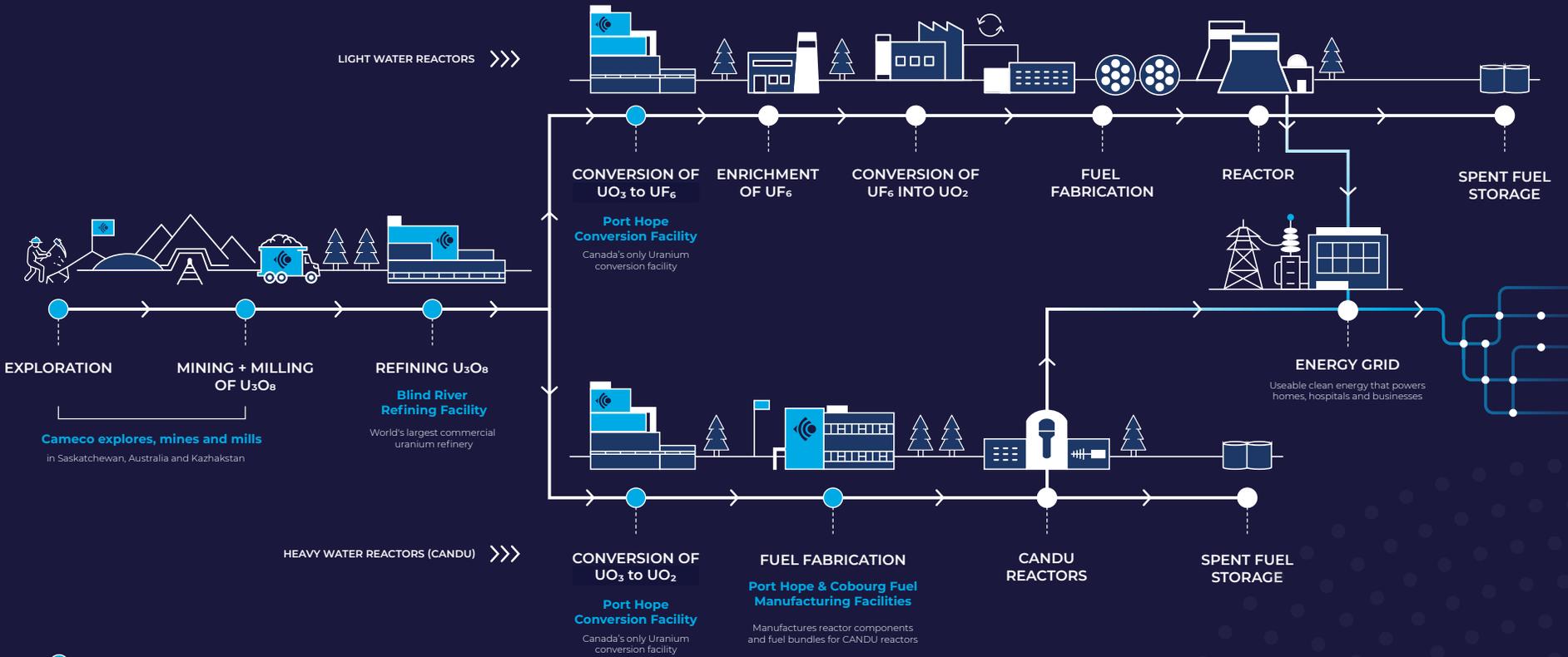
We are proud of our role in helping to energize a clean-air world – and we are proud to be able to do it from right here in Blind River.

Terry Davis

The Nuclear Fuel Cycle

At Cameco, we're proud of our role in helping to energize a clean-air world.

In Ontario, nuclear energy accounts for approximately 50% of the clean-air energy that is powering our homes and businesses. We play an important role in nuclear industries both here in Canada and around the world.



Our Current Licence

BRR holds a Class 1B Fuel Facility Operating (FFOL) Licence issued by Canada's nuclear regulator, the Canadian Nuclear Safety Commission (CNSC). The current licence FFOL-3632.00/2022, issued on February 28, 2012 is valid until February 28, 2022.

Our current licence authorizes BRR to process natural uranium ore concentrates into natural uranium trioxide (UO₃). BRR receives uranium ore concentrates from mines and mills worldwide. In 2019, BRR had licenced production capacity of 18,000 tonnes of uranium as UO₃, with the option to increase production to 24,000 tonnes subject to hold points stipulated in the current licence conditions handbook (LCH).

The majority of the UO₃ produced at BRR is shipped to Cameco's Port Hope Conversion Facility, where it is converted to either uranium dioxide (UO₂) or uranium hexafluoride (UF₆). BRR also prepares and ships small quantities of UO₃ to other customers around the world who are licenced by the CNSC or the equivalent authority in the respective country.

The safety of people and the environment is our top priority. We have a well-established culture of continuous improvement and have a long history of safe operations. Throughout the current licensing period, BRR has maintained strong operational and safety performance in all 14 Safety and Control Areas regulated by the CNSC (see [page 11](#) for more information on Safety and Control Areas).

Facility Licensing Manual

Our Facility Licensing Manual (FLM) describes how Cameco's Blind River Refinery meets the licence conditions defined in its FFOL.

FACILITY LICENSING MANUAL

Application to Renew Our Licence

93% of Blind River residents surveyed in 2021 are aware knowledgeable about Cameco.

On September 30, 2020, Cameco's BRR submitted its application to the CNSC to renew its Class 1B FFOL for a period of 10 years.

As an existing Class 1B Fuel Facility Operating Licence holder, we are rigorously regulated by Canada's nuclear regulator – the CNSC. The CNSC grants licences for a determined amount of time and licence holders must apply to the CNSC to request the licence be renewed.

Cameco is not requesting any changes to the currently licenced activities in its licence renewal application.

Our licence renewal application and letter to the CNSC are available on our website:

BLIND RIVER LICENCE RENEWAL APPLICATION



Canada's Nuclear Regulator

Canada's nuclear industry is stringently **regulated by the Canadian Nuclear Safety Commission (CNSC)**. The CNSC's mandate is to regulate the use of nuclear energy and materials to protect health, safety, security and the environment; to implement Canada's international commitments on the peaceful use of nuclear energy; and to disseminate objective scientific, technical and regulatory information to the public¹.

The CNSC is comprised of the Commission and CNSC staff

The Commission is an independent administrative tribunal set up at arm's length from government, with no ties to the nuclear industry². Up to seven permanent Commission members are appointed, and one is designated as President and CEO. The

Commission reviews applications for nuclear licences through a Public Commission Hearings and considers relevant information from the public and the recommendations of expert CNSC staff.

CURRENT CNSC COMMISSION MEMBERS

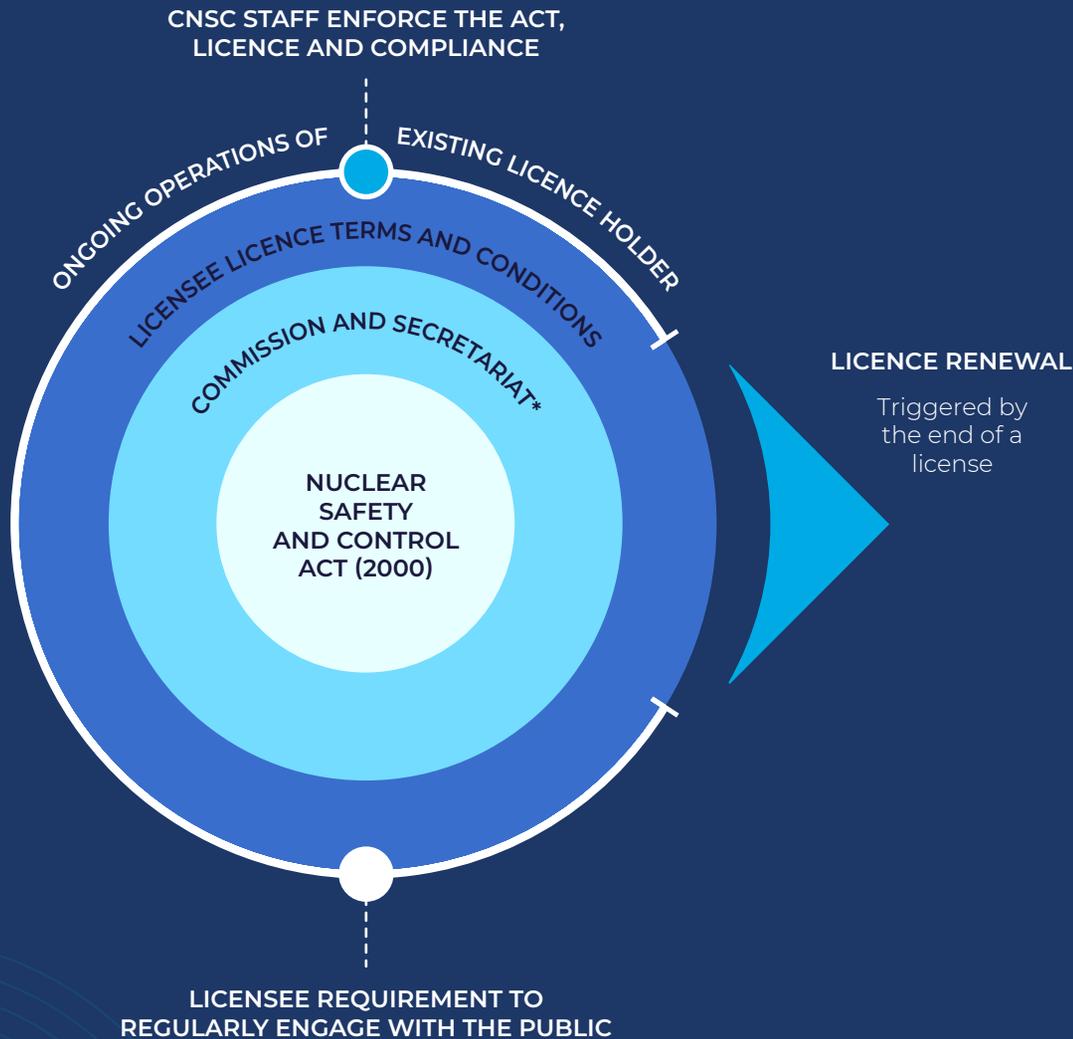
Over **800 scientific, technical, specialized, and professional people make up the CNSC staff**. These personnel are responsible for enforcing compliance with the Nuclear Safety and Control Act, making recommendations to the Commissions, enforcing regulations and any licence conditions imposed on the licensee by the Commission.

You can learn more about how Canada's nuclear industry is regulated at nuclearsafety.gc.ca.

¹ <http://nuclearsafety.gc.ca/eng/the-commission/index.cfm>

² <http://nuclearsafety.gc.ca/eng/the-commission/index.cfm>

Cameco or Other Existing Licence Holder



*The commission and secretariat is made up of seven impartial commission members with expertise in nuclear safety and supported by staff to organize hearings and liaise with the public.

Licence Renewal process

- 1**

LICENSEE APPLIES TO CNSC FOR RENEWAL THAT MAY INCLUDE CHANGES

 - The CNSC issues a Notice of Public Hearing and sets dates for hearing
 - CNSC staff conduct detailed technical review of licensee, make recommendations
 - CNSC sets out details of its public intervention process and Participant Funding Program
- 2**

COMMISSION HOLDS PUBLIC HEARINGS

 - Commission considers written interventions and hears oral presentations
 - Public submit written interventions and oral presentations
 - Hearings are public and live webcast
- 3**

COMMISSION ISSUES DECISION REGARDING LICENSE RENEWAL

 - Any associated conditions
- 4**

CNSC STAFF ENFORCE THE ACT, LICENCE AND COMPLIANCE

 - Staff ensure licensees comply with over a dozen regulatory requirements: health & safety, environmental & radiation protection, waste, transport, security, fire & emergency, fitness for service, operating performance, etc.

CNSC

Licence Renewal Process

As an existing Class IB Fuel Facility Operating Licence holder, BRR is subject to stringent regulations and oversight by the CNSC. Nuclear licences are granted for a set period and licencees must apply to the CNSC to request a licence renewal.

BRR's current licence FFOL-3632.00/2022, issued on February 28, 2012 is valid until February 28, 2022. **On September 30, 2020, Cameco's BRR submitted its application to the CNSC to renew its Class 1B FFOL for a period of 10 years.**

What happens next?

CNSC staff will review Cameco's BRR licence renewal application and conduct a technical assessment against the regulatory requirements, make recommendations to the Commission, and verify compliance with the Nuclear Safety and Control Act, regulations, and licence conditions.

Public Hearing Process

The CNSC considers licence applications for nuclear facilities via a public hearing process, which is set out in the **Canadian Nuclear Safety Commission Rules of Procedure**.

The one or two-part public hearing for a licence application usually takes place over a 90-day period and considers the views, concerns and opinions of interested parties and intervenors. The public hearings are broadcast live on the CNSC's website.

Following the hearings, the Commission deliberates and makes its decision on the matter. The Record of Decision is made public.

We will update our website with key dates as they become available.

PUBLIC COMMISSION HEARINGS

BLIND RIVER LICENCE RENEWAL UPDATES

Participating in the

Public Commission Hearing

The CNSC's Public Commission Hearings provide an important opportunity for members of the public, Indigenous groups and stakeholders to share relevant information and expertise that may be useful to the Commission in reaching its decision on Cameco's BRR licence renewal application. This done through the CNSC's Intervenor's process.

Interventions can be made via a written submission or a written submission accompanied by an oral presentation at the hearing.

The intervention process is for everyone – this includes those who have concerns, and those who are supportive of the licence renewal. You don't have to be a scientist or have a technical background. If you have relevant information to share than this is your opportunity to share it.

Requests to intervene must be filed by October 19 with the Commission Secretariat either **online**, by email at interventions@cnsccsn.gc.ca or by fax or mail to the details below.

Canadian Nuclear Safety Commission

280 Slater St., P.O. Box 1046, Station B
Ottawa, ON
Canada K1P 5S9

Phone: 613-996-9063

Toll Free: 1-800-668-5284

Fax: 613-995-5086

KEY DATES

Public Intervention Submission Deadline: October 19, 2021

Cameco Blind River Refinery Public Hearing

Dates: November 24 and 25, 2021

Location: TBD by the CNSC

Time and further details will be available in the hearing agenda when made available by the CNSC. We will keep our [website](#) up to date with that information.

Responsible and Safe Operations

Safeguarding the health and safety of our employees, members of the public and the environment is our top priority.

The CNSC evaluates a licensee's performance in 14 Safety and Control Areas (SCAs). Throughout the current licence period, the Blind River Refinery has demonstrated strong performance in all of these areas.

91% of Blind River residents surveyed in 2021 agree that Cameco does everything possible to protect people and the environment

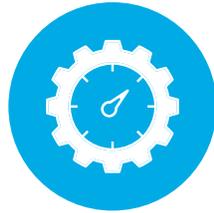
Safety and Control Areas



Management System



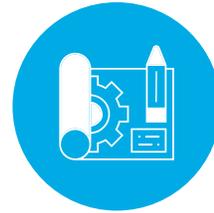
Human Performance Management



Operating Performance



Safety Analysis



Physical Design



Fitness for Service



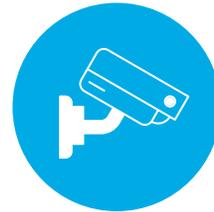
Radiation Protection



Emergency Management & Fire Protection



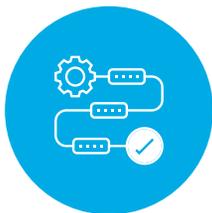
Waste Management



Security



Safeguards and Non-Proliferation



Packaging and Transport



Conventional Health & Safety



Environmental Protection

In addition to the CNSC, the Blind River Refinery is regulated by other federal and provincial regulators such as:

- Ontario Ministry of the Environment, Conservation and Parks (MECP)
- Environment and Climate Change Canada (ECCC)
- Employment and Social Development Canada (ESDC)
- Transport Canada (TC).

We are compliant with all federal, provincial, and municipal regulations.

More details on our performance can be found in our quarterly and annual compliance reports:

Our Record of

Strong Safety Performance

Safety is our top priority. We are guided everyday by our commitment to safeguarding the health and safety of our people, communities, and the environment.

Our five safety key principles:

1. Safety is our first priority
2. We are all accountable for safety
3. Safety is part of everything that we do
4. Safety leadership is critical to Cameco Corporation
5. We are a learning organization

We are proud of our safety performance at the Blind River Refinery. In June 2020, we celebrated **14 years without a lost time injury**. Our robust safety programs include:

- Comprehensive training for all employees
- Well established worker protection program
- Strong safety culture
- Development and maintenance of a formal hazard recognition, risk assessment and change control processes
- Established preventative maintenance program
- Internal audit program
- Extensive Radiation Safety Program
- Various inspection programs, incident investigations, and ongoing analysis by the Facility Health and Safety Committee

“No job is so important that we cannot take the time to do it safely”

SAFETY REPORT

Environmental Protection

We understand the **value of our surroundings and how important the environment is** to all of us. We take great care and pride in our environmental performance and have not had an environmental incident during the current licence period.

Our environmental management program addresses applicable legal requirements, and we demonstrate compliance to all federal and provincial legislation. The Blind River Refinery is also compliant with ISO 14001(2015): Environmental Management Systems.

The refinery's Environmental Protection Program (EPP) is comprised of the following components:

- sampling of water and air emissions;
- high-volume sampling of ambient air, both near the refinery and in the Town of Blind River; and
- additional ambient sampling, including soil, surface water and groundwater monitoring

Monitoring results demonstrate that we are well below the limits set by regulatory bodies.

More details on our environmental performance are detailed in our quarterly and annual compliance reports:

COMPLIANCE REPORTS



Water Emissions

Water is used in the production process and for janitorial functions such as floors. To help ensure we effectively manage our effluent, we first hold the water we use in storage tanks where we can then test it. We test the pH balance and for the presence of uranium, nitrate and radium-226. We treat it through our effluent treatment circuit and only discharge it once test results verify that it meets release requirements.

The Blind River Refinery has one effluent discharge location into Lake Huron.

Test results verify that our water emissions are well below regulatory limits.

More details on our emissions are detailed in our quarterly and annual compliance reports:

COMPLIANCE REPORTS



Groundwater Monitoring Program

Cameco has an extensive groundwater monitoring program in place around the refinery with a total of 35 monitoring wells: 14 inside the perimeter fence and 21 outside the fence line. Monitoring at each well location varies from once per year to three times per year

depending on the location of the well relative to the refinery. Results show that there is no possible impact to drinking water sources from wells downstream.

Uranium in Groundwater Results

Parameter	Units	Value	2015	2016	2017	2018	2019
Uranium	µg/l	Average	1.7	1.3	1.2	2.3	2.0
		Maximum	18.5	14.0	11.0	27.0	14.0

Air Emissions

The Blind River Refinery has a comprehensive ambient air monitoring program. High volume air samplers (hi-vols) are used to collect uranium and particulates from the ambient air. Air is drawn into a covered housing and through a filter paper by means of a high flow rate blower.

Annual results from all five stations are well below the Ministry of the Environment, Conservation and Parks (MECP) annual average criteria of 0.03 ug/m³.

The locations of the hi-vols are:

- South East Yard (inside the facility fence line)
- East Yard (inside the facility fence line)
- Golf Course (outside the facility fence line)
- Hydro Yard (1 km from the facility)
- Town location (5 km from the facility)

Annual Uranium-in-Air Concentration at Hi-Vol Stations (µg/m³)

Year	Result	Golf Course	SE Yard	East Yard	Hydro Yard	Town of Blind River
2015	Average	0.0002	0.0007	0.0031	0.0001	0.0001
	Maximum	0.0003	0.0015	0.0111	0.0003	0.0003
2016	Average	0.0002	0.0007	0.0031	0.0001	0.0001
	Maximum	0.0003	0.0015	0.0111	0.0003	0.0003
2017	Average	0.0002	0.0007	0.0031	0.0001	0.0001
	Maximum	0.0003	0.0015	0.0111	0.0003	0.0003
2018	Average	0.0002	0.0007	0.0031	0.0001	0.0001
	Maximum	0.0003	0.0015	0.0111	0.0003	0.0003
2019	Average	0.0002	0.0007	0.0031	0.0001	0.0001
	Maximum	0.0003	0.0015	0.0111	0.0003	0.0003

Radiation

Radiation is energy in the form of energy waves or energized particles. Radiation is all around us and is part of our daily lives. It is both man-made and naturally occurring and it exists in different forms. Radiation can be found in everything from rocks and soil, to your granite countertop and the banana you eat.

The uranium concentrates that we receive from all over the world have naturally occurring radiation. We have nearly 40 years of experience with safely handling and processing this type of material.

Radiation exposure for our workers and the public is stringently regulated by the CNSC. The acceptable levels of exposure are set by the CNSC and are based on decades of scientific studies by the International Commission on Radiological Protection. We have an extensive radiation protection program that is guided by the ALARA (as low as reasonably achievable) principle. This means that we do everything possible to minimize radiation exposures of our workers and the public.

For nuclear energy workers like those who work at the Refinery, the acceptable dose of radiation exposure is 50 milliseverts (mSv) per year, or no more than 100 mSv over a five-year period. The CNSC has set the acceptable dose of radiation exposure for a member of the public at 1 mSv.

The public dose from the Refinery's air and direct gamma radiation emissions is 0.005 mSv. This is just a fraction of the acceptable limit and is so small that it's considered negligible.



0.005 mSv

Blind River Refinery's annual air and direct gamma radiation emissions



0.005 mSv

Dental x-ray (intraoral)



0.02 mSv

Typical cross-Canada flight



0.1 mSv

Typical chest x-ray



Environmental Risk Assessment

The Cameco Blind River Refinery maintains an **Environmental Risk Assessment (ERA)** which is **updated every five years**, or if there is a **significant change**.

This document is a licence requirement and is conducted in accordance with the Canadian Standard Association (CSA) N288.6-12, Environmental risk assessments at Class I nuclear facilities and uranium mines and mills, 2012.

The purpose of an ERA is to assess the effects of the activity to the environment and identify measures that will effectively address potential adverse effects before they occur. There are two parts to an ERA – an assessment of the facility's operations on human health and an assessment on the environment.

The Blind River Refinery's ERA has been updated as part of the regular five-year cycle and a summary is available on our [website](#).

As part of the licence renewal process, CNSC staff will review the ERA as part of its assessment of the renewal request and seek additional information if required.

ERA Conclusions

The Blind River Refinery has a sophisticated and thorough environmental monitoring program that will continue to cause no undue effects.



Overall estimated emissions from the Blind River Refinery are and will continue to be low

Radioactive and non-radioactive environmental releases are not expected to significantly impact the aquatic or terrestrial environment

For human health, there is no undue impacts expected to members of the public

Community



We are proud to call Blind River home. Our employees are your family, neighbours and friends. We are committed to making a difference and have been actively involved in enhancing the quality of life for many years.

Community

We make investments in the community because it's the right thing to do. We provide a mix of financial and volunteer support which focuses on four key areas:

- **youth**
- **education and literacy**
- **health and wellness**
- **community development**

Each year we support numerous initiatives in Blind River and the surrounding area, frequently in partnership with community groups and local organizations. If you are seeking sponsorship for a community event or organization, please apply online.

We provide presentations on a regular basis to the Town of Blind River and to the Mississauga First Nation. Our most recent presentation to both the town and Mississauga First Nation is available on our [website](#). We are also happy to provide facility tours to groups and organizations, however, due the ongoing pandemic tours are temporarily suspended.

If you have questions or you would like a presentation for a group or organization, you can always reach out to us through social media or call us at [905.800.2020](tel:905.800.2020) or email us at cameco_ontario@cameco.com.

Keeping You Informed

We strive to **keep the local community, Indigenous groups and stakeholders informed about our operations and activities.**

We have a [dedicated website](#) where you can find information about our operations, compliance reports, community activities and more.

We are also active on social media.

Find us on Facebook, Twitter or Instagram.



Community



Here are some of the ways that we have helped make a difference over the years



2021

Public Polling

Residents of Blind River continue to show strong support for local Cameco operations. According to a recent public opinion survey, 96% of residents are supportive of Cameco's operations in Blind River and there continues to be 100% awareness of the facility.

The Blind River Refinery has maintained strong community support since surveying first began in 2009. Prior to the 2021 survey, the last survey was conducted in 2018.

[VIEW THE FULL SURVEY](#)

Additional 2021 survey highlights include:

- All survey respondents (100%) are aware of Cameco's Blind River Refinery
- 91% of respondents agree Cameco does everything possible to protect people and the environment.
- Nearly all (97%) respondents are aware that Cameco invests in the Blind River area through sponsorships and other community initiatives.
- When asked about their concerns with the Blind River Refinery, the large majority (84%) of respondents do not have any specific concerns.
- Nine out of ten (94%) agree Blind River is a safe, healthy place to live—including 77% who "strongly agree."

The public opinion survey of 200 Blind River residents was conducted between February 24 and March 7, 2021 by a third-party consultant. Cameco conducts public opinion surveys to measure levels of awareness, support and trust in the community and to gauge the effectiveness of its communication and public engagement efforts.

Public Disclosure Protocol

PUBLIC DISCLOSURE PROTOCOL FOR ONTARIO OPERATIONS

Blind River Refinery, Cameco Fuel Manufacturing Port Hope & Port Hope Conversion Facility

To keep target audiences in communities with an interest in Cameco operations informed, Cameco commits to:

- Maintaining two-way communication channels to address the questions and concerns of people within our target audience in a timely and clear manner.
- Providing information, through regular community engagement, regarding significant operational changes or expansions that require an environmental assessment or require amendments to our facility licences.
- Providing information postings on our website, with timely efforts to posts within 24 hours about unusual operational events at our facilities that may have off-site consequences or that would be of interest to our target audience.
- Making timely efforts to provide postings to our website within 24 hours, regarding information related to an environmental event that triggers a notification to the Canadian Nuclear Safety Commission under Section 29 of the General Nuclear Safety and Control Regulations.
- Providing postings to our website, with timely efforts to post within 24 hours, summaries of non-routine environmental incidents that are required to be reported to the Ontario Spills Action Centre.
- Quarterly posting to our website of compliance monitoring and operational performance reports.
- Building capacity among residents of Port Hope and Blind River to understand the environmental, health and safety aspects of uranium conversion and encouraging youth in communities to understand the opportunities for a safe, healthy, and rewarding career.
- Communicating technical aspects of uranium conversion in plain language.
- Regularly reviewing with community leaders and others how and what we communicate to ensure relevant information is reaching each site's target audience.
- Regularly conducting public opinion polling to help assess the effectiveness of the public information programs in Port Hope and Blind River.
- Posting this public disclosure protocol on our website.

PUBLIC DISCLOSURE PROTOCOL

DISCLOSURES



Resources

[BLIND RIVER LICENCE RENEWAL APPLICATION](#)

[CURRENT CNSC COMMISSION MEMBERS](#)

[PUBLIC COMMISSION HEARINGS](#)

[BLIND RIVER LICENCE RENEWAL UPDATES](#)

[SAFETY REPORT](#)

[COMPLIANCE REPORTS](#)

[PUBLIC DISCLOSURE PROTOCOL](#)

[DISCLOSURES](#)

[2021 BLIND RIVER POLLING RESULTS](#)



QUESTIONS?

We understand that the work we do here is complex. We're happy to help answer any questions you may have. Please reach out to us at [905.800.2020](tel:905.800.2020) or cameco_ontario@cameco.com.