



# An Update on The Independent Environmental Monitoring Program (IEMP)

Presentation by CNSC Staff

November 2, 2023

CMD 23-M39

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Canadian Nuclear  
Safety Commission

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de sûreté nucléaire

Canada



# Outline

- The IEMP Process
- What The IEMP Is and Is Not
- Other Monitoring Programs
- Evolution of IEMP
- Indigenous Engagement
- 2023 and Beyond



Locations of all facilities  
sampled as of 2023



Research



Waste  
Management



Fuel  
Processing



Isotope  
Production



Mining



Power  
Generation

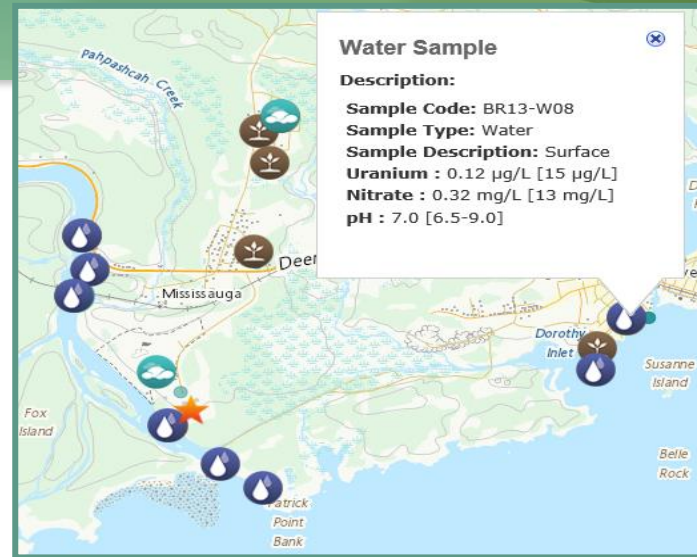


Nuclear  
Substances



# The IEMP Process

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Program and sample planning

Sampling

Laboratory analysis

Interpretation of results

Publication of results

The IEMP involves staff from across the organization as well as external partners



# What The IEMP IS and IS NOT

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## IEMP *IS*

- A CNSC initiative
- Conducted outside the perimeter of the site (publicly accessible areas)
- Complimentary to compliance
- A “snapshot in time”
- An additional mechanism to support CNSC staff’s conclusions on the state of the environment around the site
- A program that encourages and seeks out Indigenous Nations and communities’ and the public’s participation and involvement

## IEMP *IS NOT*

- The Licensee’s program
- On-site sampling/monitoring (such as effluent)
- Compliance or inspections
- Baseline sampling or environmental characterization
- A replacement for Licensee’s monitoring programs
- A community-based monitoring program



# Other Monitoring Programs (1/2)

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In addition to the licensees' monitoring and reporting, there are several [Other Programs](#) being conducted around licensed facilities including:

## Federal monitoring and reporting:

- Health Canada
  - Canadian Radiological Monitoring Network
  - Fixed Point Surveillance Network
  - Occupational Radiation Monitoring
- Environment and Climate Change Canada
  - Metal Mining Effluent Regulations Status Report
  - National Fish Contaminants Monitoring and Surveillance Program
  - National Pollutant Release Inventory
  - Environmental indicators – Water indicators

## Provincial monitoring and reporting:

- Ontario
  - Drinking Water Surveillance Program
  - Nuclear Reactor Surveillance Program
- Saskatchewan
  - 2015–16 State of Drinking Water Quality in Saskatchewan
- **Municipal monitoring and reporting**
  - Water quality monitoring



# Other Monitoring Programs (2/2)

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In Saskatchewan, around the uranium mines and mills, there are a few more programs to mention:

- Licensees' EMPs
- [Eastern Athabasca Regional Monitoring Program \(EARMP\)](#)
- Community Based Environmental Monitoring Program (CBEMP)



EASTERN ATHABASCA  
REGIONAL MONITORING  
PROGRAM



# Evolution of IEMP: The Early Years

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2012

- The IEMP is developed to meet *Requirement 32* of the *IAEA General Safety Requirements Part 3*
- The pilot sampling campaign took place around Chalk River Laboratories

2014

- 12 sampling campaigns are executed at facilities across the nuclear fuel cycle
- Screening levels are developed to provide guidelines for result comparisons

2015

- The IEMP dashboard is launched on the CNSC's website
- The team receives the CNSC's award for Creativity and Innovation



# Evolution of IEMP: Continuous Improvement

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2016

- IEMP is conducted around McClean Lake using a contractor, CanNorth, and samples are analyzed at the Saskatchewan Research Council (SRC)
- IEMP receives a GoC Digital Communications Award

2017

- Most sites have now been sampled 2-3 times
- The *Focus on Health* section is added to the IEMP dashboard
- IEMP data is added to the CNSC's website in .CSV format
- Indigenous Nations and Communities (IN&C) are becoming increasingly interested in IEMP



Food sampling in a local garden  
near Point Lepreau, NB

**The IEMP begins to include more Indigenous engagement**





# Evolution of IEMP : A Program in Transition

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2018

- A Traditional Knowledge holder joins the sampling team in the field for the first time

2019

- The Bruce IEMP involves all 3 local IN&C
- Traditional plants and medicines are sampled as well as fish from Lake Huron and the Saugeen River
- IEMP data is added to Open Data



Sumac berries were sampled around  
NPD in 2018 and 2023

**IN&C begin to contribute to sampling plans and join in field work**



# Evolution of IEMP: Recent Improvements (1/2)

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2020

- COVID-19 causes many deferrals and challenges CNSC staff to deliver on the IEMP in innovative ways
- Online meeting platforms allow the CNSC to reach IN&C more easily and Indigenous engagement increases rapidly
- IEMP sites are assigned priority rankings to determine sampling frequency and the 10-year plan is created



The IEMP Team in Ottawa conducted sampling training via Zoom for site inspectors located in New Brunswick

**COVID-19 results in more innovative approaches to IEMP and engagement**



# Evolution of IEMP: Recent Improvements (2/2)

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2021

- Modern data management tools are developed and implemented to improve efficiency and streamline data collection and management
- Many IN&C participate in sampling plan development and execution in the field
- Moose meat is sampled as part of the IEMP in Northern SK



Clams were harvested and sampled with representatives from Indigenous Nations & Communities near Point Lepreau during the 2021 IEMP campaign

**Indigenous Nations and Communities gain more hands-on involvement**



# Evolution of IEMP: Updated Objective

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The objective of the Independent Environmental Monitoring Program (IEMP) is to:

**Build Indigenous and public trust** in the Canadian Nuclear safety Commission's (CNSC) regulation of the nuclear industry, **via an independent, technical and accessible environmental sampling program** around nuclear facilities, while using CNSC resources effectively and efficiently.



CNSC staff hosting Indigenous community members in the field during the Pickering IEMP in 2021

**Documenting the objective, scope and processes of the IEMP are major milestones**



# Evolution of IEMP: 2022 Season

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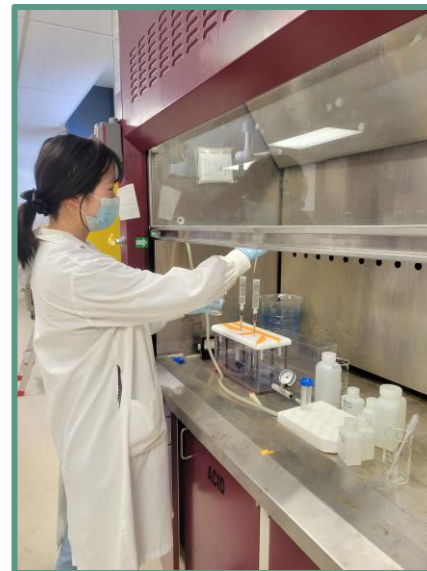
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2022



- Many sampling campaigns continue to include Indigenous participants
- QR codes leading to IEMP results pages are developed and implemented into IEMP communication materials

**In 2022, the CNSC lab performed  
~2,000 analyses on IEMP samples**



The CNSC's Laboratory processes and analyses the vast majority of IEMP samples



# Indigenous Engagement (1/4)

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- Rapid increase in engagement since 2017
- IEMP activities include:
  - Presentations, meetings, webinars
  - Community outreach events
  - Incorporation of Indigenous Knowledge into sampling plans
  - Indigenous participation in field sampling

**These activities help CNSC staff learn from and improve trust with Indigenous Nations & Communities**



The edible portion of blade grass was sampled with local Indigenous community members during the 2022 Whiteshell IEMP



# Indigenous Engagement (2/4)

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## Samples Were Collected Near McArthur River



Sampled area  
**McArthur River**

Results  
**Safe**

### What do the results tell us?

The results from our Independent Environmental Monitoring Program (IEMP) support our assessment that the environmental protection program put in place by Cameco Corporation, as required by the CNSC, is effective. Our results add to the body of evidence that the public and environment around uranium mines and mills are protected.

Federal and provincial authorities set limits for hazardous substances and radionuclides released by a nuclear facility, such as McArthur River Operation.

The McArthur River Operation is an underground mine that includes many activities, such as ore processing, slurry loading, waste management facilities and more.

The program takes samples in public areas outside the facility.



### What did we test for?

**Heavy metals**  
Selenium, Zinc, Arsenic, Uranium, Molybdenum, etc.

**Radionuclides**  
Polonium-210, Lead-210, Radium-226, Thorium-230

### What did we sample?

We tested the following items around the licensed site.

**Fish**  
Northern Pike  
Lake Whitefish  
White Sucker



**Water**  
Little Yalowega Lake  
Lower Read Lake



**Plants**  
Blueberries  
Labrador Tea



Some of these results are slightly above guidelines but are similar to other fish in this area.

CNSC staff performed a detailed assessment of all the results and concluded that the water, fish, blueberries, and Labrador tea are safe for use. We would like to thank English River First Nation for collaborating with CNSC on the McArthur River IEMP.



To learn more:  
<http://www.nuclearsafety.gc.ca/IEMP/McArthur>



## IEMP Results Cards

- First suggested by the Saugeen Ojibway Nation (SON)
- Implemented in 2019
- Collaborative document
  - Using familiar wording/names
  - Incorporation of community logos and branding
  - Include photos of participants where possible
  - Short, easy to understand language
  - QR code and link for additional information



# Indigenous Engagement (3/4)

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A Ya' thi Néné Community Land Technician worked with CNSC and CanNorth staff to complete the sampling for the Rabbit Lake IEMP



Fish and wild blueberries sampled around Rabbit Lake



The Point Lepreau IEMP included sampling of sweetgrass with local Indigenous community members





# Indigenous Engagement (4/4)

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Leveraging feedback and suggestions for ongoing improvements to the IEMP:

- Walk the lands in advance of sampling
- Sample in culturally significant locations
- Collaborate with Guardians programs
- Incorporate Indigenous Knowledge
- Include IEMP in engagement workplans and Terms of References
- Increase funding for IN&C participation through the new Indigenous and Stakeholder Capacity Fund (ISCF)



The Wolastoquey Nation of New Brunswick (WNNB) and Mi'gmawe'l Tplu'taqnn Incorporated (MTI) toured the CNSC Lab in 2019



# IEMP In Action

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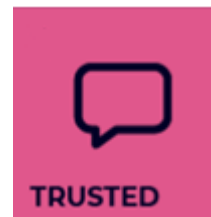
# Evolution of IEMP: 2023 and Beyond

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2023

- The 10-year plan lays out for each year which sites will be sampled with room for **agility**
- **Global** leader in open and transparent communication of technical information
- **Modern** approaches to sampling
- IEMP is committed to Indigenous Engagement in order to increase **trust** and build relationships



**IEMP is *modern, agile, global* and focused on building *trust***



# Questions?

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