



**2023 Second Quarter Compliance Monitoring
&
Operational Performance Report**

Reporting Period April 1 – June 30, 2023

**Cameco Fuel Manufacturing Inc.
Fuel Facility Operating Licence
FFL-3641.00/2043**

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Submitted to:
The Canadian Nuclear Safety Commission
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Executive Summary

Cameco Corporation (Cameco) is committed to the safe, clean, and reliable operations of its facilities and continually strives to improve safety performance and processes to ensure the safety of both its employees, local residents, and the environment. CFM maintains the required programs, plans and procedures as required by the applicable regulations including but not limited to the areas of health and safety, radiation protection, environment, emergency response, fire protection, waste management, and training.

As a result of the programs, plans and procedures, CFM's operations have maintained radiation exposures to workers and the public well below the regulatory dose limits. Environmental emissions are also being controlled to levels that are a fraction of the regulatory limits. During the second quarter, there were no exceedances of the action levels in the radiation protection or environmental protection program.

In the second quarter there was no planned shutdown of the facility with employees attending the facility as per normal operations.

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1.0 Second Quarter Overview

1.1 Facility Operation

Cameco continues to strive for operational excellence at all of its facilities through consistent application of management systems to ensure that they operate in a safe, clean, and reliable manner. Corporate policies and programs, including that for Safety, Health, Environment and Quality (SHEQ) provide guidance and direction for all site-based programs and procedures that define the CFM Management System.

In the first quarter of 2023, CFM was granted a twenty-year licence by the Commission (FFL-3641.00/2043) effective March 1, 2023 until February 28, 2043. The current Licence Conditions Handbook (LCH) was released in March of 2022 (LCH-FFL-3641.00/2023).

There were no significant changes to Structure, Systems and Components (SSC) or processes in the second quarter. The LCH for the facility references core CFM documents that form the licensing basis in each safety and control area.

There was one document that was submitted to the CNSC in the second quarter of 2023.

- Fire Protection Program (MSP 30-07), version #6 – Revision required to update the National Fire Code and National Building Code to reference the 2015 versions as well as revise section 7.3 Housekeeping and Control of Combustibles, Transient Materials, and Waste to include purchasing of non-combustible options.

In the second quarter there was no planned shutdown of the facility.

There was one reportable event that required notification of the duty officer as detailed in the *Nuclear Safety and Control Act* during the second quarter.

On May 30, 2023, CFM staff were moving skidded drums containing legacy contaminated metallic material for processing and noticed discolouration of the ground in a location where a skid of four drums had been stored. Health physics (HP) personnel were notified; a survey of the area in question determined that the ground surface in an approximately 12 ft by 4 ft affected area was contaminated above the outdoor criteria of 0.4 Bq/cm² (Zone 1). The readings ranged from 4.0 Bq/cm² to 73 Bq/cm².s.

CFM contacted the CNSC Duty Officer, the CNSC Project Officer, the Municipality of Port Hope, and the Spills Action Centre (SAC – reference number # 1-3HNQG1) to report the presence of contamination on the ground in an outdoor waste drum storage location.

On June 5, 2023 an excavator was secured to remove the top 2 to 2.5 inches of surface in the area. The area was resurveyed to confirm that the activity level of the affected area was below the outdoor storage area criteria of 0.4 Bq/cm². Soil samples were taken at 5

locations within the 4 ft by 12 ft area at the base of the shallow excavation as well as the center location at a depth of one foot below grade. Uranium results ranged from 2.6 to 12 $\mu\text{g/g}$, which is below the MECP soil standard (Table 3 Standards) for industrial site use of 33 $\mu\text{g/g}$. The area was then backfilled with granular fill. Cameco identified this event as a significance level III on its severity matrix and entered this event into its incident reporting system to document the investigation and corrective actions.

During the second quarter there were no exceedances of the radiation protection or environmental protection action levels.

1.2 Physical Design / Facility Modification

Modifications to facility buildings, processes, equipment, procedures, programs, or organizational structure with the potential to impact safety are evaluated through the internal change and design control process from planning through to completion. This process is used to help identify impacts and potential impacts to the licensing basis, the environment as well as to the health and safety of employees and local residents.

In the second quarter of 2023, there were no modifications undertaken that required written approval from the Commission or a person authorized by the Commission.

There were also no significant changes to the physical design of equipment, processes, or the facility in the quarter.

There were four changes to the equipment in which third party reviews were submitted to the CNSC in the second quarter. The changes included:

- installation of lexan shield above the blender,
- modification of drum turnover,
- modification of powder prep area, and
- modification of PP2/CSA sprinkler system.

For each modification the reviewer determined that CFM was in compliance with the requirements of the applicable codes and standards. There was one recommendation in the third party review for the lexan shield installation, which was satisfactorily dispositioned by CFM after which the area was deemed to be in compliance.

2.0 Radiation Protection

This safety and control area covers the implementation of a radiation protection program, in accordance with the *Radiation Protection Regulations*. The program must ensure that contamination and radiation doses are monitored and controlled.

CFM has established action levels pertaining to radiation protection, which are listed in CFM’s LCH. A result above an action level is investigated and remedial actions taken if necessary. During the second quarter there was no exceedance in the Radiation Protection program.

Whole Body Dose

Table 1 shows the second quarter whole body dose for three work groups: employees in the operations group, employees in administration/support roles, and outside contractors/visitors. The highest exposures are from the operations work group, consisting of production, inspection, and maintenance personnel. There were no action level exceedances for whole body dose in the radiation protection program during the quarter. In the second quarter, the majority of NEWs received a whole body dose below 1 mSv (96%).

Table 1

Second Quarter 2023 Whole Body Dose Results				
Work Group	Number of Individuals	Average (mSv)	Minimum (mSv)	Maximum (mSv)
Operations	106	0.31	0.00	1.37
Administration / Support	84	0.01	0.00	0.32
Contractors/Visitors	5	0.01	0.00	0.04
Monthly action level is 1.6 mSv (for NEWs such as production employees). Quarterly action level is 1.0 mSv (for NEWs such as support staff and contractors).				

Table 2 shows the quarterly average, minimum and maximum individual external whole body exposure for all NEWs from the second quarter of 2022 to the second quarter of 2023 (five monitoring periods). The average whole body dose in the second quarter for all NEWs was 0.17 mSv. The average whole body dose is higher than previous quarters. The maximum dose is higher than the second quarter of 2022 and higher than previous except for the first quarter of this year. It is most accurate to compare the second quarter results in 2023 to the previous second quarter results in 2022 when normalized with production rates. When these two quarters are compared, the average dose was the same

and the maximum dose was higher in 2023. The individual with the highest exposure in the second quarter was an operator who works in the Pelleting Area.

Table 2

Whole Body Dose Results by Quarter				
Monitoring Period	Number of Employees	Average Dose (mSv)	Minimum Dose (mSv)	Maximum Dose (mSv)
Q2 2022	192	0.12	0.00	1.16
Q3 2022	199	0.10	0.00	1.33
Q4 2022	200	0.11	0.00	1.20
Q1 2023	198	0.15	0.00	1.54
Q2 2023	195	0.17	0.00	1.37

Skin Dose

Table 3 shows the first quarter skin dose results for three work groups, employees in operations (monitored monthly), employees in administration and/or support roles and outside contractors/visitors (both monitored on a quarterly basis). The highest exposures are from the operations work group, consisting of production and maintenance personnel. The maximum skin dose for all NEWs was 12.37 mSv in the second quarter and the average skin dose for all NEWs was 1.14 mSv. The action levels for skin dose were not exceeded in the quarter. The majority of NEWs received a skin dose in the second quarter below 10 mSv (98.5%).

Table 3

Second Quarter 2023 Skin Dose Results				
Work Group	Number of Individuals	Average (mSv)	Minimum (mSv)	Maximum (mSv)
Operations	106	2.08	0.00	12.37
Administration / Support	84	0.02	0.00	0.56
Contractors/Visitors	5	0.01	0.00	0.04
Monthly action level is 20.0 mSv (for NEWs such as production employees). Quarterly action level is 5.0 mSv (for NEWs such as support staff and contractors).				

Table 4 shows the employee quarterly average and maximum individual skin exposure from the second quarter of 2022 to the second quarter of 2023. It is most accurate to compare the second quarter results in 2023 to the previous second quarter results in 2022 due to production rates. When these two quarters are compared the average dose was higher and the maximum dose was lower in 2023. The individual who received the

maximum skin dose was a Pelleting area employee but was not the same individual with the maximum whole-body dose.

Table 4

Skin Dose Results by Quarter				
Monitoring Period	Number of Employees	Average Dose (mSv)	Minimum Dose (mSv)	Maximum Dose (mSv)
Q2 2022	192	1.00	0.00	11.91
Q3 2022	199	0.60	0.00	8.65
Q4 2022	200	0.82	0.00	12.95
Q1 2023	198	0.97	0.00	12.95
Q2 2023	195	1.14	0.00	12.37

Eye Dose

Table 5 shows the first quarter eye dose results for three work groups, employees in operations (monitored monthly), employees in administration and/or support roles and outside contractors/visitors (both monitored on a quarterly basis). The highest exposures are from the operations work group, consisting of production and maintenance personnel. The maximum eye dose for all NEWs was 5.55 mSv in the second quarter and the average eye dose for all NEWs was 0.59 mSv. The interim action levels for eye dose were not exceeded in the quarter. The majority of NEWs received an eye dose below 2 mSv (88%).

Table 5

Second Quarter 2023 Eye Dose Results				
Work Group	Number of Individuals	Average (mSv)	Minimum (mSv)	Maximum (mSv)
Operations	106	1.07	0.00	5.55
Administration / Support	84	0.02	0.00	0.38
Contractors/Visitors	5	0.01	0.00	0.04
*Monthly interim action level is 6.0 mSv				
*Quarterly interim action level is 12.0 mSv.				

*Interim action levels approved by CNSC July 11, 2022

Table 6 shows the employee quarterly average and maximum individual eye exposure from the second quarter of 2022 to the second quarter of 2023. The average dose in the second quarter of 2023 was higher than previous quarters. The maximum eye dose in the second quarter was higher than the previous quarters with the exception of the first quarter of 2023. When production quantity is considered for the quarters, the average eye

dose in 2023 was the higher than the average in 2022. The maximum dose in the second quarter of 2023 was lower than the second quarter of 2022. The individual who received the maximum eye dose was a Pelleting area employee who was the same individual with the maximum skin dose.

Table 6

Eye Dose Results by Quarter				
Monitoring Period	Number of Employees	Average Dose (mSv)	Minimum Dose (mSv)	Maximum Dose (mSv)
Q2 2022	192	0.50	0.00	5.42
Q3 2022	199	0.32	0.00	4.31
Q4 2022	200	0.42	0.00	5.92
Q1 2022	198	0.51	0.00	6.05
Q2 2023	195	0.59	0.00	5.55

Extremity Dose

The action level for extremity dose at CFM is 55 mSv per quarter. The quarterly action level applies to production NEWs who regularly handle product as part of their daily task. In 2021, CFM completed an assessment for extremity dose to align with the Radiation Protection Regulations (RPR) issued in 2020. Specifically, section 8 of the RPR adds the requirement to use a licensed dosimetry service for equivalent doses to the skin, hands, and feet if the annual dose would be over 50 mSv. It was determined that the extremity dose for NEWs at CFM do not exceed 50 mSv/yr and therefore are not required to wear dosimeters from a licensed dosimetry service provider. Extremity dose can be estimated using historic data.

If there is a change in processing techniques or work configurations that would impact extremity dose, then an assessment is required to determine if the 50 mSv/yr criteria would be exceeded. Changes to equipment or processes are captured through CFM's Management of Change (MoC) process. In the second quarter of 2023, there were no changes implemented that would have required an assessment of the impact to extremity dose; therefore, the second quarter extremity dose is equivalent to previous quarters.

Table 7 shows the average, minimum, and maximum extremity dose for NEWs over the period from the second quarter of 2022 to the second quarter of 2023. As noted above the dose for the second quarter of 2023 would be similar to previous quarters with the second quarter of 2021 most representative as NEWs wore their rings for the entire quarter. If the second quarter dose from 2021 was used as the basis for the second

quarter of 2023 the average dose is estimated at 1.90 mSv and the maximum dose is estimated to be 10.50 mSv.

Table 7

Extremity Dose Results by Quarter				
Monitoring Period	Number of Employees	Average Dose (mSv)	Minimum Dose (mSv)	Maximum Dose (mSv)
Q2 2022	-	1.90*	0.00	10.50*
Q3 2022	-	1.25 ⁺	0.00	7.87 ⁺
Q4 2022	-	1.90*	0.00	10.50*
Q1 2023	-	1.90*	0.00	10.50*
Q2 2023	-	1.90*	0.00	10.50*

*estimation based on Q2 2021 data

+ estimation based on Q3 2021 data

Urine Analysis

The action level for a single routine urine sample is 10 µg/L of uranium concentration. During the quarter there was no exceedance of the urine analysis action level. Routine urine samples results analyzed during the second quarter are provided in Table 8 below.

Table 8

Second Quarter Routine Urine Analysis Results				
Work Group	Number of Samples	Average (µg/L)	Minimum* (µg/L)	Maximum (µg/L)
Operations	410	0.23	<0.20	1.30
Routine urine sample action level is 10 µg/L				

*detection limit of equipment is 0.2 µg/L therefore reported as <0.20 µg/L

Internal Dose

Routine urine analysis samples are collected on a biweekly basis for trending purposes; if an acute uptake is noted it is verified using lung counting and dose assigned if required.

In the second quarter of 2023, there were no routine urine sample results that were above the internal administrative level of 4.0 µgU/L. During the second quarter the spring lung count campaign was conducted in June and July. In total 58 employees attended a lung count. The next campaign is scheduled for November/December.

Contamination Control

CFM has other programs to ensure radiation exposure levels remain low. An extensive contamination control program at CFM is zone control. The facility is divided into four zones for contamination control purposes. Zone 1 areas are designated as clean areas with no contamination permitted. Food and drink can be consumed in these areas and include the lunchroom and office areas. Zone 2 areas contain no open sources of radioactivity but have the potential for contamination. These areas include the assembly area, change rooms and the machine shop. Zone 3 areas are the access points to Zone 4. Zone 4 areas contain open sources of radioactivity and include the Pelleting Area. Consumption of food and drink are restricted in Zones 2, 3, and 4.

The administrative limits are provided in Table 9 as well as the routine contamination monitoring results for the second quarter. Of the 763 samples taken none exceeded the internal administrative control limits (ACL).

Table 9

Second Quarter Alpha Contamination Monitoring Results			
Area	# of Samples Taken	Administrative Limits (Bq/cm²)	# of Samples Above Limits
Zone 1	155	0.4	0
Zone 2	224	4.0	0
Zone 3	49	4.0	0
Zone 4	335	40	0

In-Plant Air

Routine air sampling is conducted at workstations throughout the plant continuously during operations to monitor airborne uranium dioxide in the work environment. The results for the second quarter of 2023 taken in each area, including the CAM heads in the PP2 area, dry Waste Treatment area and the furnace hall are shown in Table 10 below. There was one result in the Pangborn Room above the 80-hour ACL or the 2000 hour ACL in the second quarter. This occurred while the Pangborn was being cleaned. The operators did not close both valves resulting in a release of powder. The operator was wearing a respirator as required during completion of this task and submitted a urine sample at the end of the shift. The supervisor ordered signs to be posted on the equipment to remind operators to close both valves.

Table 10

Second Quarter 2023 Uranium In-plant Air Sampling Results					
Plant Area	# of Samples	Average ($\mu\text{g U/m}^3$)	Maximum ($\mu\text{g U/m}^3$)	# Samples > ACL^{2000 hr}	# Samples > ACL^{80 hr}
Ceramics Lab	61	2	5	0	0
Compaction Room	123	2	9	0	0
Load Room	245	1	6	0	0
Pangborn Room	123	4	88	1	0
Pelleting Area	368	2	10	0	0
UO ₂ Grinders	246	4	23	0	0
Waste Treatment	61	4	35	0	0
PP2 Area	728	2	17	0	0
Dry Waste Treatment	455	2	13	0	0
Furnace Hall	546	1	5	0	0
TOTAL	2956	3	88	0	0
2000-hour Administrative Control Limit = 52 $\mu\text{g/m}^3$					
80-hour Administrative Control Limit = 595 $\mu\text{g/m}^3$					

Gamma Surveys

An ongoing ALARA initiative involves posting OSLD's around the facility to determine areas of elevated gamma radiation. The result for each location in the first quarter is summarized in Table 10. The results illustrate that the Fuel Storage Area had the highest gamma fields (6.1 $\mu\text{Sv/hr}$), which is expected due to the amount of product stored in the area. The area is posted instructing workers to limit the time spent in this area. The next highest reading (4.7 $\mu\text{Sv/hr}$) was in the PP2 Receiving area. This is also expected due to the amount of raw material stored in this area. Employees limit their time in this area as well. The dose rate result for the fuel storage area was higher than the previous quarter (5.8 $\mu\text{Sv/hr}$) and for the PP2 area the dose rate was lower than last quarter (5.0 $\mu\text{Sv/hr}$). The dose rate in both of these areas fluctuate according to production requirements.

Table 11

Second Quarter 2023 Gamma Survey Results						
Location #	Area	Result (μSv/hr)		Location #	Area	Result (μSv/hr)
13	Kitting	0.3		37	PP2 Powder Rec. N.	1.1
14	S Stacking	1.2		38	Powder Receipt	0.3
15	Stacking	0.2		39	U ₃ O ₈ Add-back	1.2
16	Pelleting Entry	0.6		40	S End Cap	0.2
17	Pelleting Lab	0.1		41	End Cap	0.4
18	S Grinding	1.1		42	N End Cap	0.1
19	Grinding	0.9		43	E Offices	0.0
20	N Grinding	0.9		44	S End Plate	0.0
21	S Wall	0.0		45	End Plate	0.0
22	S Furnace	0.3		46	N End Plate	0.2
23	Furnace	0.9		47	W Offices	0.0
24	N Furnace	0.1		48	S Inspection	0.2
25	SE Wall	0.4		49	Inspection	0.1
26	E Wall Furnace	0.6		50	N Inspection	1.5
27	NE Wall	0.5		51	W Inspection	0.0
28	N Corridor	0.4		52	Strapping Bay	0.3
29	Ceramics Lab	0.1		53	Packing	0.3
30	R7#1 East Wall	1.6		54	Fuel Storage Area	6.1
31	PP2 West Wall	0.1		55	Graphite East	0.1
32	S Pressing	0.8		56	BMS Loading	0.9
33	N Pressing	0.9		57	PP2 Receiving	4.7
34	Pangborn	0.8		58	PP2 Press R53-1	1.2
35	S. Waste Treat	2.0		59	PP2 East Wall	0.8
36	N. Waste Treat	0.7				

3.0 Conventional Health and Safety

This safety and control area covers the implementation of a program to manage non-radiological workplace safety hazards and to protect personnel and equipment. Table 12 shows the safety statistics for the Port Hope facility.

Table 12

2023 Safety Statistics					
Year / Parameter	Q1	Q2	Q3	Q4	YTD
First Aid Injuries	1	5			
Medical Diagnostic Injuries	0	0			
Medical Treatment Injuries	0	0			
Lost Time Injuries	0	0			
Lost Time Injury Frequency	0.0	0.0			
Lost Time Injury Severity	0.0	0.0			

There were no lost time incidents that occurred in the second quarter. The Total Recordable Injury Rate (TRIR) for April 1st to June 30th, 2023 is 0.0.

Health and Safety Activities

- Communications:** The second quarter safety meetings were held each month with a different topic including Workplace Violence, the Heat Stress program, and the CoHE program. Each month an update is also included for the previous month on 4 topics: Safe, healthy, and rewarding workplace, clean environment, supportive communities, and outstanding financial performance. Safety statistics as well as the status on quality and production targets are also included in the update on these topics.
- Education and Training:** During the start of second quarter of 2023, CFM training went through staffing changes. The recruitment for a second trainer began with a new training specialist hired toward the end of the second quarter. A bulk of the activities in the second quarter involved training the new training specialists. By the end of the second quarter, overall compliance was at 95.9%. Safety critical “No Go” training at 96.8%. Both numbers remained ahead of the benchmark target.
- Safety Awareness Activities:** In the second quarter the JHSC promoted NAOSH week with Safety Awareness activities taking place including a safety word search, crossword & Spot the Safety Opportunity. During the heat stress days, the JHSC provided freezies to ensure employees were hydrated and cool. The JHSC also provided a BBQ to acknowledge all employees’ contributions to helping keep a safe workplace and the JHSC shared gifts focusing on health & safety for the family during summer activities.
- JH&SC:** The JHSC continued with extended meetings once a month to focus on workplace inspections. JHSC members attend weekly Continuous Improvement meetings

to provide guidance and contribute to sitewide improvements. Both activities align with the 2023 objectives for increased visibility and communication.

- **Safety & Industrial Hygiene:** In the second quarter a team was established to determine a plan for reinvigorating the Stop, Think, Act, Review (STAR) mentality for working safely. Additionally, CFM continued to work on developing a prioritization list for job tasks that need an Ergonomic Risk Assessment (ERA).

4.0 Environmental Protection

This safety and control area covers the programs that monitor and control all releases of nuclear and hazardous substances into the environment, as well as their effects on the environment, as the result of licensed activities.

Public Dose

With the update to the Derived Release Limit (DRL) report, the calculated public dose was revised to include potential dose from all pathways at the CFM facility. Public dose is calculated by summing the total amount of uranium dioxide released to air in process stacks, building ventilation as well as liquid emissions, and was added to the gamma dose to the critical receptor (now represented by location #12). This is demonstrated in the following formula:

$$\text{Public Dose} = \text{Dose Air (stacks)} + \text{Dose Air (building ventilation)} + \text{Dose Water} + \text{Dose Gamma}$$

The estimated public dose, along with each component, for the second quarter of 2022 to the second quarter of 2023 is provided in Table 13.

The total dose to the member of the public from air, liquid emissions and gamma levels for the quarter is calculated to be 0.089 mSv, which is in line with previous quarters.

Table 13

Public Dose by Quarter (mSv/quarter)					
DRL Component	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023
Air (stacks)	0.000	0.000	0.000	0.000	0.000
Air (building ventilation)	0.028	0.021	0.028	0.026	0.027
Liquid	0.001	0.001	0.001	0.001	0.002
Gamma (Location 12)	0.071	0.067	0.069	0.067	0.061
Total dose to Critical Receptor (location #12)	0.100	0.089	0.098	0.093	0.089

Gamma Monitoring

The perimeter gamma derived release limit for the critical receptor at location #12 is 1.35 $\mu\text{Sv/hr}$ and the action level is 1.0 $\mu\text{Sv/hr}$. The other DRL's listed for gamma monitoring are for location #1 and location #2 at 4.96 $\mu\text{Sv/hr}$ and 0.46 $\mu\text{Sv/hr}$ respectively with the action level of 0.2 $\mu\text{Sv/hr}$ for both locations. There were no exceedances of the DRL's or the action levels during the second quarter.

Table 14 provides the quarterly gamma levels in $\mu\text{Sv/hr}$ for all fence line monitoring locations (i.e., 1-12) for the quarter.

Table 14

Second Quarter 2023 Gamma Monitoring Results ($\mu\text{Sv/hr}$)		
Location	Action Level	Quarterly Dose Rate
1	0.2	0.00
2	0.2	0.02
3	1.0	0.00
4	1.0	0.00
5	1.0	0.00
6	1.0	0.00
7	1.0	0.00
8	1.0	0.00
9	1.0	0.05
10	1.0	0.00
11	1.0	0.17
12	1.0	0.33

The monitoring results for location 12 (closest location to the critical receptor) from the second quarter in 2022 to the second quarter of 2023 are provided in Table 15. Results have been corrected to consider background gamma levels by subtracting $0.08 \mu\text{Sv/hr}$. The dose rate for the second quarter of 2023 at location 12 is lower than the dose rates in previous quarters.

Table 15

Gamma Monitoring Results at Critical Receptor by Quarter ($\mu\text{Sv/hr}$)			
Period	Regulatory Limit (DRL)	Action Level	DRL Contribution
Q2 2022	1.35	1.0	0.38
Q3 2022	1.35	1.0	0.36
Q4 2022	1.35	1.0	0.37
Q1 2023	1.35	1.0	0.36
Q2 2023	1.35	1.0	0.33

Stack Emissions

The total amount of uranium dioxide released to the environment during the quarter in gaseous effluent from stacks was 0.001 kg. The action level for stack emissions is 2.0 µg/m³ uranium concentration for a daily stack reading. There were no exceedances of the action levels with respect to air emissions during the quarter.

Table 16 provide the average and maximum uranium concentration for all stacks in µg/m³ from the second quarter of 2022 to the second quarter of 2023. The average and maximum concentrations measured in stack emissions in the second quarter were lower or equal to the concentrations in previous quarters.

Table 16

Daily Stack Emissions by Quarter (µg/m³)							
Source	Action Level	Avg. / Max.	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023
PP2 West	2.0	Avg.	0.0	0.0	0.0	0.0	0.0
		Max.	0.1	0.1	0.1	0.0	0.0
PP2 East	2.0	Avg.	0.0	0.0	0.0	0.0	0.0
		Max.	0.1	0.1	0.1	0.0	0.0
Waste Treatment Area Absolute	2.0	Avg.	0.3	0.2	0.1	0.1	0.1
		Max.	0.7	0.3	0.4	0.3	0.3
BMS Extraction	2.0	Avg.	0.0	0.1	0.1	0.1	0.1
		Max.	0.2	0.3	0.2	0.2	0.2
Hoffman Vacuum	2.0	Avg.	0.0	0.0	0.0	0.0	0.0
		Max.	0.1	0.0	0.0	0.0	0.2
Pangborn North Dust Collector	2.0	Avg.	0.0	0.1	0.1	0.0	0.1
		Max.	0.2	0.2	0.2	0.1	0.3
Pangborn South Dust Collector	2.0	Avg.	0.0	0.0	0.0	0.0	0.0
		Max.	0.1	0.1	0.1	0.0	0.1
DeVilbiss Mist Collector	2.0	Avg.	0.0	0.0	0.0	0.0	0.0
		Max.	0.1	0.1	0.1	0.0	0.1
Furnace Burn-off	2.0	Avg.	0.0	0.0	0.0	0.0	0.0
		Max.	0.1	0.1	0.1	0.0	0.1
Overall	2.0	Avg.	0.1	0.0	0.0	0.0	0.0
		Max.	0.7	0.3	0.4	0.3	0.3

Building Ventilation Emissions

The action level for building ventilation is 1.0 g/hr and is monitored daily for the Pelleting Area and 0.4 g/hr for the PP2 area. There were no exceedances of either action level in the second quarter. The estimated release of uranium dioxide in exhaust ventilation from both areas during the quarter was 0.28 kg (0.24 kg from the Pelleting Area and 0.04 kg from the PP2 area).

Table 17 provides the average and maximum uranium concentration emitted through the building ventilation system in g/hr from the second quarter of 2022 to the second quarter of 2023.

The table demonstrates that the PP2 area has much lower emissions through building ventilation than the Pelleting Area and the results are consistent between the quarters. In the second quarter of 2023 the building ventilation average and maximum emission rates for both areas were comparable to previous quarters.

Table 17

Building Ventilation Rates by Quarter (g/hr)							
Parameter	Action Level	Measure	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023
Uranium Emissions from Pelleting Area	1.0	Average	0.17	0.15	0.19	0.16	0.16
		Maximum	0.38	0.25	0.33	0.25	0.30
		Minimum	0.05	0.06	0.09	0.09	0.10
Uranium Emissions from PP2 Area	0.4	Average	0.01	0.02	0.02	0.01	0.02
		Maximum	0.04	0.11	0.08	0.05	0.07
		Minimum	0.00	0.00	0.00	0.00	0.01

Liquid Emissions

The action level for liquid effluent released to the sewer is 0.10 mg/L. In the second quarter there was no exceedance of the action level.

Table 18 provides the average and maximum uranium concentration for a single composite sample from the second quarter of 2022 to the second quarter of 2023. Also provided in the table is the minimum and maximum pH measured in the samples.

Table 18

Sanitary Sewer Emissions by Quarter							
Parameter	Action Level (mg/L)	Measure	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023
Uranium (mg/L)	0.1	Average	0.02	0.01	0.02	0.02	0.02
		Maximum	0.02	0.02	0.06	0.03	0.03
pH (pH units)	6.5	Minimum	6.6	6.8	6.9	7.2	7.3
	9.0	Maximum	7.4	7.6	7.6	7.9	7.9
Volume of water	-	(m ³)	3928	3770	2718	3715	6704*
Estimated Discharge	-	(kg)	0.06	0.05	0.05	0.06	0.12*

*Results increased after groundwater treatment system was repaired.

Ambient Air Monitoring

High volume air samples are collected in the four corners of the CFM property. Table 19 shows the quarterly average and maximum results for all four locations from the second quarter of 2022 to the second quarter of 2023.

Table 19

Overall Uranium-in-Air Concentration at Hi-Vol Stations by Quarter (µg/m ³)					
Parameter	Q2 2022	Q3 2022	Q4 2022	Q 2023	Q3 2023
Average	0.0005	0.0003	0.0002	0.0002	0.0004
Maximum	0.0021	0.0006	0.0005	0.0005	0.0010

Table 20 provides the quarterly average and maximum uranium-in-air concentrations for all locations from the second quarter of 2022 to the second quarter of 2023. The average result is comparable or to lower than previous quarters while the maximum result elevated when compared to previous quarters with the exception of the second quarter of 2022.

Table 20

Uranium-in-Air Concentration at Hi-Vol Stations by Quarter (µg/m³)					
Quarter	Result	East	North	Northwest	Southwest
Q2 2022	Average	0.0003	0.0006	0.0005	0.0005
	Maximum	0.0009	0.0023	0.0021	0.0011
Q3 2022	Average	0.0002	0.0003	0.0002	0.0003
	Maximum	0.0003	0.0005	0.0005	0.0006
Q4 2022	Average	0.0002	0.0002	0.0002	0.0002
	Maximum	0.0003	0.0005	0.0003	0.0004
Q1 2023	Average	0.0002	0.0002	0.0002	0.0003
	Maximum	0.0003	0.0004	0.0005	0.0005
Q2 2023	Average	0.0003	0.0004	0.0004	0.0004
	Maximum	0.0006	0.0010	0.0007	0.0008

Legacy Waste Management

Limited waste management activities occurred in the second quarter due to ongoing resource constraints. CFM is still reviewing drummed material that did not meet the disposal site’s criteria; this requires systematically opening each drum to visually identify the contents, sort, and segregate like materials. From this activity, recoverable uranium material is consolidated to be verified and the uranium recovered with other scrap material. Marginally contaminated material is repackaged, rescanned, and prepped for disposal in the United States.

5.0 Public Information Program

During the second quarter of 2023, CFM continued to meet the requirements of CNSC RD/GD 3.2.1, *Public Information and Disclosure programs*.

Public Engagement

On April 4, Cameco and Bruce Power celebrated the extension of their long-term exclusive nuclear supply agreement. A news release was issued to local media and the news release and a video were posted to the website.

On April 4, Cameco president and CEO announced a \$200,000 gift to Northumberland Hills Hospital Foundation to support the equipment needs of the Diagnostic Imaging Department. A news release was issued to local media and posted to the website.

The spring issue of Energize was mailed out to residents of Port Hope in the last week of April. A digital version was also posted on the Cameco website on April 25. Stories in this issue included: Cameco and Bruce Power's long-term agreement; Cameco supports hospital with a \$200K gift and Step Up for Mental Health events.

Cameco representatives met with the Mayor of Port Hope on May 15 to provide an overview of Cameco's operations and local community activities.

The Step Up for Mental Health 5K run/walk took place on May 13, 2023 in Cobourg. Over 600 people registered to participate.

Over 30 Cameco employees took part in the 24th annual United Way Day of Caring on June 2, helping to complete 24 projects around the community.

The Port Hope Cameco Charity Golf Tournament took place on Friday, June 2 at Dalewood Golf Club. Over 120 people registered for the tournament with all funds raised benefitting the Cameco Fund for Mental Health.

Cameco hosted its annual community BBQ on June 22nd from 4 – 7 p.m. at Memorial Park in Port Hope. Cameco mailed out information about the BBQ via postcards to approximately 2,700 addresses in Port Hope and posted information to social media channels and the website. Approximately 400 people attended including the Mayor of Port Hope and a few councillors, and representatives from Curve Lake First Nation. Local Cameco leadership and subject matter experts were available to share information and answer questions. Information boards were set up to provide information to the public on various aspects of Cameco's operations and activities such as the facilities (PHCF and CFM), Vision In Motion, community involvement and regulatory compliance.

Advertising on local radio was used to support the Step Up for Mental Health 5K and the charity golf tournament. Cameco provided free advertising to local charitable organizations with its sponsorship of MyFM’s Community Partner Program. Through the quarter, Habitat for Humanity, Rebound Child and Youth Services and the Northumberland Diversity Festival benefitted from this sponsorship by receiving advertising.

Public Disclosure

CFM made one public disclosures during the second quarter: [Environment & Safety - Conversion: Port Hope - Fuel Services - Businesses - Cameco](#)

Posting Date	June 1, 2023
Incident Date	May 30, 2023
Incident	Reportable Spill
Details	<p>Four drums stored on a skid and containing legacy contaminated metallic material were being moved in the CFM yard when discolouration of the ground below where the skid had been sitting was identified. CFM personnel surveyed the area for uranium and determined that the levels were above what is acceptable for that area.</p> <p>There was no health or safety risk posed to the public, workers or the environment.</p>
Corrective Action	<p>Three drums were identified as being in poor condition and CFM transferred the contents into new drums on May 30. Going forward, CFM will store similar drums of this material type indoors until they can be overpacked (the drum is placed inside a bigger drum to secure the contents).</p> <p>The ground area with elevated readings has been delineated and the surface layer of soil will be removed on June 5.</p> <p>Cameco notified the Canadian Nuclear Safety Commission, Spills Action Centre and the Municipality of Port Hope.</p>
Cameco Environmental Effect Rating	1

Social Media

Cameco Ontario's Facebook community grew by 56 new followers (1,128 total) and had a total of 1,228 page likes at the end of the quarter. Cameco Ontario's 76 posts covered information such as:

- Cameco and Bruce Power celebrated a 10-year extension of the fuel supply contract on April 4 with photos and video shared on social media
- Cameco CEO Tim Gitzel attended a cheque presentation at the Northumberland Hills Hospital in Cobourg on April 4 as Cameco pledged a \$200,000 gift to the hospital
- Promoted the spring 2023 issue of Energize on April 25
- Recognized National Safety and Health Week on May 2
- Promotion and results of the Step Up for Mental Health 5K run / walk which took place on May 13 in Cobourg
- Cameco's participation in the Métis Nation of Ontario Nuclear Safety Open House on May 27
- Cameco recognized pride month on social media with photos of the pride flags flying at each site as well as a diversity and inclusion presentation given to all Cameco employees on June 6
- Promotion and results of the Port Hope Cameco Charity Golf Tournament that took place on June 2 at Dalewood Golf Club
- Recognition of the sponsors of the Cameco Charity Golf Tournament
- Promotion for the Cameco Community BBQ on June 22 at Memorial Park in Port Hope
- Cameco recognized National Indigenous Peoples History Month throughout the month of June

By the end of the quarter the Instagram account had grown by 52 new followers for a total of 807 followers. Photos and information featured were similar to the Cameco Facebook page.

Website

Cameco and Bruce Power celebrated the extension of their long-term arrangements for nuclear fuel. A news release and video were posted to the website:

- [Cameco and Bruce Power Celebrate Extension of Long-Term Arrangements for Nuclear Fuel Through 2040 - News Archive - Media - Cameco Fuel Services](#)

A news release announcing a \$200,000 gift to the Northumberland Hills Hospital Foundation to support the equipment needs of the Diagnostic Imaging Department. issued to local media and posted to the website:

- [Cameco Supports Diagnostic Imaging at Northumberland Hills Hospital with \\$200,000 Gift - News Archive - Media - Cameco Fuel Services](#)

The Spring 2023 edition of Energize was posted.

- [Energize - Spring 2023 - Making a Difference - Community - Cameco Fuel Services](#)

Information about Cameco's community BBQ was posted to the website.

- [Port Hope Community BBQ - Making a Difference - Community - Cameco Fuel Services](#)

Public Disclosures: Two public disclosures were posted to the website:

- [Environment & Safety - Conversion: Port Hope - Fuel Services - Businesses - Cameco](#)

The Q1 2023 Compliance Report was posted to the website:

- [Media Library - Media - Cameco Fuel Services](#)

Media Analysis

Cameco receive media coverage about Cameco and Bruce Power celebrating the extension of their long-term exclusive nuclear supply agreement:

- **Bruce and Cameco partner for long-term nuclear fuel supply** – April 4, 2023 – World Nuclear News
 - [Bruce and Cameco partner for long-term nuclear fuel supply : Corporate - World Nuclear News \(world-nuclear-news.org\)](#)
- **COMMUNITY SPOTLIGHT – Cameco has extended its relationship with Bruce Power to 2040** – Go Northumberland – April 4, 2023
 - [COMMUNITY SPOTLIGHT: Cameco has extended it's relationship with Bruce Power to 2040 | 93.3 myFM \(gonorthumberland.ca\)](#)
- **Cameco, Bruce Power extend nuclear fuel supply deal through to 2040** – Global News – April 4, 2023
 - [Cameco, Bruce Power extend nuclear fuel supply deal through to 2040 | Globalnews.ca](#)

- **Cameco, Bruce Power nuclear fuel partnership extended** – Northumberland News – April 6, 2023
 - [Cameco, Bruce Power nuclear fuel partnership extended \(northumberlandnews.com\)](https://www.northumberlandnews.com)

Cameco received media coverage on its Step Up for Mental Health initiative:

- **Step-Up for Step Up to Mental Health Fun Run/Walk Begins** – May 10, 2023 – Today's Northumberland
 - [Set-Up for Step Up to Mental Health Fun Run/Walk Begins - Today's Northumberland - Your Source For What's Happening Locally and Beyond \(todaysnorthumberland.ca\)](https://www.todaysnorthumberland.ca)
- **Step Up for Mental Health this Saturday** – May 10, 2023 – Go Northumberland
 - [COMMUNITY SPOTLIGHT: Step Up for Mental Health this Saturday | 93.3 myFM \(gonorthumberland.ca\)](https://www.gonorthumberland.ca)
- **Cobourg road closures to accommodate fundraising run May 13** – May 12, 2023 – Northumberland News
 - [Cobourg road closures to accommodate fundraising run May 13 \(northumberlandnews.com\)](https://www.northumberlandnews.com)
- **Hundreds of People and Cameco Step Up for Mental Health in Cobourg** – May 14, 2023 – Today's Northumberland
 - [Hundreds of People and Cameco Step Up for Mental Health in Cobourg - Today's Northumberland - Your Source For What's Happening Locally and Beyond \(todaysnorthumberland.ca\)](https://www.todaysnorthumberland.ca)

Cameco received media coverage regarding the joint training exercise:

- **Cameco and Port Hope Fire and Emergency Service Hold Joint Training Exercise** – June 13, 2023 – Today's Northumberland
 - [Cameco and Port Hope Fire and Emergency Services Hold Joint Training Exercise - Today's Northumberland - Your Source For What's Happening Locally and Beyond \(todaysnorthumberland.ca\)](https://www.todaysnorthumberland.ca)

Cameco received media coverage regarding its donation to the hospital:

- **Cameco supporting 'world-class care and medical technology' at Northumberland Hospital** – April 9, 2023 – Northumberland News

- [Cameco supporting ‘world-class care and medical technology’ \(northumberlandnews.com\)](http://northumberlandnews.com)

Communication Products

The Spring 2023 edition of Energize was mailed to all addresses in Port Hope and posted online and social media.

- [Energize - Spring 2023 - Making a Difference - Community - Cameco Fuel Services](#)

Cameco and Bruce Power celebrated the extension of their long-term exclusive nuclear fuel supply arrangements for an additional 10 years through to 2040 – a news release and video were posted to the website.

- [Cameco and Bruce Power Celebrate Extension of Long-Term Arrangements for Nuclear Fuel Through 2040 - News Archive - Media - Cameco Fuel Services](#)

A news release announcing a \$200,000 gift to the Northumberland Hills Hospital Foundation to support the equipment needs of the Diagnostic Imaging Department. issued to local media and posted to the website.

- [Cameco Supports Diagnostic Imaging at Northumberland Hills Hospital with \\$200,000 Gift - News Archive - Media - Cameco Fuel Services](#)

Cameco mailed out information about the BBQ via postcards to approximately 2,700 addresses in Port Hope and posted information to social media channels and the website. Information boards were set up to provide information to the public on various aspects of Cameco’s operations and activities such as the facilities (PHCF and CFM), Vision In Motion, community involvement and regulatory compliance.

- [Port Hope Community BBQ - Making a Difference - Community - Cameco Fuel Services](#)

6.0 Indigenous Engagement

Cameco emailed the PHCF, VIM and CFM Annual Compliance Reports, and the spring issue of Energize on May 2 to Curve Lake, Scugog Island, Alderville, Hiawatha, and Rama First Nation and the Mohawks of the Bay of Quinte. On June 16, they were all emailed the

Q1 2023 PHCF and CFM compliance reports and an email invitation to the community BBQ. Two representatives from Curve Lake First Nation attended the BBQ.

Cameco and Curve Lake participated in a routine meeting on May 3. Cameco and Curve Lake discussed recent public disclosures and a review of the PHCF Annual Compliance Report.

Alderville First Nation requested an introductory meeting with Cameco. That meeting is scheduled to take place in Q3.

On May 24, Cameco's Vice-President, Sustainability and Stakeholder Relations, and the Vice-President of Cameco Fuel Services Division met with Curve Lake First Nation's Chief, members of Council and consultation committee for the official signing of an agreement that formalizes the relationship between Curve Lake First Nation and Cameco.

Cameco representatives attended the Métis Nation of Ontario's (MNO) Nuclear Safety Open House in Blue Mountain on May 27. The objective of the Open House was to provide information and education related to the safety of the nuclear power industry to MNO citizens who are living in Region 7. Cameco's booth featured information about its operations in Ontario and representatives were available to answer questions.

Public disclosures are emailed to Curve Lake and Scugog Island and then discussed at the next available meeting.

7.0 OTHER MATTERS OF REGULATORY INTEREST

There were no processing activities of enriched material conducted on site in the second quarter of 2023 and CFM met all site-specific reporting requirements.

8.0 CONCLUDING REMARKS

Cameco is committed to the safe, clean, and reliable operations of its facilities and continually strives to improve safety performance and processes to ensure the safety of both its employees and the local residents.

During the second quarter of 2023, CFM did not exceed any CNSC regulatory limits. CFM maintained environmental emissions and public radiation exposures to levels that are a fraction of the regulatory limits.

Cameco's relationship with residents remains strong and we are committed to maintaining the strong support and trust we have developed over the past several years.