

**Canadian Nuclear  
Safety Commission**

**Commission canadienne de  
sûreté nucléaire**

**Public meeting**

**Réunion publique**

**December 11<sup>th</sup>, 2019**

**Le 11 décembre 2019**

**Public Hearing Room  
14<sup>th</sup> floor  
280 Slater Street  
Ottawa, Ontario**

**Salle des audiences publiques  
14<sup>e</sup> étage  
280, rue Slater  
Ottawa (Ontario)**

**Commission Members present**

**Commissaires présents**

**Ms Rumina Velshi  
Dr. Sandor Demeter  
Dr. Timothy Berube  
Dr. Marcel Lacroix**

**M<sup>me</sup> Rumina Velshi  
D<sup>r</sup> Sandor Demeter  
M. Timothy Berube  
M. Marcel Lacroix**

**Secretary:**

**Secrétaire:**

**Mr. Marc Leblanc**

**M<sup>e</sup> Marc Leblanc**

**Senior General Counsel:**

**Avocate-générale principale :**

**Ms. Lisa Thiele**

**M<sup>e</sup> Lisa Thiele**

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Ottawa, Ontario / Ottawa (Ontario)

--- Upon commencing on Wednesday, December 11, 2019  
at 9:00 a.m. / L'audience débute le mercredi  
11 décembre 2019 à 9 h 00

### **Opening Remarks**

**THE PRESIDENT:** Good morning and welcome to the meeting of the Canadian Nuclear Safety Commission.

Mon nom est Rumina Velshi, et je suis la présidente de la Commission canadienne de sûreté nucléaire.

I would like to begin by acknowledging that the land on which we are gathered is the traditional territory of the Algonquin and Anishinabek Peoples.

Je vous souhaite la bienvenue, and welcome to all those joining us via webcast.

I would like to introduce the Members of the Commission that are with us today.

On my right is Dr. Sandor Demeter; to my left are Dr. Marcel Lacroix and Dr. Timothy Berube.

Also joining us on the podium today are Ms Lisa Thiele, General Counsel to the Commission, and Mr. Marc Leblanc, Secretary of the Commission.

I would like to start today's meeting with

a safety moment.

While the Christmas carols tell us that this is the most wonderful time of the year, we also need to be aware that there are many things that could go wrong over the holidays. Some of these include: road travel hazards, where drivers may risk taking the road in inclement weather or where alcohol, drugs or fatigue are at play; being stranded at an airport; frayed or ill-placed electrical cords used for our holiday decorations; cooking hazards; thefts, particularly with increased online shopping and packages being left at our doors; fatigue and stress due to extra tasks, looming deadlines, last-minute shopping or that impending credit card bill; rushing and frustration which can lead to disrespectful behaviour. So during the next three weeks trade your Santa hat for a virtual safety hat occasionally. Be vigilant and enjoy a wonderful, safe holiday period.

I will now turn the floor to Mr. Leblanc for a few opening remarks.

Marc.

**M. LEBLANC** : Merci, Madame la Présidente.

Bonjour, Mesdames et Messieurs.

J'aimerais aborder certains aspects touchant le déroulement de la réunion.

For this Commission meeting we have simultaneous interpretation. Please keep the pace of your speech relatively slow so that the interpreters are able to keep up.

Des appareils pour l'interprétation sont disponibles à la réception. La version française est au poste 2, and the English version is on channel 1.

To make the transcripts as complete and clear as possible, please identify yourself each time before you speak.

The transcripts should be available on the website of the Commission sometime next week.

I would also like to note that this proceeding is being video webcast live and that archives of these proceedings will be available on our website for a three-month period after the closure of the proceedings.

As a courtesy to others in the room, please silence your cell phones and other electronic devices.

The *Nuclear Safety and Control Act* authorizes the Commission to hold meetings for the conduct of its business.

Please refer to the revised agenda published on December 6 for the complete list of items to

be presented today and tomorrow.

I also wish to note that all the Commission Member Documents (or CMDs) listed on the agenda are available on the CNSC website.

In addition to the written documents reviewed by the Commission for this meeting, CNSC staff and other participants will have an opportunity to make verbal comments and Commission Members will be afforded an opportunity to ask questions on the items before us today.

Madame Velshi, présidente et première dirigeante de la CCSN, va présider la réunion publique d'aujourd'hui.

President Velshi...?

#### **CMD 19-M45.A**

#### **Adoption of Agenda**

**THE PRESIDENT:** With this information, I would now like to call for the adoption of the agenda by the Commission Members, as outlined in Commission Member Document CMD 19-M45.A.

Do we have concurrence?

For the record, the agenda is adopted.

The minutes of the October 3rd, 2019

Commission meeting were approved secretarially and are available on the CNSC website.

The minutes of the November 6-7 meeting will be approved secretarially at a later date.

The first item on the agenda is the Regulatory Oversight Report on Uranium and Nuclear Processing Facilities in Canada for 2018, as outlined in CMDs 19-M35 and 19-M35.A.

The public was invited to comment in writing. The Commission received four written submissions and we will get to the written submissions after CNSC staff's presentation.

I would like to acknowledge that Ms Nardia Ali from Environment and Climate Change Canada is joining us remotely to be available for questions.

I will turn the floor to the CNSC staff for their presentation.

Ms Ducros, the floor is yours.

**CMD 19-M35/19-M35.A**

**Oral presentation by CNSC staff**

**DR. DUCROS:** Thank you.

Good morning, President Velshi, Members of

the Commission. I am Dr. Caroline Ducros, I am the Director of the Nuclear Processing Facilities Division.

My colleagues with me today are Mr. Mike Jones and Mr. Lester Posada, Project Officers and Inspectors in the same Division.

We also have licensing and compliance staff as well as subject matter experts with us to help answer any questions the Commission may have.

Today, we are here to present Commission Member Document CMD 19-M35 titled, "Regulatory Oversight Report for Uranium and Nuclear Substance Processing Facilities in Canada: 2018".

One errata was identified after the publication of Draft CMD 19-M35.

Two Radiation Protection action levels were exceeded for Best Theratronics in 2018, not zero as reported in page 117 of the Regulatory Oversight Report CMD 19-M35. We will be providing more details later on in this presentation.

This was previously reported to the Commission during the Best Theratronics Renewal Hearing in June 2019 as part of staff CMD 19-H2. CNSC staff will correct this for the publication of the Regulatory Oversight Report.



CNSC staff reviewed and are satisfied with the corrective actions taken by Best Theratronics. There are no changes to the safety conclusions for the facility.

We start our presentation with a brief description of the Regulatory Oversight Report.

Following that is an overview of CNSC's risk-informed regulatory oversight activities associated with the facilities listed in this slide.

In line with the Regulatory Oversight Report, and as shown on the right side, the presentation is then divided into the uranium processing facilities and the nuclear substance processing facilities.

Finally, we will cover some of the major themes identified in the interventions which the CNSC has received.

The CNSC currently produces a number of Regulatory Oversight Reports, as shown on this slide.

The 2018 Report for Uranium and Nuclear Substance Processing Facilities in Canada presents CNSC staff's assessment of the safety performance of operating uranium and nuclear substance processing facilities.

This is the 7th annual report on Uranium and Nuclear Substance Processing Facilities presented to the Commission. The public has been invited to intervene

on each of these annual reports.

The report covers the 2018 calendar year and includes: a summary of the CNSC's regulatory efforts; overviews highlighting performance across similar facilities; and site-specific sections that outline:

- licensee information on operations and major developments;
- CNSC staff's safety and control areas performance ratings; and
- detailed performance reporting on three safety and control areas: radiation protection, environmental protection and conventional health and safety.

The next slides will provide an overview of CNSC's regulatory oversight for these facilities.

The Canadian Nuclear Safety Commission regulates Canada's uranium and nuclear processing facilities to protect the health, safety and security of Canadians and the environment.

Compliance is verified through inspection/verification activities; reviews of operational activities and documentation; licensee reporting of performance data, including annual reports and unusual occurrences.

The nature of this regulatory oversight is commensurate with the risk associated with each licensed activity.

The CNSC measures a licensee's performance by its ability to mitigate risks posed by the licensed activity and to comply with regulatory requirements.

CNSC staff use 14 Safety and Control Areas (SCAs) to evaluate each licensee's performance, which are shown on this slide.

CNSC staff continually assess the licensee's performance based on results of regulatory oversight activities.

Safety and control area performance is rated using set criteria such as key performance indicators, compliance with licence conditions, events, repeat non-compliances and licensee action in response to events as well as the nature of the events themselves. CNSC staff assign ratings to safety and control areas based on their professional judgment, expertise and the information that is collected.

CNSC staff consider a multitude of inputs and assign a rating that best represents licensee performance in a holistic manner.

The rating methodology was presented as

part of the 2017 Regulatory Oversight Report.

The CNSC has implemented its Independent Environmental Monitoring Program (IEMP) to verify that the public and the environment around licensed nuclear facilities are safe. CNSC staff will be presenting an update to the IEMP in CMD 19-M42 after this agenda item.

This slide lists the locations where the CNSC conducted its IEMP around uranium and nuclear substance processing facilities in 2018. Sampling was completed for Cameco Blind River Refinery, BWXT Toronto and Peterborough, SRB Technologies, and Nordion.

CNSC staff posted the results on the CNSC IEMP website. IEMP sampling at other sites continues to be conducted in accordance with CNSC staff's IEMP sampling plan.

The results from the IEMP demonstrate that the licensees' environmental protection programs are effective and that the people and the surrounding environment are protected.

CNSC staff routinely engage with the public and Indigenous groups. Examples include: participation in relevant community events as a means to inform the public of the CNSC's role; engagement and consultation with Indigenous groups to discuss issues of

concern to them and related to the CNSC's mandate.

CNSC staff are committed to building long-term positive relationships with Indigenous communities. We understand that such relationships must be built on mutual trust, which can take time to develop.

CNSC staff will continue to meet and engage upon request with Indigenous groups with an interest in CNSC-regulated facilities and activities, including uranium and nuclear substance processing facilities, to provide updates and to build these important relationships.

I will now pass the presentation to Mr. Mike Jones

Thank you.

**MR. JONES:** Thank you.

Good morning, President Velshi and Members of the Commission. My name is Mike Jones and I am a Project Officer in the Nuclear Processing Facilities Division.

The following slides provide an overview of the regulatory oversight activities, performance ratings and safety performance metrics of uranium processing facilities in Canada in the 2018 calendar year.

This figure illustrates the nuclear fuel cycle. The nuclear fuel cycle begins with uranium being

extracted from the ground and ends with its disposal following its use in the generation of energy.

The processes in dark green are the front end of the uranium processing cycle for natural uranium fuel, those in orange are the back end of the uranium processing cycle, and those in light green are the front end of the uranium processing cycle for enriched uranium fuel.

Note that the processes in light green are not part of the Canadian nuclear fuel cycle. Although uranium hexafluoride is produced in Canada, enrichment is not done in the country and the uranium hexafluoride is exported for enrichment and processing for use in light water reactors around the world.

The dashed red box in the slide indicates the scope of the facilities included in this section of the Regulatory Oversight Report.

In the first dark green box, called "uranium refining", natural uranium is refined into uranium trioxide at the Blind River Refinery.

In the second dark green box, called "uranium conversion", the uranium trioxide is converted into two products, uranium dioxide and uranium hexafluoride, at the Port Hope Conversion Facility. As

previously mentioned, the uranium hexafluoride is exported to other countries for enrichment and use in light water reactors.

In the third dark green box, called "UO<sub>2</sub> natural fuel", the uranium dioxide is formed into pellets and fuel bundles are assembled at both the Cameco Fuel Manufacturing Facility and the BWXT Nuclear Energy Canada facilities. The fuel bundles are then used in Canada's Candu power reactors.

This slide shows the locations of uranium processing facilities in Canada. They are Cameco's Blind River Refinery, Port Hope Conversion Facility and Fuel Manufacturing Facility, in addition to BWXT Nuclear Energy Canada in Toronto and Peterborough. All facilities are located in the Province of Ontario.

The licence expiry dates and financial guarantee values for these facilities are shown in the table. All uranium processing facilities have valid financial guarantees in place for future decommissioning.

In 2018, CNSC staff spent 115 person days on licensing activities for the uranium processing facilities, while 1,064 person days were dedicated to compliance activities. This was accomplished through inspections and desktop reviews which can be scheduled or

unscheduled.

CNSC staff performed 17 inspections at these facilities in 2018. All enforcement actions arising from the findings were recorded and are tracked to completion using the CNSC regulatory information bank.

The table also identifies the trend changes compared to regulatory oversight activities in 2017. An up arrow indicates an increasing trend, a down arrow indicates a decreasing trend and the right arrow indicates no change.

Of note is the increasing trend at BWXT for both licensing and compliance. This is due to activities associated with initiating review of BWXT's licence application for the relicensing hearing scheduled for March 2020.

For the other facilities variation is expected to occur from year to year and the trend arrows do not indicate a significant change in regulatory oversight activities.

This slide shows the 2018 performance ratings for each of the 14 safety and control areas at each uranium processing facility.

The Blind River Refinery received a rating of "fully satisfactory" for the conventional health and



safety SCA in recognition of 12 continuous years without a worker lost-time injury. Blind River Refinery received a rating of "satisfactory" for all other safety and control areas.

Port Hope Conversion Facility, Cameco Fuel Manufacturing and BWXT for both its sites in Toronto and Peterborough received a rating of "satisfactory" for all safety and control areas.

Over the next slides, I will present the performance and trends for the radiation protection, environmental protection and conventional health and safety SCAs.

This slide illustrates the relationships between a regulatory limit, an action level and a monitored parameter during normal operation.

The region with the green dots represents the range of normal operation for the parameter.

The regulatory limit is shown as the red line on the graph. This is prescribed in regulation and, if exceeded, warrants enforcement action.

An action level is shown as the blue line. This is an internal program that is site or licensee-specific and is typically set much lower than the regulatory limit. The action level serves as an indication

that, if exceeded, may indicate a potential loss of control with a program. The licensee is required to notify the CNSC of the action level exceedance, perform an investigation, and, where needed, carry out subsequent corrective actions and take preventive measures.

The graph on this slide shows the average and maximum individual effective dose to nuclear energy workers in 2018 for all uranium processing facilities.

The red line on this chart represents the 50 mSv regulatory effective dose limit for nuclear energy workers. As illustrated, doses to workers at all uranium processing facilities were well below the 50 mSv regulatory dose limit in any one year.

The graph on this slide shows the five-year trend for effective doses to nuclear energy workers (NEW) from 2014 to 2018 for all uranium processing facilities.

The average effective dose per worker for each year is overlaid on the maximum effective dose. For each column, the color on the lower portion indicates the average effective dose and the colour on the upper portion indicates the maximum effective dose. The number at the top of each column is the maximum effective dose.

Note: In addition to the annual effective

dose limit of 50 mSv in any one year, a regulatory dose limit of 100 mSv over a defined five-year dosimetry period is applied for an NEW. As illustrated, doses to workers at all uranium processing facilities were well below the 50 mSv regulatory dose limit in any one year and 100 mSv over a defined five-year dosimetry period.

In January 2018 there was one instance at the Port Hope Conversion Facility where a UF6 maintenance employee's dosimeter result of 2.45 mSv exceeded the whole body dose monthly action level of 2 mSv.

In accordance with Cameco's corrective action process, Cameco initiated an investigation to determine the cause of the exposure and identify corrective actions. The employee had been assigned to multiple jobs, none of which stood out as being the cause for the elevated result. The employee indicated that their badge was never lost and was always returned to the badge rack at the conclusion of their shift.

While the direct cause could not be established, Cameco implemented additional administrative controls in one of the work areas where there was a potential for elevated dose rates. These controls include requirements for the wearing of direct reading dosimeters in the work area and gamma dose rate surveys to be

performed prior to execution of work activities.

CNSC staff are satisfied with Cameco's reporting of and response to the action level exceedance.

This slide provides a five-year trend of doses to the public from each uranium processing facility from 2014 to 2018.

In summary, doses to the public from all uranium processing facilities continue to be well below the regulatory limit of 1 mSv per year.

Note that in 2017 Cameco PHCF updated its public dose calculations to change the gamma monitoring location to the fence line, which is closer to the operating facility than the previous location, resulting in an increase as shown in the table. This change provides a more conservative dose estimate compared to previous years.

The increase in public dose is due to updating the public dose calculation and is not a result of increased environmental releases or gamma dose from the PHCF.

This diagram shows the five-year trend for monitoring uranium in ambient air around uranium processing facilities from 2014 to 2018.

The Ontario Ministry of the Environment, Conservation and Parks (MECP) quality standard for uranium

in ambient air, shown as the green line on the slide, represents a concentration that is protective against adverse effects on health or the environment.

The monitoring results, which include the highest annual average from each facility's air monitoring stations, indicate that concentrations of uranium in ambient air around these facilities are well below the ambient air quality standard for uranium.

This slide shows a five-year trend for annual average uranium concentrations in soil around the uranium processing facilities from 2014 to 2018. Licensees' soil monitoring programs monitor the long-term environmental effects of air emissions and show whether there is an accumulation of uranium in the soil surrounding a facility.

The Canadian Council of Ministers of the Environment (CCME) guideline for residential and parkland use is the most conservative soil quality benchmark type of land use and is therefore shown on this slide as the green line at 23  $\mu\text{g}$  of uranium per 1 g of soil.

Note that CFM samples soil on a three-year frequency. Appendix table F-10 includes additional CFM soil monitoring data from 2008 to 2016.

The soil sampling results in 2018 continue

to indicate that current uranium soil concentrations are well below the guideline and do not pose a risk to people or the environment.

During the second and third quarters of 2018, Cameco PHCF reported nine instances where the daily action level of 100 µg uranium per litre was exceeded for the uranium discharges from the sanitary sewer. Cameco's investigation attributed this to heavy rainfall leading to groundwater infiltration into the sanitary sewer piping. Releases to the sanitary sewer were below the licence limit with no impact on the environment.

Cameco has implemented corrective actions in relation to the sanitary sewer action level exceedances, including sealing the identified infiltration sources, and as part of Vision in Motion, Cameco will be upgrading the sanitary sewer system. Note that Vision in Motion is Cameco's multi-year project to clean up and renew the PHCF site.

CNSC staff reviewed and are satisfied with the corrective actions taken by the licensee.

During the first quarter of 2018, Cameco Fuel Manufacturing recorded an action level exceedance when the measured concentration of uranium in an effluent sample for liquid releases to the municipal sewer system was

measured at 0.11 mg uranium per litre, above the weekly action level of 0.10 mg uranium per litre.

Cameco notified CNSC staff of the exceedance and conducted an investigation to identify the cause. The event report was submitted to the CNSC following the investigation, which provided Cameco's conclusion that the elevated measurement was likely attributed to recent equipment modifications within the facility. Subsequent liquid effluent monitoring results were all below the 0.10 mg uranium per litre for the remainder of 2018.

CNSC staff reviewed and are satisfied with the corrective actions taken by the licensee.

Lost-time injury, or LTI, is an injury that takes place at work and results in the worker being unable to return to work for a period of time.

The accident severity rate measures the total number of days lost to injury for every 200,000 person hours worked at the site. The accident frequency rate measures the number of LTIs for every 200,000 person hours worked at the site. The number of lost-time injuries and the corrective actions taken in response are key performance indicators for the conventional health and safety SCA.

This slide shows the five-year trend for the lost-time injuries at the uranium processing facilities. As shown on this slide, in 2018 there were two lost-time injuries at a uranium processing facility, covered in the next slide.

Cameco PHCF reported two lost-time injuries in 2018.

The first LTI was a result of an employee falling approximately four feet while taking confined space training off site. The employee was initially put on restricted duty and later instructed by their doctor to cease work, resulting in lost time.

The second LTI was a result of a contracted truck driver spraining their ankle while stepping down onto a rig mat in the loading area of Centre Pier, resulting in lost time.

For both LTIS, Cameco conducted an investigation and implemented corrective actions. CNSC staff reviewed the corrective actions and are satisfied with the actions taken by Cameco to prevent reoccurrence.

The next few slides will briefly talk about uranium processing facility highlights.

The following table briefly outlines facility highlights for the uranium processing facilities.



There were no changes to facility operations at uranium processing facilities, no licensing decisions made, and no *Licence Condition Handbook* updates. All licensees managed to operate safely in 2018 and according with their licensing basis.

For 2018, there were no unplanned regulatory oversight activities at the Cameco Blind River Refinery. CNSC staff conducted five inspections at the Cameco Blind River Refinery in 2018, focusing on the following SCAs: environmental protection, management system, waste management, emergency management and fire protection, and radiation protection.

All enforcement actions arising from the inspections at any of the uranium processing facilities are recorded and tracked in the CNSC regulatory information bank to completion.

Cameco reported two events for the Blind River Refinery in accordance with their regulatory reporting requirements. One was a transport event, and the second was a radiation protection event. CNSC staff reviewed Cameco's corrective actions following the events and found them to be acceptable.

For 2018, there were no unplanned regulatory oversight activities at the Cameco Port Hope

Conversion Facility. CNSC staff conducted six inspections at the Cameco Port Hope Conversion Facility in 2018, focusing on fitness for service, waste management, radiation protection, emergency management, environmental protections, and management system.

Cameco reported 13 events for the Port Hope Conversion Facility in accordance with their regulatory reporting requirements.

The breakdown of the events are as follows: three events related to the sanitary action level exceedances previously discussed, one release of ground water, one radiation protection action level exceedance previously discussed, two LTIs previously discussed, two transport events, one pressure boundary event, and three events requiring activation of PHCF's emergency response team.

CNSC staff reviewed Cameco's corrective actions following the events and found them to be acceptable.

Vision in Motion is Cameco's project to clean up and renew the PHCF site. The project is carried out under Cameco's operating licence for the facility.

In July 2018, CNSC staff conducted an inspection in Cameco PHCF on the Vision in Motion Project.

CNSC verified the following VIM activities: repackaging legacy waste and transfer of stored waste to the long-term management facility; asbestos abatement and removal of process hazards from the former UF6 plant; mobilization for Centre Pier building demolition; construction of project support trailers; and establishment of supplemental ambient air monitoring equipment.

CNSC staff continue to maintain regulatory oversight over licensed activities.

For 2018, there were no unplanned regulatory oversight activities at Cameco Fuel Manufacturing.

CNSC staff conducted two inspections at the Cameco Fuel Manufacturing in 2018, focusing on fire protection and waste management.

Cameco reported one event for Cameco Fuel Manufacturing related to the action level exceedance previously discussed. CNSC staff reviewed Cameco's corrective actions following the event and found them to be acceptable.

In November 2018, BWXT submitted a licence renewal application requesting to renew its operating licence for a 10-year period. CNSC staff are conducting a review and assessment of the application. CNSC staff's

recommendation will be presented to the Commission in a public proceeding scheduled for the week of March 2nd, 2020.

In 2018, there were no unplanned regulatory oversight activities at the BWXT facilities in Toronto and Peterborough.

CNSC staff conducted four inspections at BWXT in 2018, focusing on general, fire protection, environmental protection, and emergency management.

BWXT reported two events in accordance with its regulatory reporting requirements. One event was related to a small spill at the Peterborough facility. The second event was related to a power outage at the Toronto facility.

CNSC staff reviewed the corrective actions and their implementation and found them to be acceptable.

This concludes the section for uranium processing facilities.

I will now pass the presentation to Lester Posada.

**MR. POSADA:** Thank you. My name is Lester Posada, for the record. I am a project officer and inspector working in the Nuclear Processing Facilities Division. I will be presenting this section on the nuclear

substance processing facilities.

The nuclear substance processing facilities are different from the uranium processing facilities, as their end products are not related to the nuclear fuel cycle for power reactors.

The products created by nuclear substance processing facilities have a variety of end uses, such as diagnosing and treating cancer, sterilizing items for sanitary reasons such as surgical gloves, and creating self-luminous emergency and exit signs for buildings and airplanes.

There are three Class IB nuclear substance processing facilities in Canada, all of which are located within the province of Ontario.

SRB Technologies is a gaseous tritium light source manufacturing facility, located in Pembroke. Nordion is a health sciences organization that provides products used in the prevention, diagnosis, and treatment of disease. Best Theratronics manufactures teletherapy machines, self-shielded irradiators, and cyclotrons. Both Nordion and Best Theratronics are located in Ottawa.

The licence expiry dates and financial guarantee amounts for these facilities are shown on a table on this slide.

In 2018, CNSC staff spent a total of 111 person days on licensing activities for the nuclear substance processing facilities, while 320 person days were dedicated to compliance verification activities, including inspections and desktop reviews.

CNSC staff performed a total of five compliance verification inspections at these facilities. All enforcement actions were recorded and are tracked in the CNSC regulatory information bank.

This table also identifies the trend changes compared to regulatory oversight activities in 2017. An up arrow indicates an increasing trend; a down arrow indicates a decreasing trend; and a right arrow indicates no change.

Of note is the increasing trend at BTL for licensing activities. This is due to activities associated with initiating the review of BTL's licence application for the relicensing hearing held in May 2019. For the other facilities, variation is expected to occur from year to year, and the trend arrows do not indicate a significant change in regulatory oversight activities.

In November 2018, CNSC staff issued an information request under section 12(2) of the *General Nuclear Safety and Control Regulations* to Nordion as a

result of a non-compliance with a condition of an export licence. The non-compliance did not represent a risk to the health and safety of persons or the environment. Nordion responded to the request and implemented corrective actions. CNSC staff have reviewed and are satisfied with Nordion's corrective actions and no further action is required.

For 2018, all of the nuclear substance processing facilities met CNSC requirements and received a satisfactory rating with the exception of four SCAs that were rated as fully satisfactory for exceeding CNSC expectations.

In 2018, CNSC staff rated SRBT's conventional health and safety SCA as full satisfactory for continuing to implement a highly effective program. SRBT promptly addresses and reports any arising problems in accordance with regulatory requirements. CNSC staff also rated SRBT's fitness for service program as fully satisfactory as a result of SRBT's continuous improvements to its manufacturing processes, equipment, and revision of its maintenance program. SRBT proactively incorporates best industry practice.

Nordion received a rating of fully satisfactory for environmental protection due to its

continual low environmental releases and the licensee's commitment to the ALARA principle. Nordion's security program was also rated fully satisfactory due to its continual improvements and ability to effectively maintain the program.

Overall, these ratings indicate adequate management of safety and control measures at all facilities.

The graph on this slide shows the 2018 average and maximum effective radiation doses to nuclear energy workers for the three facilities. The red line represents the regulatory annual effective dose limit of 50 mSv for a nuclear energy worker. As illustrated, the average and maximum dose received by a worker at each of the facilities was well below the regulatory limit.

This data demonstrates that doses to workers at nuclear substance processing facilities are safe and that the licensee's radiation protection programs remain effective.

The graph on this slide shows the five-year trend for effective doses to nuclear energy workers from 2014 to 2018 for all nuclear substance processing facilities.

The average effective dose per worker for



each year are overlaid on the maximum effective dose. For each column, the colour on the lower portion indicates the average effective dose, and the colour on the upper portion indicates the maximum effective dose. The number at the top of each column is the maximum effective dose.

Note that in addition to the annual effective dose limit of 50 mSv in any one year, a regulatory dose limit of 100 mSv over a defined five-year dosimetry period is applied for an NEW.

As illustrated, doses to workers at all nuclear substance processing facilities were well below the 50 mSv regulatory dose limit in any one year, and 100 mSv over a defined five-year dosimetry period.

In October 2018, BTL reported that two servicing technicians exceeded BTL's radiation protection action levels during a source loading procedure for a prototype design teletherapy head. The incident occurred when a tungsten screw securing the end plug for the teletherapy head failed and part of the source drawer exited the other end of the source head. The source was immediately pulled back into the transport container and safely stored.

The first worker exceeded the monthly extremity action level of 10 mSv, with an equivalent dose

to the right extremity of 13.51 mSv. The second worker exceeded the monthly whole-body dose action level of 4 mSv, with an effective dose of 9.65 mSv.

BTL's correction actions include replacing the tungsten screws with stainless steel screws, along with taking radiation measurements to ensure localized dose rates at the screw locations remain low.

CNSC staff are satisfied with BTL's reporting of and response to the action level exceedances.

This slide provides the dose to the public from each nuclear substance processing facility from 2014 to 2018. Doses to the public from all nuclear substance processing facilities continue to be well below the regulatory limit of 1 mSv per year.

Note that public dose estimates are not provided for Best Theratronics because its licensed activities involve sealed sources and there are no discharges to the environment.

A lost-time injury is an injury that takes place at work and results in a worker being unable to return to work for a period of time. The accident severity rate measures the total number of days lost to injury for every 200,000 person hours worked at the site. The accident frequency rate measures the number of LTIs for

every 200,000 person hours worked at the site. The number of lost-time injuries and corrective actions taken in response are key performance indicators for the conventional health and safety SCA.

This slide shows the five-year trend for lost-time injuries at nuclear substance processing facilities. As shown in this slide, in 2018 there were two lost-time injuries at a nuclear substance processing facility, which are described in the next slide.

There were two lost-time injuries reported at the BTL facility in 2018.

An employee had a cut and abrasion to the stomach area when the grinder being used was caught in their coveralls and pulled them in. This resulted in one lost day and the employee was reminded to use the proper guard when performing the work.

The second LTI resulted in an employee hurting their back when applying an upward force to a large pipe wrench. The second LTI was an isolated incident, and the work has not been performed since. This resulted in 11 lost days, and the employee visited a chiropractor for treatment and was put on light-duty work upon return.

CNSC staff reviewed the corrective actions and are satisfied with the actions taken by BTL to prevent

recurrence.

The next few slides will briefly talk about nuclear substance processing facility highlights in 2018.

The following table briefly outlines facility highlights for the nuclear substance processing facilities. There were no changes to facility operations at the nuclear substance processing facilities, no licensing decisions were made in 2018, and there were no updates to any facility *Licence Condition Handbooks*. All licensees managed operations safely in 2018 and in accordance with their licensing basis.

For 2018, there were no unplanned regulatory oversight activities at SRB Technologies. CNSC staff conducted two inspections at SRBT in 2018, focusing on security and packaging and transport.

All enforcement actions arising from the inspections at any of the nuclear substance processing facilities are recorded and tracked in the CNSC regulatory information bank to completion.

SRBT reported one event at its facility related to packaging and transport. CNSC staff reviewed SRBT's corrective actions following the events and found them to be acceptable.

This figure provides the 2018 average groundwater monitoring data near the SRBT facility.

The highest average tritium concentration was reported at 40,208 Bq/L for monitoring well MW06-10, which is located directly beneath the area where the active ventilation stacks are located at SRBT. CNSC staff note that neither this monitoring well nor any other monitoring well for SRBT are used for drinking water.

As can be seen in the figure, tritium concentrations decrease significantly at locations farther away from the SRBT facility. This is consistent with the air deposition distribution patterns of tritium releases and slow groundwater movement conditions.

Tritium values in wells located in residential areas are below 200 Bq/L, which is well below the provincial drinking water standard of 7,000 Bq/L.

These residences shown in this figure are connected to the municipal water supply.

Overall, CNSC Staff conclude that the tritium inventory in the groundwater system around the facility has been trending downward since 2006, and is now stabilized. This trend is due to natural attenuation and to SRBT's initiative to reduce emissions. These include the commissioning of improved tritium trap valves and

remote display units, real-time monitoring of gaseous effluent, and a reduction in the amount of failed leak tests from manufactured light sources.

CNSC Staff conclude that residents in the area and the Muskrat River remain protected.

For 2018 there were no unplanned regulatory oversight activities at Nordion. CNSC Staff conducted two inspections at Nordion in 2018 focusing on management system and a general inspection covering multiple safety and control areas.

Nordion reported eight events at its facility related to packaging and transport. CNSC Staff reviewed Nordion's corrective actions following the events and found them to be acceptable.

In April 2018 BWXT announced an agreement to acquire Nordion's medical isotope business. The acquisition was completed in August 2018. CNSC Staff assessed the information provided by Nordion on the acquisition, including the proposed management system and determined that the proposed change would have a neutral impact on safety.

No licence amendment or Commission approval was required for the acquisition to proceed as Nordion will continue to operate the medical isotope

facility until such time as BWXT obtain a separate Class 1B nuclear substance processing facility operating licence.

In September 2018 BTL submitted a licence renewal application requesting to renew its operating licence for a 10-year period. CNSC Staff conducted a review and assessment of the application.

The Commission conducted a public licence renewal hearing with the opportunity for oral interventions in May 2019. The Commission renewed BTL's Class 1B licence for a 10-year period in June 2019. For 2018 there were no unplanned regulatory oversight activities at BTL.

CNSC Staff conducted one inspection at BTL in 2018, which was a general inspection covering multiple safety and control areas. BTL reported four events at its facility related to the two action level exceedences reported and the two lost-time injuries previously discussed.

CNSC Staff reviewed BTL's corrective actions following the events and found them to be acceptable.

This ends the section for nuclear substance processing facilities. I will now pass the presentation back to Caroline Ducros.

**DR. DUCROS:** Caroline Ducros, for the

record.

CNSC Staff have confirmed that in 2018 licensees operating uranium and nuclear substance processing facilities in Canada adequately controlled radiation exposures to keep doses ALARA, maintained releases to levels protective of the environment, continued to protect workers with its conventional health and safety program, continued to effectively implement programs in support of all safety control areas and addressed all areas of noncompliance in a timely manner.

CNSC Staff are satisfied that licensees continue to protect the health and safety of workers, the public and the environment.

The following slides present an overview of the CNSC's Participant Funding Program and of the interventions received regarding the regulatory oversight report.

CNSC's Participant Funding Program supports individual, not-for-profit organizations, and Indigenous groups participating in the CNSC's regulatory processes, including participation at regulatory oversight report commission meetings.

The program helps interested parties contribute value-added information to the Commission that



is subsequently taken into consideration during decision-making processes.

CNSC provided funding to the following recipients: Swim Drink Fish Canada; Lake Ontario Waterkeeper; and, Thessalon First Nation.

CNSC Staff also received written interventions from the Canadian Nuclear Workers Council and the Canadian Nuclear Association.

Intervenors expressed satisfaction with the safe operation of these facilities in regards to workers, the public, and the environment. CNSC Staff are committed to continuous improvement and to addressing the concerns that were raised.

For example, as part of its commitment to open government and its mandate to disseminate this information to the public, the CNSC is making radionuclide release data more readily accessible to the public. Regarding the timelines of information sharing, CNSC Staff worked with the Secretariat to ensure that the requested information from intervenors for this regulatory oversight report were provided in a timely manner.

With regard to the intervenor concerns related to release limits, CNSC Staff are drafting a regulatory document for releases to the environment from

facilities which provides a new approach for establishing licence limits.

Concerns and recommendations received from intervenors for this regulatory oversight report have been dispositioned in more detail in the annex to this presentation.

We will now provide some concluding remarks. CNSC Staff's regulatory oversight activities confirm that licensees are taking action in a timely manner, licensees' programs are implemented effectively, priority areas using a risk-informed approach and verification activities are maintained, and trends across the uranium and nuclear substance processing facilities demonstrate that the industry continues to operate safely.

For 2019 CNSC Staff's regulatory oversight was undertaken using a risk-informed approach. CNSC Staff continue to disseminate objective scientific, technical and regulatory information on the potential effects to the environment and to the health and safety of persons related to uranium processing and nuclear substance processing facilities in Canada.

The CNSC takes the meaningful outreach and engagement with Indigenous groups and the public very seriously and seeks continuous improvement in this area in

the interest of building trust and confidence.

This concludes CNSC Staff's presentation. We are now available to answer any questions. Thank you.

**THE PRESIDENT:** Thank you very much for the presentation. I'll now ask the licensees if they wish to make comments on what was presented today, and we'll use the same order that was used in the presentation.

So I'll start with Cameco Corporation. Would you like to make a statement, Mr. Mooney?

**MR. MOONEY:** Yes, thank you. Good morning, President Velshi and Members of the Commission.

For the record, my name is Liam Mooney, I am Cameco's Vice-President of Safety, Health, Environment Quality, and Regulatory Relations.

With me today is Tom Smith, Cameco's Director of Regulatory Compliance and Licensing for our Fuel Services Division.

We are joining you as part of your review of CNSC Staff's 2018 Regulatory Oversight Report for Uranium and Nuclear Substance Processing Facilities.

We want to take the opportunity to emphasize that Cameco's highest priorities are the safety and health of our employees, members of the public and the environment. We take great pride in the quality of our

processes and programs that support these priorities.

Cameco's strong performance is reflected in the 2018 Regulatory Oversight Report. We had satisfactory ratings across all SCAs with the exception being the Blind River Refinery, which we received a fully satisfactory rating in conventional health and safety for the sixth straight year. This is well-deserved, considering that 2018 marks 12 years since that facility had a lost-time incident.

In Port Hope, the Vision in Motion project continues to progress our work in 2018 focused on the safe transfer of stored waste from the Centre Pier and preparation work for building demolition.

A key to the success of this project is the collaborative working relationship we enjoy with the Canadian Nuclear Laboratories and the Municipality of Port Hope.

With CNL we have several topic-specific working groups to effectively coordinate work in the harbour area and on the former waterworks. We also coordinate with CNL on communications with the public about our two projects.

In addition, Cameco, CNL and the municipality all meet monthly to discuss the projects. We

communicate regularly with the municipality on our general operations and we provide quarterly environmental monitoring summaries to the municipal counsel.

Dale Clark, our Vice-President of Fuel Services also meets regularly with the mayor to discuss our general operations and Vision in Motion.

Cameco's environmental performance remains strong and we have a culture of continuous improvement that aids our commitment to protecting the environment. In 2018 the Blind River Refinery completed a number of infrastructure-related projects.

At Cameco, fuel manufacturing upgrades were made to the waste treatment system. The Port Hope Conversion Facility continues repackaging of waste associated with the Vision in Motion project. Transfers of these wastes to the long-term waste management facility were also initiated in June 2018.

We are proud to operate in Port Hope and Blind River and take our responsibility to be a good corporate citizen seriously. We utilize a wide range of channels to provide meaningful and timely information to our communities. We work hard to ensure our stakeholders have access to Cameco's subject matter experts to answer their questions and address their concerns.

Our website, social media channels, newsletters, participation at community events, community investment, tours and meetings are just some of the ways that we share information and engage with our communities.

Our annual public polling results verify that our communities are both well-informed and supportive of Cameco's operations. The 2018 polling results confirm that 85 per cent of Port Hope residents and 97 per cent of all respondents in Blind River support the continuation of Cameco operations.

In Port Hope 83 per cent agree that Cameco does everything possible to protect the environment, and in Blind River that number is 95 per cent.

We believe that our success in fostering and maintaining high levels of community support is built on our demonstrated track record of operational excellence and our commitment to engagement.

In closing, 2018 featured another strong performance from Cameco's Port Hope and Blind River facilities and we remain committed to working hard everyday to uphold our commitment to the health and safety of our employees, members of the public and the environment.

Thank you for the opportunity to speak today in relation to Staff's report, and we will be

available to respond to any questions that you may have.

**THE PRESIDENT:** Thank you. I'll now ask representatives from BWXT Nuclear Energy Canada, if they would like to make a statement.

**MR. MacQUARRIE:** Thank you and good morning, President Velshi and Members of the Commission. My name is John MacQuarrie and I'm President of BWXT Nuclear Energy Canada.

With me this morning from BWXT, to my right are: David Snopek, who's Director of Environmental Health and Safety and Regulatory; Natalie Cutler, who is Director of Communications and Government Relations; and, Ted Richardson, who is Director of our Fuel Operations.

As was presented this morning previously, 2018 was a good year for BWXT Nuclear Energy Canada, there were no lost-time injuries and very few low-level events from a conventional safety perspective, and there were no action levels exceeded for radiation environmental protection.

We held a successful emergency evacuation drill and demonstrated our preparedness for any emergency.

We look forward to our March licence hearing and continue to gauge with our communities through open and transparent communications.

We appreciate the opportunity to make these brief remarks and look forward to answering any questions you may have for us. Thank you.

**THE PRESIDENT:** Thank you, Mr. MacQuarrie. To you, Mr. Levesque, from SRB Technologies, if you'd like to make a statement please?

**MR. LEVESQUE:** Thank you very much. Stéphane Lévesque, for the record. I'm Stéphane Lévesque, I'm the President for SRB Technologies.

We don't have any additional statements to make other than I'm joined here on my left by Ross Fitzpatrick, the Vice-President for SRB Technologies; and, on my right, Jamie MacDonald, Manager of Health Physics & Regulatory Affairs.

We're ready to answer any questions you may have.

**THE PRESIDENT:** Thank you. Nordion Canada, would you like to make a statement?

**MR. BROOKS:** Yes, President Velshi, thank you. Thank you for inviting Nordion this morning to the Commission meeting and the opportunity to review and discuss our 2018 licensing activities.

I'm Kevin Brooks, I'm the President of Nordion and I'm joined here by my colleagues to my right:



Richard Wassenaar, who's the Director of Regulatory and Environmental Health and Safety; Jennifer Mahoney is our Manager of Environmental Health and Safety, Document Management and Corporate Records; Shannon Lacasse, our Facilities Nuclear Compliance and Training Specialist; and, Richard Decaire, Senior Manager, Radiation Safety and Compliance who is with BWXT Isotope Technology Group.

In the cheap seats we have Mr. Ron McGregor, who's our Vice-President of Regulatory EHS compliance for BWXT ITG; and, Jackie Kavanagh, the Senior Manager of Regulatory and EHS from BWXT ITG.

As referenced by the CNSC Staff's presentation, in August 2018 we divested the medical isotopes business to BWXT Isotope Technologies Group, and what was included was a lease back portion of our facility.

BWXT ITG is seeking their own Class 1B licence which is, as I understand, currently under review with the CNSC, and until such time as they receive a licence all work at Nordion facility continues to be performed under the Nordion licence, Nordion's processes and procedures, and Nordion's oversight and responsibility.

This framework was reviewed by the CNSC Staff and has been successful in continuing to ensure the safety and security of employees, our customers, the

public, and the environment.

Finally, I would just like to add that Nordion and our parent company, Sotera Health, is very proud of our commitment to safety and security of employees, our customers, the public, and environment, which we believe is reflected in the 2018 Oversight Report by the CNSC Staff.

Thank you very much.

**THE PRESIDENT:** Thank you. I'll ask BEST Theratronics, if you'd like to make a statement please?

**MS SOLEIMANI:** Good morning, Ms Velshi and the Members of the Commission. My name is Mojgan Soleimani, I'm the Director of Quality and Regulatory Affairs at BEST Theratronics.

I'm here to answer any questions that you may have about our operations. Thank you.

**THE PRESIDENT:** Thank you. We'll now move to the interventions.

But before we do so, I wanted to note that some of the intervenors both for today's Regulatory Oversight Report on Uranium and Nuclear Facilities, as well as what's on the agenda tomorrow for Uranium, Mines and Mills Regulatory Oversight Report, have raised concerns regarding the regulatory oversight reports.

In particular, in procedural considerations such as timelines, the inability to present orally and on the content of the RORs.

I wanted to acknowledge that we have taken note of these concerns and that the CNSC Staff are going to be looking at the RORs and identifying opportunities for improvement, especially with regards to content, timeliness, frequency and participation opportunities.

So early in the New Year CNSC Staff will start consultation with Commission Members, with licensees, with civil society organizations, Indigenous peoples, the public, and they're hoping that with the recommendations that come out from that review that next year's RORs will address some of those concerns.

So, as Commission Members, we won't be spending a whole lot of time today going through those concerns but, again, want to note that they have been seriously noted and will be considered in the future.

So we'll now proceed with the written submissions filed by intervenors. Marc, if you can lead us through those please?

**CMD 19-M35.1**

**Written submission from the  
Canadian Nuclear Association**

**MR. LEBLANC:** Thank you, Madame le  
Président. The first written submission is from the  
Canadian Nuclear Association, as outlined in CMD 19-M35.1.

Any questions from the Members on this  
submission?

**CMD 19-M35.2**

**Written submission from the  
Canadian Nuclear Workers Council**

So we'll proceed now to the next  
submission, which is from the Canadian Nuclear Workers  
Council, as outlined in CMD 19-M35.2.

Any questions from the Members?

**CMD 19-M35.3**

**Written submission from  
Swim Drink Fish Canada / Lake Ontario Waterkeeper**

I'll now proceed to the next submission,

which is from Swim Drink Fish Canada, Lake Ontario Waterkeeper, as outlined in CMD 19-M35.3.

Any questions from the Members on this submission?

Dr. Berube.

**MEMBER BERUBE:** Just looking at the submission from the intervenor here, Recommendation 3 in particular. I know you've handled this a bit in your presentation summary, but if you could expand on basically how choose what environmental data is going to be published in our ROR. CNSC Staff, if you could do that for me please?

**DR. DUCROS:** Caroline Ducros, for the record. Before passing it to the environmental protection experts, just as an overview, there are some variances across the facilities in terms of the activities and the environmental interactions which is the reason for some of the variances.

But, more specifically, we are going to be working towards having a more consistent approach to presenting in the following RORs and be very receptive to the feedback that will be received in the upcoming year.

I'd like to pass it to the environmental protection subject matter experts to elaborate a bit more

on your question.

**MS SAUVÉ:** Good morning. Kiza Sauvé, I'm the Director of Health Sciences and Environmental Compliance Division.

So, as Dr. Ducros mentioned, we are looking at which environmental data go into the RORs. We're also looking at a broader perspective where we can provide more environmental data to the public in machine-readable formats, as an example.

So we've recently been working with civil society groups to look at how we can get data online in an NPRI format. We've got some linkages that they're testing right now. We're also getting data on our website through the IEMP and there are linkages over to the NPRI.

So definitely a topic that we're very engaged in and we're working with civil society groups and within the CNSC to do that.

**THE PRESIDENT:** I'd like to start off by complimenting Staff on how you have dispositioned comments from intervenors. They have been very thorough and thoughtful dispositions.

I think one of the reasons why you probably won't have Commission Members ask a lot of questions is we've reviewed those and only if they need

clarification or have follow-up questions will you hear from them. But, again, an acknowledgement of that.

My first question is one that the intervenor has raised a few times, and which is about identifying a contact person at the licensee who they can get follow-up information from.

In particular, for those who are recipients of the participant funding, I just wondered why would we not make their lives easier by providing that information as opposed to a statement that the CNSC does not provide that information?

**DR. DUCROS:** Caroline Ducros, for the record. Yeah, that was a well-received comment.

In terms of access to information for documents that belong to the CNSC, we are trying to improve on our disclosure of that information on our website. But CNSC doesn't disclose the names of contact people from licensees. So I think I would like to hear from the licensees what mechanism they might put in place to make the contact person more readily accessible.

**THE PRESIDENT:** Thank you. So before I turn to the licensees. Just simply, as for this year's ROR, our single point of contact is Person A, B, C. How difficult would that be for you to provide?

We'll start with you, Cameco.

**MR. MOONEY:** Thanks. It's Liam Mooney, for the record. I can only say in relation to this intervenor that we have worked with them over many years and they know who to contact within our organization, and they reached out to that person directly and we didn't see any delays in that regard.

So we feel that that information is available and that there was no hiccups in relation to the process for them to make the inquiries in relation to have further information that they were interested in.

**THE PRESIDENT:** But more generally, as opposed to for this specific intervenor. For you to provide that information so that the CNSC could provide if we were approached with that request?

**MR. MOONEY:** It's Liam Mooney, for the record.

It sounds relatively straightforward and simple and I don't want to be the drag on the process. You did refer to the work that staff is doing to improve the ROR process and we participate in that as a licensee and provide input into that. I don't expect it's going to be a significant hang-up because, as I tried to describe, the people who we have in those positions have been there for



some time and the contact route is very much direct in that regard.

**THE PRESIDENT:** Okay. So from all of that, I hear that for Cameco it would be easy to provide one or more contact names.

What about BWXT?

**MS CUTLER:** Natalie Cutler, for the record.

We have a dedicated website for our bids for our licensed site, BWXT Nuclear Energy Canada, that has an 800 number and a dedicated email address and we have been receiving correspondence that way from folks requiring more information for interventions for example. So we will encourage that to continue and/or my name to be given as a direct point of contact.

**THE PRESIDENT:** Thank you.

SRB...?

**MR. LEVESQUE:** Stephane Levesque, for the record.

On our website we have the numbers of a few individuals that can provide the information. In addition, on a lot of our information pamphlets, brochures and documents, which are all on our website, we also have the name of a direct contact. So I don't think in this

case or any other case for the members of the public we have given information usually within about a day or two of their request, but we will make sure that we review all of the documents to make sure we provide a point of contact in case they don't go back to the website.

Thank you.

**THE PRESIDENT:** Thank you.

Nordion...?

**MR. WASSENAAR:** Richard Wassenaar, for the record.

Nordion also has a website dedicated to our public information program and on that website we have contact information and do receive requests from the public regarding various items. I believe as well somewhere on there is direct contact for myself as part of the public disclosure protocol. So we believe this information actually is available and so it's easy to look at.

**THE PRESIDENT:** Thank you.

And Best...?

**MS SOLEIMANI:** Mojgan Soleimani, for the record.

We have no problem providing a contact. Although the information, like other licensees, is on the website, we have no problem with providing a direct contact

as well.

**THE PRESIDENT:** Okay. So, CNSC, you got the answer.

**DR. DUCROS:** Okay.

**THE PRESIDENT:** Thank you.

**MR. LEBLANC:** Dr. Demeter.

**MEMBER DEMETER:** Thank you.

This refers to Table -- I have to get my thing back up -- 6-3, which is page 74 of the staff CMD. This is a question for staff, and the geologist for the intervenor commented on this. It's looking at the difference between the actual and limits relative to -- for BWXT for the amount of uranium allowed per kilogram per year in the sewer. Someone looking at this externally would say that, for example, for 2018 the amount, the actual amount is 1/10000ths of the limit. And then they look at the limits between the two BWXT facilities, one in Toronto and Peterborough, the licence limit is 9000 versus 7600.

So for a member of the public to understand, why are the licence limits a number of orders of magnitude higher than the actual and why is the licence limit different between two facilities with the same substance? Just from a safety point of view, how do you

square all those differences between actual and real and that the licence limits are different for the same substance discharged to the sewer? As from a regulator, how do we square that?

**DR. DUCROS:** Caroline Ducros, for the record.

I will pass it to the experts in environmental protection.

**MS SAUVÉ:** Kiza Sauvé, I am the Director of Health Sciences and Environmental Compliance.

We have discussed licence limits in the past and we talk a lot about the derived release limits. So at the current time licence limits are based on the DRL, so that's based on a public dose, and so we look at the methodology of where that exposure pathway is, what type of releases are coming out of the facility. So we would expect to see different release limits at different facilities based on the surrounding area and the exposure pathways.

**MR. RINKER:** Mike Rinker, for the record.

If I could add, what is consistent amongst the facilities is that the limit would achieve what is required to protect the public at 1 mSv per year. So that is consistent across facilities. However, the amount of a

certain nuclear substance that would be released and modelled through the different pathways and what the exposure situations are at a facility are more unique to that facility.

**MEMBER DEMETER:** Okay. So that, as I understand it, the full pathway of the releases at these two facilities is sufficiently different to result in different derived release limits relative to on the receptor of the 1 mSv. So this is still based on a safety case based on the unique geohydrology and pathways for these two facilities?

**MR. RINKER:** Mike Rinker.

That's correct. In fact the number comes from CSA Standard N288.1, which is in fact a model for determining -- you would use to determine how much of a substance would be released to achieve that 1 mSv per year.

And if I could give an example of another facility not reported today, but to illustrate. The Bruce A facility and the Bruce B facility release the same things, they are in a similar environment, but the nature of that model and the pathways, they do have slightly different numbers, and when they are situated in a very different location like these facilities across Ontario, you would get a different value in terms of the amount of

uranium but still with the goal of making sure the limit is 1 mSv.

**MEMBER DEMETER:** Okay. Thank you.

**MR. LEBLANC:** Further questions?

Madam Velshi...?

**THE PRESIDENT:** My question was with regards to -- I think it's 7 of 13, so it's slide 70 -- around a recommendation on incident communication. I am actually looking for the specifics on that, but my understanding is that the licensees on your website after an incident occurs you put down some brief description of the incident, but I gather from the intervenor that then there isn't a follow-up to provide more details after you have done your investigation and have more details. So the recommendation was, you know, more on the quantity released, for instance if it was an environmental spill, the impact, the lessons learned, the mitigation measures, and so on. Is that information available on your website?

**MR. MOONEY:** It's Liam Mooney, for the record.

There are a number of recommendations there and we have assessed them. One was the date of the event and the date the event was posted, which we do have a commitment in our public information program to post within

24 -- by the next business day. We have been criticized in the past for going back into posting and changing it with updated information, so we are on the horns of a bit of a dilemma there. But there are quarterly reports that are filed that provide additional information, as well as the annual reports, and that would be, you know, the website posting is more for in the immediate and then the quarterly or the annual provide more detail, including corrective actions that may have been identified through the investigation of the event.

We did take the comment in relation to the applicable action level or limit in very rare circumstances, is that in play as something that we should look at our posting process and improve it in that way to provide that, because that would be known at the time.

So I think the short answer is that we would look to improve our posting process by both having the date of the event, the date it was posted and the applicable action level or limit as part of the initial posting, but we would point to our quarterly report or annual report where more detail is available and those are posted on our website as well.

**THE PRESIDENT:** Thank you.

Staff, anything further to add?

**DR. DUCROS:** Caroline Ducros, for the record.

Yes. Just from a regulatory perspective, the CNSC do ensure and must ensure that the licensees have the programs in place to manage these events and that they adhere to the reporting requirements that they are obliged to report under REGDOC-3.1.2. And we also post the events on the CNSC website, verifying that the licensee has posted on theirs as well.

In terms of verification, though, we also follow up in terms of looking at the information in the report, assessing to see whether it was adequate, whether corrective actions were put in place in a timely way and to our satisfaction, and we track those to completion in the regulatory information bank. So there is the regulatory perspective as well as the licensee's obligations.

**THE PRESIDENT:** Right. I guess the question though here was what is available in the public domain around the follow-up action and your point that your quarterly and your annual report, which is also available on your website. As long as that initial event posting would direct them there if they wanted further information, then that would meet that need. Something for consideration.



**DR. DUCROS:** Just a follow-on then. For the larger events that warrant an event initial report, we would also report those to the Commission and we also have a mechanism that reports to the global environment on the bigger events or events that other countries can learn from. It's the FINAS. So that is another mechanism whereby we can try to eliminate future events from happening by learning from the lessons.

**THE PRESIDENT:** Thank you.

**MR. LEBLANC:** Thank you.

Any further questions?

Dr. Demeter...?

**MEMBER DEMETER:** Thank you.

This is for Cameco, and understanding there are multiple jurisdictions involved. But the intervenor talked about the impact of the collapse of the harbour wall and maybe it would be nice to get a sense of where that sat, impact on remediation, monitoring, just sort of a summary update on that.

**MR. SMITH:** For the record, Tom Smith.

That project was completed in the fall of 2018. After the failure, Cameco cooperated with both Canadian Nuclear Laboratories and the Municipality of Port Hope. We did the remedial engineering design, the

municipality's contractor did the work, and CNL removed the residual contaminated soils that needed to be transferred to the LTWMF. So it was a collaborative effort to put a revetment wall in to secure the soils behind where the wall had failed and that project has now concluded.

**MEMBER DEMETER:** And did monitoring demonstrate any release of contamination beyond the harbour, into the waters beyond?

**MR. SMITH:** For the record, Tom Smith. We did see an increase in some of the contaminants of concern in our cooling water intake, but there was a wave attenuator installed not long thereafter. So we saw a decline after a period of monitoring, back to a normal state.

**MEMBER DEMETER:** Thank you.

**MR. LEBLANC:** Any further questions?  
Dr. Lacroix...?

**MEMBER LACROIX:** No.

**MR. LEBLANC:** President Velshi...?

**THE PRESIDENT:** No, thank you.

**CMD 19-M35.4**

**Written submission from the  
Thessalon First Nation**

**MR. LEBLANC:** So we will proceed to the next submission, which is from the Thessalon First Nation, as outlined in CMD 19-M35.4.

Any questions from the Members on this submission?

Dr. Berube...?

**MEMBER BERUBE:** So here the intervenor actually brings up the point of decommissioning in terms of plans, and of course we have indicated the financial guarantees which obviously are linked to some kind of a detailed decommissioning plan; is that correct?

**DR. DUCROS:** That is correct.

**MEMBER BERUBE:** And I am seeing this across the board, not with just this intervenor, but a number of questions we have had over the past is that there is very much concern with the Indigenous groups over long-term viability of sites, specifically long-term use for them. I am just wondering, how difficult would it be to link these decommissioning plans to the ROR so they would be available?

**DR. DUCROS:** Caroline Ducros, for the record.

I will pass the question to the Waste and Decommissioning Division Director, who will be able to provide you a much more fulsome answer.

**MS GLENN:** Good morning. My name is Karine Glenn and I am the Director of Waste and Decommissioning.

So the financial guarantee is linked with a preliminary decommissioning plan which is submitted every five years and it is exactly what it says, preliminary, and it is used as a planning tool as the basis of the financial guarantee.

There is no current requirement to make the decommissioning plan public. We don't require it. However, public input is one of the considerations that should be taken by the licensee in preparing their preliminary decommissioning plan. As a matter of fact, the CSA standard which deals with decommissioning, N294, has just been revised. A new version was published two weeks ago and we have as part of that new standard -- I am part of the Technical Committee for that and we have explicitly included Indigenous engagement and input in the development of both the preliminary and the detailed decommissioning

plans.

The preliminary plan does not authorize a licensee to conduct any decommissioning. They would need to submit a detailed plan and then be subject to Commission authorization at that point in time and the entire process that goes through -- that goes around that, including any environmental assessments that may be required based on what their plans are.

So to make a long story short, we strongly encourage the licensees to consult with not only the public but explicitly the Indigenous groups in the development of their strategies and their end state objectives.

**MEMBER BERUBE:** But you haven't answered my question, which is how difficult would it be to link even these preliminary things to -- because it becomes a matter of comfort for these people. Licences now are getting extended, as you are well aware. These things are being updated every five years, whereas licensing periods are going to -- it looks like 10 years is what is being requested in a lot of cases and I think for these Indigenous groups in particular that's too long for them to have very little information.

**MS GLENN:** Karine Glenn, for the record.  
There is at times -- it depends the way

that the decommissioning plans are prepared. Costing methodology, which is the basis of the cost estimate, is proprietary. However, the portion of the decommissioning plan that deals with strategy and with timelines could be made public and should -- we encourage the licensees to do so.

I believe Mr. Jammal would like to add a few words.

**MR. JAMMAL:** It's Ramzi Jammal, for the record.

As a normal part of our operations, licensing for the operations, there is always engagement with Indigenous groups.

Your question with respect to the future of decommissioning. Ms Glenn mentioned, the fact that there is a PDP or the preliminary decommissioning plan is preliminary. No one can proceed for a decommissioning activity without a request from the Commission for a licence to proceed. At that time there is always engagement with the stakeholders, the civil societies or the Indigenous groups to determine what the end state is going to be and the impact.

So the licensing process itself guarantees the engagement and the preliminary decommissioning plan

puts in place what will take place based on planned activity. So the key point to your plan is the plan. However, with respect to engagement, with respect to what will be the end state of the site or the surrounding area, it will take on the engagement with respect to the Indigenous group and the other stakeholders.

And as we are before you on an ROR or any licence renewal, there is always a determination on the impact with respect to the onsite or offsite with respect to any Indigenous or traditional knowledge.

**MR. MOONEY:** It's Liam Mooney.

I might offer some views at my own peril on this, but we have summarized our preliminary decommissioning plans and those are posted and available for consumption in that regard. We do regard the PDPs as containing some commercially proprietary information and there is a business advantage associated with some of the estimating that is provided in those documents, so this was sort of the halfway that we thought gave that information out.

Another area of interest has been in relation to our Waste Management Programs, so our Fuel Services staff summarized the Divisional Waste Management Program in an easy to read format and that is posted on our

website as well.

So we recognize the interest, but we've also seen a number of access to information requests from folks that we are in a competitive position with to see those documents. So we are trying to find a middle ground there and we think that those summaries go a long way in that regard, at least giving the conceptual plans for those facilities at the end of life.

**THE PRESIDENT:** So let me follow up on that. And I'm glad that you have made some effort in that regard.

And it's not the financial calculations or the modelling that's done. Frankly, I think it's the end state of the facility that is probably of primary interest and I would hope that the staff too would want to confirm that not only has the consultation taken place but that it's reflected in what the preliminary decommissioning plan is showing and that the financial guarantee then is appropriate for whatever that end state is. The last thing you would want is a financial guarantee based on something that is never going to be acceptable.

So I think we should seriously consider about making that public on what is the planning basis for the end state and I think there is a lot of merit in that,



as Dr. Berube is also suggesting.

**MR. LEBLANC:** Madam President, I believe this ends the review of the interventions, unless there are any further questions.

Dr. Demeter...?

**MEMBER DEMETER:** I will start with -- I have two detailed questions, so I will start with the one.

If I am looking at slide 49 from the staff presentation, this is relative to -- this is a question for SRB Technologies -- they talked about one of the wells, Monitoring Well 06 having 40,000 Bq per litre below --

**THE PRESIDENT:** Dr. Demeter, we are just doing intervenors' submissions right now.

**MEMBER DEMETER:** Oh, sorry. I thought we were finished.

**THE PRESIDENT:** Okay.

So having finished with the interventions, why don't we take a 15-minute break and come back at 10 to 10:00 and we will start but Dr. Demeter's question to SRBT.

Thank you.

--- Upon recessing at 10:34 a.m. /

Suspension à 10 h 34

--- Upon resuming at 10:50 a.m. /

Reprise à 10 h 50

**THE PRESIDENT:** Ms Ducros, I understand you have something you want to inform the Commission of before we get started with the questions.

**MS DUCROS:** Caroline Ducros, for the record.

Yes. I would like to pass the floor back to Ms Kiza Sauvé, who would like to clarify a detail in response to the question on the BWXT release limits from Table 6-3.

**MS SAUVÉ:** Thank you, Dr. Ducros.

Kiza Sauvé, for the record.

So in my previous response to Dr. Demeter's question I noted that the BWXT release limits were based on 1 mSv per year, but in fact the limits are based on a dose constraint to a member of the public of 50  $\mu$ Sv per year. But the methodology discussed by Mr. Rinker and myself is still the same, that's the derived release limit, CSA Standard N288.1.

But to get to the exact point of your question about why are they so different, the difference is really in the receiving water body. So when the uranium is

released through the liquid effluent, the water bodies that receive the effluent and the subsequent mixing of the uranium is quite a different size in Toronto versus Peterborough, so the Toronto receiving environment is much larger in terms of the mixing of the uranium into the system.

So the important point though is that the limits are protective of health and safety of persons and they are still both based on 50  $\mu$ Sv per year, but that is the main difference.

**THE PRESIDENT:** Okay. Thank you.

We will now open the floor to Commission Members for other questions on the ROR and we will start with Dr. Demeter. You can finish off with your question there.

**MEMBER DEMETER:** Thank you. I'm sorry, previously I thought we were ahead of the game.

So I am referring to slide 49 of staff, SRBT, the map. I'm looking at the monitoring wells and Monitoring Well 6-10 had a limit of 40,000 -- or just about 40,000 Bq per litre. I guess that was below the stack. And noting that the public -- the consumption dose limit is 7000.

But I was just curious. From SRBT, where

does the water from this monitoring well go? How is it connected to the system or the environment? Noting that this wasn't used for drinking, but where does it go?

**MR. LEVESQUE:** Stephane Levesque, for the record. Thank you for the question.

The water travels to the ground towards what you see there as the Muskrat River and it does so at the rate of a couple of metres a year. So before it gets to the Muskrat River, you can understand that is several hundred metres away from the facility, it goes through radiological decay and dilution. So that is why you see the numbers there just across the street, at about 100 metres away, being significantly lower than that.

**MEMBER DEMETER:** And is it well understood from your business why that -- like why you are losing that much tritium into this small groundwater reservoir?

**MR. LEVESQUE:** Stephane Levesque, for the record.

Yes. We have done several groundwater studies and the mechanism of how that happens is basically through tritium deposition on the ground and further infiltration from rain afterwards. So what happens is in historical practice we used to operate in periods of precipitation and we used to do several maintenance

activities around the stack area, which is exactly where that well is that contributed to having higher concentration right around the stacks. We have since taken mitigation measures to reduce the emissions drastically to reduce that deposition in the first place, eliminate the practices that we used to do to contribute to that, while going high as far as maintenance of the stack equipment. And we also don't operate in periods of precipitation, which further reduces the amount of concentrated tritium around that area that goes further into the well.

**MEMBER DEMETER:** Thank you very much.

**THE PRESIDENT:** Okay.

Dr. Berube...?

**MEMBER BERUBE:** So this question is for the CNSC staff and it has to do with looking at the ROR overall so far. One of unifying themes from the Indigenous groups are that of engagement and really what they feel is still inadequate engagement, although they do comment that it has improved a lot over the last little while, but if you could, please, just summarize CNSC's engagement activities right from inception and initial contact right through to long-term maintenance of those particular relationships.

**DR. DUCROS:** Caroline Ducros, for the

record.

I would like to pass this back to the Indigenous engagement group to respond.

**MR. LEVINE:** Adam Levine, Team Lead, Indigenous Relations for the CNSC.

So we take a holistic approach to our relationships with Indigenous communities. The ROR is one point, one aspect where communities can get engaged and have their voices heard by the Commission and also review how the industry has been performing over the past year, but we also want to make sure that we are talking on a regular basis. So we look at this by community, by community basis, because each community is different in terms of their level of interest, the types of activities in their territory, et cetera, that we are talking about. So what we have been doing over the past few years is looking across the country where there seems to be regulated facilities and then engaging each of those communities that have a direct interest around their territories and making sure that we are addressing their needs in terms of engaging with CNSC staff and also their engagement with the licensees. So we are taking a comprehensive view of that and we are getting great results and looking to do more moving forward.

**MEMBER BERUBE:** So just give me some granularity basically on process, how you actually do this. Do you have a calendar on the wall that you go through, cycle through every year and say: Okay, it's time to go and talk to these people? How do you actually do that?

**MR. LEVINE:** Adam Levine, for the record. Sure. So, for example, in New Brunswick we look at the communities that are interested in Point Lepreau for example and we ask them, you know, "How often would you like to meet with us?" And if their answer is, you know, biannually, so twice a year they like to meet with us and have updates of what is going on, potentially more depending on the regulatory activity, so we do that and we go to each of their leadership and communities to meet.

With regards to the facilities that are subject to this ROR, for example, around Blind River and Elliot Lake right now we usually go once or twice a year. We are right now in the midst of planning a trip to go in February. We are trying to do that in conjunction with an inspection of the Blind River facility and then meet with the five Indigenous communities that have direct interest there.

So it's really community-specific, but

even in between those in-person meetings we are always open for telephone calls and teleconferences and things like that to answer any questions and we do that often.

**MEMBER BERUBE:** And just for the operators, does anybody care to comment on that, what your process is in terms of how you actually maintain continuous engagement? I know definitely licensing activities would generate this activity for sure, but your annual activities with Indigenous people, do any of you have best practices you would like to share?

**MR. MOONEY:** It's Liam Mooney, for the record.

I think that, speaking about our Blind River Refinery that was just mentioned, in that circumstance we look at engagement as occurring on a spectrum in accordance with the Canadian jurisprudence in that regard and so our focus is on our nearest neighbours, the Mississauga First Nation, and our GM has regular meetings scheduled with both the Mississauga First Nation and the Town of Blind River to talk about operational performance.

Going beyond engagement, we have a significant number of employees from the Mississauga First Nation at our Blind River Refinery, in the 15 percent range



of the 135 or so employees at that facility, and we firmly believe that may be as important in relation to developing the relationship with the adjacent First Nations as far as the people who work at our facilities understand the care with which we treat the environment and our priorities and they take that home with them. That is a parallel that we see in Saskatchewan.

So I think the engagement piece is very much a focus and one that, when you asked for granularity, we would, as with the CNSC, try and determine what the needs were and how we could best situate them and then from there develop a plan year over year.

Of course, as you said, when it's in relation to more significant licensing action such as relicensing of a facility, we would be pushing a little bit more than pulling in relation to our engagement activities, but overall I think we try to maintain a pretty constant flow of information.

Supplemental to that, you know, as spoken to in our Public Information Program, is our efforts to make sure there's information on our website and any questions that people have can be then referred to subject matter experts for response.

So I think that overall we have had a lot

of learnings as an organization between our Saskatchewan operations and Blind River and making sure that we have some consistency, but it is, as was detailed by Mr. Levine, very site- and community-specific in that regard.

**MEMBER BERUBE:** Any other comments from any of the operators?

**MS CUTLER:** Natalie Cutler, for the record.

We, BWXT, joined the Canadian Council of Aboriginal Business back in 2017 with an effort to mature our process for Indigenous engagement and we have evolved to do training of our executive staff in Indigenous cultural awareness.

As well, we have a PAR Working Group, which is Progressive Aboriginal Relations Working Group, that meets regularly. We have identified our communities of interest. In particular around the Peterborough and Toronto sites we have identified those communities and we reach out to them regularly with information, invite them to events, request them to come visit us, meet with us and have tours. There is some interest from certain groups and not as much from others, but we continue to keep them apprised of our business and the relicensing efforts, and we are continuing to engage and mature that program, those

relationships long term. Thank you.

**THE PRESIDENT:** Maybe a follow-up question to Cameco.

You mentioned in your statement about polling that you have done around Blind River and the Port Hope Conversion Facility. Are the Indigenous communities included in the polling and what do those results show if they are?

**MR. MOONEY:** It's Liam Mooney, for the record.

I think that the polling that is conducted by the third-party experts that we retain is broadly scoped, but we don't break it down into that sort of basis. But overall, I think the anecdotal information is very much fed by those employees that I talked about, but also the face-to-face meetings that Chris Astles, our General Manager, has from time to time with Council and getting feedback about any concerns that may arise. And people continue to seek employment opportunities at Blind River from the adjacent First Nation and I think that is a pretty strong indicator of their support for the continued activities of Blind River.

**THE PRESIDENT:** Thank you.

Dr. Lacroix...?

**MEMBER LACROIX:** Well, first of all, I would like to thank staff for preparing the ROR. It is well structured and informative.

Most of the time it is easy to read, but sometimes I get confused and one of the points of confusion is when I look at the various emissions, air emissions as well as the liquid effluents.

If I focus on the air emissions of uranium, I know that each facility is unique, but when I look at the licence limits I'm a little bit surprised by the disparities in the numbers. For instance, if I look at the Port Hope Conversion Facility, page 47, in Table 4-3, I look at the licence limit in terms of kilograms per hour and if you translate it into kilograms per year I end up with air emissions of uranium with a limit of roughly, as a rule of thumb, 2500 kg per year. And if I move on to the Cameco Fuel Manufacturing Facility, I look at the limit, which is 14 kg per year of uranium. So there are two orders of magnitude here and I was wondering why the disparity.

And the second observation is that when I look at these limits and I look at the monitoring results, the monitoring results are usually several orders smaller than the limits themselves. So I was wondering, from an

outside observer does it mean that the limits are too lenient, too permissive or does it mean that the conversion processes are so effective that they can never reach these limits?

**DR. DUCROS:** Caroline Ducros, for the record.

I will pass it back to the experts in deriving the limits and answering your question about the establishment of those limits.

--- Pause

**MS SAUVÉ:** Thank you.

It's Kiza Sauvé, I'm the Director of Health Sciences and Environmental Compliance.

So the derivation of the limits is similar to my response to Dr. Demeter's questions, it's in terms of the methodology found in the CSA Standard N288.1.

Having said that, we have discussed a few times REGDOC-2.9.2, which is in draft form -- which we are hoping to be in front of the Commission I want to say soon -- which would establish license limits based more on a maximum predicted design release, so at more of a technology- or an exposure-based release. So we know that the limits are high right now and we know that it is confusing and so this REGDOC is intended to clarify that

and to look at that more technology-based, what is the licensee capable of doing, what have they done in the past. We look at their previous releases and set a limit that is, you know, above the regular releases, but that is more of a control mechanism I would say. So yes, we recognize it and we are up here answering this question often and we hope to get a better handle on that in the next year.

**MEMBER LACROIX:** And the same question goes for the liquid effluent. This is even more confusing in the sense that sometimes you provide in milligrams per litre, sometimes in becquerels per litre and sometimes in kilogram per year. So I keep converting, making the conversion from one unit to the next and eventually I lose track of what you mean. So this is a general observation once again.

**MS SAUVÉ:** And I would give the same answer, that we are looking to clarify for you.

**THE PRESIDENT:** Thank you.

Dr. Demeter...?

**MEMBER DEMETER:** Thank you.

This is a question for Cameco, and I'm sorry about the degree of detail. It is not really a high level question.

There was one small release of uranium

hexafluoride discussed and from a health point of view that is probably the highest risk toxin in your environment relative to inhalation and lung damage. In the past we have talked about onsite and complementary emergency services relative to these facilities, but I wanted to get a sense that one of the highest risks to your occupational risks is inhaling this. What resources do you have onsite to manage a hexafluoride inhalation incident, specifically airways management, if you have an airways management ability onsite versus having to wait for an ambulance?

**MR. MOONEY:** It's Liam Mooney, for the record.

I am going to ask Tom Smith to give a more detailed response in relation to that given his three-decade-plus record working at Cameco in the conversion facility specifically, but I just wanted to emphasize that we do recognize that those instances are potentially very serious and we take them seriously and elevate them within our own corrective action process, investigate them and really chase the corrective actions that are identified from events but with a view to preventing them from occurring.

But maybe with respect to the actual ability to treat and what we have onsite, Tom can talk

about both the ERT and medical facilities that we have both at the site and the community.

**MR. SMITH:** Tom Smith, for the record.

A slight correction: four decades, not three.

--- Laughter / Rires

**MR. SMITH:** So the event in question was an anhydrous HF ISO container in our containment building and prior to unloading, all vacuum and leak checks had passed inspection. However, we noticed a small release out of a threaded connection, so we activated our Emergency Response Team.

To demonstrate how seriously we take this, no one went in until the plan was discussed outside of the enclosure. The employees that went in were in a chemical Class A suit with breathing air and they were able to redirect the thread and get it corrected and direct the fumes to a scrubber.

As far as a potential AHF inhalation, all of our emergency response personnel are also medical response personnel, so we do have the capability of treating an emergency onsite. Our preference, however, is to transport to the Northumberland Hills Hospital, which does have an emergency room, and they're fully set up for



an AHF inhalation, which we've not had in many, many years.

**MEMBER DEMETER:** And what's the transport time to the facility?

**MR. SMITH:** I would suggest that the arrival of the ambulance would be roughly 10 minutes, and the transport time to Northumberland Hills Hospital would be approximately 15.

**MEMBER DEMETER:** And part of your medical staff on site, are any of them respiratory-technologist trained, or are they all mostly EMT kind of trained?

**MR. SMITH:** We do have a full-time nurse; however, she works Monday to Friday, day shift only. The emergency response team personnel have comprehensive emergency first aid training, and would be in a position to stabilize someone in the event that they had an exposure to get them to the hospital.

**MEMBER DEMETER:** Thank you. I just -- I guess to drill down the question I was asking is if -- the very specific question is given that if someone's in significant respiratory distress from an inhalational incident, is there ability to literally intubate them and provide air to them on the transport on the 10 minutes to the -- well, waiting 10 minutes for the ambulance and then -- that's really what I was trying to get down. At

the end of the day, can you establish an airway, given the times to wait for the ambulance and to transport them?

**MR. SMITH:** I believe our medical facilities on site, we have that capability. But I can't absolutely commit to it, so.

**THE PRESIDENT:** Dr. Berube?

**MEMBER BERUBE:** Yeah, this is for CNSC staff. I'm just looking at slide 14 here, and I'm looking at the financial guarantees for the Cameco Fuel Manufacturing facility and then BWXT Toronto, Peterborough. And there's a factor of about two and a half, here. Is this because the BWXT includes both facilities for decommissioning? Or just give me some information on that. Because otherwise it looks a little bit strange that BWXT and Cameco are doing roughly the same kind of things. Why would there be such a large differential in the financial guarantees?

**DR. DUCROS:** Caroline Ducros, for the record.

That is correct, the figure for BWXT includes both the Toronto and the Peterborough facilities.

**THE PRESIDENT:** Dr. Lacroix?

**MEMBER LACROIX:** Another question. It's the last sentence on page 48. In this sentence, it says:

"The highest annual average uranium concentration in ambient air among the sample stations was 0.003 micrograms per cubic metre ..."

-- which is 10 times smaller than the regulatory limit. So that's fine.

But then when I read the sentence, I am confused with the word "highest" and "average" in the same sentence. What does it mean? I could understand the annual average uranium concentration; I could understand the highest uranium concentration. But the word "highest" and "average" in the same sentence, sort of -- well, I'm confused. Maybe it's the wording. I don't know. Could you be more accurate on that?

**MR. JONES:** Mike Jones, project officer, for the record.

The reason that we used the words "highest annual average" is because there are multiple ambient air monitors around the site, so that they're all being monitored and there's data being collected around throughout the year. And this is representing of those five locations, of the annual averages, that this is the one that has -- this is the highest one that was recorded.

So it's just a way to summarize that there

was a lot of data we were looking at, and just to put it briefly in the line that that's why that language was chosen.

**MEMBER LACROIX:** So does that mean that you could have one monitoring station where the concentration is above the limit, but when you take the average of all the monitoring stations then you end up with a number below the limit?

**MR. JONES:** Mike Jones, for the record. They have like internal action levels which they use which would identify something like that. And definitely in 2018 there weren't any exceedances like that.

**MEMBER LACROIX:** Again, I'm sharing with you my perception. It's like if you compare it to a hospital. You take the temperature of all the patients in the hospital; you always end up with a temperature -- body temperature which is normal. But some of the patients may have 43 degrees of, you know, fever. But over the average --

**MR. SMITH:** For the record, Tom Smith. That 0.03 is a value for a single high-vol monitoring station. Single. We do not average the high-vol stations. They're reported on individually. And

that was the highest single value for one station.

**MEMBER LACROIX:** So I was confused. So it's not the average among the stations? I see, okay.

**DR. DUCROS:** Caroline Ducros, for the record.

And just to clarify, the second part is any exceedances, even at an individual, would still be reported, and there are none reported.

**THE PRESIDENT:** Dr. Demeter?

**MEMBER DEMETER:** Sorry, I had a question for Nordion.

Just an observation. So on slide 43 of the staff slide deck, it looked at doses to the public between 2014 and 2018, which were all very low, that given. But they drop by like three orders of magnitude at the fence line between 2014 and 2018. It's kind of an unusual trend. Like was there some significant change in your practice, to the way you measured it, or the model you used for dose to the public? It goes from 0.01 to 0.0000067. I don't quite understand that.

**MR. DECAIRE:** Richard Decaire, for the record.

Nordion ceased processing NRU reactor isotopes at that time.

**MEMBER DEMETER:** That explains it, then.

Thank you.

**THE PRESIDENT:** So before we leave that slide, I had just a quick comment for staff.

With most of your slides, you have a concluding statement below a table to say, you know, dose to the public remained well below the annual dose limit, or something like that. I think it'd be helpful if you added something like that there. Thanks.

Dr. Berube?

**MEMBER BERUBE:** Yeah, a quick question for CNSC and BTL with reference to BTL in terms of the doses over the last five years. They seem to be creeping up your -- even though they're well below the action levels and stuff like this. Any idea why that would be? Is it due to activity at the site or something else?

**DR. DUCROS:** Caroline Ducros, for the record. I would like to call upon the project officer for Best Theratronics to respond to that question.

**MR. ERDEBIL:** Ismail Erdebil, project officer, for the record.

BTL, dose measurements or dose levels depend on the workload that BTL experiences every year. So it depends from one year to another. If the load --

workload is high one year, that would be high dose levels, and the next year that would be lower.

**MEMBER BERUBE:** So maybe I could hear from BTL. Is this because your activity levels are increasing or what's happening?

**MS SOLEIMANI:** Mojgan Soleimani, for the record.

It absolutely is. It's we actually have lowered our action levels and administrative level 1 and 2. We have a very good control over our exposure rate to our nuclear energy workers. But our doses are purely reflective of the workload.

We have recently engaged with the DOE in the US in decommissioning a lot of cesium-based blood irradiators and our personnel are actively working in dismantling. So that contributes to the overall dose.

**THE PRESIDENT:** Dr. Lacroix?

**MEMBER LACROIX:** This is a question for SRB.

On page 94 it says that there was  $4,488 \times 10^{12}$  TBq of tritium that was transferred to the waste material at SRB. When I look at these numbers, I always have the reflex of converting these astronomical numbers into masses and volumes, and it turns out that this

is a -- if I'm not mistaken in my back-of-envelope calculations -- it turns out to be 13 g of tritium, that is, at room temperature and pressure it occupies a volume of 150 litres. So you can easily compress this tritium in a bottle that looks like this.

And my question to SRB is that do you store -- do you actually store tritium in scuba-diving bottles like this? Or how is it stored in the factory?

**MR. LEVESQUE:** Stephane Levesque, for the record.

The tritium is stored when we get it in the facility in the depleted uranium beds. So it's in the -- a small bed that's about the size of a soda can. Then it's decanted in light sources. And to put it in perspective, we make approximately 40,000 exit signs a year, that each contain 13 to 17 light sources. So it's decanted in much more smaller quantities in light sources from those depleted uranium containers.

**MEMBER LACROIX:** So a malevolent organization cannot burst into the factory and loose -- well, you know, steal a container containing all the tritium; they would have to steal many capsules, for instance?

**MR. LEVESQUE:** Stephane Levesque, for the



record.

That is correct, and we have a number of safety and security measures that are in place to ensure that the material, in however small a quantity it may be, is well protected and secure from such an event happening.

**THE PRESIDENT:** Mr. Levesque, as kind of the same line of questioning, one of the incidents you had was using a Type A container for Type B quantity levels of tritium. Could you tell us a bit more about the incident, how that happened, and what are you doing to prevent something like that happening again?

**MR. LEVESQUE:** Stephane Levesque, for the record.

Yeah, we've taken a number of measures to ensure that doesn't occur again. And I'll pass this on to Jamie MacDonald, the manager at Health Physics and Regulatory Affairs.

**MR. MacDONALD:** Yes, so Jamie MacDonald, for the record.

The container in question is a certified Type B container of a certified design. It's the same sort of container that we get shipments of tritium from Ontario Power Generation.

So we received the tritium inside that

container, utilized the tritium depleted uranium bed in order to dispense the tritium into our light sources. And once we've removed the tritium from that bed, we've basically emptied it, and it will be returned back to our dispenser, Chalk River, in order to be reused again.

So in the past, when we've emptied that bed, we do a volumetric measurement of the gases that are still left on that bed. And we're limited by the heat that we can apply to that bed by our safety case in order to make sure that, you know, everything is maintained safe. So there's a certain temperature limit that we can apply.

So with the bed in question, when this reportable event happened, we applied that, we did the measurement, sent the container back with what we interpreted to be a Type A quantity of tritium inside the Type B container. So the container is still designed and certified for Type B, but we shipped it administratively as a Type A quantity.

When it was received by Chalk River, they do a similar assessment of what tritium is left on that bed. But their facility is equipped so that they can apply a greater amount of heat to the bed. And when they did their measurement, they were able to evolve off more tritium than we were able to evolve off at the time. And

it turned out that the amount of tritium that they measured was on the order of about 51 TBq, which the limit for Type A quantity is 40 TBq.

So when we heard this from CNL, we confirmed our measurement with them, and obviously we made a report as a reportable event to the regulator.

The corrective action that we elected to take in order to prevent a recurrence is when we return that container now, ever since, we ship it administratively as a Type B container. So it's got all of the correct labelling, all the dangerous goods documentation have that as well.

So fundamentally, there was no difference in the way the package was physically shipped. It was when it was packaged up, all the torque values on bolts, all of the -- it was just more of an administrative, how we represented the amount inside the container at that time that ended up being a reportable event.

So since then, all shipments have been Type B.

**MR. LEVESQUE:** If I could just complement that answer a bit, just to put it in perspective, in the 29 years of operation of our company, we've operated the same process. And this event took us by surprise, as it was the

first time it ever happened. But needless to say with the measures that we've taken, it won't happen again.

**THE PRESIDENT:** Okay, thank you very much.  
Dr. Demeter?

**MEMBER DEMETER:** Thank you. As you can see, when I review these reports I look for trends and outliers and see if there's an explanation, because that helps me understand the process.

So this is for Cameco and the Port Hope Conversion Facility, and it's Table F-4 on page 149 of the staff CMD. I'll let you find that first.

So it looks at the mass of contaminants removed from pumping wells from 2014 to '18. And for all of the constituents, they're stable or they go down, but there's an outlier with nitrate more than doubling, whereas between 2017 and 2018 all the other ones go down.

So I didn't -- do you have an explanation as to why that particular substance more than doubled compared to the previous four years, and everything else has remained relatively stable?

**MR. MOONEY:** Liam Mooney, for the record.

We don't have an explanation for that increase. We would say that the purpose of the Vision in Motion project is to clean up contaminated soil, but that

the amount of nitrate that we would see in our network of pumping wells would be impacted by activities upstream of our facility as well, which would include agriculture as well as various municipalities that are in that same watershed.

So ultimately, I think that we would see less variability after the cleanup activities under the auspices of the Vision in Motion project, but that particular increase did not cause us much concern, given the understanding of the broader hydrogeological setting that that network of pumping wells services.

**MEMBER DEMETER:** And from staff, is that nitrate level of any particular concern? Is it based on changing agricultural practice in the surrounding area?

**DR. DUCROS:** Caroline Ducros, for the record.

I'll pass it to the environmental protection experts.

**MR. McALLISTER:** Andrew McAllister, director of the Environmental Risk Assessment Division.

I think what we're seeing is really two-fold. Can't comment *per se* on upstream, but certainly with respect to groundwater and the different sort of parameters we're looking at, they'll have their own sort of

unique plumes, their unique characteristics. And so what we are seeing here is just I think there's some variability between parameters as well as variability around movement of those parameters through the groundwater. So there's a combination of potential aspects that are -- might be influencing the numbers that we are seeing. But in general, seeing the sort of nitrate value that we're seeing is not, from CNSC staff's perspective, posing concerns to us.

**MEMBER DEMETER:** So I guess, just so that I can sort of figure this out, nitrates are not a constituent of the business of Cameco Port Hope facility, so it's not part of what you'd expect as a contaminant. So it's most likely based on external factors beyond your plant?

**MR. MOONEY:** It's Liam Mooney, for the record.

No, nitrates are -- we use nitric acid at the conversion facility. So it is something that we monitor as it -- as there may be a potential for contamination in relation to the groundwater associated with our plant.

That being said, there are broader contributors in relation to that. I'd also point out too

that we saw an increase in the lake levels, which would also impact the groundwater and the flow of groundwater in that area which could impact the nitrate concentration that we would see in the groundwater.

Overall, I think I want to emphasize that we expect to see some flux in the contaminants that are being recovered through that network of groundwater wells that we installed, and this was, while you point out, higher than the previous four years, that might be a product of the hydrogeological conditions fluctuating as the groundwater level has been affected by higher lake levels.

**MEMBER DEMETER:** Okay, I'm good with that. Thank you.

**THE PRESIDENT:** And Mr. McAllister, while you're here, on page 148, Table F-1, this is on Blind River Refinery annual groundwater monitoring results for uranium. For 2018, the maximum uranium concentration is much higher than it's been before at 27.0 µg/L. And the comparator that's used is the GCDWQ, the groundwater drinking water -- the Canadian Drinking Water Quality, which may not be the best comparator, but which is 20, so it's much higher than that.

So comment on the 27. Should that be of

concern? And is the GCDWQ a good limit to compare it with? Or maybe I'll ask Dr. Ducros. I don't know if Mr. McAllister is the one to answer.

**MR. McALLISTER:** I will certainly start the answer, and then I have my hydrogeologist, Dr. Shizhong Lei, who can complement my answer, I guess, as needed.

So to tackle the first part of the question is were the results that were observed in the 2018 wells of concern. The elevated uranium levels in groundwater were attributed to a single well, number 22. When one takes that well out of the array of other wells, the average value's quite lower.

This well has been one where CNSC staff has observed trends around that as early as I believe early 2012, 2013, where we had flagged it to the licensee during our review of the results. They undertook an examination of potential sources of elevation. Didn't exactly pinpoint for sure there the cause. Could've been historical perspectives. There's a lot of drums that were stored there.

Since then, though, they have undertaken measures to potentially reduce the sources of inflow to that area. There was some sealing, some work done around the hard surfaces. And Dr. Lei just flagged to my



attention that notwithstanding the 2018 results, the 2019 results are back below guidelines.

Second part of your question is what do we compare these to. That's an excellent question, one that, you know, we tend to default to, say, a drinking water standard in the absence of anything specific, because oftentimes groundwater can be a source of drinking water.

In the case of looking at other guidelines that are out there such as surface water quality guidelines, those more come into play when the groundwater would sort of interface with that receiving environment and then looking at those sorts of values.

But that being said, we're always examining sort of the points of comparison that we are putting into these RORs to make sure that they're of value, and I think we'll continue to do that to see if those still remain the appropriate ones.

**THE PRESIDENT:** Thank you. Dr. Berube.

**MEMBER BERUBE:** Yeah, well we're talking about contamination around facilities and each one is going to obviously have its own unique footprint, if you will, and also gradient. I would think that would be true with the groundwater in terms of soil contamination there, the whole nine yards.

So from a CNSC standpoint, how do you determine what is satisfactory monitoring? How do you characterize these facilities, how do you determine where you have to sample, what you have to sample, how frequent you have to sample? Just to give the public a general idea of what you're doing here.

**MR. McALLISTER:** Andrew McAllister, Director of the Environmental Risk Assessment Division.

So I'll take us to our sort of overall environmental protection framework, which I think really sets the stage to answer your question, Dr. Berube.

First and foremost, there's sort of the Environmental Risk Assessment which has -- or the ecological risk assessment portion as well as the human health risk assessment aspect a bit.

It will look at the potential risks to the environment, to humans and allow then to, with the results of that risk assessment, help inform the nature of both effluent monitoring as well as receiving environment monitoring, as well as groundwater monitoring. So there's a specific standard on that.

So conceptually, that's how they function and there's feedback loops amongst these different compartments, and then that's codified in the series both

in our Regulatory Document 2.9.1 and then at the next level through the 288 series of CSA Standards on Environmental Risk Assessment on effluent monitoring, environment monitoring, and groundwater monitoring.

So those layout -- for example, you said, okay, what's the frequency, where should we monitor, what should we monitor? Those kinds of particulars, the guidance and requirements are captured in those series of standards and regulatory documents.

**THE PRESIDENT:** Dr. Lacroix.

**MEMBER LACROIX:** This is a question for Staff. On page 45 of the ROR it concerns the estimated dose to the public at Port Hope Conversion Facility. It is reported that an operating release level equation has been developed to account for all public doses, exposure pathways that is from gamma, air and water.

So I was wondering, can we have access to this equation? Is this equation specific to the Port Hope facility? If not, can it be applied to other facilities?

**DR. DUCROS:** Caroline Ducros, for the record. In terms of the dose to the public, I will pass it to the Environmental Protection Division experts.

**MS SAUVÉ:** Kiza Sauvé, Director of Health Science and Environmental Compliance.

So in terms of the equation, we're talking again about the derived release limit, the methodology found in this CSA Standard, which you can have access to, and I believe at the last Commission meeting we walked through how to get all those standards.

**MEMBER LACROIX:** I do have another question. This question is to Madam Sauvé. It concerns the limit for the tritium concentration in drinking water. From what I read, in Ontario the limit is 7,000 Bq/L. When I look in the U.S.A. it's 740 Bq/L, in Switzerland it's 10,000, and in Australia it's 70,000.

So, again, I'm ill at ease with this limit in the sense that there are two orders of magnitude between the U.S.A. and Australia. So what does it mean, 7,000 Bq/L? How has it been established?

**MR. RINKER:** Mike Rinker, for the record. I'll take this one.

The CNSC has published a document on tritium based on the research that we've done about a decade ago that outlines this, and it's posted on our website. In general, the number 7,000 Bq/L would relate to a dose of 0.1 mSv in a year if one were to consume two litres of water a day, or 1.5 litres of water a day.

The Australians have their number's based

on 1 mSv per year. The WHO is closer to our number at 7,000 Bq/L. The U.S., however, have -- it's been well-documented, they made a math error and their number of 740 from the 1970s was incorrect. However, all of industry is meeting that limit and they haven't chosen to update it.

**THE PRESIDENT:** Okay. So before we get to our last round of questions, just a couple of minor comments to Staff on the report.

One, I just wanted to give feedback that I really liked that you provided the rationale for the fully satisfactory rating, performance rating, that was very helpful, because we don't always get that.

The second one is on your slide 56 where you provide a summary of comments received from interventions, one of the positive comments, albeit given begrudgingly, was the improvement in disclosure and transparency. Agree there is room for improvement, but I think it's a recognition of the amount of work the licensees and CNSC Staff have done in this area, and I think we should accept that and reflect that.

So last round of questions. I'll start with you, Dr. Demeter.

**MEMBER DEMETER:** Thank you. It's not really a question. You said you were going to be revising

a CMD for a couple of things. There was just one -- I noticed on Table G2 on page 159 the legend under the table doesn't match the abbreviations in the table itself. The table's, for example, in gigabecquerels, but you give the abbreviation for terabecquerels in the legend.

So just to fix that if you're going to be correcting it, that's it.

**DR. DUCROS:** Caroline Ducros, for the record. Yes, I will make that change.

**MEMBER DEMETER:** Thanks.

**THE PRESIDENT:** Dr. Berube.

**MEMBER BERUBE:** One last question for Cameco. You've mentioned your Vision in Motion program a couple of times. Would you mind giving us a high level précis of what that is exactly and what the objectives are?

**MR. SMITH:** For the record, Tom Smith. It's a comprehensive site remediation project at the Port Hope Conversion Facility. We started in earnest a couple years ago, taking legacy accumulated waste and repackaging, getting it ready to ship when the long-term waste management facility would open, which was June of last year.

So we've made hundreds, perhaps even thousands of shipments at this point to the long-term waste

management facility. We've removed all the drums of accumulated legacy waste that were on the Centre Pier, we've demolished all the structures on the Centre Pier, and that site is now out of our licence and CNL is using it to remediate the harbour.

On our main site, we've done asbestos abatement in our old UF6 plant and we're getting ready to repurpose it as a warehouse. South of our UO2 plant we're putting in new civil storm infrastructure and had put in a concrete pad to relocate -- well, it's not going to be a relocation, we're actually getting a new liquid hydrogen tank and then we'll decommission the old one.

So we're very active on the site. In the New Year we'll be starting to work on a new wastewater evaporator, which is located in a building at the north end of our site, and we've rerouted all of our utilities to accommodate that relocation.

Future work includes targeted deep excavations throughout the site to remove contaminant material. Once we've completed that we'll be enhancing our existing pump and treat system on the property.

We anticipate that the project will go through to roughly 2024 before we're complete.

**THE PRESIDENT:** Ms Ali, if you're still on

the line, we didn't have any questions for you, but did you have any comments to make from Environment Canada's perspective?

**MS ALI:** Nardia Ali, Environment and Climate Change Canada, for the record.

I don't have any specific comments on this topic. But I just wanted to say that we do work closely with the CNSC and Cameco on the Vision in Motion project, and I think we're satisfied with the progress that we've been seeing.

**THE PRESIDENT:** Okay, thank you very much. Thank you for joining us this morning.

I'd like to thank the licensees for protecting the workers, the public, and the environment, staff for your oversight, and to the intervenors for helping the Commission in probing further on the ROR. So thank you for this.

We'll give you folks time to change seats and move to our next agenda item. Thank you.

**MR. LEBLANC:** In terms of agenda items, we've changed the agenda given the timing. The next item that we'll start in about three or four minutes will be the REGDOC-3.1.1. Then this afternoon, after lunch, we will resume with, as planned, the presentation on the IEMP.



Thank you.

--- Pause

**THE PRESIDENT:** Okay. Are we ready to go? The next item on the agenda is a decision item on REGDOC-3.1.3, Reporting Requirements for Waste Nuclear Substance Licensees, Class II Nuclear Facilities and Users of Prescribed Equipment, Nuclear Substances and Radiation Devices. I guess we won't be able to get an acronym for this one.

This is outlined in CMDs 19-M47 and 19-M47.A

Ms Owen-Whitred, the floor is yours.

**CMD 19-M47/19-M47A**

**Oral presentation by CNSC staff**

**MS OWEN-WHITRED:** Bonjour, Madame la Présidente et membres de la Commission.

My name is Karen Owen-Whitred, Director of the Transport Licensing and Strategic Support Division.

With me today are Lynn Forrest, Director of the Regulatory Framework Division; Karine Glenn, Director of the Wastes and Decommissioning Division; Mark Broeders, Director of the Accelerators and Class II

Facilities Division; Karen Mayer, Licensing Project Officer with the Nuclear Substances and Radiation Devices Licensing Division; Colin Moses, Director General of the Directorate of Nuclear Substances Regulation; and other CNSC Staff available to support and answer any questions you may have.

We are here today to request Commission approval of REGDOC-3.1.3 Reporting Requirements for Waste Nuclear Substance Licensees, Class II Nuclear Facilities and Users of Prescribed Equipment, Nuclear Substances and Radiation Devices.

REGDOC-3.1.3 consolidates requirements and guidance for reports and notifications that licensees and waste nuclear substances class II facilities and users of prescribed equipment, nuclear substances and radiation devices must submit to the CNSC.

This document also presents the types of reports and the applicable timeframe for reporting.

I will now outline today's presentation. I will start by providing an overview of the CNSC's regulatory framework series for reporting requirements.

Next, I will provide further detail on the regulatory document that is provided today for Commission approval. Specifically, I will present the background, the objectives, and the process and results of public

consultation, including the key comments from the public consultation and how they were addressed by CNSC Staff.

I will provide a brief explanation of how this regulatory document, if approved, would be implemented.

Finally, I will finish our presentation with CNSC Staff's conclusions and recommendation.

Before I continue the presentation, I would like to bring forth two minor edits to be made to REGDOC-3.1.3 should this document get approved.

The first edit is near the top of page 4 in the third paragraph. I'll pause for a moment so that you can find it in the REGDOC. So, again, that's the top of page 4 in the third paragraph, this guidance paragraph provides a list of examples of events that should be reported to the CNSC.

The last example in this paragraph refers to events that fall under subsection 29(a) of the general regulations. Since reporting requirements from regulations are a shall and not a should, this example would be deleted from the text. The rest of the examples in the paragraph are appropriate.

The second edit would be on page 8 within the guidance for Section 3.5, which is entitled Other

Reportable Situations and Events. I'll pause for a moment.

This paragraph provides, as an example of other reportable situations and events the fact that licensees may submit to the CNSC copies of reports that have been prepared for other regulatory bodies. The last part of the sentence reads, "in accordance with established communication protocols, e.g. National Energy Board for a piece of equipment recalled, exposure device, radiation device, or prescribed equipment."

Since the time of drafting this REGDOC the National Energy Board has become the Canadian energy regulator. In addition, it was recognized that the reference to established communication protocols is unnecessarily formal for licensees covered by this REGDOC.

As a result, for simplicity, the last part of the sentence would be deleted so that the text would read, "as an example, the licensee may submit to the CNSC copies of the reports or notifications prepared for other governing regulatory bodies."

This same text appears at the bottom of page 24 under Item 11 in Table A. So the identical revision would be made there. I'll just repeat, that's on page 24 under Item 11 in Table A.

Neither of these edits would change the

substance of the REGDOC. With that, I'll return to the presentation.

Before discussing the document in detail, I will briefly review the role of regulatory documents and where this document is situated within the CNSC's regulatory document framework. To enhance accessibility of our regulatory expectations, the CNSC structures regulatory documents according to their framework shown here. REGDOC-3.1.3, indicated by the red font text on this slide, is found in Category 3, other regulatory areas in the subsection for reporting requirements.

This series also contains REGDOC 3.1.1 Reporting Requirements for Nuclear Power Plants, version 2, which was published in 2016, and REGDOC-3.1.2 Reporting Requirements Non-Power Reactor Class I Facilities and Uranium Mines and Mills, published in 2018.

Note that these regulatory documents are about the regulatory reporting requirements to the CNSC and not about what licensees disclose via their public information disclosure programs. These disclosure programs, as well as Indigenous engagement, are covered by the REGDOCs in series 3.2.

This initiative builds on previous efforts by the CNSC to clarify its reporting requirements via

REGDOCs 3.1.1 and 3.1.2. Currently, reporting requirements are spread out in a variety of regulatory instruments, including regulations and licences. The 3.1 series consolidates event and compliance reporting in order to provide the CNSC and licensees with clear and consistent high-level reporting requirements and guidance.

REGDOC-3.1.3 applies to a broad range of licensees as summarized here. Note that most of the licenses covered by this REGDOC are issued by a designated officer, as per Section 37 of the *Nuclear Safety and Control Act*. The exceptions are within the waste nuclear substance licences, some of which are issued by the Commission. For example, the Port Hope Area Initiative.

Over the next three slides I'll provide a brief explanation of each group of licensees listed on this slide.

Waste nuclear substance licensees manage low-risk radioactive waste. These do not include the Class 1B waste management facilities at the nuclear power plants. There are 22 waste nuclear substance licences or WNSLs.

Some examples of holders of WNSLs are facilities that manage low-level waste from research laboratories, for example, gloves, paper towels, liquid scintillation vials, as well as contaminated metals,

laundry, tooling and equipment from other types of nuclear facilities such as nuclear power plants and fuel cycle facilities.

A Class II nuclear facility includes the prescribed equipment as well as the building or parts of the building that house the equipment. There are 150 different Class II nuclear facility locations in Canada that cover over 400 Class II nuclear facilities as well as operation and servicing of Class II prescribed equipment.

Examples of Class II nuclear facilities are a hospital equipped with a medical linear accelerator and a research facility operating a cyclotron.

Nuclear substances and radiation devices are used in a variety of applications in the medical, industrial, commercial, as well as academic and research sectors. There are approximately 1,400 licensees using nuclear substances and radiation devices in Canada.

Some examples are isotopes used in nuclear medicine for diagnostic and therapeutic purposes, portable gauges to measure moisture and compaction levels in soil, and asphalt density and paving mixes, and the production of medical isotopes for commercial purposes.

As mentioned, REGDOC-3.1.3 incorporates and clarifies existing reporting requirements found in the

*Nuclear Safety and Control Act* (or NSCA) and regulations made under the NSCA, including requirements for content and timing of reports. Additionally, it provides guidance on the interpretation and scope of application of these requirements in the context of Class II nuclear facilities, nuclear substances and radiation devices, and waste nuclear substances.

Specifically, this document covers the following types of reporting requirements:

- notifications;
- preliminary reports and full reports;
- action level reports;
- specific reports under the *Packaging and Transport of Nuclear Substances Regulations, 2015* (or PTNSR 2015); and
- annual compliance reports.

The contents of REGDOC-3.1.3 can be broken down into three components:

- the first component, event reporting, sets out general reporting requirements and the content requirements for various types of reports;
- the second component, report timing, which forms the bulk of the document, consists of a table that consolidates the reporting timing for the various



requirements; and

- the third component, annual compliance reports, provides a sample structure and content for the annual compliance report specifically for waste nuclear substance licensees.

The next slides provide some further details for each of these.

Beginning with event reporting.

Licensees and those who transport nuclear substances are required to report to the CNSC regarding situations, events and dangerous occurrences that may require short-term action by the CNSC.

For context, as described in the Regulatory Oversight Reports for 2018, waste nuclear substance licensees reported 15 events to the CNSC in 2018, while Class II nuclear facility licensees and users of nuclear substances and radiation devices reported about 200 events that year.

The requirement to report situations and events of regulatory interest to the CNSC stems specifically from the *General Nuclear Safety and Control Regulations*, section 29. They include, for example:

- radiation exposures in excess of the regulatory dose limits;

- a conveyance carrying radioactive material involved in an accident; and
- theft or loss of nuclear substances.

In addition, other reporting requirements are found in other regulations, for example the PTNSR, 2015, and in licence conditions.

Licensees are also required to provide notification of certain normal business activities, such as work disruptions or financial status, in accordance with the NSCA and the regulations made under the Act.

As well, licensees are required to notify the CNSC of specific situations such as exceedances of action levels.

This slide presents the progression and timing of reporting to the CNSC as stipulated in the regulations. This information is covered in Appendix A of the REGDOC, which forms the bulk of the document.

As depicted here, once a reportable event occurs at a facility, licensees are to immediately inform the CNSC. This is typically done through providing a preliminary report.

The regulatory document clarifies that "immediately" means as soon as practicable after the licensee becomes aware that a situation or event is

reportable, without compromising safety or recovery.

Since a licensee may not have all the details related to a reportable event at the time of the preliminary report, particularly for a complex situation, a full report is then required within 21 days of the reportable event.

The final main item in the regulatory document pertains to annual compliance reporting.

All of the licensees covered by this REGDOC are required to submit to the CNSC Annual Compliance Reports (or ACRs) which demonstrate a licensee's compliance to regulatory requirements. Most do so using standardized forms available on the CNSC website. Given this straightforward format, there was no need for additional guidance on these types of ACRs in the REGDOC.

By contrast, the ACRs for waste nuclear substance licensees are not based on a template form. Appendix B of the REGDOC therefore provides further guidance to these licensees, including a sample ACR table of contents covering each of the 14 Safety and Control Areas and other matters of regulatory interest. The REGDOC clearly indicates that this sample format is only intended as guidance and that licensees are free to use a different format if they choose, provided all of the necessary

information is included.

All of the information submitted through the ACRs is used in the CNSC's Regulatory Oversight Reports which are presented to the Commission.

Turning now to consultation.

Draft REGDOC-3.1.3 underwent an initial 120-day public consultation period. Furthermore, the CNSC published an article in the Summer 2018 Edition of the Directorate of Nuclear Substances Regulation Newsletter inviting comments on this draft REGDOC. During this consultation period, the CNSC received 69 comments from 10 respondents.

The original draft of REGDOC-3.1.3 did not include requirements related to WNSLs. Subsequently, and just prior to consultation on this first draft, the CNSC decided to add WNSL requirements to the REGDOC. In order to prevent delays, it was decided to proceed with consultation on the original version of REGDOC-3.1.3 while developing a second version that incorporated requirements and guidance relevant to holders of WNSLs.

As a result, an additional 30-day public consultation on the revised draft REGDOC-3.1.3 was held. During this second consultation period, the CNSC received 48 comments from six respondents.

The submissions received during both consultations were then posted on the CNSC's website to allow the public to provide feedback on comments. One respondent submitted four comments during this feedback period.

CNSC staff addressed all of the stakeholder comments, with most being readily resolved. In addressing the comments, CNSC staff either revised the document or else provided an explanation for why proposed revisions were not incorporated.

CNSC staff found the comments to be helpful, especially in clarifying the intent of the regulatory document or in identifying areas where editorial changes strengthened the text.

The following slides focus on the four key concerns listed on this slide and describe how CNSC responded to these concerns.

The first concern was related to confusion over the difference between a notification and a preliminary report.

As a result, the regulatory document was revised to explain that a notification refers to the obligation to inform the CNSC of a situation, typically with no follow-up reporting required, whereas a preliminary

report is required in certain circumstances and is typically associated with the obligation to submit a full report once the event has been fully investigated.

For example, a licensee must inform the CNSC of a change in the name and title of the person responsible for the management and control of the licensed activity. This is an example of a notification.

An example of when a preliminary report would be required is for a spill of unsealed nuclear substances in a laboratory. The licensee must submit a preliminary report right away and follow up with a final report within 21 days, once the licensee has had a chance of completing a full investigation of the event, including actions to prevent a recurrence.

The second major theme that arose during consultation related to some licensees' expectations that REGDOC-3.1.3 should exactly parallel the previous REGDOCs in the 3.1 series. CNSC staff, in dispositioning the comments, clarified that while consistency among the REGDOCs is important in those instances where requirements are the same across all licensees, some differences in content are to be expected and are appropriate since REGDOC-3.1.3 applies to different classes of licensee than those covered by the other two.

As one example, REGDOC-3.1.3 covers the requirement to notify the CNSC prior to any operation to recover a sealed source stuck in a borehole, which would not be applicable to Class I licensees.

The third concern was related to the validity of the examples provided as guidance related to each reporting requirement in the regulatory document. The CNSC agreed that some of the examples provided in the REGDOC weren't relevant or particularly helpful. In those instances the document was revised accordingly.

As an example, in relation to the requirement to report after a dangerous occurrence, as specified in the *Packaging and Transport of Nuclear Substances Regulations, 2015*, the initial draft of the REGDOC made specific reference to Radiation Safety Officers. One of the comments we received pointed out that, in reality, the person providing support during a dangerous occurrence such as a motor vehicle accident would more likely be a transportation expert, not a Radiation Safety Officer. So that was one instance where we changed the example provided in the guidance so as to be more realistic.

The final concern raised was that for licensees possessing more than one class of licence, it was

unclear which REDGOC should be used as guidance. CNSC staff amended the text to clarify that Class I licensees who are also authorized to conduct the activities covered by this REGDOC under their Class I licence should instead consult REGDOC-3.1.1 or 3.1.2, as appropriate.

Turning now to implementation.

The CNSC has a standard practice in place with regards to implementation of regulatory documents. As with all regulatory documents, REGDOC-3.1.3, if approved, is expected to be published on the CNSC's website in 2020 and made available to applicants, licensees and other stakeholders.

For Class II nuclear facilities and users of prescribed equipment, nuclear substances and radiation devices, this regulatory document simply supplements guidance and clarification on reporting requirements and so it would not be referenced in their licences. If approved, licensees would be informed via email once the REGDOC is published.

For holders of a waste nuclear substance licence, licensees would be requested to submit an implementation plan for REGDOC-3.1.3. Implementation plans and associated timelines would be captured in *Licence Conditions Handbooks* and would form part of CNSC staff's



compliance verification criteria.

To conclude, REGDOC-3.1.3 will serve as a valuable addition to the CNSC's regulatory document framework by consolidating the existing reporting requirements for these licensees into a single reference document. Having this consolidated reference, along with specific examples of reporting scenarios, will assist licensees in complying with their regulatory requirements and will further help improve consistency in reporting.

Based on our conclusions, CNSC staff recommend that the Commission approve this regulatory document.

Thank you for your attention, and we remain available to answer any questions you may have.

**THE PRESIDENT:** Thank you for the presentation. I will open the floor for questions from Commission Members and we will start with Dr. Lacroix.

**MEMBER LACROIX:** Well, thank you for this presentation. As of now, before we approve this new REGDOC, how does it work, the requirement process? What sort of documents do the licensees have to refer to?

**MS OWEN-WHITRED:** Karen Owen-Whitred, for the record.

So all of the reporting requirements that

are listed in this REGDOC come from the regulations, the Act or licences. So right now those would be the reference documents that licensees would use. What the REGDOC does is pull all of those existing requirements into a single document and also provides those examples, as we mentioned, just to make it easier to understand what the reporting requirements are.

**MEMBER LACROIX:** So the ultimate purpose is to make it simpler for CNSC staff and make it more efficient for the licensees, I presume?

**MS OWEN-WHITRED:** Karen Owen-Whitred.

Yes, that is correct.

**THE PRESIDENT:** Dr. Berube...?

**DR. BERUBE:** Well, first of all, thank you for your effort in pulling this all together and it definitely clarifies a lot of things and consolidates, makes it pretty straightforward and formulistic to actually respond to a lot of these issues, which is exactly what you want to do if there is something going on that shouldn't be going on obviously.

First of all, I want to say thank you very much for clarifying the language up front, the differences between "shall", "would", these kind of things where we are seeing a lot of ambiguity in language and that is critical

in these kind of documents so that people understand what they mean so there is no misunderstanding, miscommunication. That also applies to a lot of hearing stuff, we are starting to hear this too, with people playing with wordage, so really critical to get those definitions down, what is required, what is expected. So thank you for that.

Reading through the document, you know, I don't see a lot of red flags, so that means you have done a great job and I will leave it at that.

I just have one question for you. Given the fact that we may approve this, how long does it take for the LCHs to be updated and this to be fully implemented?

**MS OWEN-WHITRED:** Karen Owen-Whitred.

The LCHs apply specifically to the waste nuclear substance licensees, so I will ask Karine Glenn to take that question.

**MS GLENN:** Karine Glenn, Director, Waste and Decommissioning.

So typically we tend to -- and it's not a periodicity that is mandated, but typically we revise the *Licence Condition Handbooks* on an annual basis more or less. It is really important to note that the changes for

the licensees are minimal. They are already required to provide an annual compliance report, that is already captured in their licence, and they are already required under the regulations to do all this reporting. So the delta is small and we expect that they should be able to implement it for the next reporting year at least, so not within the current reporting year, which they may have already started to prepare the report, but the following year. That is typically what we did with the other REGDOCs like 3.1.2, we gave the licensees a year ahead of time's notice so that they were able if they wanted to adopt the new format they could.

**THE PRESIDENT:** Dr. Demeter...?

**MEMBER DEMETER:** Thank you for the document. That was impressive, with the iterative round of consultations and the responses and considerations for the stakeholders that commented. So I think the changes made were very positive and reflective of the feedback received.

I had a question related. Some of the responders talked about issues of privacy and releasing names under specific situations and it was quoted where the legislation came from. Do you anticipate in scenarios where there is a reportable occupational and a reportable public exposure or a reportable patient exposure that there

are any conflicts with provincial legislation with regards to privacy and the requirements of the regulation that this is embedded in? Are there any anticipated privacy -- if someone says, I don't want my name release and I'm a member of the public. The scenario that mind is the fellow that was -- we had a report where someone was transporting Class VII material and took passengers on with him and you had to deal with -- but, you know, is there any conflict between provincial privacy legislation and the requirements to report names in any circumstance with the Act and regs?

**MR. MOSES:** Colin Moses, for the record.

So I think the thing I will specify is that any information collected is for regulatory recording purposes, not for public purposes, and so any information that is collected by us a regulator in the context of this document or any other business that we conduct is subject to the federal *Privacy Act*, in which case we would need to ensure that the protected information is appropriately restricted and managed within our organization, as well as if we are looking at any public disclosures. So I wouldn't expect that that would mean necessarily conflict between the different legislations, but ultimately we are subject to the *Privacy Act* to manage all information accordingly.

**THE PRESIDENT:** A question on the public

consultation process, so correct me if I have this right. The draft REGDOC went out for public comments, you were adding something on, so it went for two sets of comments, and then the comments got posted and people commented on the comments, but they have never really seen the disposition of the comments. Is that correct?

**MS OWEN-WHITRED:** Karen Owen-Whitred, for the record.

I will refer the detail of that to Lynn Forrest. This is more of a regulatory framework question, but I would just say that we do include the dispositioning of the comments as part of the material for this presentation.

**THE PRESIDENT:** Right. But that's the first time the commenters would see how the comments have been dispositioned and if they weren't happy with the disposition, that would come up down the road when you then have to revise the document?

**MS FORREST:** Lynn Forrest, for the record.

That is correct. We actually -- it's common practice to post the comments for feedback on comments and then we include all of them in the disposition table. We send the comments disposition table to those who commented ahead of the hearing, as well as the document,

the revised draft document, and depending on the document, this one not being overly controversial, we may have a subsequent consultation during that period in order to ensure that when we get to the Commission we all know the lay of the land.

**THE PRESIDENT:** So that's extremely helpful. And that would have been done for this REGDOC?

**MS FORREST:** Yes.

**THE PRESIDENT:** I think it would have been very helpful if you had said that, just so that we know that you have actually consulted, people are happy or you know if they have any concerns and you have addressed that.

And as I looked at who had commented, it really was your major licensees as opposed to the ones who really need to now follow through with this, though there were some hospitals who had. So how are you going to sensitize people? It is supposed to make their life easier, but really find out from them is this really working for you and is the guidance helpful?

**MS OWEN-WHITRED:** Karen Owen-Whitred, for the record.

The way in which we would reach out to individual groups of licensees that are covered by this REGDOC would really be particular to each of those groups.

So I will ask the representatives from each of the licensing Divisions here to respond to that, starting with Mark and then Karine and then Karen.

**MR. BROEDERS:** Mark Broeders, for the record.

So currently we have -- there are two opportunities to share that information with our licensee groups. One is a working group. So we have what we call a C3 working group which is composed of members of the Canadian Radiation Protection Association and the Canadian Organization of Medical Physicists, so we cover industrial -- all four sectors with those two -- that combined group. These types of REGDOCs are discussed with that working group with the expectation they disseminate it in the most effective way possible to their constituent members.

The second option is through various fora such as industry, scientific meetings, and so on. So, often there are panel discussions where we have an opportunity to discuss what's new at the CNSC and answer any questions they might have.

And thirdly -- I will add a third one too -- we usually take advantage of our captive audience in the context of a Type I inspection to inform them of what



is happening. Since we have the whole group with us, we say, look, you should be aware that these documents are now available, avail yourself of those tools and give us any feedback if we can improve it for the next time.

**MS GLENN:** Karine Glenn, for the record.

There is a much smaller number of waste nuclear substance licensees and so, because the files are slightly more complex, they tend to have more interaction with their project officers on a regular basis. So we -- for instance, a consultation on these documents was directly targeted with all 22 of them. So mostly in this instance, the promotion of this new document would be done through their contact with their project officers. We also have the Regulatory Oversight Reports. These licences are covered in a number of different RORs, so through that we always report on implementation of the REGDOCs.

**THE PRESIDENT:** Thank you.

Dr. Lacroix...? Dr. Berube...?

Thank you. Thank you very much for the presentation and for the REGDOC.

We will now break for lunch and resume the meeting at 1:30. Thank you.

--- Upon recessing at 12:25 p.m. /

Suspension à 12 h 25

--- Upon resuming at 1:30 p.m. /

Reprise à 13 h 30

**THE PRESIDENT:** Good afternoon.

We will move on to our next item on the agenda, which is a presentation from CNSC staff to provide us an update on the Independent Environmental Monitoring Program, as outlined in CMD 19-M42.

Mr. Rinker, over to you.

**CMD 19-M42**

**Oral presentation by CNSC staff**

**M. RINKER :** Madame la Présidente, Messieurs les Commissaires, mon nom est Mike Rinker. Je suis le directeur général de la Direction de l'évaluation et de la protection environnementales et radiologiques.

With me today are Kiza Sauvé, Director of the Health Sciences and Environmental Compliance Division, and Kate Peters, the Independent Environmental Monitoring Program Technical Lead, who will help me present the CNSC's Independent Environmental Monitoring Program, or what we

call the IEMP.

Also in attendance are Environmental Protection and Health Sciences staff, as well as Laboratory, Communications and Information Technology staff.

The IEMP is a topic that frequently comes up at many Commission hearings and is of particular interest to Indigenous communities, the public and many intervenors.

This presentation will provide you with an overview of the IEMP, including the background and objectives of the program, the history of the program and recent improvements to the program.

This map shows the locations of nuclear facilities across Canada that have been included in the IEMP to date. So far we have visited 24 different sites in six provinces, including nuclear facilities that do research, waste management, fuel processing, isotope production, mining, power generation and the processing of nuclear substances.

I will now pass the presentation to Kiza Sauvé.

**MS SAUVÉ:** Good afternoon. For the record, my name is Kiza Sauvé, I am the Director of the

Health Sciences and Environmental Compliance Division, which is the division responsible for the oversight of the IEMP.

Under the *Nuclear Safety and Control Act*, licensees are required to make adequate provision for the protection of the environment and the health and safety of persons. This includes developing effluent and environmental protection programs, which are implemented as a licence condition, to demonstrate that the public and the environment are protected. The results of these monitoring programs are submitted to CNSC staff to confirm compliance with applicable guidelines and limits as set out in regulations that govern Canada's nuclear industry.

To complement ongoing compliance activities, the CNSC established its Independent Environmental Monitoring Program. The main objective of the IEMP is to independently verify and communicate that the public and the environment around nuclear facilities are protected from releases. Additionally, it helps to confirm the CNSC's regulatory position and supports decision-making.

The IEMP involves taking samples from public areas around the facilities and measuring the amounts of radioactive and hazardous substances in those

samples. CNSC staff collect the samples and send them to the CNSC's laboratory for analysis.

Requirement 32 of the International Atomic Energy Agency General Safety Requirements Part 3 states that the regulatory body shall ensure that environmental monitoring is in place and results are recorded and shall be responsible for making provisions for an independent environmental monitoring program.

The Commission and members of the public have on many occasions asked: "How does CNSC independently verify the licensee's results?" The IEMP helps CNSC staff answer this question. It is also a tool that helps with building trust in the regulator.

I will now give a brief overview of the IEMP story.

The pilot sampling campaign was done around Chalk River in 2012. In 2013 six successful campaigns were completed. Since then, CNSC staff have been sampling 7 to 10 sites per year.

A user-friendly, interactive IEMP dashboard was designed and launched as a platform for the publication of IEMP results.

In 2015, CNSC staff developed in-house screening levels for substances where there are no

provincial or federal guidelines in place.

As the IEMP has grown, the IEMP team has been involved in more activities such as outreach and Indigenous engagement in the communities around nuclear facilities.

The IEMP has been used as a tool to support Commission decisions as well as engage with the public in order to build trust and confidence in the CNSC as Canada's nuclear regulator.

Sixty-one sampling campaigns have been completed to date.

The program is planned on an annual cycle. The process starts with the program and sample planning. CNSC staff determine which facilities and which samples will be included in the program at the beginning of each year.

Then, with approved sampling plans, field sampling is conducted, followed by analysis of the samples at CNSC's lab, the interpretation of results by CNSC technical specialists, and publication of the results on CNSC's interactive IEMP webpages.

We will go through these steps in further detail in the next few slides.

The IEMP is a CNSC-wide initiative

involving many staff from across the organization. This includes not only Environmental Protection staff but also Inspectors, Laboratory staff, Environmental Assessment and Environmental Risk Assessment staff, site offices, Communications staff and the web team. CNSC staff spend approximately 1,500 person days for an annual IEMP cycle.

The first step in the IEMP cycle is program and sample planning. Each year staff decide which facilities will be sampled.

Site selection is prioritized based on:

- any direction from the Commission to conduct sampling at certain sites or locations;
- consideration of upcoming licence hearings;
- any past environmental compliance concerns; and
- establishing a baseline and ongoing routine monitoring.

We have completed three-year baseline data for most major facilities and are now moving into routine monitoring.

Environmental Program Officers design the sampling plan based on their knowledge of the facility and use these references in order to choose which media to

sample, which parameters to analyze in the lab and where to take the samples.

They determine appropriate media selection based on valued ecosystem components, critical receptors and primary exposure pathways.

The contaminants of interest are identified based on the operation of the site, releases to the environment and other factors identified in the facility environmental risk assessment. These may include radioactive and hazardous substances.

Sampling plans are reviewed and revised as needed before each campaign. Revisions may arise from changes in site activities or operations, changes to the environmental monitoring program or concerns from compliance activities.

Indigenous knowledge and public concerns may also be considered when designing the sampling plans. CNSC staff work with communities and Indigenous groups to ensure that the samples we take are relevant to their lives and can provide meaningful results. We see this as an important part of the program in order to build and maintain public trust.

Sampling is conducted spring to fall each year by the CNSC field team, supported by other CNSC staff.



We focus on accessible areas such as parks, beaches and boat launches. No samples are taken within the site boundary.

Occasionally we do work with the licensee to obtain samples where access and logistics are more complicated. For example, at the Welcome and Port Granby waste management sites where the effluent diffuser extends well into Lake Ontario, CNL assists by taking CNSC staff to the diffuser by boat. In Point Lepreau, there are no local markets, so we take food samples in a resident's garden alongside the licensee.

The IEMP team works on notifying the public at various stages of the IEMP process. Municipalities and Indigenous communities are notified in advance of sampling and social media posts are made during the campaign as well as when the results are published on our website.

CNSC staff often meet members of the public during sampling campaigns as we are generally sampling in accessible areas like parks and beaches. Staff wear branded gear and use a branded tent in order to be easily recognized. They are also open and prepared to discuss the IEMP and the facilities with interested members of the public. We carry copies of our IEMP brochure to

hand out in these situations. The pamphlet answers common questions in plain language. These face-to-face interactions help us communicate with the people living near nuclear facilities in order to share information about the program.

Samples are prepared and analyzed at the CNSC's lab to the greatest extent possible. The laboratory performs many analyses, including IEMP samples and inspection or compliance samples. This includes both radioactive and hazardous substances.

Samples from Northern Saskatchewan are analyzed by a contracted lab which to date has been the SRC Lab, Saskatchewan Research Council.

If special analyses are required, the CNSC lab will subcontract the analyses to an external lab.

Results are reviewed against available guidelines or CNSC-derived screening levels. They are also compared to licensee data and background data when available.

The CNSC screening levels are established based on conservative assumptions about the exposure scenario and using the methodology found in CSA Standard N288.1, which is for Derived Release Limits. The screening level for a particular radionuclide in a particular medium

(for example, water, air or food) represents the activity concentration that would result in a dose of 0.1 mSv per year based on the annual ingestion or exposure rate, which is a dose which has no health impacts that are expected. This is the same as the drinking water, the 7,000 that we spoke about this morning.

For each facility, a reference location is chosen. This is a location where there is likely no potential for exposure from the operations of the nuclear facility. The reference location is chosen based on distance from the operation and on meteorological data such as predominant wind direction, precipitation and water currents. This allows CNSC staff to collect local data that is representative of the region.

CNSC staff consider the licensee's data when they assess the IEMP results in order to verify that the licensee's data is within the range of what was measured in the IEMP. So if an IEMP sample result is above the range reported by the licensee and has potential for risk, then the CNSC will investigate further, taking the necessary action to protect public health and the environment.

Results are posted on the CNSC's website. The dashboard includes a landing page, a short discussion

of the results for each facility, interactive maps and site-specific data.

The dashboard provides the ability to select a facility on the map and view specific information on samples and results.

When new results are posted the CNSC sends an email to subscribers and often local media is informed. Informing the local media was a recommendation by an Indigenous group to help us inform communities on the results.

Our data is also posted on the Federal Geospatial Platform, which will be discussed shortly.

Kate Peters will present the next sections on completed campaigns and program improvements.

**MS PETERS:** Thank you.

I am Kate Peters, the IEMP Technical Lead for the CNSC.

Since 2012, there have been 61 sampling campaigns, including 17 around nuclear power plants, 23 at uranium and nuclear processing facilities, 4 at uranium mines and mills, and 17 at other sites.

Baseline sampling for nuclear power plants and processing facilities is mostly complete.

Due to the remoteness of the locations and

the number and type of samples taken, it has been difficult logistically and financially to complete IEMP sampling in Saskatchewan as frequently. CNSC staff are looking at ways to optimize the IEMP in Northern Saskatchewan from a financial perspective, while ensuring that the program meets its objectives.

We have created a tentative five-year sampling plan. These plans are reviewed and updated on an annual basis.

The first program improvement I will discuss helps address our challenges with sampling in Saskatchewan.

The CNSC is exploring ways to collaborate with other monitoring programs. Currently we are working on partnering with the Eastern Athabasca Regional Monitoring Program, or the EARMP.

The original EARMP, funded by the province and industry, ended in 2017. This program consisted of a community and a technical program. The community program focused on monitoring environmental metals and radionuclides in traditional foods, while the technical program was designed to detect long-term changes potentially associated to far-field cumulative effects.

In recognition of the importance of the

community program to residents of the Athabasca Basin, the CNSC joined forces with Saskatchewan Ministry of Environment and Industry to extend the life-span of this component of the program, ensuring stable funding to 2023.

The CNSC is also discussing the feasibility of completing the technical program once within the EARMP 5-year funding cycle as a means of both meeting the CNSC's IEMP needs and ensuring a future for the technical program.

Another improvement we have made over the past few years is the addition of health and other monitoring information to the IEMP dashboard.

Health concerns in communities with nuclear facilities is a common topic that arises from the public and Indigenous communities. As IEMP is an avenue to communicate with individuals, our dashboards could also be used as a method of alleviating these concerns by providing relevant health information.

In 2018, the IEMP team collaborated with the Health Sciences specialists at the CNSC in order to create the "Focus on Health" section. Health studies such as CNSC-led and -supported research, health reports from communities, cancer reports, and other population health data, where available, are used to develop the Focus on

Health section for each facility. From these studies we look at adverse health outcomes associated with radiation exposure, risk factors for these outcomes, and combine this information with the environmental monitoring results to provide an overall assessment. The information in this section augments the conclusions that the health of the populations living near the nuclear facilities that we sample is protected.

In 2017, the CNSC created a webpage to provide links to other monitoring programs in the areas of radiation and environmental protection. This includes:

- Health Canada's Radiation Monitoring Networks;
- Ontario's Nuclear Reactor Surveillance Program and Drinking Water Program;
- Saskatchewan's Eastern Athabasca Regional Monitoring Program; and
- all major licensees' environmental monitoring program reports.

Sharing other programs supports the CNSC mandate to provide the public with objective scientific, technical and regulatory information.

In 2018, CNSC purchased and outfitted a truck for IEMP field work. This has improved efficiency as

well as enhanced security of equipment and chain of custody of samples.

The truck is also available for other CNSC staff when not in use for the IEMP. It is often used on inspections as well as for travel to meetings, conferences and outreach events.

In order to enhance public trust and increase transparency, the CNSC has worked on giving the public greater access to IEMP data.

In 2017, we began to provide IEMP results in downloadable comma-separated values, or CSV files, on our website. This was based on the recommendations from intervenors. CSV files are designed to be a way to easily export data and import it into other machine readable formats.

In 2019, IEMP data was added to the Federal Geospatial Platform, or the FGP. This is part of Canada's Open Data Initiative. It is a collaborative online environment that enables users to search and access geospatial data from multiple government sources and overlay them all on one map.

The FGP is expected to drive innovation by making more data available to the public, academic institutions, the private sector and others to conduct



research or produce value-added products and applications.

By far, the largest improvement made in the past few years is the increased collaboration with Indigenous communities.

As the IEMP helps CNSC staff engage with communities near nuclear facilities, it has been leveraged as a way to increase communication with Indigenous communities.

The IEMP team works with communities to provide meaningful results and to help build trusting relationships. This involves meetings, workshops, walking the lands and hands-on sampling with Traditional Knowledge Holders.

The Participant Funding Program offers funding to support Indigenous participation in the IEMP when possible.

We have worked with the following communities and Nations over the past few years:

- from 2017-2019 we worked with the Saugeen Ojibway Nations, the Historic Saugeen Métis, and the Metis Nation of Ontario around the Bruce Site;
- with the Mississauga First Nation in Blind River;
- with the Algonquins of Ontario near the

Nuclear Power Demonstration Waste Facility; and

- with the Sagkeeng First Nation near Whiteshell.

During our 2020 campaign around Point Lepreau we are planning to work with the Wolastoquey First Nation and the MTI, who represent a number of Mi'kmaq First Nations in New Brunswick. In 2019, a CNSC laboratory visit was held for these Nations in advance of the 2020 sampling campaigns.

I will now pass the presentation back to Mike Rinker.

**MR. RINKER:** Thank you, Ms Peters.

Michael Rinker, for the record.

To summarize, we would like to leave you with the following.

To date, 61 IEMP sampling campaigns have been completed around 24 sites.

Over the years, the IEMP has evolved into a CNSC-wide initiative bringing staff together from across the organization.

We have recognized that the IEMP is a tool to engage both the public and Indigenous peoples living near nuclear facilities. Our staff will continue to collaborate with Indigenous peoples to include their input

in sample planning and collection in order to provide meaningful results to the community and we will continue to inform the public of our results.

The IEMP also supports regulatory oversight by complementing the CNSC's ongoing environmental protection compliance verification activities.

In closing, CNSC staff is proud of the IEMP. In our 61 sampling campaigns we have been able to independently verify that the public and the environment are protected from the operations of nuclear facilities. We will continue to collaborate with Indigenous communities on future sampling campaigns. This program is a key feature of the CNSC's goal of earning and keeping the trust of the communities in which we regulate.

We will leave you with this slide of the IEMP pictures that showcase more of the great work that the team has done.

We are happy to answer any questions you may have.

**THE PRESIDENT:** Thank you very much.

Well, why don't we start with the questions.

Dr. Demeter...?

**MEMBER DEMETER:** Thank you for the

presentation. It was very informative.

Over the time that you have run the program, have there been any untoward results that have led to concerns for contamination beyond what you thought was appropriate?

**MS SAUVÉ:** Kiza Sauvé, for the record.

So in your question you said, have there been any results that have shown a concern, and the answer is no, there have been no concerns, but I am going to walk through one example to show you what we have done with one result that we call of potential interest.

So in Elliot Lake we were sampling sediment as well as surface water at a boat launch. The heavy metals results, as well as Radium-226 I believe, came back higher than guidelines in the sediment, but the surface water results were still way below guidelines. We went and looked to see what the licensee's monitoring results were and in fact a few years earlier the licensee, due to the nature of the facility, had changed their environmental monitoring program and was no longer sampling at that site.

So what we have done with that is we're working now -- we will continue sampling there. We don't have -- we know that in sediment things move very slowly,

so we are comfortable with the surface water results being below guidelines. We are also reviewing again right now the licensee's environmental monitoring program, so we are using this IEMP result as we review their environmental monitoring program to determine whether or not it should be added back in for the licensee to monitor. But we will ensure that site continues to be -- or that location continues to be monitored.

That's kind of to give you an example of what we would do when we do find something.

**THE PRESIDENT:** Dr. Lacroix...?

**MEMBER LACROIX:** Thank you for the presentation. Very informative.

If you put on slide 14 -- could you come back to slide 14, please? I have noticed that in the third column, Cigar Lake does not appear. Is there a reason for that?

**MR. RINKER:** Mike Rinker, for the record.

So yes, and you will notice that in general the mines have a lower frequency. So there are two parts to that reason.

First of all, the province has a very good program that has been the result of environmental assessments that were conducted in the '90s for the uranium

mines in particular. There was a cumulative effects program which was reported and published. And then there is a program more focused on the communities and that data is published online. That program had almost come to end, but the CNSC stepped in to partially fund the program and to revive it. The value of this program called the Eastern Athabasca Regional Monitoring Program is that it relies on Indigenous communities to provide the samples. So the country food that they are collecting is the food that is being analyzed. So it's a very useful, meaningful result.

The other reason why there is a lower frequency is that we are not able to -- you know, you have to charter a plane, you have to -- the access restrictions are difficult, so we rely on contractors to do this work.

So I would say one campaign to one mine site is about triple the cost of seven other campaigns in the rest of the country and so we are working with the province to see if there is a better way for us to achieve the objectives that we want.

**THE PRESIDENT:** Dr. Berube...?

**MEMBER BERUBE:** Yes, just speak to me about species selection for harvesting. How do you actually determine what you are going to actually take and look at specifically?

**MS SAUVÉ:** So when we're looking at species -- Kiza Sauvé, for the record -- you know, we are looking at country foods and we are looking at what the community is ingesting. So we work with the Indigenous communities usually if we can. We will also look at -- in the environmental risk assessment we will look at what the licensee is monitoring as well, but if we can work with Indigenous communities, that gives us a better opportunity to provide them with meaningful results and so we will try to sample foods that they're eating.

**MEMBER BERUBE:** So when you're sampling and you're using a guideline from a local Indigenous group, do you actually take one of them with you and sit there and more or less sample together so that there's an absolute surety that this is what's going on, it gives them some sense that it's being done appropriately?

**MS PETERS:** Kate Peters, for the record. When we are developing the sampling campaigns with the Indigenous communities we often have a lot of meetings in advance of doing the actual sampling. Often they will provide us with a list of species of interest or of importance to them and we will take a look at this and choose a few that are reasonable to sample. And sometimes they will come out in the field with us. We

have worked with the Algonquins of Ontario around the Nuclear Power Demonstration Waste Facility. Their traditional knowledge holders came out with us and helped us locate the species of interest. They gave us also some tips on how to identify different types of trees and things like that. We also made sure to sample the parts of the plant that they were interested in. So in terms of, let's say sumac, we took both the leaves and the berries because they told us that they were using the leaves as a tea and sometimes the berries as a spice. So we made sure to sample both and to sample them separately as opposed to taking a clipping and putting it all in one bag.

**MEMBER BERUBE:** And just to follow on this, is this general policy now to try and do this as much as possible within this program? Is this where it's going? I know it's difficult to get set up and running, but is this where you want to go with it?

**MR. RINKER:** Mike Rinker, for the record.

So that's where we are seeing the most value, is to work with Indigenous peoples and find a way to build relationships and to inform them of any concerns that they may have. But it is a slow growth because there is a balance between -- we are moving away from air, water and soil, which are fairly routine to analyze in a laboratory



setting, versus country food and fish tissue. So the processing time and other elements present their own challenges and so we are trying to effectively and efficiently manage this program with that goal in mind.

**THE PRESIDENT:** If you were to look at this program 10 years down the road, how do you see it evolving?

**MR. RINKER:** Mike Rinker, for the record. So just idealistically, without any constraints, we have worked with -- you have heard, Dr. Irvine from Saskatchewan has very important insights that we have communicated with. For example, a moose was harvested and the result of the liver contamination was presented and the flesh, and the result said it had a certain level of uranium in it. So the comparison was at the supermarket the beef that you purchase has the same level and our interpretation was, "So it's safe." And the recipient of that information said, "So they are both contaminated."

I think that we need to be less scientific and more informative in terms of, you know, what is the nutritional value of that food, what are the other attributes of the country food that would demonstrate that not only are we looking at uranium but we are providing an

indication that this is actually a really important source of food that should remain in your diet and the uranium is just one piece of that.

So trying to come up with a more holistic view of what are we sampling and what does it mean to the Indigenous communities is one area. And it may evolve into less doing eight sites in a year, which is just a snapshot, to maybe a region we go every five years and more of a research focus. A bigger study, less frequent, as opposed to a snapshot.

**MS SAUVÉ:** Kiza Sauvé, for the record.

I am going to add on. Something else that we would like to do in the next 10 years is work with other government departments that are monitoring. So we mentioned the Ontario Reactor Surveillance Program. They do monitoring around the nuclear power plants in Ontario for air, water and soil, and so we would like to be getting their results and putting those on our website as well so we can show, you know, one picture, and that might mean that we might not sample air, water and soil if they are doing it already. So that is one way to work with them.

And, Dr. Berube, if I can go back to yours about Indigenous, another neat example is at the Bruce site this year, the Saugeen Ojibway Nation, Historic Saugeen

Métis and the Métis Nation of Ontario and we worked with all three groups but differently. So with the Saugeen Ojibway Nation, Kate and some of the field team went out fishing with them. So we chartered their boat for them to take us fishing. The Métis Nation of Ontario was interested in just learning more about the program, so they came out with the team just for a day to watch and learn. So that was just a great way to communicate with them. The Historic Saugeen Métis, we had a few meetings leading up to it and when we started talking about the volume that we needed to sample, they said, "Well, that is not sustainable for us for you to be taking that amount of sample, so we prefer if you came and took from our cedar hedge at our garden", and that for them was meaningful. So we are working, you know, personally with each group to see what is meaningful for them.

**THE PRESIDENT:** Thank you.

Dr. Demeter...? Dr. Lacroix...?

**MEMBER LACROIX:** I have noticed that you take samples of air, water, soil, sediment, sand, vegetation and local food. What about bioassay on humans, is it part of your mandate?

**MR. RINKER:** Mike Rinker, for the record.

So no, it is not. There is bioassay that

would be part of a licensee's operational radiological protection program, but it's not part of any environmental program.

**MEMBER LACROIX:** And one snap question for my own information. When you report the concentration of uranium in water you do it in becquerel per -- no, I'm sorry -- in milligrams per litre and when it boils down to radium you report it in terms of becquerels per litre. Is there a reason for that? Well, there must be.

**MR. RINKER:** Mike Rinker, for the record.

Yes. And I recognize that uranium is a particularly complicated nuclear substance because its primary health concern is as a heavy metal and toxicity to the kidney, and in those terms we look at it from milligrams per litre, although sometimes we set limits in our licence using the DRL model and it comes out as something in, you know, millisieverts or becquerels. We are back calculating on our desks what that means from a milligram per litre so we ensure kidney toxicity is protected.

**THE PRESIDENT:** Dr. Berube...?

So this is an IAEA requirement for an independent environmental monitoring program. How does that program compare to other countries?

**MS SAUVÉ:** Kiza Sauvé, for the record.

I will note that IAEA requirements are guidance for all regulators and so we are following that guidance. And when we started the program in 2012 there was some benchmarking done. I don't have those results with me and we haven't done benchmarking since. So when we are talking about moving forward for 10 years, that is something else that I would like to do.

**THE PRESIDENT:** Okay. Good.

Well, thank you very much for the presentation.

Did you have any closing comments you wanted to make?

**MR. RINKER:** No, but thank you for your attention. Certainly, staff find that this is a very meaningful and valuable contribution to what the CNSC does, in part from compliance but more so by engaging the community. You will notice that Ms Peters is wearing a particular shirt that is always worn in the communities and so we do get approached by members of the public.

And maybe just to add that we have been silent on -- as we really put in the focus of how this is meaningful for Indigenous communities, it is also really important for members of the general public and we do get

approached and I wouldn't want to suggest that we are deemphasizing that relationship as well.

**THE PRESIDENT:** Thank you.

This concludes the public meeting of the Commission for today and we will resume at 9:00 a.m. tomorrow.

So thank you for your participation.  
Bonne fin de journée.

--- Whereupon the meeting adjourned at 2:05 p.m.,  
to resume on Thursday, December 12, 2019  
at 9:00 a.m. / La réunion est ajournée à  
14 h 05, pour reprendre le jeudi  
12 décembre 2019 à 9 h 00