Canadian Nuclear Safety Commission | Commission canadienne de sûreté nucléaire

Canada

SRB Technologies (Canada) Inc.

Application to Renew Licence for the SRBT Facility

CNSC Staff Presentation

Commission Hearing

April 27-28, 2022

CMD 22-H8.A

E-Docs: #6710212.pptx

E-Docs: #6723827.pdf

Presentation Outline

- Purpose of Hearing
- Facility Overview
- Indigenous Engagement
- Review of Licence Application
- Regulatory Oversight
- Performance Assessment
- Other Matters of Regulatory Interest
- Licence and Licence Conditions Handbook (LCH)
- Conclusions and Recommendations

CMD 22-H8 Errata

- CMD 22-H8 page 72, section 5.6.1, last sentence of the second paragraph should refer to table 4 for the list of events reported, not table 3

Purpose of Hearing

SRB Technologies (Canada) Inc. (SRBT) has applied to the Commission to:

- Renew the SRBT facility operating licence for a period of 15 years

CNSC staff recommend that the Commission:

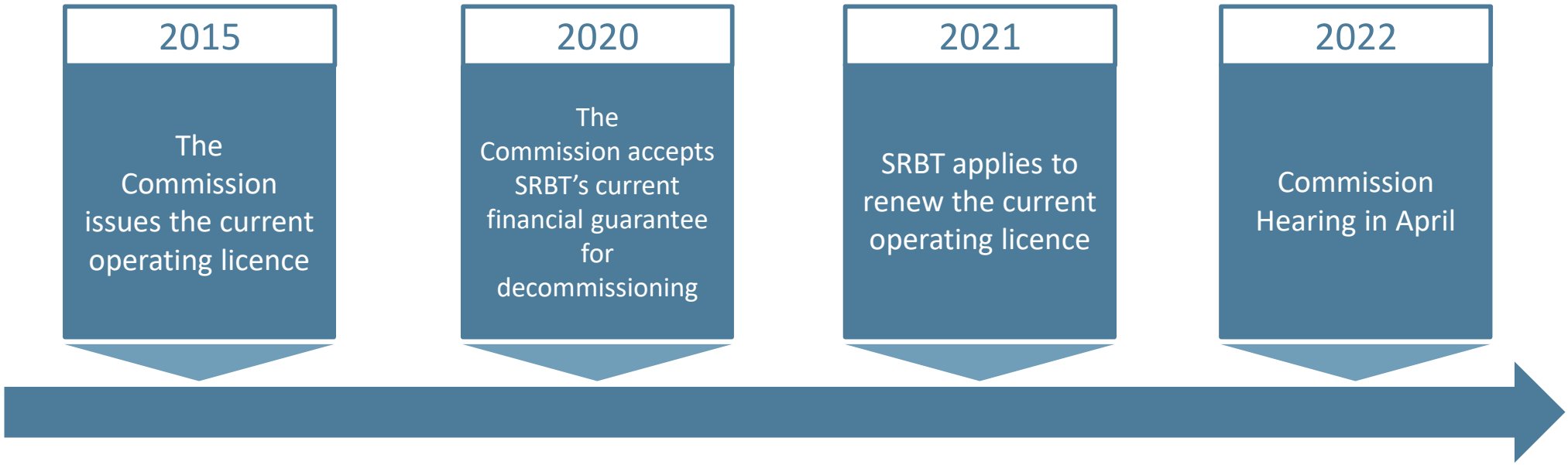
- Conclude, pursuant to paragraph 24(4)(a) and (b) of the NSCA, that SRBT:
  i. Is qualified to carry on the activities authorized by the licence
  ii. Will make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed
- Renew the operating licence for a period of 15 years, valid until June 30, 2037
- Delegate authority as set out in CMD 22-H8

SRB Technologies (Canada) Inc. Licence Renewal: CMD 22-H8.A

FACILITY OVERVIEW

Facility Location

Timeline


2015
The Commission issues the current operating licence
2020
The Commission accepts SRBT's current financial guarantee for decommissioning
2021
SRBT applies to renew the current operating licence
2022
Commission Hearing in April

Operations Description

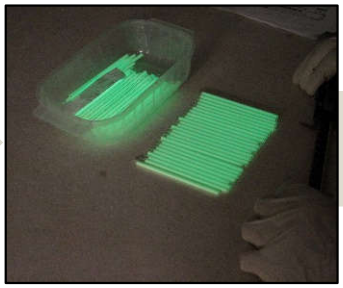
SRBT uses tritium, a nuclear substance, in order to make self-luminous products called Gaseous Tritium Light Sources (GTLS).

Glass Tube Manufacturing

Coated with phosphorescent powder

Tritium Filling Operation

Sealed



Finished GTLS

Tested

Sign Assembly

GTLS signs are manufactured safely in accordance with regulatory requirements

Current Licence

Last renewed July 1, 2015, valid until June 30, 2022. Authorizes SRBT to:

- Operate a Class IB facility, comprising of a tritium processing facility for the purposes of manufacturing radiation devices
- Produce, possess, transfer, service and use, radiation devices arising from the manufacturing of radiation devices
- Possess, transfer, use, process, manage, store and dispose of nuclear substances that are required for, associated with, or arise from the manufacturing of radiation devices
- Possess tritium up to a limit of 6000 terabecquerels of tritium in any form
- Possess and use prescribed information that is required for, associated with, or arise from the manufacturing of radiation devices

Licence Renewal

SRBT's licence application requests the Commission:

Renew the operating licence for a period of 15 years effective July 1, 2022, to June 30, 2037.



Exit Signs


Safety Markers


Raw Light Sources

Safety Signs


Tactical Devices

Source: SRB Technologies

No changes requested to authorized activities

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INDIGENOUS ENGAGEMENT

Indigenous Engagement

The SRBT facility is situated on the traditional homelands and treaty territories of many Indigenous Nations and communities.

CNSC staff engagement activities included:

Sep 2021	Letters of notification with follow-up phone calls
Oct 2021	Virtual meeting with Kebaowek First Nation
Nov 2021	Indigenous Nations and communities awarded funding through CNSC's Participant Funding Program
Feb – Mar 2022	Discussions during regular monthly meetings with Indigenous Nations and communities, and virtual update meeting with Métis Nation of Ontario, Region 6

Indigenous Nations and Communities:

- Algonquin Anishinabeg Nation Tribal Council
- Kitigan Zibi Anishinabeg
- Kebaowek First Nation
- The Algonquins of Ontario
- Algonquins of Pikwakanagan First Nation
- The Métis Nation of Ontario

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REVIEW OF LICENCE APPLICATION

CNSC's Review of the Licence Application

CNSC staff:

- Verified that the information submitted in support of the application is complete in satisfying CNSC regulatory requirements, including the Nuclear Safety and Control Act (NSCA) and associated Regulations, for all 14 safety and control areas (SCAs)
- Assessed SRBT's past performance and record (compliance activities and environmental monitoring)

CNSC staff concluded the application complies with regulatory requirements

Environmental Protection Review under the NSCA

- CNSC staff conducted an Environmental Protection Review (EPR) under the NSCA to assess the environmental and health effects of the SRBT facility
- CNSC staff's assessment was based on information submitted by SRBT, as well as technical assessment and independent verification activities conducted by CNSC staff
- The EPR report is available on the CNSC Website and supports the recommendations in CNSC staff's CMD 22-H8

CNSC staff conclude SRBT has made adequate provision for the protection of the environment and the health of persons

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REGULATORY OVERSIGHT

Licensing and Compliance Activities

- The CNSC has a facility assessment and compliance team that oversees all licensed activities

Activity	2015	2016	2017	2018	2019	2020	2021	Total
Number of inspections	1	1	2	2	2	2	3	**13**
Number of events reported	1	2	2	1	2	0	2	**10**

CNSC staff verify completion of corrective actions as part of ongoing regulatory oversight

Event Reporting

- Licensees must report all events as required by the NSCA, associated Regulations, licence conditions and regulatory documents
- SRBT provided 10 reportable event notifications:
  - All events are of low safety significance
  - 5 fire alarm activation events
  - 4 events related to transport
  - 1 related to import of aircraft signs
- SRBT did not report any action level exceedances or environmental events
- SRBT's event notifications and follow-up reports were acceptable to CNSC staff

CNSC staff concluded SRBT met regulatory event reporting requirements during the current licence period

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PERFORMANCE ASSESSMENT

Assessment of Safety and Control Areas (SCA)

- CNSC staff assessed 13 safety and control areas for SRBT's licence application
- Information submitted in support of the application satisfies CNSC requirements under the NSCA and its Regulations
- Assessment criteria and results are summarized in CMD 22-H8

SRBT's programs meet regulatory requirements

Safety and Control Areas
Management System
Human Performance Management
Operating Performance
Safety Analysis
Physical Design
Fitness for Service
Radiation Protection
Conventional Health and Safety
Environmental Protection
Emergency Management and Fire Protection
Waste Management
Security
Safeguards and Non-Proliferation
Packaging and Transport

SCA – Management System

Program Highlights

CNSC staff's assessment:

- SRBT has implemented and maintains a management system in accordance with CSA N286-12, Management system requirements for nuclear facilities
- Annual management review of performance and internal audits meets requirements
- Design and change control programs ensure that changes to documented processes are identified, justified, reviewed and approved before implementation
- SRBT has dedicated staff conducting internal assessments to confirm staff are following documented processes, and to identify any opportunities to improve effectiveness of licensed activities and associated documentation

SRBT's management system governs all licensed activities and meets requirements

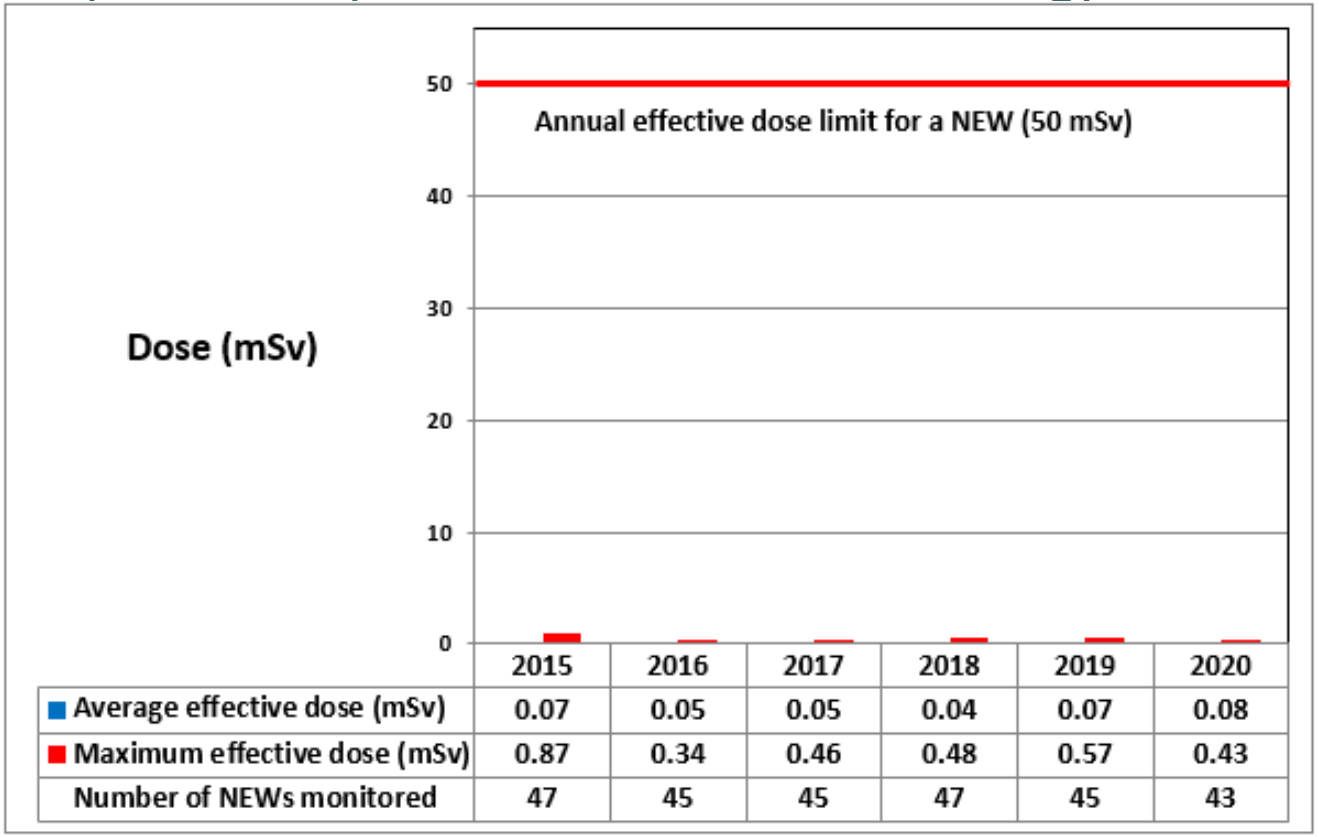
SCA – Radiation Protection
Program Highlights

CNSC staff's assessment:

- SRBT's radiation protection (RP) program meets the Radiation Protection Regulations
- SRBT's RP program is effective in keeping doses to workers well below CNSC regulatory dose limits
- Action levels are established as part of the RP program
- No action levels exceeded during the current licence period

SCA – Radiation Protection

Occupational Exposures of SRBT Nuclear Energy Workers (NEWs)



	2015	2016	2017	2018	2019	2020
Average effective dose (mSv)	0.07	0.05	0.05	0.04	0.07	0.08
Maximum effective dose (mSv)	0.87	0.34	0.46	0.48	0.57	0.43
Number of NEWs monitored	47	45	45	47	45	43

Occupational exposures to NEWs are well below regulatory limits

SCA – Conventional Health and Safety

Program Highlights

CNSC staff's assessment:

- SRBT has an effective health and safety program
- SRBT has established tools for identifying and controlling hazards
- SRBT staff are trained to identify hazards and the means for minimizing risk
- Safety is maintained through proper use of personal protective equipment, use of barriers and signage, housekeeping, etc.

SRBT's conventional health and safety program meets regulatory requirements

SCA – Conventional Health and Safety

Performance

Year	2015	2016	2017	2018	2019	2020
Lost-time injuries	0	0	3	0	0	0
Severity rate	0	0	17.7	0	0	0
Frequency rate	0	0	7.6	0	0	0

CNSC staff are satisfied with SRBT's performance in the conventional health and safety SCA

SCA – Environmental Protection

Program Highlights

CNSC staff's assessment:

- SRBT's environmental protection program is implemented effectively and meets regulatory expectations
- The 2020 Environmental Risk Assessment is acceptable and concludes that the human health and ecological risk attributed to SRBT operations are negligible
- SRBT's environmental monitoring program results confirm that the environment and human health are protected

SRBT's environmental protection program meets regulatory requirements

SCA – Environmental Protection

Air Emission Monitoring Results, 2015 - 2020

Parameter	Licence limit	2015	2016	2017	2018	2019	2020
Tritium as tritium oxide (HTO) (GBq/year)	**67,200**	11,554	6,293	7,198	10,741	11,858	9,755
Total tritium as HTO + tritium gas (HT) (GBq/year)	**448,000**	56,237	28,945	24,822	33,180	31,769	25,186

Air emissions are well below release limits

SCA – Environmental Protection

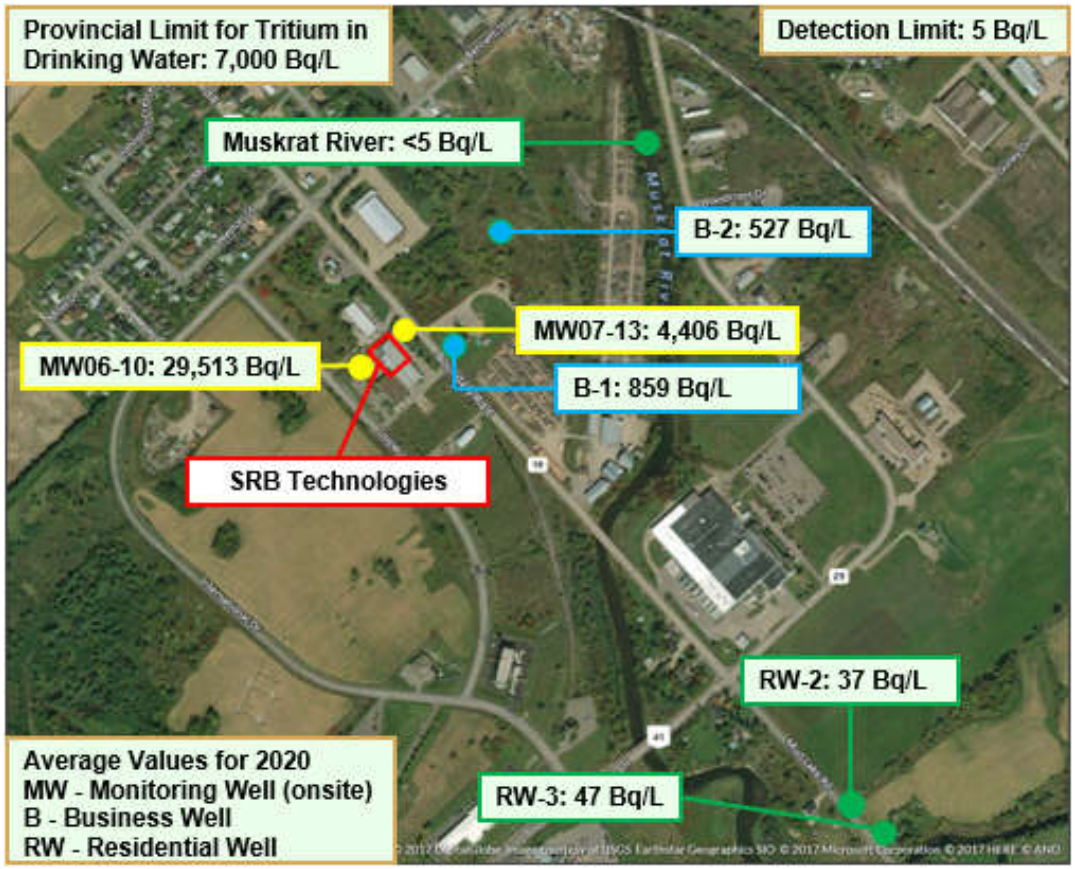
Liquid Effluent Monitoring Results, 2015 - 2020

Parameter	Licence limit	2015	2016	2017	2018	2019	2020
Tritium-water soluble (GBq/year)	**200**	6.50	5.18	6.85	10.02	13.67	5.56

Liquid effluent releases are well below release limits

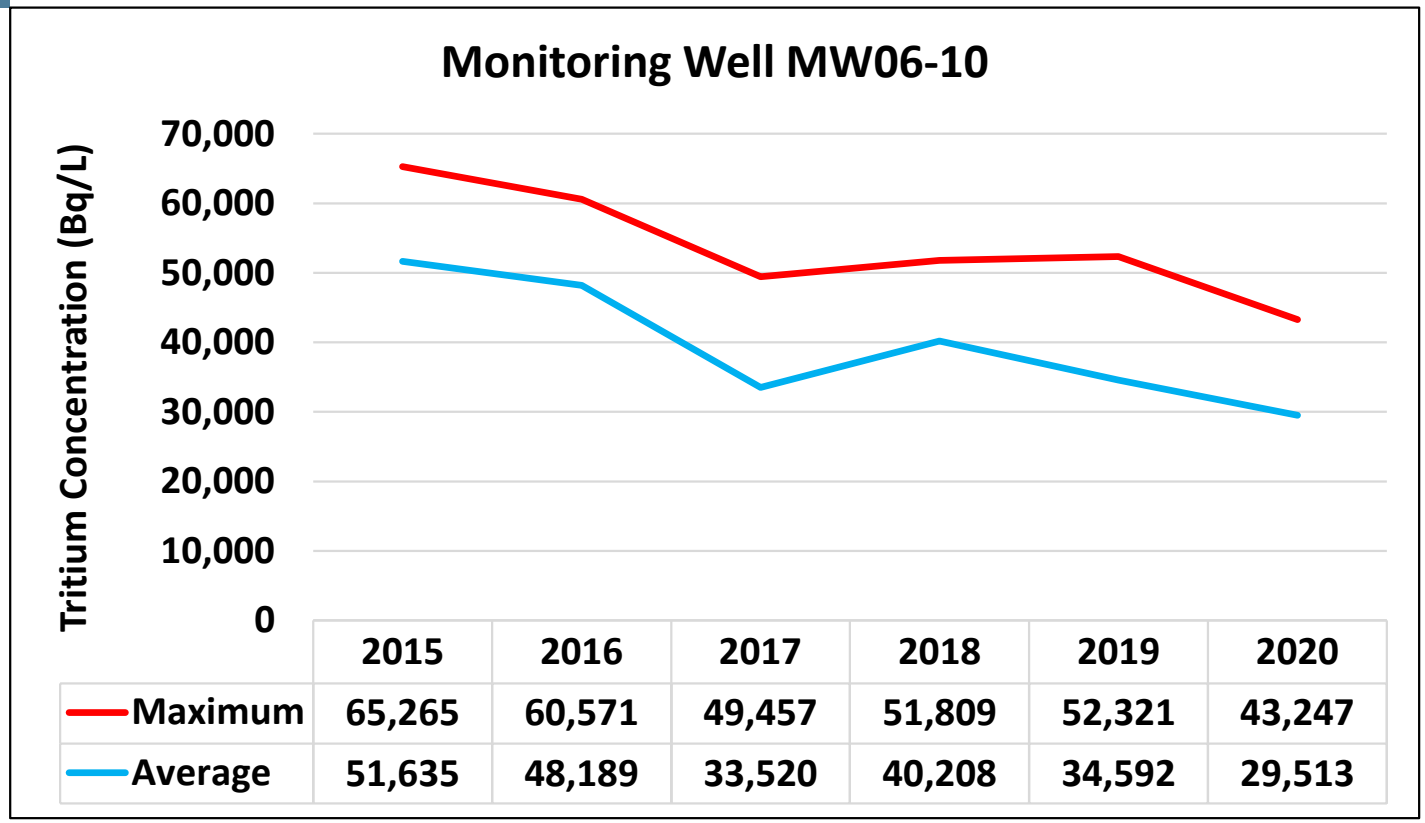
SCA – Environmental Protection

Groundwater Monitoring



SCA – Environmental Protection

Groundwater Monitoring



	2015	2016	2017	2018	2019	2020
Maximum	65,265	60,571	49,457	51,809	52,321	43,247
Average	51,635	48,189	33,520	40,208	34,592	29,513

This well is a dedicated, engineered groundwater monitoring well at the facility and is not used as a source of water consumption

SCA – Environmental Protection

Estimated dose to the Public

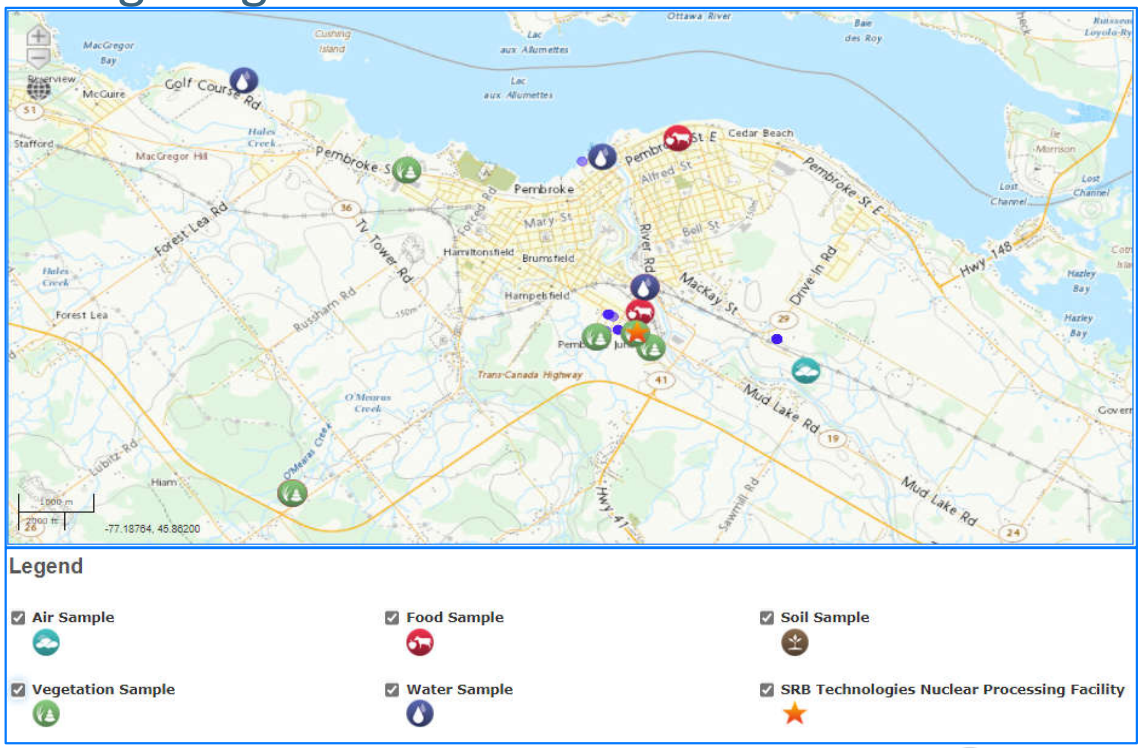
Estimated dose to a member of the public (mSv)						
Year	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Dose (mSv)	0.0068	0.0046	0.0033	0.0038	0.0021	0.0024

Radiation doses for a member of the public are well below the regulatory limit of 1 millisievert/year (mSv/yr)

SCA – Environmental Protection

Independent Environmental Monitoring Program

- Five IEMP sampling campaigns in 2013, 2014, 2015, 2018 and 2021
- Samples included air, water, soil, vegetation and food
- All samples analyzed for tritium
- Results posted on CNSC's IEMP online dashboard
- Results add to the body of evidence that the public and the environment around the SRBT facility are protected



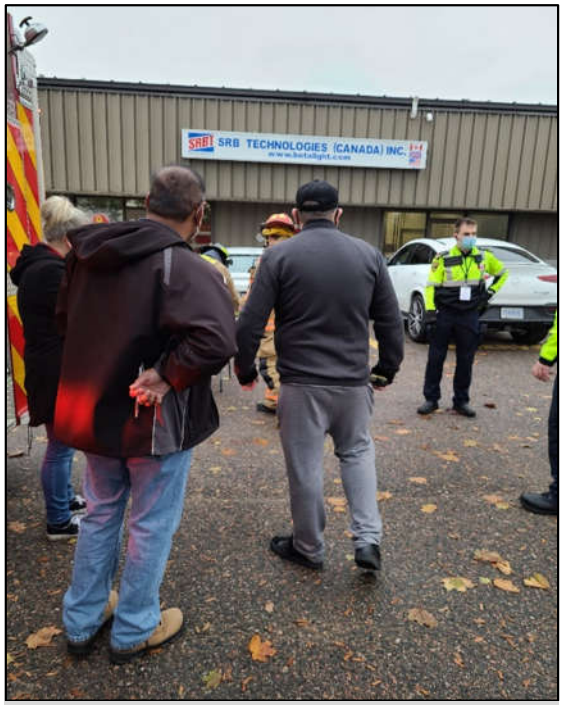
SCA – Emergency Management and Fire Protection

Program Highlights

CNSC staff's assessment:

- SRBT has implemented and maintains a Nuclear Emergency Preparedness and Response Plan in accordance with REGDOC-2.10.1
- SRBT conducted a full-scale exercise in October 2021 to test their emergency preparedness program
- CNSC staff concluded that SRBT met their Emergency Management and Fire Response Program objectives, with an adequate onsite and offsite response to a significant fire event

SRBT's emergency management program meets regulatory requirements



CNSC observing SRBT emergency exercise
Source: CNSC

SCA – Waste Management

Program Highlights

CNSC staff's assessment:

- SRBT has implemented and maintains a waste management program in compliance with CSA Group Standards N292.0-14, N292.3-14 and N292.5-11
- Tritium-contaminated waste materials are characterized by qualified members of the SRBT Health Physics Team
- Waste materials that are characterized as being contaminated to levels that exceed clearance levels are dispositioned through licensed radioactive waste management service providers.

SRBT's waste management program meets regulatory requirements

SCA – Packaging and Transport

Program Highlights

CNSC staff's assessment:

- SRBT has implemented and maintains a packaging and transport program in accordance with the Packaging and Transport of Nuclear Substance Regulations 2015 and the Transportation of Dangerous Goods Regulations
- SRBT's packaging and transport program covers elements of package design and maintenance, and the registration for use of certified packages
- 4 transport related events reports during the licence period, no impact to the environment or to the health and safety of persons.

SRBT's packaging and transport program meets regulatory requirements

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OTHER MATTERS OF REGULATORY INTEREST

Financial Guarantee

- As of October 2021, SRBT's financial guarantee was valued at $745,711.43, which exceeds the cost estimate in the CNSC accepted Preliminary Decommissioning Plan for the facility.
- The financial guarantee is in the form of a cash fund held in escrow
- SRBT's financial guarantee was accepted by the Commission through a Hearing in Writing held in December 2020
- The next revision of SRBT's financial guarantee is expected in 2024

Financial guarantee is valid, enforceable and sufficient to fund SRBT's decommissioning obligations

Public Information and Disclosure Program

CNSC staff have reviewed SRBT's Public Information Disclosure Program and determined that it:

- Identifies clear goals and objectives in terms of dissemination of information
- Identifies multiple target audiences in close proximity to the licensed facility
- Provides contact information for members of the public who want to obtain additional information
- Outlines communication approaches that SRBT will deploy to reach target audiences

Meets regulatory requirements for public information and disclosure

Public Engagement

Event	Date
Announcement for Notice of Hearing	August 30, 2021
CNSC Webinars	January 25, 2022

Agenda

- Overview of Nuclear Substance Processing Facilities and SRB Technologies (Canada) Inc. (SRBT)
- SRBT's Licence Renewal Application
- CNSC Licensing Process
- How to participate in the licensing hearing
- Participant Funding Program

Participant Funding Program

Funding was provided to assist Indigenous Nations and communities and members of the public in providing valuable information directly to the Commission.

CNSC awarded $39,218 to the following recipients:

- The Algonquins of Ontario
- Algonquins of Pikwàkanagàn First Nation
- Anna Tilman
- Concerned Citizens of Renfrew County
- David Winfield

Main Themes from Interventions

Indigenous engagement and consultation	Health effects due to tritium
Support from local businesses and groups	Organically bound tritium
Waste management and preliminary decommissioning plan	Groundwater monitoring and contamination
Safety analysis report	Length of licence period

SRB Technologies (Canada) Inc. Licence Renewal: CMD 22-H8.A

LICENCE AND LICENCE CONDITIONS HANDBOOK

Proposed Licence and Draft Licence Conditions Handbook

Proposed SRBT Operating Licence

- 15-year licence period
- Standard licence conditions

Draft Licence Conditions Handbook (LCH)

- Preamble
- Compliance Verification Criteria
- Guidance

Proposed Licence Period

- The requested 15-year period is longer than the current licence period and longer than other CNSC licences issued to other Class I nuclear facilities across Canada
- CMD 02-M12 presents a risk-informed process on the basis for recommending licence periods to the Commission
  - Duration should be commensurate with licensed activity
  - Hazards associated with the licensed activity are well characterized
  - Management system in place to maintain licensed activities safely
  - Effective compliance programs in place for both the CNSC and the applicant
  - Consistent and good operating experience and compliance
  - Whether there are any significant plans for the future operations of licensed activity

Proposed Licence Period (Cont.)

- Activities are significantly less complex than other Class I nuclear facilities
- Hazards associated with licensed activity are well understood and characterized
- Mature facility with established programs and a management system focused on continuous improvement
- Licensee currently has a good track record of regulatory compliance
- No expected change to licensed activities for proposed licence period
- CNSC staff will continue to provide effective regulatory oversight

CNSC staff recommend a 15-year licence period

Proposed Licence Period

CNSC Staff Activities and Commission Involvement

- CNSC employs evolving communication strategies and trust initiatives, including enhanced SRBT facility webpage and SRBT EPR report
- CNSC continues to build strong relationships with Indigenous Nations and communities through Terms of Reference, IEMP opportunities, etc.
- Scheduled reporting on compliance and licensee performance through the Regulatory Oversight Report
- Unscheduled reporting through Event Initial Reports, deviations from the licensing basis and review of Orders

SRB Technologies (Canada) Inc. Licence Renewal: CMD 22-H8.A

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Based on the technical assessment of SRBT's application and supporting information, CNSC staff conclude that:

- The application complies with the regulatory requirements
- The licensee's performance during the current licence period was satisfactory and met regulatory requirements

Recommendations

CNSC staff recommend that the Commission:

- Conclude, pursuant to paragraph 24(4)(a) and (b) of the NSCA, that SRBT:
  i. Is qualified to carry on the activities authorized by the licence
  ii. Will make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed
- Renew the operating licence for a period of 15 years, valid until June 30, 2037
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