Canada's Nuclear Regulator

# CNSC COMPLIANCE INSPECTION REPORT

**Inspection No.:** SRBT-2020-02

**Inspection Title:** Radiation Protection Inspection

**Prepared by:** Lester Posada, Project Officer
Nuclear Processing Facilities Division
Directorate of Nuclear Cycle and Facilities Regulation

**Report Date:** January 14, 2021

.

Canadian Nuclear Safety Commission
Commission canadienne de sûreté nucléaire

Canada

# CANADIAN NUCLEAR SAFETY COMMISSION
# COMPLIANCE INSPECTION

## Inspection No.: SRBT-2020-02

**Licensee:** SRB Technologies Canada Inc.

**Licence No.:** NSPFOL-13.00/2022

**Facility / Site Inspected:** SRB Technologies Tritium Processing Facility

**Inspection Date(s):** October 27, 2020 – October 28, 2020

**Inspector:**

Digitally signed by Posada, Lester
DN: C=CA, O=GC, OU=CNSC-CCSN, CN="Posada, Lester"
Reason: I am the author of this document
Location: your signing location here
Date: 2021-01-14 09:41:04
Foxit Reader Version: 9.7.1

Lester Posada
Lead Inspector, Nuclear Processing Facilities Division

**Approved by:**

Ducros, Caroline

Digitally signed by Ducros, Caroline
DN: C=CA, O=GC, OU=CNSC-CCSN, CN="Ducros, Caroline"
Reason: I am approving this document
Location: your signing location here
Date: 2021-01-14 11:05:23
Foxit Reader Version: 9.7.1

Caroline Ducros
Director, Nuclear Processing Facilities Division

**Safety and Control Area(s):** Radiation Protection

**Inspector Accompanied by:** Samantha Klein, Radiation Protection Officer

## EXECUTIVE SUMMARY

Pursuant to subsection 30(1) of the *Nuclear Safety and Control Act* (NSCA) Canadian Nuclear Safety Commission (CNSC) staff conducted an inspection at SRB Technologies (Canada) Inc. (SRBT) from October 27, 2020 to October 28, 2020. The purpose of this inspection was to verify SRBT's processes and performances related to the Safety and Control Area (SCA) of Radiation Protection as per the NSCA, its associated regulations, SRBT's operating licence NSPFOL-13.00/2022, and the Licence Conditions Handbook (LCH).

The scope of the inspection was focused on the Radiation Protection SCA, specifically the implementation of SRBT's Radiation Protection program.

CNSC inspectors' preliminary inspection facts and findings were discussed with licensee staff. A Preliminary Inspection Facts and Findings Report was tabled during the closing meeting held on October 28, 2020.

The inspection team found the licensee to be in compliance with the inspection criteria, and therefore no compliance actions or recommendations were raised as part of this inspection.

# Table of Contents

## 1. INTRODUCTION

A Type II Radiation Protection inspection at the SRB Technologies (Canada) Inc. (SRBT) facility was conducted from October 27, 2020 to October 28, 2020.

The licensee was assessed against provisions of the *Nuclear Safety and Control Act* (NSCA) and its associated regulations, the conditions of the licence NSPFOL-13.00/2022 [1] and the Licence Conditions Handbook (LCH) for SRBT [2], as well as applicable facility-specific and programmatic governing documentation. Due to the ongoing COVID-19 pandemic, this inspection was conducted remotely over teleconference using Microsoft Teams.

Criteria for this inspection were derived directly from the set of documents described in the notification letter and compiled into a Compliance Matrix, which had been provided to SRBT staff prior to the inspection [3]. Observations, interviews, and records review were undertaken to assess compliance with regulatory expectations.

This report documents the findings and conclusions of the inspection, along with any enforcement actions or recommendations arising from the inspection. The results of this inspection activity will form part of CNSC staff's evaluation of the licensee's performance.

## 2. PURPOSE AND SCOPE

The purpose of this inspection was to verify SRBT's processes and performances related to the Safety and Control Area (SCA) of Radiation Protection as per the NSCA, its associated regulations, SRBT's operating licence NSPFOL-13.00/2022, and the Licence Conditions Handbook (LCH).

The inspection scope focused on the Radiation Protection SCA, specifically the implementation of SRBT's Radiation Protection program.

## 3. DESCRIPTION OF INSPECTION METHODS

The NSCA, Canadian Nuclear Safety Commission (CNSC) regulations, NSPFOL-13.00/2022 licence conditions, and governing documents were reviewed as part of the preparation for the inspection. Various items were selected for verification and compiled into a Compliance Matrix. The inspection also included field observations and information provided by licensee staff.

Any number of the following method(s) of assessment were used during the inspection:

A. Documentation and record review

- Records were verified to be maintained as required by many of the outlined criteria, and a review of selected documents was performed to ensure their accuracy and completeness.
    - Records and photographs were provided by SRBT staff by email to the CNSC inspection team.

B. Interviews and discussions with licensee staff

- Interviews and discussions with various licensee staff were conducted during the inspection. Questions were posed based on compliance criteria and responses documented for verification purposes.
    - This was conducted by teleconference between SRBT staff and the CNSC inspection team using Microsoft Teams.

Selected documentation and records were reviewed during the field verification component of the inspection. These were reviewed in order to determine whether the various records associated with the areas of the inspection are in compliance with associated regulatory and programmatic requirements.

As per the CNSC process, at the conclusion of the field verification portion of the inspection, a Preliminary Inspection Facts and Findings Report was provided to SRBT representatives [4]. This report was provided for purposes of outlining observations made by the inspection team at an overall level, based on a preliminary review of the criteria set identified in the Compliance Matrix and observations made.

## 4. INSPECTION RESULTS

The Compliance Matrix (Appendix F) used for this inspection contains the compliance verification criteria (CVC) used to assess and evaluate compliance with regulatory and licencing requirements during this inspection. The criteria in the Compliance Matrix have been identified to have either “Met” or “Not Met” the applicable requirement.

There were criteria that were not observed during the inspection as they needed to be verified in-person. These items are identified in the compliance matrix in Appendix F. CNSC staff will follow up with these items during future inspections.

The inspection team found the licensee to be in compliance with the inspection criteria, and therefore no compliance actions or recommendations were raised as part of this inspection.

## 5. SUMMARY OF ENFORCEMENT ACTIONS AND RECOMMENDATIONS ISSUED

No compliance actions or recommendations were issued as a result of this inspection.

## 6. CONCLUDING STATEMENTS

CNSC staff performed a Radiation Protection inspection at the SRBT facility in order to verify compliance with the NSCA, its associated regulations, the conditions of the licence and the LCH. Due to the ongoing COVID-19 pandemic, this inspection was conducted remotely using Microsoft Teams.

The inspection team found the licensee to be in compliance with the inspection criteria, and therefore no compliance actions or recommendations were raised as part of this inspection.

CNSC staff extend their appreciation to SRBT for their assistance in conducting this inspection.

## 7. REFERENCES

[1] SRB Technologies (Canada) Inc. Nuclear Substance Processing Facility Operating Licence, NSPFOL-13.00/2022, (e-Doc 4522207).

[2] SRB Technologies (Canada) Inc. Licence Conditions Handbook, (e-Doc 5878205).

[3] Letter from L. Posada (CNSC) to J. MacDonald (SRBT), Notice of CNSC Type II Compliance Inspection of SRB Technologies (Canada) Inc. on October 27, 2020, to October 28, 202, September 15, 2020 (e-Doc 6380301).

[4] SRBT-2020-02 Preliminary Inspection Facts and Findings Report, October 28, 2020, (e-Doc 6406757).

[5] Email from J. MacDonald (SRBT) to L. Posada (CNSC), Request for Records – Oct 27 AM Session, October 27, 2020 (e-Doc 6409077).

## APPENDIX A: **ACRONYMS AND ABBREVIATIONS**

| | |
|---|---|
| ALARA | As Low as Reasonably Achievable |
| CINFR | *Class I Nuclear Facilities Regulations* |
| CNSC | Canadian Nuclear Safety Commission |
| CVC | Compliance Verification Criteria |
| GNSCR | *General Nuclear Safety and Control Regulations* |
| LCH | Licence Conditions Handbook |
| NCR | Non-Conformance Report |
| NPFD | Nuclear Processing Facilities Division |
| NSCA | *Nuclear Safety and Control Act* |
| OJT | On the Job Training |
| RP | Radiation Protection |
| RSO | Radiation Safety Operations |
| SRBT | SRB Technologies (Canada) Inc. |
| TIA | Tritium in Air Monitor |

## APPENDIX B: **ATTENDANCE RECORD(S)**

e-Doc 6406631

# Inspection Meeting Attendance Record

**Unclassified**

**Directorate of Nuclear Cycle and Facilities Regulation**

Ref. Procedure *How to Conduct DNCFR Inspections*

6306631

e-Doc Number

| | |
|---|---|
| Licensee Name: | SRBT Technologies (Canada) Inc. |
| Licence Number: | NSPFOL-13.00/2022 |
| Licensed Site: | SRB Technologies Tritium Processing Facility (Pembroke, ON) |
| Facility / Program / Site: | SRB Technologies Tritium Processing Facility |
| Title of Inspection: | Type II Radiation Protection Inspection |
| Inspection Number: | SRBT-2020-02 |
| Inspection Date(s): | October 27, 2020 to October 28, 2020 |
| Lead Inspector: | Lester Posada, NPFD |

Meeting Type: Opening

| Name (print) | Role or Job Title | Signature |
|---|---|---|
| Lester Posada | Lead Inspector | Virtual Meeting |
| Samantha Klein | Radiation Protection Officer | Virtual Meeting |
| Jamie MacDonald | Manager – Health Physics and Regulatory Affairs | Virtual Meeting |
| Joshua Bull | Assistant Manager – Health Physics | Virtual Meeting |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

# Inspection Meeting Attendance Record

**Unclassified**

**Directorate of Nuclear Cycle and Facilities Regulation**

Ref. Procedure *How to Conduct DNCFR Inspections*

6406631

e-Doc Number

| | |
|---|---|
| Licensee Name: | SRBT Technologies (Canada) Inc. |
| Licence Number: | NSPFOL-13.00/2022 |
| Licensed Site: | SRB Technologies Tritium Processing Facility (Pembroke, ON) |
| Facility / Program / Site: | SRB Technologies Tritium Processing Facility |
| Title of Inspection: | Type II Radiation Protection Inspection |
| Inspection Number: | SRBT-2020-02 |
| Inspection Date(s): | October 27, 2020 to October 28, 2020 |
| Lead Inspector: | Lester Posada, NPFD |

Meeting Type: Closing

| Name (print) | Role or Job Title | Signature |
|---|---|---|
| Lester Posada | Lead Inspector | Virtual Meeting |
| Samantha Klein | Radiation Protection Officer | Virtual Meeting |
| Jamie MacDonald | Manager – Health Physics and Regulatory Affairs | Virtual Meeting |
| Joshua Bull | Assistant Manager – Health Physics | Virtual Meeting |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

# Compliance Matrix

**Directorate of Nuclear Cycle and Facilities Regulation**

Ref. Procedure *How to Conduct DNCFR Inspections*

**Unclassified**
**Lead Inspector:** Lester Posada
**Division:** NPFD

## APPENDIX C: COMPLIANCE MATRIX

| | |
|---|---|
| Licensee Name: | SRB Technologies (Canada) Inc. |
| Licence Number: | NSPFOL-13.00/2022 |
| Licensed Site: | SRB Tritium Processing Facility (Pembroke, ON) |
| Facility / Program / Site: | SRB Technologies Tritium Processing Facility |
| Title of Inspection: | SRBT-2020-02 Radiation Protection Inspection |
| Inspection Number: | SRBT-2020-02 |
| Inspection Date(s): | October 27, 2020 to October 28, 2020 |
| Lead Inspector: | Lester Posada, NPFD |

**Inspection Safety and Control Area(s) and/or Other Matters of Regulatory Interest**

*Select all appropriate Safety and Control Area(s) for this Compliance Inspection here. If inspecting other matters of regulatory interest, select "Other," and specify.*

| | | |
|---|---|---|
| ☐ Management System | ☐ Environmental Protection | ☐ Waste Management |
| ☐ Fitness for Service | ☒ Radiation Protection | ☐ Security |
| ☐ Operating Performance | ☐ Conventional Health and Safety | ☐ Safeguards and Non-Proliferation |
| ☐ Safety Analysis | ☐ Human Performance Management | ☐ Packaging and Transport |
| ☐ Physical Design | ☐ Emergency Management & Fire Protection | ☐ Other, specify below |

Click here to enter text.

| Criteria | Compliance Expectation / Inspection Methods | Comments | Met / Not Met |
|---|---|---|---|
| **Safety and Control Area: Radiation Protection** | | | |
| **Source**: Licence Conditions Handbook (LCH) - SRB Technologies NPSFOL-13.00/2022 Compliance Verification Criteria 8.1.1<br><br>The licensee shall implement and maintain a radiation protection program that is in accordance with the requirements set out in the *Radiation Protection Regulations*. | **Document Review:**<br><br>• Question senior management, RP staff and workers on their support of ALARA at the facility.<br>• Review ALARA/radiation safety committee's terms of reference, as applicable. Observe records of minutes of meetings over the last 6-12 months.<br>• Verify that meeting minutes (or some other means) are used to track progress for the development and implementation of ALARA initiatives and establishes ownership of these initiatives.<br><br>**Field Check:**<br><br>• Observe implementation of ALARA initiatives in the facility, as applicable.<br><br>**Document Review:**<br><br>• Confirm that ALARA targets are established according to a well-structured methodology and are | **Observations:**<br><br>1. Held discussions with Manager of Health Physics and Assistant Manager of Health Physics. There is active involvement in the Health Physics committee, where items related to RP and ALARA are discussed. All individuals expressed involvement and ownership of ALARA.<br>2. Health Physics Committee Meeting Minutes from October 7, 2019 to July 14, 2020 [5]. Meetings are held quarterly to discuss health physics and swipe results. Issues identified at each meeting were addressed in follow up meetings.<br>3. Discussions with Manager of Health Physics and Assistant Manager of Health Physics confirmed that performance data from surface contamination monitoring, dose measurements and area monitoring are reviewed against production output and historical data. This information is used as performance indicators for continuous improvement.<br>4. ALARA targets are established annually for average and maximum worker doses taking into consideration the previous year's dose results as well as anticipated production levels. These are discussed and agreed upon by the Health Physics team. | Met |

| | | | |
|---|---|---|---|
| | periodically reviewed to ensure that they are kept up-to-date. Observe any records associated with these topics, generated within the last 12 months.<br><br>**SRB Technologies to Provide:**<br>• Radiation Safety Program<br>• Health Physics Committee Meeting Minutes from past 12 months.<br>• Facility and Contamination Monitoring Reports from past 12 months<br>• Internal Audit Reports related to Radiation Protection | 5. Operational reviews are performed annually in accordance with Radiation Safety Manual (RSP).<br>**Documents Reviewed**:<br>1. Health Committee Meeting minutes [5]<br>2. Radiation Safety Program M<br>3. RSO-001-F-01 and -02, Facility and Contamination Monitoring Reports<br>4. Internal Audit Report, Radiation Protection & Dosimetry Service, Report No. 04-20 | |
| **Source: Regulation**<br><br>**Details:**<br><br>RPR 4(*a*)<br><br>G-129 rev.1<br><br>Radiation Safety Program Revision XI | **Field Check**:<br><br>• Observe work areas in the facility and note any engineered controls and design features that intend to keep radiation exposures to persons ALARA.<br><br>**SRB Technologies to Provide**:<br><br>• Photos of fume hoods. | **Observations:**<br><br>1. Photos provided showed fume hoods and ventilation on the equipment are installed to keep the amount of tritium in air concentrations within acceptable levels. | Met |

| | | | |
|---|---|---|---|
| | |  | |
| **Source: Regulation**<br><br>**Details:**<br><br>RPR 4(*a*)<br><br>**Source: Other**<br><br>**Details:**<br><br>G-129 rev.1<br><br>**Source: LCH**<br><br>**Details:**<br><br>Radiation Safety Program Revision XI | **Discussion/Document review:**<br><br>• Question RP staff on their involvement in work planning and scheduling processes to allow for identification where ALARA principles and controls may be applied.<br>• Question RP staff and management to verify that work activities are scheduled, prepared and executed with the goal to keep exposures ALARA and to avoid unplanned exposures. Review records of job hazard analyses for certain work activities as evidence, generated within the last 12 months. | **Observations:**<br><br>1. Work at SRBT is generally routine and deviations from routine work are rare or non-existent.<br>2. Discussed modification of work requirements due to the COVID-19 pandemic. SRBT reduced the time in the facility and allowed for remote meetings when possible. Masks are required throughout the facility and disposable masks were provided for Zone 3 employees.<br>3. Discussed plan and procedures followed for Zone 3 Fumehood replacement. ENG-025 is not part of the Radiation Safety Manual, however the decommission process does involve checking the Health Physics for radiation safety concerns. | Met |

| | | | |
|---|---|---|---|
| **Source: Regulation**<br><br>**Details:**<br><br>RPR 4(*a*)<br><br>**Source: Other**<br><br>**Details:**<br><br>G-129 rev.1<br><br>**Source: LCH**<br><br>**Details:**<br><br>Radiation Safety Program Revision XI | **Desktop Review:**<br><br>• Question RP staff and management on the use of RP program performance objectives, monitoring and trending. Review the process for setting, monitoring, tracking and reporting (i.e. management) targets. Confirm that targets are established according to a well-structured methodology and are periodically reviewed to ensure that they are kept up-to-date.<br>• Review processes with RP staff for continuous improvement initiatives for the RP program, through benchmarking and use/sharing of operating experience. Observe records and documents (policies and procedures) associated.<br>• Confirm that poor performance against objectives is flagged to management's attention, and corrective action plans were developed and implemented. | **Observations Document review:**<br><br>1. Facility Contamination Monitoring and Analysis Reports, worker bioassay results, alarm reports, etc. are reviewed on a specified frequency to identify areas of decline in performance.<br><br>2. Dose targets were identified as likely going to fail early on in 2020. SRBT put in place several efforts to drive doses down in order to meet the targets.<br><br>3. While Facility Contamination Monitoring and Analysis Reports are reviewed at the specified frequency, it was observed that immediate actions are not taken on initial discovery of a possible issue. For example, if it is noted that after two or three days that there are elevated contamination results in the same area, this does not get addressed until an area of poor performance is identified at the committee meetings.<br><br>4. Poor performance is identified during committee meeting and actions are taken to correct them, as demonstrated in the meeting minutes and discussion with RP staff. | Met |
| **Source: Regulation**<br><br>**Details:** RPR 6<br><br>**Source: Other**<br><br>**Details:** G-228 | **Desktop Review:**<br><br>• Compare recent doses (e.g. past 5 years) against action levels and challenge whether they remain meaningful, if appropriate. | **Observations:**<br><br>1. There were no action Level exceedances in the last five years.<br>2. There was one administrative level exceedance in 2019. | Met |

| | | | |
|---|---|---|---|
| | Note: The current action Levels were reviewed in 2019.<br>**SRB Technologies to Provide**:<br>• dose spreadsheet (*NOTE: Only if no personal information is included) | **Documents Reviewed:**<br>1. Annual compliance Report 2019.<br>Dose spreadsheet | |
| **Source: Regulation**<br>**Details:** RPR 4(*a*)<br>**Source: Other**<br>**Details:**<br>G-129 rev.1<br>**Source: LCH**<br>**Details:**<br>Radiation Safety Program Revision XI | **Desktop Review:**<br>Follow up on any administrative limit exceedances in the last 3 years, including the one reported in the 2019 ACR.<br>*Tailored for specific follow up to confirm implementation of corrective actions taken by the licensee for previous radiation protection events and CNSC action items.*<br>**SRB Technologies to Provide**:<br>• Non-Conformance Report NCR-757 | **Observations:**<br>1. There was one administrative level exceedance in 2019 as reported in the 2019 ACR. A worker exceeded the administrative level of 100 Bq/L (131.9 Bq/L) for any period in Zone 1 or 2. Non-Conformance Report NCR-757 was filed to document the exceedance. Corrective actions were implemented and the worker was restricted from performing the same work until the bioassay concentrations fell less than half of the admin level. Additional samples were also requested.<br>2. Corrective actions for RP events and non-conformances are established with appropriate milestones and assignment of responsibility.<br>**Documents Reviewed:**<br>1. Non-Conformance Report NCR-757<br>2. Radiation Safety Program Revision M<br>3. Licence Limits, Action Levels and Administrative Limits, rev D. | Met |

| | | | |
|---|---|---|---|
| **Source: Regulation**<br><br>**Details:**<br><br>RPR 4(*a*)(i)<br><br>CINFR 3(*d*) | **Document Review:**<br><br>• Confirm procedures reviewed as part of the inspection have been revised as per the licensee's document review cycle.<br>• Confirm a roll-out process is in place for new or revised procedures.<br>• Confirm procedures reviewed as part of the inspection reflect current operations and practices. | **Documents Reviewed:**<br><br>1. All documents were reviewed and confirmed to be the current versions.<br>2. Change control process includes revision notes after the title page for easy tracking. | Met |
| **Source: Regulation**<br><br>**Details:**<br><br>RPR 4(*a*)<br><br>**Source: Other**<br><br>**Details:**<br><br>G-129 rev.1 | **Field Check:**<br><br>• Question management and RP staff on their responsibilities for RP (for themselves and others). Ask what steps they would take if they observed an unsafe work practice or situation.<br><br>**Document Review:**<br><br>• Review records associated which demonstrate management RP oversight including job observations, departmental safety meetings, etc. generated within the last 12 months.<br><br>**SRB Technologies to Provide**:<br><br>• any internal audit reports related to Radiation Protection from the past calendar year<br>• RSO-039, Planning for Unusual Situations | **Observations:**<br><br>1. All staff interviewed were aware of:<br><br>- Their responsibilities related to RP.<br><br>- The proper responses to incidents such as a broken light source or alarming Tritium in Air Monitor (TIA).<br><br>2. Internal audits of the RP program are performed annually. These audits review all aspects of the RP program and identify non-conformances with regulatory and procedural requirements, opportunities for improvement and good practices. Previously identified non-compliances and areas for improvement are followed up.<br><br>**Documents Reviewed:**<br><br>1. Radiation Safety Program M<br>2. RSO-039, Planning for Unusual Situations Revision B. | Met |

| | | | |
|---|---|---|---|
| | | 3. Internal Audit Report, Radiation Protection, Report No. 04-20 | |
| **Source: Regulation**<br><br>**Details:**<br><br>GNSCR 3(1)(*k*)<br><br>RPR 4 (*a*)<br><br>**Source: Other**<br><br>**Details:**<br><br>RSO-039, Planning for Unusual Situations | **Field Check:**<br><br>Question workers/contractors, management and RP staff on:<br><br>• their responsibilities for RP<br>• who they would report RP issues to and if management is accessible and responsive to concerns | **Observations:**<br>1. All staff questioned identified any member of the Health Physics Committee, but specifically the Manager of Health Physics and Regulatory Affairs, when questions or concerns arise related to RP.<br>2. Staff observed was very comfortable with the Health Physics team in terms of approaching them with any concerns. | Met |
| **Source: Regulation**<br><br>**Details:**<br><br>CINFR 6(*m)*<br><br>RPR 4(*a*)<br><br>**Source: LCH**<br><br>**Details:**<br><br>Radiation Safety Program, Section, 4.1<br><br>**Source: Other**<br><br>**Details:** | **Field Check:**<br><br>• Question workers/contractors/ management regarding the last time they received RP training; including the content, the concept of ALARA (indoctrination training, annual training, OJT).<br>• Question workers/contractors on whether they received on-the-job training.<br>• Question workers/contractors/ management on what radiological hazards they encounter in their day-to-day work.<br><br>**Document Review:** | **Observations:**<br><br>1. Staff interviewed received RP training in December 2019.<br>2. All staff receive annual refresher training at the same time. The facility closes for the day and the training is implemented offsite. Individuals who were absent due to being at school were trained on their return.<br>3. All annual refresher training records observed were up date.<br>4. Indoctrination training for new workers was performed/received as required.<br>5. On the Job training is performed, as confirmed through an interview with the new RP technician. | Met |

| | | | |
|---|---|---|---|
| G-129 rev. 1<br><br>RSO-027, Contractors<br><br>RSO-027-F-01, Contractor/Visitor Log<br><br>RSO-027-F-03, Training Record for Contract Staff | • Observe the most recent records of training and qualifications of select persons observed in the field.<br>• Review the most recent records of on-the-job training for select persons observed in the field.<br>• Perform the same checks as above, however, for contractors and visitors (refer to RSO-027, section 5).<br>**SRB Technologies to Provide**:<br><br>• Attendance list for annual refresher training in 2018 and 2019.<br>• List of new staff in 2018 and 2019. | **Documents Reviewed:**<br><br>1. Annual refresher training records for 2019 (all workers) | |
| **Source: Regulation**<br><br>**Details:**<br><br>RPR 4(*a*)<br><br>GNSCR 12(1)(*c*)(*d*)(*e*) 17(*a*)(*b*)(*d*)(*e*) | **Field Check:**<br><br>• Observe all persons on site wearing appropriate/required dosimetry and personal protective equipment (PPE).<br>• Observe persons as they move through zone transitions throughout the facility.<br>• Observe all persons following safe practices in line with ALARA/RP principles.<br>• If possible, observe RP staff performing an in-house RP inspection of work area(s).<br>**Document review:**<br><br>• Observe records of in-house RP inspections and/or self-assessments conducted at the facility within the | **Observations:**<br><br>1. Photos showed individuals wore the proper PPE as required.<br>2. All individuals observed the proper techniques for transitioning through zones<br>3. There were no non-compliances with RP practices observed.<br>4. RP self-assessment audit was performed in October 2020.<br>**Documents Reviewed:**<br><br>1. Radiation Safety Manual M<br>2. Sub-documents to RP program. | Met |

| | | | |
|---|---|---|---|
| | last 12 months.<br>**SRB Technologies to provide:**<br>• Photos of staff entering Zone 2 and Zone 3. |  | |
| **Source: Regulation**<br><br>**Details:**<br><br>RPR 5<br><br>**Source: LCH**<br><br>**Details:**<br><br>Radiation Safety Program M, Section 4.12<br><br>Licence Limits, Action Levels and Administrative Limits<br><br>**Source: Other** | **Document review:**<br>• Observe how radiation doses are tracked and monitored for workers, contractors and visitors.<br>• Verify how maximum effective dose and average dose statistics are determined and reported with the licensee's organization and to the CNSC.<br>• Review workers, contactors, and visitors radiation dose records for the last 12 months. Verify that the current year and five year regulatory dose limits have not been exceeded.<br>• Review dose history records for workers, contract workers, new hires and visitors over the last 12 months. Verify that the current year and five | **Observations:**<br>1. There were no exceedances of the 1 and 5 year dosimetry limits for workers or contractors.<br>2. Manual and electronic dose records are maintained. Doses are calculated manually on the Bioassay Dose Calculations Work sheet. They are verified by the Human Protection Coordinator. Results are manually entered into an excel spreadsheet which are validated by the Manager of Health Physics and Regulatory Affairs.<br>3. Records are maintained indefinitely at this point, in excess of their procedural requirements.<br>**Database Reviewed:**<br>1. Dose database | Met |

| | | | |
|---|---|---|---|
| **Details:**<br>G-91<br><br>RSO-027, Contractors, Section 7<br><br>RSO-004, Bioassays, Section 12.2 | year regulatory dose limits have not been exceeded. Verify that dose histories are taken into consideration when setting internal dose limits.<br>• If radiation doses are entered into a database; review QA process associated (e.g. reconciliation of radiation exposure reports from dosimetry service provider).<br>• Ensure dose records are maintained for the appropriate retention period. (10 years for contractors and 5 years after the termination of employment for a worker). | | |
| **Source: Regulation**<br><br>**Details:**<br>RPR 5<br><br>**Source: Other**<br><br>**Details:**<br>GD-150<br><br>G-91<br><br>RSO-004- Bioassay Procedure<br><br>RSO-027, Contractors | **Field Check:**<br>• Observe the process for urinalysis, from collection to receipt of results from the lab, and entry into the health physics database.<br>• Observe the process to ensure compliance by workers/contractors for timely submission of urine samples.<br>• Observe urine collection stations are adequately stocked.<br>o Observe chain-of-custody of samples followed.<br>• Question workers/contractors on the process for urinalysis collection and communication of their results.<br>**Document review:** | **Observations:**<br><br>The bioassay process was discussed with the Assistant Manager – Health Physics, observations of the stations was not performed during the virtual inspection.<br><br>Spreadsheet of worker doses highlights any missing results. One worker was on vacation and missed two scheduled assays. The worker left the company instead of returning to work after their vacation. At this point, the dosimetry results are calculated as per RSO-004 and will be mailed at the end of the year. | Met |

| | | | |
|---|---|---|---|
| RSO-027-F-01, Contractor/Visitor Log<br><br>RSO-027-F-03, Training Record for Contract Staff<br><br>RSO-011, Instrument Calibration<br><br>**Source: LCH**<br><br>**Details:**<br><br>Radiation Safety Program M, Section 4.12 | • As applicable; review process for urinalysis, from collection to receipt of results from the lab, and entry into the health physics database. Observe records of tritium-in-urine bioassays for all persons over the last 12 months.<br>• Review the QA process for validation of urinalysis results.<br>• Review the process for validation of bioassay results.<br>• Review process for flagging and tracking of tritium-in- urine administrative and action level exceedances.<br>• Observe records of dose assignment for all persons over the last 12 months.<br>• As applicable; review the process for submission of results to the National Dose Registry.<br>• Review the process to ensure compliance by workers/contractors for timely submission of urine samples in accordance with RSO-004 (NEWs in Zone 3 –weekly, Zones 2 and 1 – bi-weekly or as determined by the Health Physics) Department. For contractors/visitors – upon completion of their work as screening and if above MDA effective dose would be calculated based on RSO-004 and submission of subsequent samples) | | |

| | | | |
|---|---|---|---|
| | • If administrative or action levels are exceeded, worker is suspended from entry into Zones 2 and 3. Review any non-compliance with the bioassay program and if any ensure that if worker was suspended from working in Zones 2 and 3 after 2 non-compliances R9Radiation Safety Program, Section 4.12.3.<br>• Review the process to assign dose in the event a worker does not submit their bioassay as required. | | |
| **Source: Regulation**<br><br>**Details:**<br><br>RPR 4(*a*)<br><br>**Source: LCH**<br><br>**Details**<br><br>Radiation Safety Program M | • Request annual facility dose targets/goals and confirm that they are established appropriately. Request evidence that performance is reported to management at some frequency.<br>• Request records to demonstrate that corrective actions are implemented if targets are not being met. | **Observations:**<br>1. Facility dose goals are established as required through the Health and Safety Committee. Radiation dose targets at SRBT are established at set frequencies in accordance with their processes<br>2. Progress towards achieving radiation dose targets is monitored, and appropriate corrective actions are taken.<br>**Documents Reviewed:**<br>1. Health and Safety Meeting Minutes [5]<br>2. Discussions with SRBT staff | Met |
| **Source: Regulation**<br><br>**Details:**<br><br>RPR 7, 9, 10, 11, 24 | **Field Check:**<br>• Question workers/contractors if they are aware if they are a NEW and what that means (rights and obligations). | **Observations:**<br>1. All staff interviewed:<br>• Were aware of their status as a NEW and were aware of their rights and obligations. | Met |

| | | | |
|---|---|---|---|
| **Source: LCH**<br><br>**Details:**<br><br>Radiation Safety Program, XI,<br><br>Section 4.12.3<br><br>**Source: Other**<br><br>**Details:**<br><br>RSO-004, Bioassays, Section 17.2 | • Question workers/contractors regarding their current dose, if they are informed on and if they know how this information can be obtained.<br>• Current and quarterly dose information is posted in accordance with Section 4.12.3 of Radiation Safety Program.<br><br>**Document Review:**<br><br>• Observe records maintained by the licensee as evidence of provision of information to NEWs (workers and contractors).<br>• Confirm NEWs are provided with a copy of their dose annually in writing in accordance with Radiation Safety Program M, Section 4.12.3 and RSO-004. Confirm there is a similar process for contractors.<br>• Follow up on any recent pregnant NEWs (i.e. within last two years), the process followed, and records generated, including dose received.<br>• Ask if there are provisions in place for breastfeeding NEWs.<br>• Observe the record of name and job category for all NEWs.<br>**SRB Technologies to Provide:**<br>• Photos of NEW declaration forms (10 – preferentially most current). | • Were aware of their current dose and identified that they were informed annually in writing and the doses are also posted quarterly in the lunchroom. Weekly bioassay results are also posted in the lunchroom in accordance with RP program.<br>• Signed records for a sample of provision of information of NEWs were observed and completed in accordance with procedures.<br>• Pregnant NEWs are aware of the requirements to inform the licensee in writing upon becoming aware of their pregnancy. Doses at the facility are typically lower than the regulatory dose limits for pregnant NEWs, however, discussions are held with pregnant NEWs and they are given the choice to work in lower dose areas although this has never happened.<br>• Records of workers names and job categories are maintained. Job categories are maintained through the organizational chart and workers doses are tracked through the zoned area in which they perform their work.<br><br>**Documents Reviewed:**<br><br>1. Nuclear Energy Worker (NEW) Declaration Forms (10 +)<br>2. One pregnancy declaration was viewed (Dec 2019). CNSC staff discussed the new regulations that are being implemented and the changes surrounding breastfeeding and pregnant NEWs. | |

| | | | |
|---|---|---|---|
| | • Records/forms/notes regarding communication of radiation doses (annual for dosimetry year 2019, just enough to demonstrate the activity is performed – **please cover any protected information such as SIN**).<br>• Records regarding recent pregnant NEW written declarations (3 most recent - **please cover any protected information including names)**. | | |
| **Source: Regulation**<br><br>RPR 5, 7, 9, 10, 11, 24<br><br>**Source: Other**<br><br>RSO-027, Contractors | **Field Check:**<br><br>• Follow compliance verification activities for above section's field checks.<br><br>**Document Review:**<br><br>• Review the process for onboarding contractors, including determination of NEW status.<br>• Review the process for visitors to the facility, including determination of NEW status.<br>• Review process for tracking and recording contractor and visitor doses, including obtaining dose histories.<br>• Use names in the contractor/ visitor log (RSO-027, Section 5) obtained to verify the ascertainment and recording of doses.<br>• Review records to ensure that doses are reported, being tracked and maintained. | **Observations:**<br><br>1. RSO-004 includes a formalized process for requesting workers/ contractors/ visitors of their previous dose history during on-boarding.<br>2. All workers are identified as NEWs. Contractors and visitors are determined to be NEWs on a case by case situation and training is provided accordingly, although this is rare and has not happened in the recent history.<br>3. Contractors and visitors undergo may be required to provide a urine sample for screening depending on the work/areas/upset conditions they may encounter. In 2019, no contract worker or visitor exceeded a sample result of 15 Bq/ml which would require a dose assignment. All doses were below the recordable dose.<br>4. There are guidelines to identify under what circumstances contractors would be required to either a) submit a sample prior to commencing work or b) upon completion of work. It is up to the Manager, Health Physics and Regulatory Affairs to decide. | Met |

| | | | |
|---|---|---|---|
| | • Review records to determine if dose history records for contract workers and visitors were obtained as required.<br>• Verify that the current year and five year regulatory dose limits were not exceeded by contractors and visitors (for non-NEWs or NEWs as applicable). | 5. Contractors who performed previous work at Canadian Nuclear Laboratories were required to submit a urine sample prior to work being performed to provide a baseline in the event there was a previous tritium uptake.<br>**Documents Reviewed:**<br>1. Radiation Safety Program M<br>2. RSO-004, Bioassay Procedure, Rev N<br>3. RSO-027, Contractors, Rev D<br>4. Dose Database for 2019<br>5. Contractor Bioassay Results (Bq/ml) for the Year 2019. | |
| **Source: Regulation**<br>**Details:**<br>RPR 4 (*a*)<br>**Source: LCH**<br>**Details:**<br>Radiation Safety Program, M, Section 3.4.1 | **Field Check:**<br>• Observe workers/contractors following good ALARA practices by standing/waiting in low potential areas of exposure when not performing radioactive work.<br>• Observe workers/contractors wearing lab coats, disposable gloves and overshoes in Zones 2 and 3. Respirators are used when required.<br>• Observe workers/contractors as they move through zone transitions.<br>• Observe workers/contractors following safe work practices in line with ALARA principles.<br>• Observe work areas in the facility and note any engineered controls and design features that intend to keep radiation exposures to workers ALARA. | **Observations:**<br>• Photos were provided showing a worker getting ready for zone entries. These showed the appropriate PPE being donned.<br>• Air flow within the facility was confirmed to move from an area of lesser concentration (Zone 1) to higher concentration (Zone 3) It was noted that there is an issue where the airflow is sometimes static, engineering is reviewing the issue. Contamination monitoring is purposely done in this area to ensure no backflow. This item will be followed up during future inspections.<br>**Documents Reviewed:**<br>1. Results of smoke test<br>2. Ventilation/fume hood maintenance requirements<br>3. Radiation Safety Program, M | Met |

| | | | |
|---|---|---|---|
| | **SRB Technologies to Provide:**<br>• Photos of select RP monitoring instrumentation showing calibration stickers and condition of equipment (5 – 7 instruments including prisms, portable contamination monitors, dose rate meters, include instrument numbers in picture that are traceable to calibration records).<br>• Calibration records for select RP monitoring instrumentation (same records as photos of instruments). | | |
| **Source: Regulation**<br><br>**Details:**<br><br>RPR 4(*a*), 21, 22, 23<br><br>NSRDR 23<br><br>GNSCRs 3(1) (*d*)<br><br>CINFRs 3(*b*), 5(*a*)<br><br>**Source: LCH**<br><br>**Details:**<br><br>Radiation Safety Program, Section 3.1 and 3.4 | **Field Check:**<br><br>• Observe area postings and RP-related signage posted as per regulatory requirements.<br>• Confirm entry and exit procedures and PPE requirements are posted at the contamination barriers for Zones 2 and 3 as identified in Section 3.1 and 3.4 of Radiation Safety Program.<br>• Confirm no frivolous postings.<br>• Confirm emergency name and contact information posted at nuclear substances and radiation device locations (storage and in-use).<br>• As applicable; confirm trefoil, RP wording and requirement to follow personnel entry procedures posted at personnel access openings of equipment fitted with radiation devices. | **Observations:**<br><br>1. RP area postings in Zones 3 and 2 were confirmed to be accordance with Section 21 of the *Radiation Protection Regulation.*<br>2. Entry and exit procedures and PPE requirements were posted at the entrances to Zones 2 and 3 in accordance with the program.<br>3. No frivolous posting were identified in the photos provided.<br>4. Could not verify if workers adhered to procedural postings due to virtual inspection. This item will be followed up during future inspections.<br><br>**Documents Reviewed:**<br><br>1. Radiation Safety Program, Section 3.1 and 3. | Met |

| | | | |
|---|---|---|---|
| | • Observe workers/contractors adherence to the procedural postings.<br>• Question workers/contractors on what various postings throughout the facility mean to them.<br>**Document Review:**<br>• Review signage strategy is in place which ensures consistent posting of signs (including radiation warning signs) throughout the facility and in accordance with regulatory requirements.<br>**SRB Technologies to Provide:**<br>• Photos of entry and exit signs posted at transition areas of Zone 2 and 3, any warning signs posted at entry/exit doors. | | |

| | | | |
|---|---|---|---|
| **Source: Regulation**<br><br>**Details:**<br><br>RPR 4(*a*)<br><br>GNSCR 12(1)(*c*)(*d*)<br><br>(e); 17(*a*)<br><br>**Source: LCH**<br><br>**Details:**<br><br>Radiation Safety Program , M, Section 3.4.1 | **Field Check:**<br><br>• Observe radiation PPE storage areas.<br>• Question workers/contractors on where they can find radiation PPE as needed.<br>• Confirm adequate quantities of radiation PPE available to workers/contractors in their work areas.<br>• Confirm adequate quantities of radiation PPE for visitors.<br>• Observe laundry facility and workers donning appropriate PPE while handling contaminated PPE.<br><br>• Perform direct and indirect contamination monitoring of radiation PPE, radiation PPE storage facilities, and laundry facilities.<br>• Observe proper radiation PPE is selected and worn by workers/contractors based on known hazards and provisions are included in the event the hazards are unknown.<br><br>**Document Review:**<br><br>• Review record of contamination monitoring of radiation PPE, storage facilities, and laundry facilities over the last 12 months. | **Observations:**<br><br>1. PPE storage was not verified, will confirm in future inspections. Photos at Zone 2 and zone 3 gowning showed adequate supplies for daily egress.<br>2. Lab coats are not disposed of after each use. There is no requirement for swipes to be performed on PPE other than booties.<br>3. No adverse trends in swipe results have been shown from reusable booties in Zone 3. They have dedicated swipes in the laundry area to ensure any contamination is caught early.<br><br>**Documents Reviewed:**<br><br>1. RSO-001, Facility Contamination Monitoring, | Met |

| | | | |
|---|---|---|---|
| | **SRB Technologies to provide:**<br><br>• Photos of radiation PPE storage areas showing condition of equipment and inventory of supplies (if available).<br>• Photo of staff handling contaminated PPE in the laundry facility. | | |
| **Source: Regulation**<br><br>**Details:**<br><br>GNSCR 12(1)(*c*), 17<br><br>RPR 4, 5<br><br>**Source: Other**<br><br>**Details:**<br><br>G-147<br><br>RSO-039, Planning for Unusual Situations<br><br>RSO-004, Bioassay Procedure, Sections 11.2 and 11.3<br><br>RSO-024, Zone Alarm Record Keeping | **Field Check:**<br><br>Question workers/contractors on<br><br>• what constitutes an upset condition in their work place<br>• their response/actions to take during upset conditions<br>• their response to TIA monitors alarms<br>• how they would be alerted to/respond to:<br>  o elevated tritium levels in the workplace<br>  o failure or leaking of tritium processing equipment<br>  o a personal contamination event<br><br>**Document Review:**<br><br>• Review process for responding to upset conditions, including response to abnormal intakes of nuclear substance and work removals (as applicable). | **Observations:**<br><br>1. All workers interviewed where clear on the requirements of RSO-039 and what is considered an upset condition and who to contact.<br>2. There was on administrative level exceedance for which non-conformance report NCR-757 was issued in compliance with the RP Program, section 4.12.1. The worker was removed from the work causing the elevated result until their bioassay level returned to below ½ the administrative level. This was verified by CNSC staff in reviewing the individual's bioassay submissions.<br>3. RSO-024 records the occurrence of zone alarms. These records are maintained as required and tracked to determine trends.<br><br>**Documents Reviewed:**<br><br>1. RSO-039, Planning for Unusual Situations<br>2. RSO-004, Bioassay Procedure<br>3. Non-Conformance Report NCR-757<br>4. RSO-024 (5) | Met |

| | | | |
|---|---|---|---|
| | • Ensure there are provisions for enhanced bioassay sampling guidelines/actions non-routine bioassays in accordance with RSO-039).<br>• Ensure that there are requirements for contamination monitoring of persons and areas involved in an upset condition (i.e. loss of containment).<br>• Review records associated with:<br>• Incidences of abnormal intakes of nuclear substance over the last 12 months.<br>• Zone alarms.<br>• Non-conformance reports. | | |
| **Source: Regulation**<br><br>**Details:**<br><br>RPR 4 (*a*) | **Field Check:**<br><br>• Observe housekeeping of the facility and note any areas of concern (such as spilled product in work areas). | **Observations**:<br><br>1. Photos of work area provided showed housekeeping was generally good. | Met |
| **Source: Regulation**<br><br>**Details:**<br><br>RPR 4(*b*) | **Field Check:**<br><br>• Perform swipe samples for CNSC laboratory analysis throughout the facility. Include lunchrooms, change rooms and water fountains.<br>• Observe RP staff performing contamination monitoring if included in routines.<br><br>**Document Review:**<br><br>• Review records (RSO-001, Section | **Observations:**<br><br>Field check swipes not performed as it was a remote inspection. This item will be followed up during future inspections.<br><br>1. Contamination monitoring is performed at the required frequency in accordance with procedures.<br>2. When areas which exceed the acceptable levels are identified and decontaminated. If the following day's swipes do not register as acceptable, the process is performed again. | Met |

| | | | |
|---|---|---|---|
| **Source: LCH**<br><br>**Details:**<br><br>Radiation Safety Program M, Section 4.8<br><br>Licence Limits, Action Levels and Administrative Limits, Section 4 (for surface contamination limits)<br><br>**Source: Other**<br><br>**Details:**<br><br>RSO-001, Facility Contamination Monitoring, sections 5.1, 6, 7, 8, 9, 10 | 10) of routine contamination monitoring of areas for the last 12 months. Ensure wipe testing is performed as follows:<br>○ 8 swipes 1x/week- Zone 1<br>○ 12 swipes 3x/week- Zone 2<br>○ 4 swipes daily- Zone 3<br>• Missed monitoring is noted and justified.<br>• The following information is recorded: date of the measurement, name of individual, units of measure, make, model and serial number of the instrument used to take the measurement, and location of measurement are recorded.<br>• Ensure results are reviewed by Human Protection Coordinator.<br>• When the surface contamination limits identified in "*Licence Limits, Action Levels and Administrative Limits*"" are exceeded, surfaces are cleaned and monitored until acceptably decontaminated. Results are filed by the Health Physics Department.<br>• Health Physics department initiates any action to determine the cause of high surface contamination results and initiates corrective actions.<br>• Ensure that quarterly reviews are performed in accordance with RSO-001, Facility Contamination Monitoring to review/revise selected areas for contamination monitoring | 3. The sampling results are reviewed at the Health and Safety Meetings (every 2 months).<br><br>**Documents Reviewed:**<br><br>1. RSO-001, Facility Contamination Monitoring<br>2. Five examples of RSO-001-F-01, Facility Contamination Monitoring Analysis & Report (Zone 3)<br>3. Five examples RSO-001-F-02, Facility Contamination Monitoring Analysis & Report (Zone 1&2)<br>4. Five examples Quarterly Swipe data sheets, 2020<br>5. Health and Safety Committee Minutes | |

| | | | |
|---|---|---|---|
| | and that the areas which must always be included are tested (p 4 of same procedure). | | |
| **Source: Regulation**<br><br>**Details:**<br><br>RPR 4<br><br>GNSCR 12(1)(*c*)(*d*)<br><br>(*e*)(*f*), 17(*a*) (*b*)(*d*)(*e*)<br><br>**Source: LCH**<br><br>**Details:**<br><br>Radiation Safety Program Revision XI<br><br>RSO-001, Facility Contamination Monitoring Rev. L | **Facility Check:**<br><br>• Observe movement of workers/contractors and items through access/egress points.<br>• Ensure all materials, tools and equipment are monitored in accordance with Section 4.7.<br>• Observe interzonal boundaries are clearly marked. (3 Zones)<br>• Observe washing facilities and contamination control check points.<br>• Observe change facilities. | **Observations:**<br><br>Photos were provided of workers entering zones. These showed clear interzonal boundries.<br><br>Discussion with Health Manager discussed material monitoring procedures | Met |
| **Source: Regulation**<br><br>**Details:**<br><br>RPR 4<br><br>RSO-001, Facility Contamination Monitoring Rev. L | **Document Review:**<br><br>• Review records of contamination monitoring of work clothing for the last 12 months. | **Observations:**<br><br>1. A review of the contamination control records for Zones 2 and 3 identified that contamination monitoring of lab coats and re-useable booties is part of the routine checks. | Met |

| | | | |
|---|---|---|---|
| **Source: Regulation**<br><br>**Details:**<br><br>RPR 4<br><br>NSRDR 5.1<br><br>**Source: LCH**<br><br>Radiation Safety Program Revision XI, Section 4.8<br><br>**Source: Other**<br><br>RSO-001, Facility Contamination Monitoring, Section 5.2, 5.3, 6, 7, 8, 9, 10 | **Field Check:**<br><br>• All items/products that have been assembled, used, or stored in Zone 2 or 3 are required to be assessed for removable tritium contamination prior to being transferred to Zone 1 (RSO-001, Section 7).<br><br>**Document Review:**<br><br>• Review records for the last 12 months demonstrating that<br>  o materials moving from Zones 2 and 3 to Zone 1 met the following criteria: 4 Bq/cm$^2$ based on a 100 cm$^2$ swipe area<br>  o items to be offered for transport or shipment met the criteria of 4 Bq/cm$^2$ based on a 300 cm$^2$ swipe area<br>  o for either of the above scenarios, items that are between 3-4 Bq/cm$^2$ over a 3 minute count must be re-swiped and re-counted for a period of 10 min and confirmed < 4 Bq/cm$^2$ or decontaminated and re-assessed<br><br>**SRB Technologies to provide:**<br><br>• Photos of material moving from Zone 2 or 3 to Zone 1 | **Observations:**<br><br>1. All equipment, products and tools were swiped and checked for contamination by measuring the swipes in the LSC in accordance with RSO-001.<br><br>**Documents Reviewed:**<br><br>1. RSO-001, Facility Contamination Monitoring | Met |

| | | | |
|---|---|---|---|
| **Source: Regulation**<br><br>**Details:**RPR 4(*b*)<br><br>**Source: LCH**<br><br>**Details:**<br><br>Radiation Safety Program Revision XI, Section 3, Facilities and Equipment, Industrial Ventilation | **Field Check:**<br><br>• Observe the facility ventilation and containment system(s) operating as required by observing visual indicators or other means which demonstrate operating to acceptable specifications.<br>• Ensure that licensee is able to demonstrate that air flow moves from areas of lower contamination and not the reverse.<br><br>**Document Review:**<br><br>• Review process and records to ensure that the ventilation and containment systems are verified as operating as required and are within their design specifications.<br>• Review that airflow checks at the working face of each of the fume cupboards and cabinets in Zones 2 and 3 areas:<br>o have air flow velocities maintained at 100=/- 20ft/min<br>o are performed on a monthly basis<br>o have records are maintained by health physics dept.<br>• Review actions taken when the acceptance criteria are not satisfied. | **Observations:**<br><br>1. Photos provided showed fume hoods to be operating as indicated by the indicator lights.<br>2. Differential pressure tests/smoke tests are performed annually in accordance with maintenance document MTC-005 “Facility Ventilation Checks”. The records for this tested are captured under “Equipment Updates” during the Health Physics Committee meetings.<br><br>**Documents Reviewed:**<br><br>1. Records of the airflow checks at the working face of each of the fume cupboards and cabinets in Zones 2 and 3 areas were within the required results and performed in accordance with procedures.<br>2. Smoke test results.<br><br>  | Met |
| **Source: Regulation** | **Field Check:**<br><br>• Observe TIA Monitors operating in | **Observations:**<br><br>1. Could not observe TIA monitors in the field (fixed and portable) due to remote nature of the | Met |

| | | | |
|---|---|---|---|
| **Details:**<br><br>RPR 4,<br><br>GNSCR 12(1)(*d*)<br><br>**Source: LCH**<br><br>**Details:**<br><br>Radiation Safety Program Revision XI, Section 3, Facilities and Equipment, Airborne Contamination Monitoring, Section 3.6, Working Environment Monitoring<br><br>Licence Limits, Action Levels and Administrative Limits<br><br>**Source: LCH**<br><br>**Details:**<br><br>RSO-011, Instrument Calibration | Zone 2 and 3 are running with the appropriate/acceptable flow rate (via visual indicator or other means).<br>• Ensure stationary TIA Monitors operating in the facility have alarm set points as identified in SRB document "Licence Limits, Action Levels and Administrative Limits"<br>• Observe appropriate placement of TIA Monitors in the facility commensurate with their intended use.<br>• TIA monitors are calibrated annually or as needed, have label applied identifying calibration date, Cal. Due date, ID number and initials of person performing calibration. **Cross-reference calibration stickers to calibration certificates and maintenance records**.<br>• Question workers/contractors on how they verify that the TIA monitors in their work areas are operating correctly.<br>**Document Review:**<br>• Review maintenance and calibration records (RSO-011-F-01) for the TIA monitors. Ensure there is adequate coverage while the TIA monitor is out-of-service. | inspection. This item will be followed up during future inspections.<br>2. Records reviewed indicate all TIAs were calibrated and select photos showed the calibration stickers had dates observed in the records.<br>**Documents Reviewed:**<br>1. Maintenance records for the tritium gas calibrator were available in accordance with RSO-011.<br>2. Maintenance and calibration records (RSO-011-F01) were reviewed<br>3. Fixed TIA monitors were calibrated in 2020<br>4. TIA calibration source certificate was observed and within appropriate dates.<br>5. Portable TIA monitors were calibrated in 2020. | |

| | | | |
|---|---|---|---|
| | • Review maintenance and calibration records for the tritium gas calibrator used to calibrate the TIA monitors to ensure:<br>o gas cylinder is replaced within last five years<br>o label applied identifying calibration date, Cal. Due date, ID number and initials of person performing calibration<br>o Completed by trained individuals<br>**SRB Technologies to Provide:**<br>• Photos of select RP monitoring instrumentation showing calibration stickers and condition of equipment (5 – 7 instruments including passive air samplers, portable contamination monitors, include instrument numbers in picture that are traceable to calibration records).<br>• Calibration records for select RP monitoring instrumentation (same records as photos of instruments).<br>• Calibration certificates for any check source. | | |

| | | | |
|---|---|---|---|
| **Source: Regulation**<br><br>**Details:**<br><br>RPR 4,<br><br>GNSCR 12(1)(*d*)<br><br><br>**Source: Other**<br><br>**Details:**<br><br>RSO-040, Facility Passive Air Sampling<br><br><br>RSO-011, Instrument Calibration | **Field Check:**<br><br>• Observe tritium passive air samplers (PAS) identified on RSO-040-F-01.<br>• For the liquid scintillation counter (LSC) used to measure passive air samplers, ensure label applied identifying calibration date, Cal. Due date, ID number and initials of person performing calibration in accordance with RSO -011.<br><br>**Document Review:**<br><br>• Review copies of RSO-040-F-01 and RSO-04-F-02, for the last 12 months to ensure they are changed weekly in accordance with RSO-040.<br>• Ensure there is a process to follow up in the event elevated results are observed.<br>• Review documents/meeting minutes where this information is used to improve the RP program in accordance with RSO-040.<br><br>**SRB Technologies to Provide:**<br><br>• Photos of the liquid scintillation counter (LSC) used to measure passive air samplers showing calibration stickers and condition of equipment.<br>• Six samples of completed RSO-040-F-01 and RSO-040-F-02 from the past 12 months. | **Observations:**<br><br>1. Airborne passive samplers were not observed due to the remote inspection. This item will be followed up during future inspections.<br>2. The Assistant Manager Health Physics is responsible for the review of the passive sampling results. Elevated airborne tritium results are investigated and have actions have been taken in some instances to prevent/prior to elevated bioassay results.<br>3. The information is tracked and trended.<br><br>**Documents Reviewed:**<br><br>1. Copies of RSO-040-F-01 and RSO-04-F-02 for the last 12 months were observed. | Met |

| | | | |
|---|---|---|---|
| **Source: Regulation**<br><br>**Details:**<br><br>RPR 4(*a*), 20, 21, 22, 23 | **Field Check:**<br><br>• Observe radiation warning signs posted as required by Regulation and the licensee's RP program requirements.<br>• Observe containers and devices containing nuclear substances are labeled as required by Regulations.<br>• Confirm that radiological hazard postings are reviewed at a set frequency to ensure they are up to date.<br><br>**Document Review:**<br><br>• Review signage strategy is in place which ensures consistent posting of signs (including radiation warning signs) throughout the facility and in accordance with regulatory requirements.<br><br>**SRB Technologies to Provide:**<br><br>• Photos of posted radiation measurements within the facility. | **Observations:**<br><br>1. Signage posted was appropriate. It was verified that the radiation warning signs are in compliance with the RPRs. | Met |
| **Source: Regulation**<br><br>**Details:**<br><br>RPR 4<br><br>NSRDR 5.1 | **Field Check:**<br><br>• Observe the means for collection and storage of radioactive waste in the facility.<br>• Question workers/contractors on the proper collection and storage of radioactive waste. | **Observations:**<br><br>1. The collection and storage of radioactive waste in the facility was discussed with staff. All were aware of the procedures, including for solid and liquid waste.<br>2. Discussions held with SRBT staff regarding waste procedures were in keeping with program expectations. | Met |

| | | | |
|---|---|---|---|
| **Source: LCH**<br><br>**Details:**<br><br>Waste Management Program<br><br><br>**Source: Other**<br><br>**Details:**<br><br>RSO-001, Facility Contamination Monitoring, Sections 5.4 and 7.4<br><br>WMP-001, Waste Classification and Characterization<br><br>WMP-003, Interim Preparation and Storage of Waste | | | |
| **Source: Regulation**<br><br>**Details:**<br><br>RPR 4(*a*)<br><br>GNSCR 12(1)(*c*), 17(*b*)<br><br>**Source: LCH** | **Field Check:**<br><br>• Observe compliance with the licensee's RP program requirements and rules for personal hygiene, smoking, eating and drinking in zoned areas.<br><br>• Observe correct practices followed by workers/contractors in zoned areas | **Observations:**<br><br>1. Expectations for personal hygiene, smoking, drinking and eating restrictions are identified in section 6.2 of the Radiation Safety Program.<br>2. Staff questioned noted they only eat, dink or chew in approved areas. | Met |

| | | | |
|---|---|---|---|
| **Details:**<br><br>Radiation Safety Program Revision XI | and in eating areas.<br>• Question workers/contractors on the correct practices for eating, drinking and smoking in the workplace.<br><br>**Document Review:**<br><br>• Confirm that expectations for personal hygiene and smoking, eating and drinking restrictions (including chewing of gum) are documented. | **Documents Reviewed:**<br><br>1. Radiation Safety Program Revision XI<br><br>2. Health and Safety Committee Meeting minutes<br><br>3. Internal Audit Report No. 04-20<br><br>  <br> | |