CMD 26-M33.1

Date: 2026-08-12

Written Submission from Canadian Nuclear Laboratories

Mémoire des Laboratoires Nucléaires Canadiens

In the matter of the

À l’égard de la

Canadian Nuclear Laboratories

Laboratoires Nucléaires Canadiens

Update on the root cause of an off-site contamination from Canadian Nuclear Laboratories

Mise à jour sur la cause profonde d’une contamination hors site provenant des Laboratoires Nucléaires Canadiens

Commission Meeting

Réunion de la Commission

September 2, 2026

Le 2 septembre 2026

Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

Canadian Nuclear Laboratories (CNL)

Written Submission to the Canadian Nuclear Safety Commission

Update on the root cause of an off-site contamination from Canadian Nuclear Laboratories

Date: 2026-08-12

Signed by:

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John Osborne, Chief Nuclear Officer and
Vice President Central Technical Authority

1. Executive Summary

Canadian Nuclear Laboratories (CNL) is providing the Commission with an update on the root cause and implementation of corrective and remedial actions related to Chalk River Laboratories (CRL) Off-Site Contamination Event. This event involved the removal of contaminated sewage sludge from the Chalk River Laboratories site and was reported as an unauthorized release.

The immediate consequences of the event were fully remediated on 2025 October 5. All contaminated material was recovered, and there is no ongoing risk to workers, the public, or the environment.

The Root Cause Analysis (RCA) concluded that the event resulted from deficiencies in decision-making, specifically decisions made based on insufficient information.

In response, CNL has implemented a comprehensive set of corrective actions to strengthen governance, enhance radiological controls, and improve decision-making processes across CNL sites. The key corrective actions have been completed, with a formal effectiveness review scheduled for 2026 November. Additional actions remain underway to ensure that these improvements are fully embedded within the Management System and sustained throughout the organization. CNL is confident that the underlying causes have been addressed and that the improvements achieved are sustainable, thereby minimizing the risk of recurrence.

2. Introduction

This submission provides the Commission with an update on the root cause and status of corrective and remedial actions arising from the RCA, including confirmation of implementation and integration into the CNL Management System. It also outlines measures established to sustain performance improvements, prevent recurrence, and support ongoing oversight and monitoring.

In 2025 September, sewage sludge from the B423 Sanitary Lift Station was incorrectly characterized as non-contaminated and disposed of at an off-site landfill. Subsequent radiological surveys identified contamination, triggering notification, response, and recovery actions in accordance with regulatory requirements.

The event met the reporting criteria in REGDOC 3.1.2, *Reporting Requirements, Volume I: Non-Power Reactor Class I Nuclear Facilities and Uranium Mines and Mills* for an unauthorized release of a nuclear substance to the environment. All contaminated material was successfully recovered and is currently being managed under appropriate controls in the Chalk River Waste Management Area.

CNL publicly disclosed the event within hours of discovery and initiated proactive communication with community leaders and representatives of Indigenous nations and organizations. Engagement was maintained throughout the response and remediation.

Pending implementation of longer-term corrective actions, interim measures were established to reduce risk. These included suspension of off-site sewage shipments, increased oversight by the Waste Management program, and enhanced verification of materials prepared for off-site disposal.

The RCA, including an extent of condition, completed in 2025 November, determined that the event was driven by decision-making based on insufficient information, reflecting weaknesses in governance and processes for sewage waste management.

Contributing factors included the absence of formal governance specific to sewage and septic waste, inadequate waste characterization, reliance on limited sampling data, inconsistent application of conservative decision-making, and misalignment between established radiological control requirements and field conditions.

3. Status of Corrective Actions

CNL has completed all three corrective actions and three remedial actions identified through the Root Cause Analysis (RCA). The only remaining action is the effectiveness review (CA-4), which is scheduled for completion in 2026 November.

The completed actions addressed the root cause of the event, namely decision-making based on insufficient information, as well as the contributing factors related to governance, waste characterization, operational controls, roles and responsibilities, and knowledge management.

Corrective Action 1: Clarify Governance, Interfaces, and Release Authorities

Intent: Address gaps in governance and clarify responsibilities between Waste Management and Radiation Protection for the release of materials and waste from CNL sites.

Implementation: CNL strengthened governance for off-site release decisions by clarifying the interfaces, authorities, and responsibilities between Waste Management and Radiation Protection and by strengthening the organizational processes used to authorize the release of materials, waste, and equipment from CNL sites. Qualified Health Physicists are accountable for authorizing releases, supported by defined verification requirements, regulatory criteria, and decision-making thresholds. Recognizing that sustainable change requires more than procedural updates, CNL established a formal implementation plan to embed these governance improvements within the organization through awareness, training, and ongoing oversight activities.

Outcome: These changes establish clear accountability, strengthen oversight, and ensure that decisions regarding off-site release are made using appropriate technical expertise and verification. The implementation plan, combined with training and awareness activities, helps ensure that the strengthened governance model is consistently understood and applied across the organization. This directly addresses the governance weaknesses identified in the RCA and reduces the likelihood of future release decisions being made based on incomplete or insufficient information.

Corrective Action 2: Strengthen Requirements for Sewage and Septic Waste Management

Intent: Clarify requirements for the management and disposition of sewage and septic waste.

Implementation: The *Management of Waste* procedure was revised to explicitly address sewage and septic waste streams, including sewage waste transported off-site for processing, storage, or disposal.

Outcome: These changes provide clear direction for managing sewage waste and reducing ambiguity regarding regulatory and operational requirements. This strengthens waste characterization practices and supports more consistent and defensible decision-making.

Corrective Action 3: Formalize Radiological Controls for Sewage and Pump-Out Activities

Intent: Replace informal guidance with formal, controlled processes governing hydro-vacuum and sewage pump-out activities.

Implementation: Previous informal guidance was limited to hydro vacuum activities and was replaced with a Radiological Work Permit (RWP). The RWP establishes defined approvals, quantitative thresholds, risk-informed decision-making requirements, worker protection measures, and enhanced documentation and traceability. Use of pumper trucks is managed through established Integrated Work Control processes, with activity-specific radiological controls developed as required.

Outcome: These controls strengthen operational oversight, improve consistency in execution, and ensure radiological considerations are formally integrated into planning and decision-making. This addresses weaknesses identified in the RCA related to implementation of radiological controls and field execution.

Supporting Training and Awareness Activities

To reinforce the corrective actions, targeted awareness and training sessions were delivered to Health Physics, Radiation Protection, Waste Management, and Waste Advisor personnel. These activities strengthened understanding of waste characterization, release authorization requirements, verification expectations, and individual accountabilities. Lessons learned sessions were also conducted to communicate the causes of the event and reinforce conservative decision-making and questioning attitude principles.

Remedial Action 1: Knowledge Management Review

Intent: Evaluate how organizational knowledge, including legacy site knowledge, is identified, retained, and applied in operational decision-making.

Implementation: CNL completed a gap analysis of its knowledge management practices. The review confirmed that CNL has robust governance, information management, and training processes, while also identifying opportunities to better integrate and systematically manage legacy site knowledge relevant to waste characterization and operational decisions. The identified opportunities have been incorporated into a structured improvement plan.

Outcome: The gap analysis confirmed that CNL has a strong foundation for knowledge management and identified opportunities for enhancement. Whilst there is a strong foundation for knowledge management captured in documentation, reports and databases, there is an opportunity for improvement in effective capture and sharing of expert knowledge. This opportunity has been formalized within an improvement plan that will strengthen the identification, retention, and application of organizational and legacy site knowledge through enhancing the existing lessons learned process. The planned improvements will support more robust decision-making and help ensure that relevant historical and operational knowledge is more easily available and taken into account when making future waste characterization and operational decisions.

Remedial Actions 2 and 3: Organizational Learning and Awareness

Additional remedial actions focused on strengthening organizational learning and reinforcing expectations. Contractor Management awareness training was developed for project personnel working alongside provincial contractors, and a *Lessons Learned* bulletin was issued across the organization to communicate the causes of the event and key learning points.

These actions support broader organizational awareness and help ensure the lessons from this event are applied across CNL programs and projects.

Effectiveness Review

The final corrective action is a formal effectiveness review scheduled for 2026 November. The review will assess whether the implemented actions have effectively addressed the causes of the event and whether the associated improvements remain embedded and sustainable within the organization. Results of the review will be provided to CNSC staff upon completion

4. Sustaining Performance

Implementing corrective actions is only the first step in addressing an event; ensuring those actions remain effective over time is critical to preventing recurrence. Following this event, expectations for conservative decision-making and a questioning attitude were reinforced with all CNL staff through an OPEX bulletin. To sustain performance, CNL is enhancing its effectiveness review process through updated review requirements, targeted assessor training, and more rigorous verification of corrective action implementation and outcomes. The effectiveness review for this event will be conducted under this strengthened process and is scheduled for 2026 November. In addition, a follow up self-assessment will be conducted one year after completion of the initial effectiveness review to provide further assurance that implementation is sustained.

5. Indigenous and Public Communication

On discovery of the initial event, CNL launched a rigorous proactive communications effort to ensure transparency, build understanding, and enable productive discussions. CNL was able to leverage many of the existing relationships, built over many years, to create opportunities for dialogue. Numerous engagements were held with an array of interested audiences including local elected and municipal officials, the local Environmental Stewardship Council, as well as representatives of Indigenous nations and organizations. A significant effort was put forth to ensure that questions and concerns were addressed in a timely fashion.

One of the guiding principles of CNL's *Public Information and Disclosure Program* is to be responsive to the needs and interests of the many audiences defined in that document, ensure that information is made available to those audiences on the topics that are of interest to them.

In the period following the 2025 December 12 update to the Canadian Nuclear Safety Commission regarding this inadvertent off-site disposal of contaminated sewage sludge, CNL continued to execute against the commitments outlined in the *Public Information and Disclosure Program*, providing information as desired by our audience and allowing their interests to guide our communications activities. A wide array of events and engagements for both public audiences and Indigenous nations have been held, allowing the opportunity for further information sharing about the event should questions or concerns linger. These include events such as updates to County Council, public community events, bilateral discussions with municipal officials, and frequent and ongoing working groups established with Indigenous nations and organizations. An update on this event was included in the 2026 June Environmental Stewardship Council meeting.

6. Conclusion

CNL accepts full responsibility for the B423 event and the decisions that contributed to its occurrence. The event has been fully remediated, with all contaminated material recovered and safely managed, and there is no ongoing risk to workers, the public, or the environment.

The Root Cause Analysis identified fundamental gaps in governance and decision-making practices. In response, CNL has implemented a comprehensive and integrated suite of corrective actions that directly address these gaps. These include strengthened corporate governance over off-site material release, clearer accountabilities for decision-making, enhanced verification and authorization processes, and reinforced expectations for conservative decision-making and a questioning attitude.

CNL has completed the corrective and remedial actions identified through the RCA and has established additional improvement initiatives to further strengthen and sustain performance across the organization. Work continues to fully embed these improvements through implementation plans, training, oversight, and knowledge management enhancements. A formal effectiveness review is scheduled for 2026 November, and additional follow-up assessments are planned to confirm that the implemented improvements remain effective in practice.

CNL remains committed to transparency, accountability, and continuous improvement. We will continue to engage openly with the Commission, Indigenous nations and organizations, and local communities, and will report on the outcomes of our ongoing monitoring and assessment activities.