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Ms. Alison O'Connor
Project Officer, Nuclear Processing Facilities Division
Canadian Nuclear Safety Commission
P.O. Box 1046, Station B
Ottawa, Ontario
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K1P 5S9

Subject: PTNSR (2015) Consignor Full Report – Event of June 19, 2025

Dear Ms. O'Connor,

This letter is intended to retroactively fulfill the reporting requirements of the *Packaging and Transport of Nuclear Substances Regulations (2015)* (PTNSR) with respect to a recent dangerous occurrence (as defined by PTNSR 35 (b) and (d)) that involved SRB Technologies (Canada) Inc. as a consignor.

Information required in the preliminary report

Location of the dangerous occurrence	Canadian Nuclear Laboratories (CNL) 286 Plant Road Chalk River, ON
Circumstances of the dangerous occurrence	At 1221h on June 19, 2025, SRBT (the consignor) was notified by the consignee (CNL) that a palletized Class 7 shipment received and accepted on June 18, 2025, containing sixteen (16) Type 'A' packages, and two (2) Excepted packages, had shown evidence of leakage of its contents and/or escape of radioactive material from a package. CNL reported that after piercing the plastic wrapping that covered all packages on the pallet, a measurement of "6 DAC" was obtained. No tritium was measured at the base of the palletized shipment. SRBT contacted CNL by phone to discuss the specific circumstances of the event. It was determined that CNL had taken reasonable actions to resolve the problem safely, and that there was no significant risk to persons or the environment stemming from this event.
Any actions that SRBT (as the consignor) has taken or proposes to take with respect to the dangerous occurrence	SRBT communicated with CNL by email the following day, with a fulsome report on the details of the shipment from the perspective of the consignor, as well as a commitment to review the specifics of the shipment in question and develop actions to prevent recurrence.

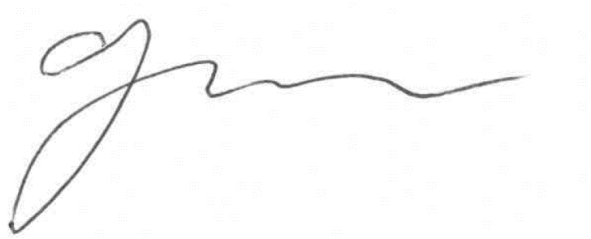
Information required in the full report

The date, time and location of the dangerous occurrence	Date: • June 18, 2025 Time: • not specifically known; believed to be between 0900 – 1400h, as per shipment agreement with CNL. Location: • Canadian Nuclear Laboratories (CNL), 286 Plant Road, Chalk River, ON
The names of the persons involved	Not specifically known by SRBT as consignor
The details of the packaging and packages	The shipment in question consisted of sixteen (16) UN2915 Type 'A' packages containing expired or non-conforming self-luminous tritium lights, and two (2) UN2911 Excepted packages of crushed borosilicate glass. These eighteen packages were arranged on a pallet and then enclosed in plastic skid wrap. The shipment was assessed for removable contamination, and was found to meet the criteria for shipping (i.e. < 4.0 Bq/cm^2 of removable beta-emitting contamination (tritium), averaged over a 300 cm^2 area). The shipment delivered to and accepted by the consignee on June 18, 2025. On June 19, 2025, SRBT as consignor, was notified by CNL as consignee, that: *"during incoming inspections High levels of tritium were measured under the plastic wrap."* CNL also noted that: *"we found 6 DAC in the plastic wrap – no tritium found at base of packaging."*
The probable cause	After reviewing the shipment details, SRBT concluded that the probable cause of the fugitive airborne tritium within the plastic wrap is most likely attributable to the breakage of a light inside of one of the Type 'A' packages during transport or upon delivery to the consignee.

The effects on the environment, the health and safety of persons, and national or international security that have resulted or may result	The reported measurement obtained by the consignor of 6 DAC suggests that the airborne concentration of material in the small space beneath the plastic wrapping was on the order of approximately 2.22 MBq/m^3 (2.22E+06 Bq/m^3, or, 60 µCi/m^3 in non-SI units) of elemental tritium gas. Based upon the dose coefficients described in CSA N288.1:20, *Guidelines for modelling radionuclide environmental transport, fate and exposure associated with normal operation of nuclear facilities,* an adult person inhaling elemental tritium is postulated to receive an effective dose of 2.0E-15 Sv per Bq inhaled. As per N288.1:20, based on a 95th percentile breathing rate of 8,400 m3 per year, a nuclear energy worker <u>continually</u> exposed to the reported concentration of elemental tritium gas over the course of a twelve-hour workday (approximately 11.5 m^3 of inhaled air) would thus receive an effective dose of: H_{eff} = (2.22E+06 Bq / m^3) x (11.5 m^3) x (2.0E-15 Sv / Bq) = 5.11E-08 Sv = 0.051 µSv This conservatively-calculated effective dose estimate demonstrates that the likelihood of any safety-significant effects on the environment, or the health and safety of persons occurring is extremely low. There are also no effects on national or international security as a result of this event.
The doses of radiation that any person has received or is likely to have received	As noted above, a continuous exposure to the measured concentration of airborne contamination reported would result in an estimated dose of radiation of 0.051 µSv to an adult worker. The true dose of radiation received by any person involved in the dangerous occurrence is very likely to be far lower than this conservatively-calculated value.
The actions taken to remedy the failure to comply or the dangerous occurrence and to prevent its recurrence	From the perspective of the consignor involved in this dangerous occurrence, to prevent recurrence of this type of dangerous occurrence, SRBT will improve how palletized shipments of this nature are physically arranged, to further dampen forces acting on the tritium lights within the Type ‘A’ packages during shipment. This includes assessing improvements to how shock-absorbing materials are used within the can of tritium lights, and ensuring that all Type ‘A’ packages are oriented vertically on the pallet (i.e. not laid on their sides) upon wrapping of the pallet before shipment. These changes will be incorporated into the associated management system procedures that govern the packaging of these items for shipment, in compliance with SRBT change control processes.

Please don’t hesitate to contact me should you have any questions or require clarification.

Best Regards,



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