



## Event Initial Report

## Rapport initial d'événement

### Metro Testing & Engineering Ltd.

Exposure of a person in excess or potential for excess of the applicable radiation dose limits prescribed by the *Radiation Protection Regulations*

### Metro Testing & Engineering Ltd.

Exposition d'une personne qui a dépassé, ou qui est susceptible d'avoir dépassé, les limites de dose de rayonnement applicables prescrites dans le *Règlement sur la radioprotection*

Commission Meeting

Réunion de la Commission

September 12, 2024

Le 12 septembre 2024

# EVENT INITIAL REPORT (EIR)

E-DOCS-# 7279893

EIR: Exposure of a person in excess or potential for excess of the applicable radiation dose limits prescribed by the Radiation Protection Regulation.

**Prepared by:** DNSR

<b>Licensee:</b> Metro Testing & Engineering Ltd.	<b>Location:</b> 6741 Cariboo Road (Unit 401), Burnaby, BC
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<b>Date Event was Discovered:</b> 2024-04-12	<b>Have Regulatory Reporting Requirements been met?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>  <b>Proactive Disclosure:</b> Licensee: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> CNSC: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Overview

**Reporting Criteria: 1)** Exposure of a person, organ or tissue to radiation in excess or potential for excess of the applicable radiation dose limits prescribed by the *Radiation Protection Regulations*.

**Description:**

On April 12, 2024, the newly appointed Corporate Radiation Safety Officer (CRSO) from Metro Testing & Engineering Ltd. informed the CNSC that a survey of the occupied areas around the primary storage location in Burnaby, BC, identified a dose rate exceeding the 2.5 µSv/hr limit for occupied spaces.

Metro Testing & Engineering Ltd. is licensed by the CNSC for the possession, transfer, use and storage of portable gauges under CNSC licence no. 16967-3-25.0 and has a total of six (6) storage locations throughout BC and Alberta. As per a condition of their licence (Licence Condition 2575-2): *“The licensee shall ensure that the dose rate at any occupied location outside the storage area, room, or enclosure resulting from the substances or devices in storage does not exceed 2.5 µSv/h and have measures in place to ensure that the dose limits in the [Radiation Protection Regulations](#) are not exceeded as a result of the substances or devices in storage.”*

The CRSO verified the dose rate at each occupied area around the Burnaby storage location and the highest reading was 4.5 µSv/h with 10 gauges in storage. Since the survey indicated that the dose rate exceeded the limit in Licence Condition 2575-2, immediate corrective actions were taken by the licensee. The portable gauges were moved within the storage room to increase their distance from the occupied areas. The new configuration decreased the dose rate to less than 1.5 µSv/h. The licensee also added shielding, in the form of concrete blocks around the portable gauges, further reducing the dose rate in the occupied areas to less than 0.57 µSv/h.

The licensee performed preliminary dose calculations based on the conservative assumption that all locations surrounding the storage room were continually occupied and found that some laboratory technicians could have received an effective dose exceeding the 1 mSv per year limit for non-Nuclear Energy Workers (Non-NEW). To more accurately assess the effective dose rate received by workers, the CRSO recalled gauges that were in the field and temporarily moved the storage setup back to its original configuration. The licensee typically stored 10 portable gauges, however, for the dose reconstruction, the licensee took a more conservative approach and placed 14 portable gauges in the storage area. Several dose rate readings were taken at all workstations near the portable gauge storage area. An accurate occupancy factor for each worker, based on interviews, was determined, and used to estimate the annual doses to the laboratory technicians.

Based on the licensee’s investigation, it is likely that 6 laboratory technicians (non-NEWs) have exceeded the 1 mSv effective dose limit for 2021, 2022 and 2023. The licensee has been at this location since March 2021 with approximately the same occupancy rates each year.

**Estimated doses received:**

The annual doses received by the 6 workers for 2021, 2022 and 2023 were estimated at 4.73 mSv, 3.46 mSv, 2.47 mSv, 1.64 mSv, 1.23 mSv, and 1.03 mSv which is classified at level 1 (anomaly) on the International Nuclear and Radiological Event Scale (INES). There are no adverse health and safety consequences, or appreciable increased risks, associated with these doses, which are well below the effective dose limits for NEWs, and roughly within the range of annual background radiation levels across Canada.

The licensee determined that the positions of the laboratory technicians will continue to be considered as non-NEW given that they do not work with portable gauges.

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### Meetings with the affected workers:

The licensee met with all affected laboratory technicians to inform them of the incident and to provide general radiation safety information. They also conducted additional meetings on the amount of radiation that the workers may have received and how to interpret those values. In addition, private meetings were conducted to inform them individually of the calculated dose they may have been exposed to and provide an opportunity to ask additional questions.

### Status of other storage locations:

According to the information provided by the licensee, the 5 other locations were compliant with Licence Condition 2575-2. Readings were taken and the dose rates were less than 2.5 uSv/h. Furthermore, no other locations would have seen doses like the Burnaby location as this is their main storage site which is used to store several portable gauges at the same time.

### Cause(s):

The licensee failed to ensure that the dose rate at any occupied location outside the portable gauge storage area did not exceed 2.5 µSv/h and did not have measures in place to ensure that the dose limits in the *Radiation Protection Regulations* were not exceeded.

### Impact of the Event

#### On People:

How many workers have been (or may be) affected? 6

How many members of the public have been (or may be) affected by the event? 0

#### How were they affected?

The laboratory technicians (Non-NEWs) likely received an effective dose exceeding 1 mSv for 2021, 2022 and 2023. This was due to the licensee's failure to ensure that the dose rate at any occupied location outside the portable gauge storage area did not exceed 2.5 µSv/h.

**On the Environment:** No effect to the environment.

**Other Implications:** There are no additional implications. The licensee shared the information across the whole organization using their intranet site and via a company-wide email. Additionally, surveys were taken around storage locations at every site and dose rates were below 2.5 µSv/h.

### Licensee Actions

**Taken or in Progress:** The licensee took immediate corrective action upon discovering the issue at the Burnaby location. The new configuration decreased the dose rate to less than 1.5 µSv/h. which is compliant with the licence condition. The licensee also added significant shielding, in the form of 2 rows of concrete blocks around the gauges, further reducing the dose rate in the occupied area to less than 0.57 µSv/h with 10 gauges in storage. Surveys were conducted at the other 5 storage locations and the dose rates were below 2.5 µSv/h.

**Planned:** N/A

### CNSC Actions

**Taken or in Progress:** CNSC staff reviewed the information provided by the licensee in their investigation report and concurred with the calculated doses to the workers, which were based on the licensee's dose rate measurements and occupancy factor assessment. The actions taken by the licensee to resolve the issue are appropriate.

**Planned:** CNSC is planning to conduct an inspection in July 2024 at this specific location to confirm the corrective measures.

### Additional reporting to the Commission Members anticipated:

Yes

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<input checked="" type="checkbox"/> No If Yes, provide method of reporting: N/A	
Name and Title	Signature
<b>Claire Pike</b> Acting DG DNSR	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;"> <b>Pike, Claire</b>                      Acting Director General                 </div> <div style="font-size: 8px; text-align: right;">                         Digitally signed by Pike, Claire                          DN: cn=CA, o=NSC, ou=CNRS-CCSN, cn="Pike, Claire"                          Reason: I am the author of this document                          Location:                          Date: 2024.06.18 14:59:38 +03'00'                          Field PDF Editor Version: 13.0.1                     </div> </div>
	Date