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## **Event Initial Report**

## **Rapport initial d'événement**

**Air Canada**

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**Air Canada**

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**Report on an overexposure to a member of  
the public during transport of packages  
containing nuclear substances**

**Rapport concernant une surexposition à  
un membre du public lors du transport de  
colis contenant des substances nucléaires**

Commission Meeting

Réunion de la Commission

**August 22, 2018**

**Le 22 août 2018**

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laissée en blanc*



To Marc Leblanc  
Commission Secretary

A c.c. Ramzi Jammal

From *Mark Bredjes Par*  
Colin Moses  
De Director General, Nuclear Substances Regulation

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Our File – Notre référence e-DOC: 5561734 4.09.02	
Your File – Votre référence	
Date July 9, 2018	Tel. No. – N° de tél. 613-993-7699

Subject **Report on an overexposure to members of the public during transport of packages**  
Objet **containing nuclear substances**

CNSC staff is reporting to the Commission following a report received on June 6, 2018 from Air Canada Cargo, that one of their workers (not designated as NEWs) has been exposed to a dose of radiation in excess of the regulatory annual limit of 1mSv during transportation.

This report presents findings of CNSC staff's assessment of this event.

**OVERVIEW**

Air Canada handles a large volume of packages containing radioactive materials from various consignors. The majority of these packages contain medical isotopes, and depart from the airport in Montreal. As required by the *Packaging and Transport of Nuclear Substances Regulations, 2015* Air Canada has developed and implemented a radiation protection program to keep the amount of dose received by its employees and members of the public as low as reasonably achievable, taking into account social and economic factors. Air Canada, through its radiation protection program, maintains doses received by workers to less than 1 mSv per year. Air Canada's radiation protection program requires all workers that handle packages containing radioactive materials to wear personal dosimeters. These dosimeters are provided by Health Canada.

On April 10<sup>th</sup>, 2018 Air Canada received its end of year exposure report from the National Dosimetry Services (Health Canada). Upon review of this report, it was noted that the cumulative dose for the year of one employee had a reading of 1.06mSv for the period March 1, 2017 to February 28, 2018. Air Canada took immediate measures to ensure that the employee would no longer be handling packages containing radioactive materials and began an investigation into the matter.

In accordance with the *Packaging and Transport of Nuclear Substances Regulations, 2015*, all packages are assigned a Transport Index (TI) that is based on the radiation emitted from the package. As stated in CNSC's *Radiation Protection Program Design for the Transport of Nuclear Substances*, several studies show that handling less than a total of 300 TI of medical isotopes annually (regardless of individual package TI) is not likely to result in a total effective dose greater than 1 mSv per year.

As part of its radiation protection program Air Canada records the total number of TI which are handled by each employee. The total number of TI (76 TI) handled by this employee is relatively low compared to what other employees have handled and does not coincide with the dosimeter readings. No other employees have received doses that come close to the regulatory limits. The investigation also shows that this worker handled packages containing radioactive materials on only five days during this period and only on two days did he handle a significant number of packages.

The Air Canada investigation reviewed potential causes of the dose recorded by the personal dosimeter, including non-personal exposures (i.e. exposure of the dosimeter only as a result of being left in proximity of a radiation source or being exposed to other radiation sources, such as through x-ray scanners). However, Air Canada could not definitively identify any non-personal sources of the exposure. As a result, the dose was ascribed to the worker.

### **IMPACT OF THE EVENT**

Only one worker was involved in the event.

The worker was exposed to a dose 1.06mSv per year, which is 0.06 mSv above the regulatory limit of 1 mSv per year.

### **ACTIONS TAKEN BY THE CARRIER**

Air Canada has taken a number of actions to ensure that such an incident does not re-occur.

Air Canada has requested an immediate upgrade to its dosimetry service to include monthly returns and exposure reports. This will allow it to identify employees that have received exposures sooner and will allow them to take action much more quickly.

Air Canada will in addition provide Electronic Personal Dosimeters (EPD) to workers in Montreal. This will also provide the management team with daily dose reporting enabling them to identify and manage employees that may require ALARA training or who are to be pulled from radioactive duties.

Finally, Air Canada has introduced additional controls of dosimeters, holding them under lock and key and including procedures to sign out the correct dosimeter and return the dosimeter at the end of shift.

### **ACTIONS TAKEN BY CNSC**

CNSC staff reviewed the investigation report submitted by Air Canada, and are satisfied with the actions taken by the carrier to ensure that such an incident does not re-occur.

### **ACTIONS PLANNED BY CNSC**

CNSC staff will conduct a follow-up inspection before the end of the calendar year at the Air Canada facility to ensure that changes to their program have been effectively implemented.