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## Update from CNSC Staff

## Mise à jour du personnel de la CCSN

**CancerCare Manitoba:**  
Action item from September 16, 2020  
Commission Meeting (#21751)

**CancerCare Manitoba:**  
Mesure de suivi de la réunion de la  
Commission du 16 septembre 2020  
(#21751)

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Response from CNSC staff on the  
dose calculations

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Réponse du personnel de la CCSN au  
sujet du calcul des doses

Commission Meeting

Réunion de la Commission

January 21, 2021

Le 21 janvier 2021

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To Marc Leblanc  
Commission Secretary

A CC:  
Ramzi Jammal  
Executive Vice-President and Chief Regulatory  
Operations Officer

From Karen Owen-Whitred  
De Director General  
Directorate of Nuclear Substance Regulation

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Subject Cancer Care Manitoba EIR: Response to Commission member request for details of dose  
Objet calculation

**Background:**

During the September 16, 2020 Commission meeting, CNSC staff presented an Event Initial Response (EIR) report which detailed the events surrounding a radiation exposure to a Cancer Care Manitoba (CCMB) worker in excess of the regulatory dose limit of 1 mSv per calendar year for a person who is not a Nuclear Energy Worker. During the Commission meeting, CNSC staff presented the likely cause of the exposure based on the information provided by the licensee, the licensee’s calculation of the dose attributed to a non-occupational activity and CNSC staff’s assessment of the information.

During the meeting, the Commission requested additional details of the dose calculation and requested that staff provide this to the Commission in writing.

To clarify, Cancer Care Manitoba responded to this event by taking the actions as required by the *Radiation Protection Regulations*. The investigation that the licensee conducted in response to the elevated dosimeter result of 3.54 mSv for the individual in question revealed that there was no specific work-related event that could account for the recorded dose. Based on interviews with the individual, the only cause the licensee identified was a scenario in which the individual assisted a family member during a medical test involving nuclear substances. Based on the account provided by the worker and the outcome of the licensee investigation, the licensee purported that the dose attributed to the caregiving activity was approximately 1.39 mSv.

CNSC staff's role in this event was twofold:

1. To review the results of the investigation conducted by the licensee, and
2. To authorize the return to work of the affected individual pursuant to the regulatory requirements.

CNSC staff from the Radiation Protection Division reviewed the dose reconstruction provided by the licensee and this assessment is summarized in a memo dated May 21, 2020 (REF 5).

Based on CNSC staffs' considerations that the dose recorded on the dosimeter was low, that there was no risk to health, and that a portion of the dose was likely not occupational, CNSC staff recommended that the Designated Officer authorize the return to work of the affected worker.

### **Response to Commission comments:**

CNSC staff understand the Commission's concerns regarding the dose estimation methodology and accuracy. In addition, CNSC staff also agree that the goal of individual dose reconstruction is to use the most accurate available information whenever possible, in a risk-informed manner, in order to ensure the integrity of dose information in the National Dose Registry (NDR). However, it is often the case that a licensee's investigation is not conclusive and that the affected worker is not able to recount their activities with the necessary precision to reconstruct the dose with the desired level of accuracy.

In this case, certain assumptions were made by the licensee to explain the unusual dose after the fact. Both the licensee and CNSC staff accept that there will continue to be some uncertainty in the final dose estimate. It is staff's view that for the purposes of the EIR reporting to the Commission and for the authorization to return to work, this is acceptable. The basis for CNSC staffs' rationale and consideration in this matter was focused on the fact that the effective dose was low and that despite the uncertainties in this case, there was no risk to the health of the worker.

When reporting events such as this one, CNSC staff must strike a balance between communicating the initial details of the event with ensuring the protection of the impacted worker's privacy. Should the Commission need a more open discussion to address the Commission's concerns over the details, CNSC staff are available.

With respect to actions to correct dose records in Canada's National Dose Registry (NDR), CNSC staff understand the Commission's desire for accurate dose information. As previously indicated, CNSC staff will recommend a dose change when the circumstances leading to an anomalous dosimeter result are well understood and technically sound. This is the point at which accurate dose reconstruction becomes even more important. If however, there is significant uncertainty or lack of compelling evidence to support a dose change, it may not be possible for CNSC staff to approve the change. The decision to approve a dose change must rely on the information provided by the licensee, the account of the worker and the professional judgement of CNSC staff when reviewing all the information.

Moving forward, CNSC staff could direct the licensee to consider further refinements to the dose estimate. However, based on the information provided in the licensee's investigation, CNSC staff are of the opinion that additional effort to refine the dose estimate is not warranted in this case.

## REFERENCES

- [REF 1] CMD 20-M19.A Agenda for Commission meeting, September 16, 2020 (e-doc #6379760)
- [REF 2] CMD 20-M27 Event Initial Report: written submission from staff concerning worker exposure in excess of regulatory limit, September 3, 2020 (e-doc# 6370305)
- [REF 3] Dose calculation report. Prepared by Cancer Care Manitoba staff, May 7, 2020 (e-doc# 6388705). **PROTECTED B.**
- [REF 4] Final event report. Prepared by Cancer Care Manitoba staff, May 19, 2020 (e-doc# 6388796). **PROTECTED B.**
- [REF 5] Memo to Caroline Purvis from Diego Estan – Return to work memo. May 21, 2020 (e-doc# 6389788). **PROTECTED B.**

## Change Log

Version	Date	Comment
1	September 28, 2020	Original. Approved Oct 5, 2020.
2	November 26, 2020	Revised to include additional information regarding CNSC's staff role in return to work authorization and NDR dose change request processes.