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Common Errors to Avoid in Your X-Ray Plan Application to the Ontario MLITSD Webinar Q&A

These are questions we did not get the opportunity to answer fully during the webinar. Please note, the answers below are based on our readings and experience and are not legal, engineering, or medical advice. As noted in the webinar, we have not addressed questions directly relating to a specific plan or submissions. The webinar and this document are for general information only and the authors assumes no responsibility or liability in the application of the content herein. The content is correct for Ontario, Canada at the time of webinar delivery, June 30, 2026.

Q: When all walls within the X-ray room are covered with the same shielding, why would the shielding requirements not meet the proposed shielding requirements for only 1 wall while the other 3 walls are sufficient?

A: The amount of shielding required depends on several factors including whether the wall is a primary protective barrier or a secondary protective barrier; the maximum permissible weekly exposure, the workload, and the occupancy of all six adjacent spaces. If the shielding is for a primary protective barrier, the distance from the source to the area for which shielding is being calculated must be considered. If it is a secondary barrier, the distance from the source to the scatterer, the scatterer to the area, and the scattering angle are all considerations. Some of those factors would be common to all six adjacent spaces, but many would not.

Q: Do you have any recommendations for submitting forms for mobile X-rays that can move between many rooms?

A: Work with the Ministry. They will likely need a tailored solution specific to your case. You may end up being required to provide all floor plans for all rooms where the machine will be used.

Q: If the diagnostic imaging device (e.g. SPECT) does not need shielding, do these same requirements on X-ray floor plans need to be included when reporting to the Ministry? e.g. North sign, occupancy etc.

A: The webinar was for plans being submitted to the Ministry of Labour, Immigration, Training, and Skills Development (MLITSD). The assumption here is that this diagnostic imaging device is not being used for human health care, but rather for training with phantoms, veterinary, or other such purposes.

Those given are the minimum requirements and are required. If anything is missing, the Ministry can either assume there is no shielding or a worst-case scenario in place of the omitted information (i.e. no shielding materials indicated = no useful shielding for that barrier, etc.) or they are going to ask you to provide that information to meet the required standards.

Q: For intraoral dental radiology do you consider Primary and Secondary barriers (NCRP 145), or only secondary barriers (NCRP 177)?

A: The webinar was for plans being submitted to the MLITSD. The assumption here is that this diagnostic imaging device is not being used for human health care, but rather for training with phantoms, veterinary, or other such purposes.

You should consider both Primary and Secondary shielding requirements for any intra-oral dental X-rays. Most governing standards do not recognize the patient as a viable pre-shielding so the primary beam is assumed to be unaltered when taking dental X-rays (no reduction of beam strength due to patient).

Q: Does the Ontario MLITSD have specific guidance or different requirements for research laboratories using X-ray equipment compared with clinical diagnostic facilities?

A: The differences in requirements are within the exceptions for Sections 5, 6, 7, and 8 of Regulation 861 on the Ontario OHSA for an X-ray machine subject to the Healing Arts Radiation Protection (HARP) Act, and the HARP Act and Regulation themselves.

Q: How do you classify the inside of the Dental Intraoral Room:
- Supervised Area?
- Controlled Area?

A: The webinar was for plans being submitted to the MLITSD. The assumption here is that this diagnostic imaging device is not being used for human health care, but rather for training with phantoms, veterinary, or other such purposes.

An X-ray room is normally considered a controlled area, however, if the space is not 100% controlled during working hours or you are not sure, it may be in the best interest to consider it as an uncontrolled space. A Supervised Space, from a regulation standpoint, does not carry much weight given that it could mean non-X-ray workers can still access such a space and are then exposed to any possible X-ray radiation reaching that space.

Q: What value do you consider for Public Area permissible dose?
- 1 mSv/year (Public dose limit?)
- or do you consider a dose constraint: 10%? 30%? 50% of dose limit?
- or other?

A: This is a decision up to your shielding/safety approach. We will not give advice specific for this; however, Section 10(1) of Regulation 861 requires that workplaces adhere to ALARA principles (As Low As Reasonably Achievable) for workers. It is not best practice to design your shielding to be just below the limit as this carries the unnecessary risk of exceeding the limit due to any change in circumstances, whether in a single year or a multi-year window. The possibility of negative health effects on workers/occupants of your space along with legal consequences are not worth skimping on proper shielding design nor in alignment with ALARA.

Q: Can you let me know your process for exempting X-ray workers from wearing a dosimeter?

A: In Ontario, an X-ray worker means a worker who, as a necessary part of the worker's employment, may be exposed to X-rays and may receive a dose equivalent in excess of the annual limits set forth in Column 4 of the Schedule, which lists the dose equivalent annual limits in millisieverts for other workers. Section 12(1) states that "An employer shall provide to each X-ray worker a suitable personal dosimeter that will provide an accurate measure of the dose equivalent received by the X-ray worker." So, there is no way to exempt an X-ray worker from wearing a dosimeter.

In order to have workers not wear dosimeters, you would have to demonstrate that the workers would never be exposed to doses in excess of those in Column 4 of the schedule. This could be done using dose estimates, area monitors, etc.

Although not regulatory requirement, you may wish to read Section 5 of the Canadian Nuclear Safety Commissions REGDOC 2.7.2 Volume 1: Ascertaining Occupational Dose on ascertaining external dose through estimation.