



Appendix A: Radiation Exposure

Radiation exists in the natural environment and this natural background radiation may vary based on location.

Sources and Average Effective Dose from Natural Background Radiation in Selected Canadian Cities¹

Canadian City	Total (mSv/y)	Cosmic radiation (mSv/y)	Terrestrial background (mSv/y)	Annual inhalation dose (mSv/y)	Radionuclides in the body (mSv/y)
CANADA	1.8	0.3	0.2	0.9	0.3
Vancouver	1.3	0.5	0.1	0.4	0.3
Victoria	1.8	0.5	0.1	0.9	0.3

Sources: Gratsky et al., 2004, UNSCEAR 2008, Geological Survey of Canada

Ionizing radiation is used during a CT scan to produce the image. CT scans are about as much radiation as 200 chest x-rays.² Living at high altitude for a year would be the same as having four chest x-rays.² A ten-hour plane flight is about the same amount of radiation as one chest x-ray.²

The risk of an adult getting cancer from a CT scan is about 1 in 1000.² However, large studies have found some slight increases in cancer risk due to radiation exposure that is more pronounced amongst children.³ For this reason, children's medical imaging scans in particular try to follow the ALARA principle (As Low As Reasonably Achievable), to obtain images at the lowest dose of radiation possible.⁴

Image Gently Campaign's strategies to minimize radiation risk for children:³

- Image when there is a clear medical benefit
- Use the lowest amount of radiation for adequate imaging based on the size of the child
- Image only the indicated area
- Avoid multiple scans
- Use alternative diagnostic studies that do not use radiation (such as ultrasound or MRI) when possible.

References

1. Canadian Nuclear Safety Commission. *Radiation Doses*. <http://nuclearsafety.gc.ca/eng/resources/radiation/introduction-to-radiation/radiation-doses.cfm>
2. HealthLink BC. *Radiation Exposure: Risk and Health Effects*. <https://www.healthlinkbc.ca/health-topics/abl0600>
3. Image Gently. *What Parents Should Know about Medical Radiation Safety* (brochure). https://www.imagegently.org/Portals/6/Procedures/Image_Gently_8.5x11_Brochure.pdf
4. Image Wisely. *Pediatric CT and Image Gently*. <https://www.imagewisely.org/Imaging-Modalities/Computed-Tomography/Pediatric-CT-and-Image-Gently>