



A Web-based ICRP Resource to Inform Healthcare Providers on the Risks and Benefits of Ionizing Radiation in Medicine

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Task

- updating ICRP's 2001 web-based module:

ICRP RADIATION AND YOUR PATIENT: A GUIDE FOR MEDICAL PRACTITIONERS A web module produced by Committee 3 of the International Commission on Radiological Protection (ICRP). Ann. ICRP 31 (4); 2001
http://www.icrp.org/docs/Rad_for_GP_for_web.pdf

Spanish 2009

http://www.icrp.org/docs/Rad_for_GP_for_web_Spanish.pdf

Environment



ICRP



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Goals

- To provide health care providers, and health care students, with a credible source of information on radiation safety related to their practice
- To recognize existing sources of information
- To identify key pragmatic topics and questions
- To deliver the information in a user friendly, and succinct, Q & A format – Web Friendly
- **To highlight what ICRP contributes to the topic**

Topics

- **What is the ICRP?**
- **What is the International System of Radiological Protection**
- **What is ionising radiation?**
- **How is radiation dose measured?**
- **How much “natural” radiation are we exposed to?**
- **What are the benefits of diagnostic imaging and interventional procedures?**
- **What are the general risks of ionising radiation?**
- **What are the risks of ionising radiation in pregnancy?**
- **What are the risks of ionising radiation during breast feeding?**

Future Topics

- What are the risk of low dose radiation?
- Ethics related to the use of ionising radiation in medical research.
- Interventional therapeutic procedures.
- Radiation therapy procedures.
- Suggestions?

Communication

ICRP Publication 121

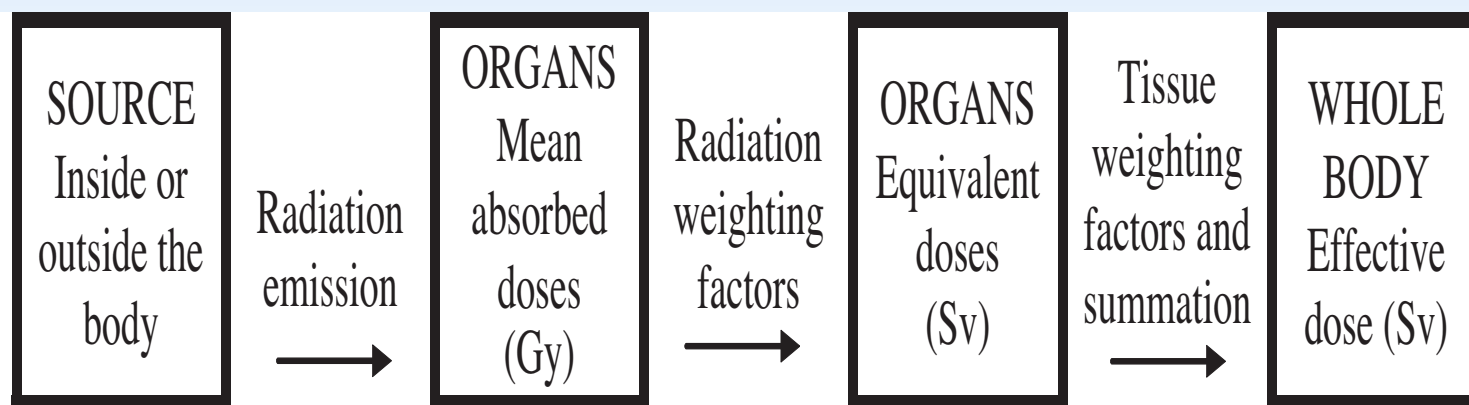


Fig. 2.1. The relationship between absorbed dose, equivalent dose, and effective dose.



Examples (1)

What are the benefits of diagnostic imaging and interventional procedures?

- It is hard to imagine a health care system without modern diagnostic imaging and image-guided interventional procedures. The relatively small risks of ionising radiation need to be put in context of significant patient care and management benefits related to appropriately protocolled and justified diagnostic or interventional procedures. One of the most important concerns in long, complex interventional procedures is to avoid the risk of skin burns. The web content provides further information about new technologies to minimize dose and track these doses in the patient electronic medical record.



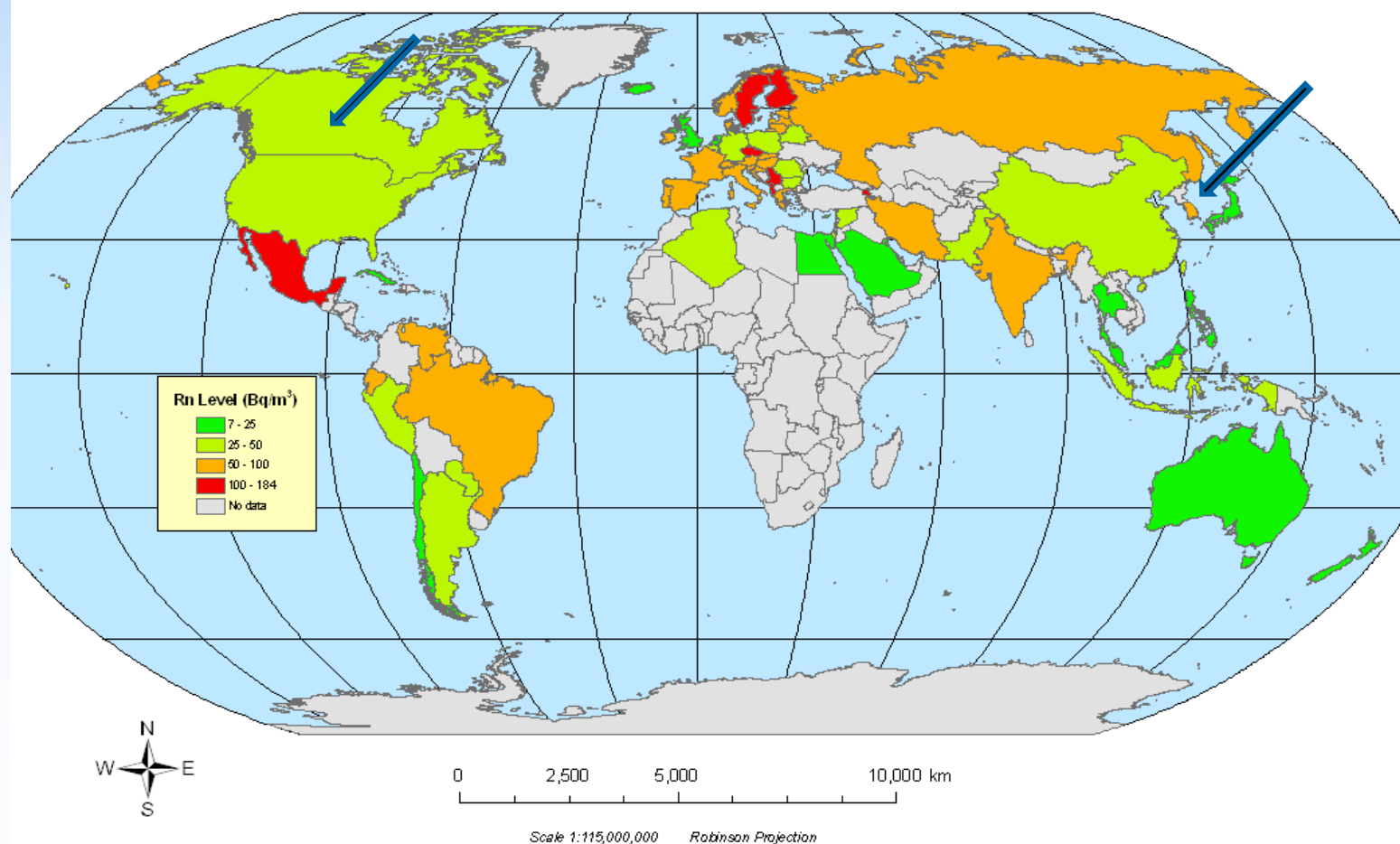
Examples (2)

How much “natural” radiation are we exposed to?

- Natural, or background, radiation originates from terrestrial (i.e. the earth) and cosmic (i.e. outer space) sources. Natural radiation levels vary somewhat depending on geology and altitude above sea level. The average background radiation dose is about 3 mSv. Radon gas emitted from the ground is the largest contributor to natural background radiation dose and radon is felt to be the most significant contributor to lung cancer incidence in non-smokers.

Arithmetic Mean Radon Level by Country

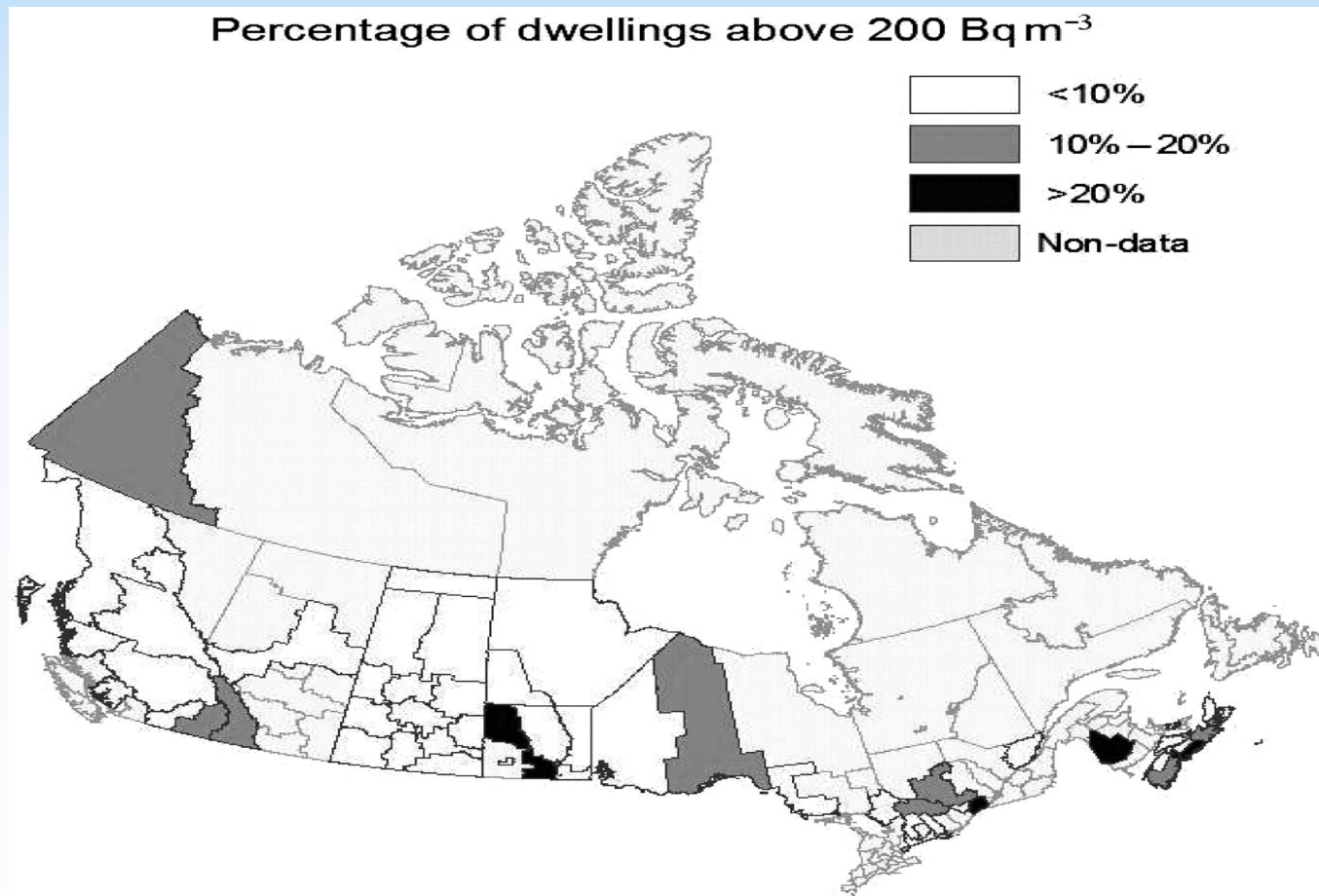
(Based on Data up to 2007)



Designed by J.M. Zielinski & H. Jiang

http://www.mclaughlincentre.ca/research/map_radon/Index.htm

Radon - Canada



<http://globalgeology.blogspot.kr/2011/03/truth-about-radon.html>

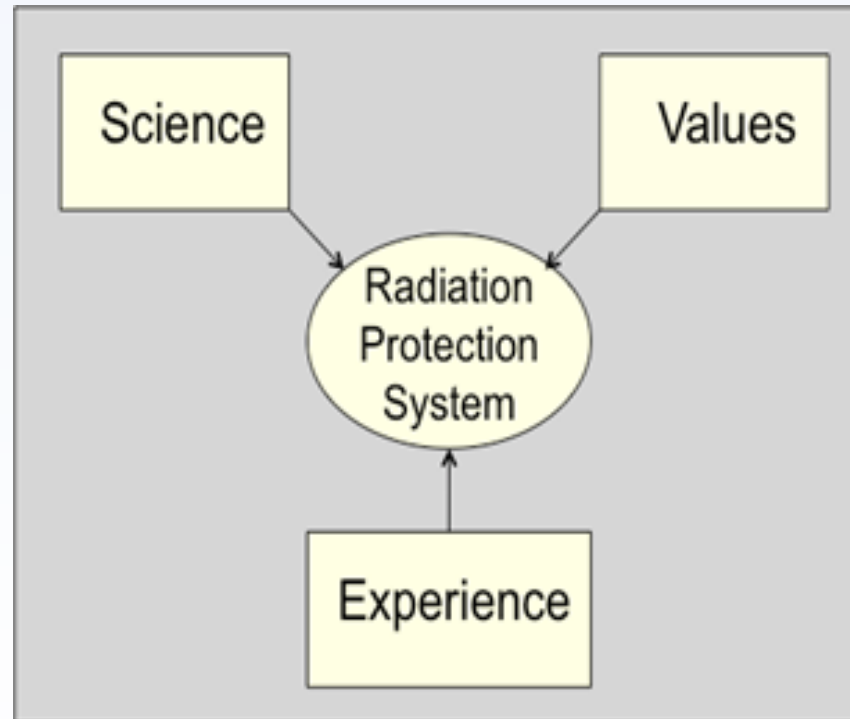
Examples (3)

What are the risks of ionising radiation to babies during breast-feeding?

- In nuclear medicine, some radiopharmaceuticals are excreted into breast milk. As a result, in addition to the mother herself, her mother's breast milk can be a radiation source to the baby. Depending on the specific radiopharmaceutical administered, guidelines range from no interruption, to interruption for a prescribed period of time, to total cessation of breast feeding. If a nuclear medicine exam is necessary while the patient is breast feeding consultation with a nuclear medicine specialist is advised.

Example (4)

What is the International System of Radiological Protection?



Example (4)

- Justification
 - *Any decision that alters the radiation exposure situation should do more good than harm.*
- Optimization
 - *All exposures should be kept as low as reasonably achievable, taking into account economic and societal factors with restrictions on individual exposure to limit inequities in the dose distribution.*

Example (4)

- Dose Limits
 - *The total dose to any individual from regulated sources in planned exposure situations other than medical exposure of patients should not exceed the appropriate limits recommended by the Commission*
- Diagnostic Reference Levels
 - *DRLs are used in medical imaging with ionising radiation to indicate whether, in routine conditions, the patient dose or administered activity (amount of radioactive material) from a specified procedure is unusually high or low for that procedure*

General Framework

- We are aware of the risks and benefits.
- As new information becomes available we are continually monitoring the risks and benefits AND taking the appropriate action.
- Patients, staff and the public are safe.
- (safety is not defined as “0” risk!)



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