



**Radiation Safety
Institute of Canada**
Institut de radioprotection du Canada

X-Ray Hazards in Manufacturing

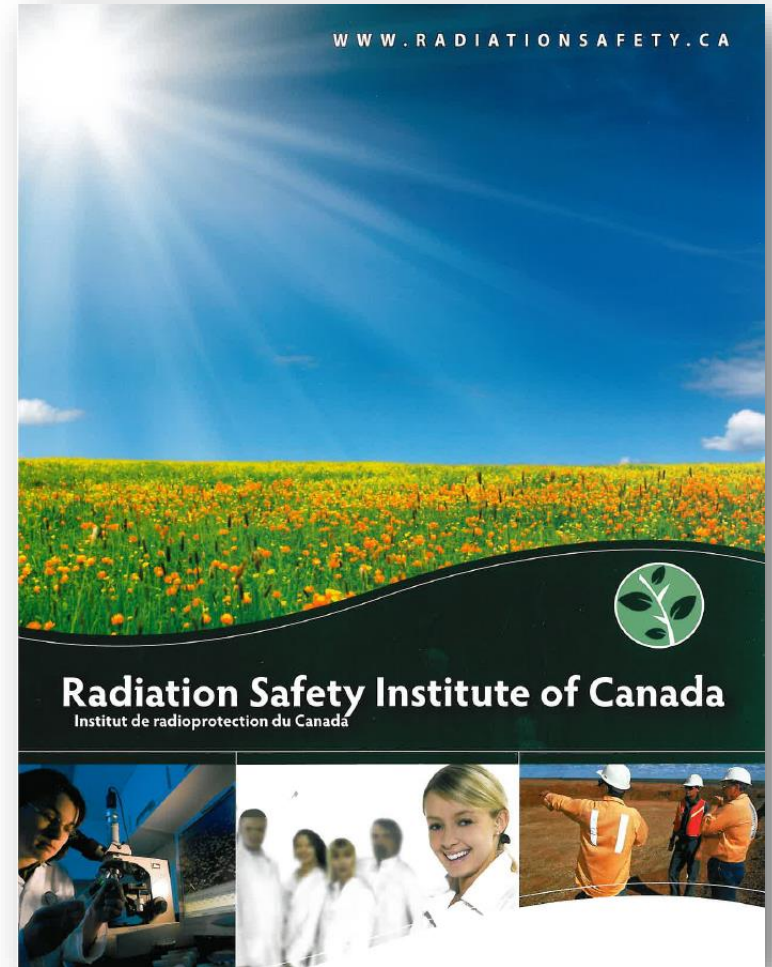
Private

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Not-for-profit

Sole concern is **radiation safety**

“Good Science in Plain Language”®



Exposure to radiation is widespread in Canadian workplaces



In all industrial sectors
In almost all service sectors



X-Ray Equipment



Images courtesy of ThermoFisher Scientific



Image courtesy of Mettler Toledo



Image from Smiths Heimann



We are talking about *ionizing* radiation

Radiation dose to workers can lead to:

Short Term – Acute effects

Long Term – Delayed Effects

Severity increases with dose

Probability increases with dose



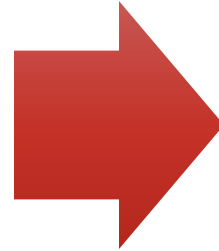
Exposure doses of radiation over a long period of time (months, years).

Generally associated with low doses received in the workplace.

The main concern with chronic low-dose radiation exposure is cancer.



Radiation exposure increases the **probability** of developing cancer.



Probability increases with dose received, assumed to be linear without threshold (LNT)

The only absolutely safe radiation dose is no dose.



- Dose limits can be misleading
 - People may feel that there is a safe level of exposure
- The **ALARA Principle**
 - Keep the radiation exposure *As Low As Reasonably Achievable*



Radiation exposure from x-ray equipment can be decreased by:

Time

Distance

Shielding



Worker Training

- Workers need to be aware of:
 - The hazards posed by the x-ray equipment
 - What they can do to keep their doses ALARA
 - What the employer obligations are
 - Who to contact if they have concerns





Thank You!

“Good science in plain language”®

For more information:

Website: www.radiationsafety.ca

Toll-free info: 1-800-263-5803

