



Radiation Safety
Institute of Canada
Institut de radioprotection du Canada

Radiation Safety &
Wellness Webinars



May 19, 2022

Preparing for an **X-Ray Inspection in a Health Care Setting** Based on Ontario Regulations and Best Practices

With Guest Lothar Doehler
Followed by Mandel Fraser from PowerYoga West

Good Science in Plain Language®



- Audio and video
 - During the presentation, from the presenters only
 - Use computer or telephone (call in)
 - Computer seems to give the best sound quality
 - Technical difficulties: 1-800-263-5803 x321
- Use the “Chat” feature to enter comments and questions
- Posted on webinar page
 - Video, answers to questions, copy of the slides
- Follow up email will be sent
 - Topics covered, time of attendance
- It may be possible to change your Zoom view if the controls are hiding the closed captioning.

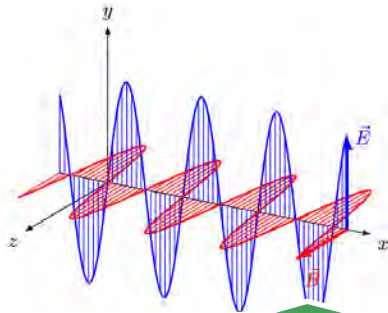


- Jurisdiction
 - CNSC
 - Health Canada
 - Provinces/Territories
- Interview
 - HARP Act
 - Facility organization
 - The role of the RPO
 - Worker credentials
 - Powers of inspectors
 - Additional advice
- Wellness

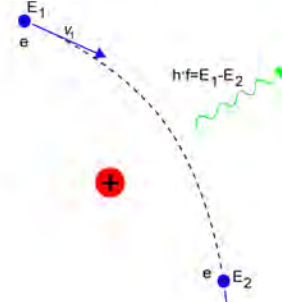




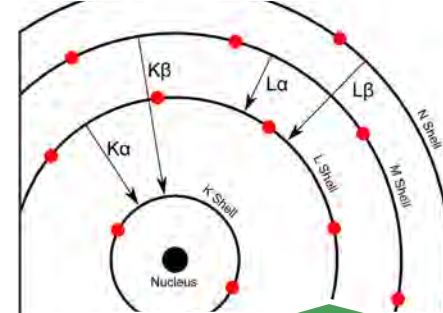
Why are X-rays Regulated



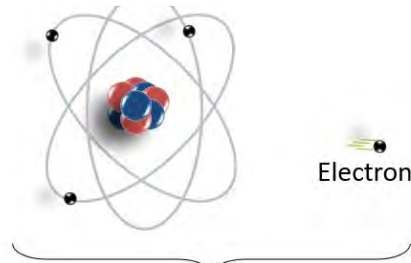
High energy
electromagnetic waves



Fast moving electrons slow
down/change directions

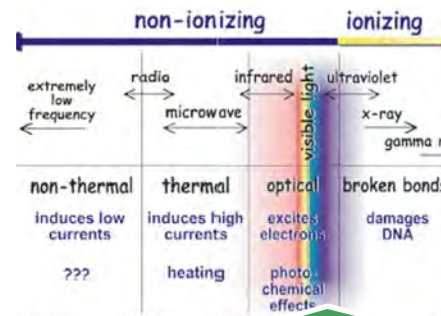


Fast moving electrons eject
bound electrons



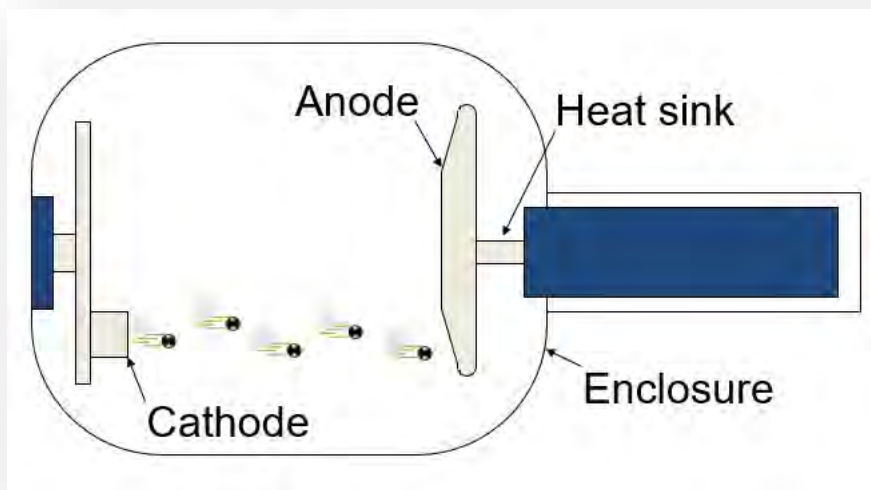
Ion Pair

Ionizing radiation



Health effects: heating,
photochemical, carcinogenic

EM-Wave.gif By And1mu - Own work, CC BY-SA 4.0, via Wikimedia Commons
Bremsstrahlung.svg - Journey234 assumed (based on copyright claims), Public domain, via Wikimedia Commons
CharacteristicRadiation.svg - HenrikMidtby, CC BY-SA 3.0, via Wikimedia Commons
NonionizingRadiation.jpg - Glennna Shields, U.S. Environmental Protection Agency, Public domain, via Wikimedia Commons



- Ionizing radiation
 - Radioactive isotopes
 - Human made equipment
- X-rays created by machines
 - Some built to purposefully create x-rays
 - Some built for other reasons



- Canadian Nuclear Safety Commission
- Regulates high-energy particle accelerators over 1 MeV
- Health care examples
 - High energy linear accelerators for cancer treatment
 - Cyclotrons for medical isotopes

Government of Canada / Gouvernement du Canada

Canada.ca | Services | Departments | Français

Canadian Nuclear Safety Commission

We regulate the use of nuclear energy and materials to protect health, safety, security and the environment.

We also implement Canada's international commitments on the peaceful use of nuclear energy, and disseminate objective scientific, technical and regulatory information to the public.

Most requested

- [CNSC updates on the Invasion of Ukraine by Russia](#)
- [Nuclear regulatory documents](#)
- [Radiation doses](#)
- [Nuclear facilities](#)
- [Types and sources of radiation](#)
- [Nuclear power plants](#)

The Commission

Scheduled Commission meetings and hearings, documentation, decisions and information on public participation

Protecting people and the environment

Environmental assessments, review of and participation in environmental protection activities

Emergency management and nuclear security

Plans and programs for emergencies and for non-routine conditions

Nuclear substances

Uses of nuclear substances and radiation devices in Canada, and information about certification

Waste

Regulation of nuclear waste in Canada, and maps of waste management facility locations

Nuclear reactors

Nuclear power plants, research reactors, small modular reactors and other shut-down or decommissioned reactors



CANADA

CONSOLIDATION

CODIFICATION

Radiation Emitting Devices Act

Loi sur les dispositifs émettant
des radiations

R.S.C., 1985, c. R-1

L.R.C. (1985), ch. R-1

- Import, sale lease
 - Except CNSC NSCA and TC MVSA
- RED Act and Regulation
 - Non-ionizing and ionizing
- Some provinces and territories require for equipment in use



20A

(Archived) X-ray Equipment in
Medical Diagnosis Part A

25

Short-Wave Diathermy
Guidelines for Limited
Radiofrequency Exposure

26

Guidelines on Exposure to
Electromagnetic Fields from
Magnetic Resonance Clinical
Systems

30

Radiation Protection in
Dentistry

35

Safety Procedures for the
Installation, Use and Control
of X-ray Equipment in Large
Medical Radiological Facilities

36

Radiation Protection and
Quality Standards in
Mammography



X-Ray Jurisdiction: Provincial/Territorial



Alberta



British Columbia



Manitoba



New Brunswick



Newfoundland & Labrador



Northwest Territories



Nova Scotia



Nunavut



Ontario



Prince Edward Island



Quebec



Saskatchewan



Yukon

- X-rays under 1MeV
- Not at Federally regulated workplaces
- Some refer to HC Safety Codes
- Typically, Ministry responsible for Occupational Health and Safety
- Ontario unique
 - 2 Ministries



Ontario 
**Ministry of Labour,
Training and Skills
Development**

MLTSD

- Worker safety
- Occupational Health and Safety Act
- Regulation 861: X-Ray Safety

Ontario 
Ministry of Health

MOH

- Patient safety
- Healing Arts Radiation Protection Act
- Regulation 543: X-Ray Safety Code



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- Not legal advice
- Follow regulations in your jurisdiction
- Points for consideration
- Best practices
- Not vetted by Ministries
- Detailed questions to relevant jurisdictional Ministry



- Interview Questions
- Questions posted in the chat room
- To ask a question verbally
 - use “raise hand” button
 - When asked, press spacebar or unmute to speak
- Questions we do not get to
 - Answers will be posted to our website and link to resources emailed out





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“Good science in plain language”[®]

Thank you for listening!

www.radiationsafety.ca

1-800-263-5803

info@radiationsafety.ca



- Ontario Ministry of Health: <https://www.ontario.ca/page/ministry-health>
- HARP Act: <https://www.ontario.ca/laws/statute/90h02>
- Regulation 543 – X-Ray Safety Code: <https://www.ontario.ca/laws/regulation/900543>
- Ontario Ministry of Labour, Training, and Skills Development:
<https://www.ontario.ca/page/ministry-labour-training-skills-development>
- OHSA of Ontario: <https://www.ontario.ca/laws/statute/90o01>
- Regulation 861 – X-Ray Safety: <https://www.ontario.ca/laws/regulation/900861>



- RED Act: <https://laws-lois.justice.gc.ca/eng/acts/r-1/FullText.html>
- RED Regulation: https://laws-lois.justice.gc.ca/eng/Regulations/C.R.C.,_c._1370/index.html
- Health Canada Safety Codes: <https://www.canada.ca/en/services/health/publications/health-risks-safety.html>
- Canadian Nuclear Safety Commission: <https://nuclearsafety.gc.ca/>
- Inspection of Lead Aprons: Criteria for Rejection: https://www.mpcphysics.com/documents/ApronInspectionCriteria_for_Rejection.8.pdf
- Particle Accelerators in Medicine: https://link.springer.com/chapter/10.1007/978-3-642-00875-7_14?noAccess=true