Radiation Safety Institute of Canada
Institut de radioprotection du Canada

Radiation Safety & Wellness Webinars

June 9, 2022

Transportation of Nuclear Materials

With Guest Brian Bjorndal , MSc, PPhys

Followed by Mandel Fraser from PowerYoga West

Good Science in Plain Language®

Radiation Safety Institute of Canada
Institut de radioprotection du Canada

Webinar Functionality

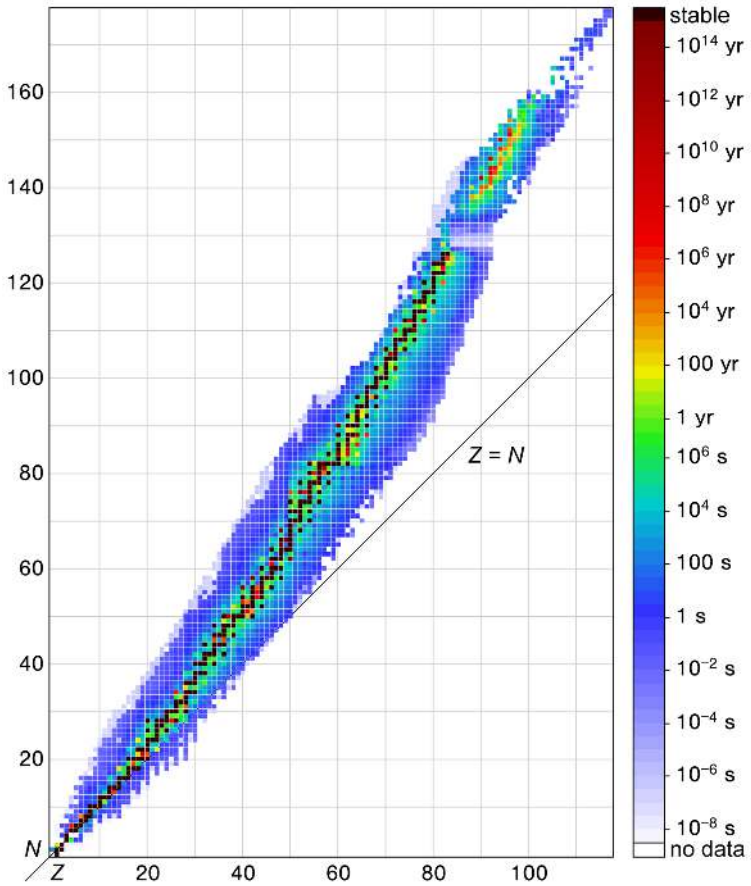
- Audio and video
  - During the presentation, from the presenters only
  - Use computer or telephone (call in)
  - Computer seems to give the best sound quality
  - Technical difficulties: 1-800-263-5803 x321
- Use the “Chat” feature to enter comments and questions
- Posted on webinar page
  - Video, 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.

Outline

- Jurisdiction & Regulation Presentation
  - Nuclear Substances, Radiation Devices, and Prescribed Equipment
    - CNSC
    - Transport Canada
    - IAEA
  - NORM
    - TENORM
    - Canadian NORM Guidelines
- Interview
- Q&A
- Wellness

Radiation Safety Institute of Canada
Institut de radioprotection du Canada

Nuclear Substances

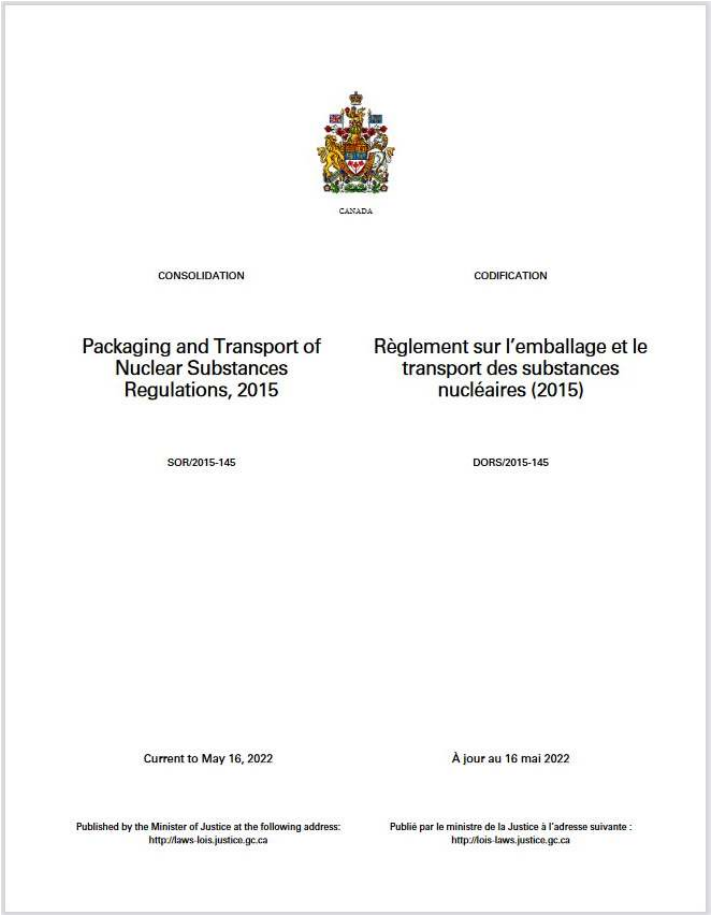


BenRG, Public domain, via Wikimedia Commons

- Element type → # of protons
- Isotopes of an element have different number of neutrons
- Stable isotopes
  - No radioactive decay
  - 254
- Unstable isotopes
  - Radioactive decay
  - Radioisotopes, radionuclides, radioactive
  - 84/~3000 natural
- Jurisdiction/regulation depends on natural or not & activity

Transport Regulations: CNSC

- Canadian Nuclear Safety Commission
- Nuclear Safety and Control Act
- Packaging and Transport of Nuclear Substances Regulations
- Refer to
  - Transport Canada's TDG Class 7
  - IAEA Regulations for the Safe Transport of Radioactive Material
    - Most recent version
- Licence exemptions given in NSRD Regulations, Sections 5-9.



CANADA

CONSOLIDATION

CODIFICATION

Packaging and Transport of Nuclear Substances Regulations, 2015

Règlement sur l'emballage et le transport des substances nucléaires (2015)

SOR/2015-145

DORS/2015-145

Current to May 16, 2022

À jour au 16 mai 2022

Published by the Minister of Justice at the following address: http://laws-lois.justice.gc.ca

Publié par le ministre de la Justice à l'adresse suivante : http://lois-laws.justice.gc.ca

Application
PTNS Regs, Section 2(1)

- The PTNS regulations apply to:
  - Packaging and transport of nuclear substances
  - Design, production, use and maintenance of packaging and packages
  - Preparation, consigning, handling, loading, carriage, storage during transport
  - Receipt at final destination
  - Unloading of packages.

Application - Exceptions

PTNS Regs, Section 2(2)

- The PTNS regulations do not apply if the nuclear substance is:
  - In a **person or animal** for medical purposes
  - In the **remains** of a person
  - In a **bioassay** sample
  - In human or animal **tissue** or a liquid scintillation medium, in limited amounts

Federal Highway Administration, Public domain, via Wikimedia Commons

Application - Exceptions

PTNS Regs, Section 2(2)

- Transported by a licensee on access controlled private property for the purpose of the licensed activity
- In consumer products where no licence is required following sale to the end user
  - *Nuclear Substances and Radiation Devices Regulations* Sections 6-8
  - Smoke detectors, tritium safety signs, devices with radium luminous compounds

Federal Highway Administration, Public domain, via Wikimedia Commons

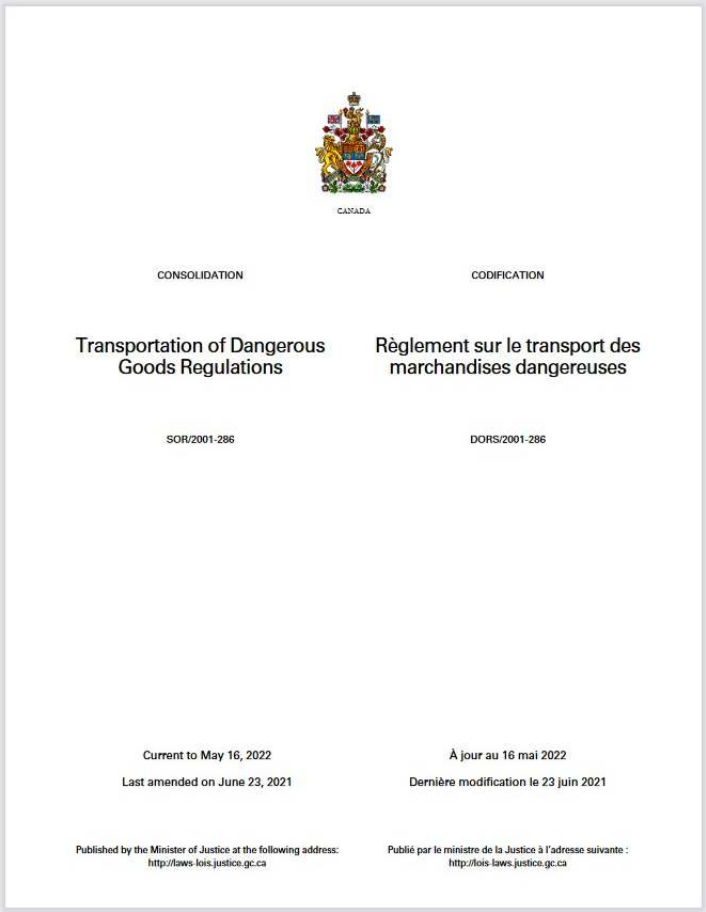
Application - Exceptions

PTNS Regs, Section 2(2)

- An integral part of a conveyance and required for transport purposes
- Natural material, ores in their natural state if the activity concentration is low
- Total activity does not exceed IAEA limits for an exempt consignment or exempt material
- Exceptions to the exceptions are given in Sections 6 & 7.

Federal Highway Administration, Public domain, via Wikimedia Commons

Transport Regulations: Transport Canada



CANADA

CONSOLIDATION

Transportation of Dangerous Goods Regulations

SOR/2001-286

Current to May 16, 2022

Last amended on June 23, 2021

Published by the Minister of Justice at the following address: http://laws-lois.justice.gc.ca

CODIFICATION

Règlement sur le transport des marchandises dangereuses

DORS/2001-286

À jour au 16 mai 2022

Dernière modification le 23 juin 2021

Publié par le ministre de la Justice à l'adresse suivante : http://lois-laws.justice.gc.ca

- Transportation of Dangerous Goods Act
- Transportation of Dangerous Goods Regulations
  - Class 7
- Refers to
  - CNSC, IAEA
- CANUTEC

CANUTEC

Government of Canada | Gouvernement du Canada

Search website | tc.canada.ca

MENU

Canada.ca > Transport Canada > Dangerous goods

CANUTEC

From: Transport Canada

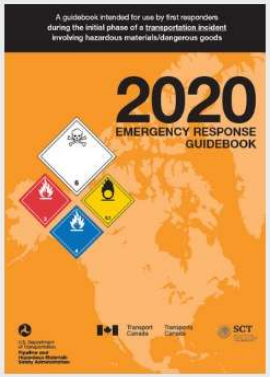
In the event of an emergency

In the event of an emergency involving dangerous goods, call CANUTEC at **1-888-CAN-UTEC (226-8832), 613-996-6666** or ***666 on a cellular phone.**

CANUTEC is the **Canadian Transport Emergency Centre** operated by the Transportation of Dangerous Goods (TDG) Directorate of Transport Canada. The Directorate's overall mandate is to promote public safety in the transportation of dangerous goods by all modes. CANUTEC was established in 1979 and is one of the major safety programs Transport Canada delivers to promote the safe movement of people and goods throughout Canada.

Canadian Consignors:

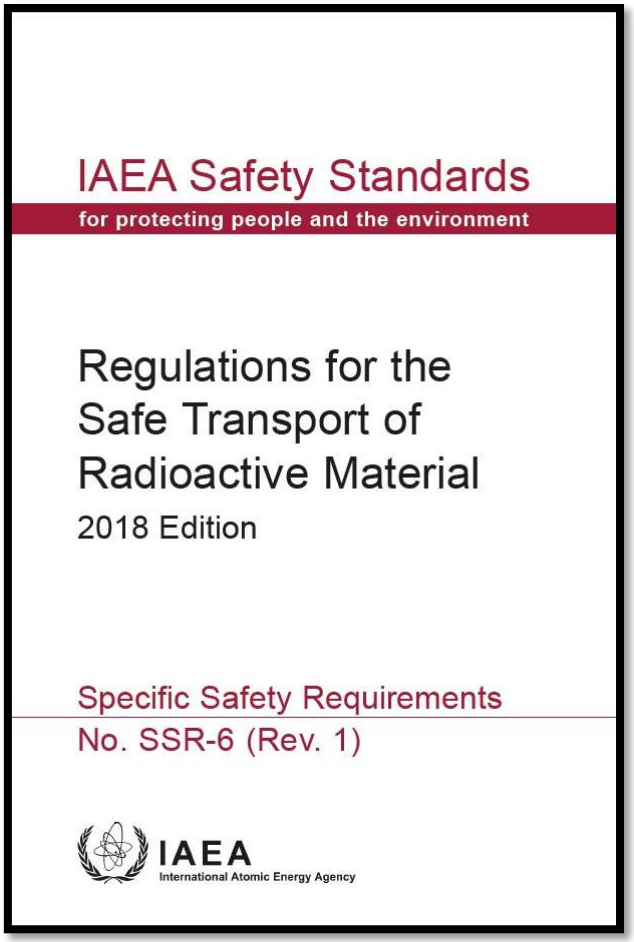
Register online to use CANUTEC's free, 24-hour emergency telephone number on your dangerous goods shipping documents.



The **Emergency Response Guidebook 2020** edition is now available.

Transport Regulations: IAEA

- International Atomic Energy Agency
  - Autonomous within UN
  - Scientific & technical co-operation within the nuclear field
- Safety Standards



NORM/TENORM

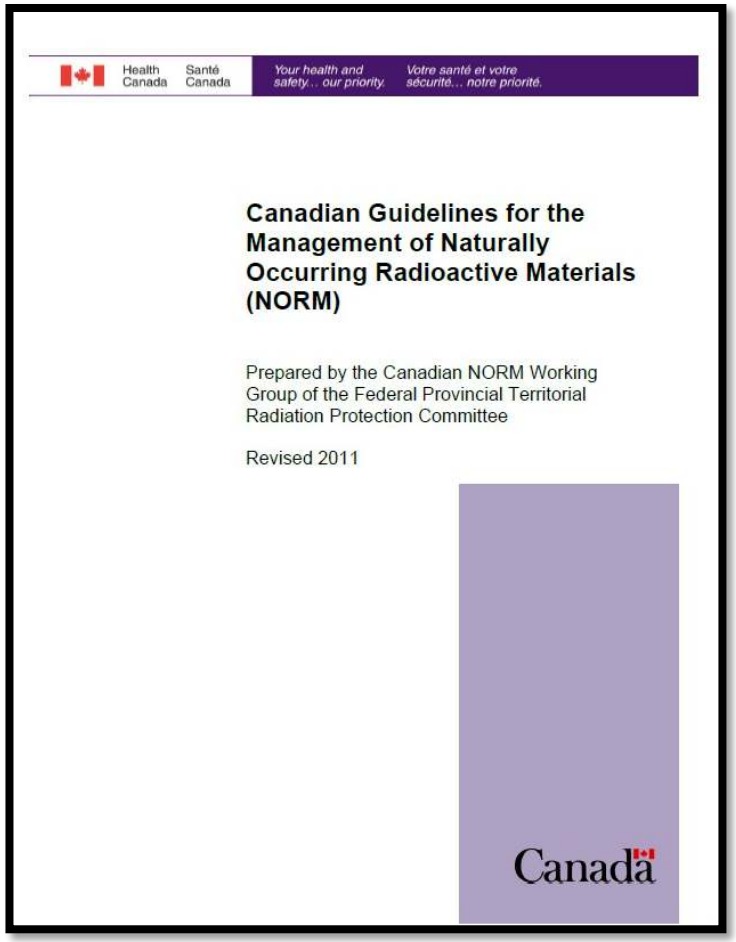
- NORM - Naturally Occurring Radioactive Material
- Excepted from CNSC's PTNSR
  - Specific activity ≤ 70 Bq/kg
  - Activity concentration ≤ 10x activity concentration limit for exempt materials values in IAEA Regs
    - These are very low
- TENORM – Technologically Enhanced NORM
  - Some TENORM will need to follow CNSC's PTNSR.

Provincial/Territorial Regulations

- NORM typically falls under provincial/territorial jurisdiction
- Federal Provincial Territorial Radiation Protection Committee created to harmonize standards of radiation protection

Canadian NORM Guidelines

- Candian Guidelines for the Management of Naturally Occurring Radioactive Materials (NORM)
- Includes guidance for compliance with federal transportation regulations
- Not law unless adopted into regulation
- NORM may appear in environmental and/or health and safety regulations, amongst others



Disclaimer

Arnold Lakhovsky, Public domain, via Wikimedia Commons

- Not legal advice
- Follow regulations from applicable regulator
- Points for consideration
- Best practices
- Not vetted by regulators
- Detailed questions to relevant jurisdictional regulator

Interview


RADIOACTIV
OFF
OFF


RADIOACTIVE
CONTENTS
ACTIVITY
TRANSPORT

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

Radiation Safety Institute of Canada
Institut de radioprotection du Canada

"Good science in plain language"®

Thank you for listening!

www.radiationsafety.ca

1-800-263-5803

info@radiationsafety.ca

References/Resources

Regulations:

- Nuclear Safety and Control Act: https://laws-lois.justice.gc.ca/eng/acts/n-28.3/
- Packaging and Transport of Nuclear Substances Regulations: https://laws-lois.justice.gc.ca/eng/regulations/sor-2015-145/index.html
- Transportation of Dangerous Goods Act: https://laws-lois.justice.gc.ca/eng/acts/T-19.01/
- Transportation of Dangerous Goods Regulations: https://laws-lois.justice.gc.ca/eng/regulations/SOR-2001-286/
- IAEA: https://www.iaea.org/publications/12288/regulations-for-the-safe-transport-of-radioactive-material

References/Resources

- https://www.iaea.org/topics/nuclear-science/isotopes/radioisotopes
- https://nuclearsafety.gc.ca/eng/resources/fact-sheets/packaging-and-transport-of-nuclear-substances.cfm
- https://nuclearsafety.gc.ca/eng/resources/educational-resources/feature-articles/You-Asked-Us-about-Transporting-Radioactive-Materials.cfm?pedisable=true
- http://nuclearsafety.gc.ca/eng/nuclear-substances/packaging-and-transport-of-nuclear-substances/index.cfm

Radiation Safety Institute of Canada
Institut de radioprotection du Canada

References/Resources

- https://nuclearsafety.gc.ca/eng/waste/faq/transport-of-used-nuclear-fuel/index.cfm
- http://nuclearsafety.gc.ca/eng/nuclear-substances/packaging-and-transport-of-nuclear-substances/faqs/index.cfm
- http://www.nuclearsafety.gc.ca/eng/nuclear-substances/packaging-and-transport-of-nuclear-substances/certification-process-for-transport-packages/index.cfm
- https://world-nuclear.org/information-library/nuclear-fuel-cycle/transport-of-nuclear-materials/transport-of-radioactive-materials.aspx