



Canadian Nuclear
Safety Commission

Commission canadienne
de sûreté nucléaire

Security of Nuclear Substances: Sealed Sources

REGDOC 2.12.3

**Toronto Outreach
October 30, 2013**

**Raphael Duguay, Security Advisor
Nuclear Security Division
Canadian Nuclear Safety Commission**

e-Docs # 4179757





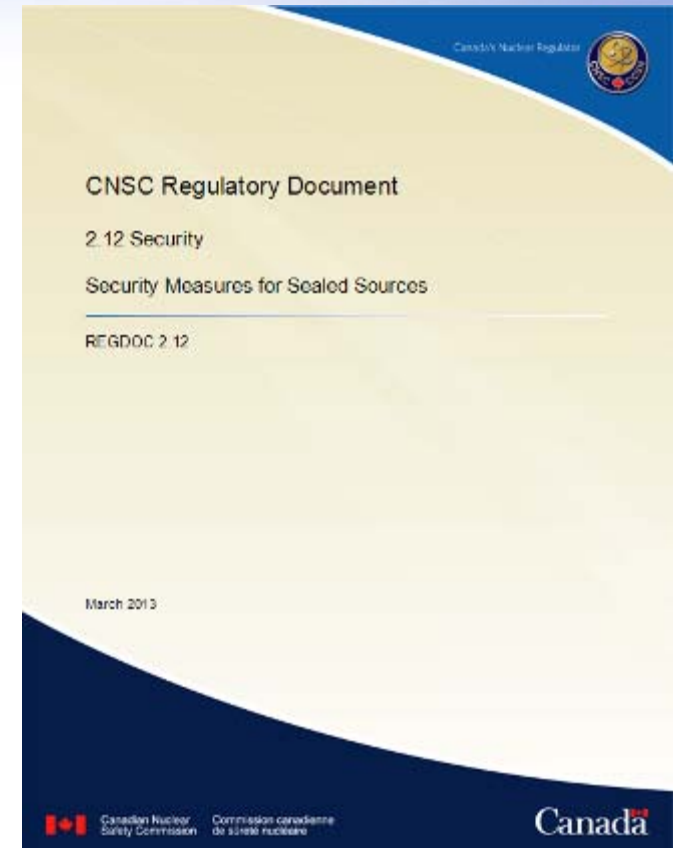
Presentation outline

- Purpose of this regulatory document
- Consequences of a radioactive dispersal device (RDD)
- Risk categories of radioactive sealed sources
- Technical requirements
- Administrative requirements
- Transport Security Requirements
- CNSC response to Public Feedback
- Implementation



Purpose of this regulatory document

- Sets out minimum security measures to prevent the loss, sabotage, illegal use, illegal possession or illegal removal of sealed sources
- Provides information and guidance on how to meet the security measures





Consequences and impact of a radioactive dispersal device (RDD)

Creating an RDD is difficult but...

- Usage of an RDD, even one that is not potent, may trigger panic out of proportion of true risk to human health and safety
- Negative physical and economic effects
- It's our role and responsibility to ensure the public is safe
- This regulatory document provides security measures to prevent the loss, sabotage, or illegal use / possession / removal of sealed sources



Source: DRDC



Source: DND



Risk categories of radioactive sealed sources in Canada





Application

Security Measures for Sealed Sources:

- Applies to transport by road and to storage within Canada.
- Will apply to category 1, 2 and 3 radioactive sealed sources.
- Will apply to aggregate quantities
- Provides guidance for category 4 and 5 radioactive sealed sources.
- Does not apply to radioactive sources within military or defence programs.



Category 1 - Examples



- Pool Type Irradiator
- Up to 37,000 GBq of Cobalt 60
- Category 1



Category 1 - Examples



- Teletherapy Medical Treatment
- 555 TBq Cobalt 60



- Gammacell 3000 - Blood Irradiator
- 110 TBq Cesium 137

Category 2 - Examples



- Radiography exposure devices
- 5.5 TBq Iridium-192



- High Dose Rate brachytherapy device
- Medical treatment device
- 370 GBq Iridium-192



Category 3 - Examples



- Logging source within transport container
- 740 GBq Americium-241/Be



- Industrial fixed gauge
- Used in industrial process control
- 370 GBq Cesium-137



Category 4 and 5 - Examples



- Portable Gauges
- Used in construction
- 370 MBq Cesium-137
with 1480 MBq Americium-241/ Be
- Category 4



- Electron Capture Detector
- 1400 MBq Nickel-63
- Category 5



Technical security measures

Technical security measures include requirements and specific guidance for:

- Access control
- Detection of unauthorized access
- Locking hardware and key control
- Physical barriers
- Alarm response protocol
- Inspection, maintenance and testing of security-related equipment
- Security officers (if they are employed by the licensee)





Technical Security Measures Category 1 & 2 & 3 Sources

- Implement a minimum of **two physical barriers**
- Implement effective **access control measures** to ensure that only authorized persons have access
- Implement an **effective means to detect and assess unauthorized access** and unauthorized removal (e.g. monitored alarm system)





Technical Security Measures Category 1 & 2 & 3 Sources

- Implement an **acceptable response protocol** in case of a security alarm or incident
- Implement **regular testing and maintenance** of security systems and devices (alarm sensors), **minimum every 6 month**



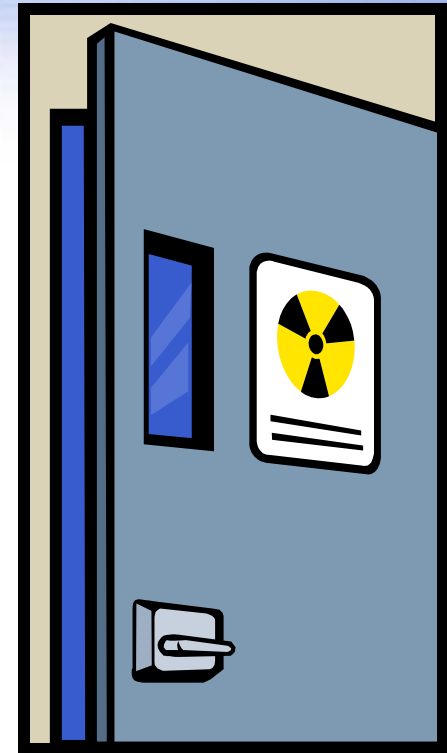
Source: NNSA



Requirements for administrative security measures Category 1 & 2 & 3 Sources

Administrative security measures include requirements and specific guidance for:

- A site security plan
- A security awareness program
- Personnel trustworthiness and reliability checks
- Protection of prescribed and/or sensitive information
- Inventory control of radioactive sources





Administrative Security Measures

- Implement a Site (Facility) **Security Plan** for each licensed site
- Implement **security awareness training** for employees
- Implement **background verification** for employees with unescorted access to sealed sources (e.g., Criminal Record Name check)
- Maintain an **up-to-date list** of personnel authorized for unescorted access



Source: 123rf



Administrative Security Measures Category 1 & 2 & 3 Sources

- Implement measures/procedures to **protect prescribed information** and/or sensitive security related information (ex: Information related to security arrangements, equipment, systems and procedures).
- Implement **inventory control**



Source: 123rf



Requirement for security during transport Category 1 & 2 & 3 Sources

Security measures during transport includes instructions and specific requirements for :

- Vehicle security
- Security measures for sealed sources during transport
- Transport security plan





Security Measures during Transport Category 1 & 2 & 3 Sources

- Use **packages/containers that are robust enough** to prevent unauthorized access
- Implement a **vehicle disabling device** to prevent unauthorized removal
- Install an effective **intrusion detection system or an equivalent means to detect unauthorized access** including regular **testing and maintenance** of same





Security Measures during Transport Category 1 & 2 & 3 Sources

- Implement **background verifications** for employees with unescorted access (e.g., Criminal Record Name Check) for drivers
- Licensees must ensure that commercial **carriers** that they may utilize meet CNSC transportation security measures
- Implement an **acceptable response protocol** in case of a security alarm or incident while in transport mode





Security Measures during Transport Category 1 & 2 & 3 Sources

- **Generic Transport Security Plan**
– Category 2 sources
- Includes describing proposed security measures, monitoring, routing etc.





Category 4 and 5 Prudent management practices

Physical barrier /Intrusion detection system /Access control	Source should be protected against unauthorized access and removal
Security of storage	Should be stored in a secure container or location
Response protocol	Source should be protected against unauthorized access and removal
Maintenance and testing	Maintenance and testing must be conducted at least every six months, and written records should be maintained
Facility security plan	Prudent management practice
Personal trustworthiness or background checks	Reference, education and employment verification and criminal records name check (prudent management practice)
Information security	All prescribed information must be protected and be shared on a need to know basis
Security awareness program	All authorized users, including staff who transport radioactive sources, must receive security awareness training on a regular basis
Vehicle security	Source should be protected against unauthorized access and removal
Transportation security plan	Source should be protected against unauthorized access and removal



Consultation process

- S-322 and S-338 were previously posted for public consultation in November 2006
 - 133 comments from 31 reviewers for S-322
 - 191 comments from 39 reviewers for S-338
- These two documents (S-322 and S-338) have been merged into *Security Measures for Sealed Sources*
- Public consultation was from March 21 to June 8, 2012. 127 comments from 22 reviewers including 4 classified comments were received.
- CNSC conducted outreach activities at DNSR radiography meetings in Edmonton and Ottawa in 2012 and with PSAC (Petroleum Services Association of Canada) in Calgary.



Key comments

- **Stakeholders** asked for more guidance on personnel trustworthiness and reliability, and the process regarding a criminal record name check.
- **CNSC response:** Additional guidance has been provided.



Key comments (continued)

- **Stakeholders** expressed concerns on their limited capability and resources to ensure compliance by subcontractors and verification of large inventory.
- **CNSC response:**
 - It is the responsibility of the licensee to ensure that there is a process for receiving radioactive materials and for inventory control so that materials are not lost or misplaced.
 - Although most transport activities do not require licenses, they are subject to the requirements of the *Packaging and Transport of Nuclear Substances Regulations*. Subcontractors (third-party carriers) must transport materials in accordance with the consignor's instructions.



Conclusion

- Further to the requirements and obligations set forth in the NSCA and its regulations, the issuance of this regulatory document will provide a **clear and consistent set of comprehensive requirements** regarding security measures for sealed sources.
- The incorporation of *Security Measures for Sealed Sources* in the various affected licences will also serve as the cornerstone to **align CNSC regulations with the IAEA Code of Conduct** and Nuclear Security Series documents.



Timelines

Sealed Source Security Requirements (Category 1 and 2)

- The licensee shall, no later than **May 31, 2015**, comply with the minimum security measures for sealed sources in their possession as set out in Regulatory Document REGDOC-2.12.3, Security of Nuclear Substances: Sealed Sources or in any other document that replaces this document.

Sealed Source Security Requirements (Category 3, 4 and 5)

- The licensee shall, no later than **May 31, 2018**, comply with the minimum security measures for sealed sources in their possession as set out in Regulatory Document REGDOC-2.12.3, Security of Nuclear Substances: Sealed Sources or in any other document that replaces this document.



Thank You

Questions??