



DRAFT
Regulatory
Standard

S-338

Physical Security Requirements for Sealed Sources during Transport

Issued for Public Comment
November 2006

Draft release date: 10/11/06

TYPES OF REGULATORY DOCUMENTS

Regulatory documents support the Canadian Nuclear Safety Commission (CNSC) regulatory framework. By expanding on expectations set out in general terms in the *Nuclear Safety and Control Act* and associated regulations, regulatory documents provide one of the core management tools upon which the CNSC relies to fulfill its legislated obligations.

The regulatory documents most commonly published by the CNSC are *regulatory policies*, *regulatory standards*, and *regulatory guides*. At the highest level, regulatory policies provide the direction for regulatory standards and guides, which serve as the policy “instruments.” A fourth type of regulatory document, the *regulatory notice*, is issued when warranted. Because the information in a *regulatory notice* must be conveyed with relative urgency, the development process is faster than that applied to the other documents.

Regulatory Policy (P): The regulatory policy describes the philosophy, principles or fundamental factors on which the regulatory activities associated with a particular topic or area of concern are based. It describes why a regulatory activity is warranted, and therefore promotes consistency in the interpretation of regulatory requirements.

Regulatory Standard (S): The regulatory standard clarifies CNSC expectations of what the licensee should do, and becomes a legal requirement when it is referenced in a licence or other legally enforceable instrument. The regulatory standard provides detailed explanation of the outcomes the CNSC expects the licensee to achieve.

Regulatory Guide (G): The regulatory guide informs licensees about how they can meet CNSC expectations and requirements. It provides licensees with a recommended approach for meeting particular aspects of the requirements and expectations associated with their respective licensed activities.

Regulatory Notice (N): The regulatory notice notifies licensees and other stakeholders about significant matters that warrant timely action.

Draft Regulatory Standard

S-338

PHYSICAL SECURITY REQUIREMENTS FOR SEALED SOURCES DURING TRANSPORT

November 2006

About this Document

The purpose of this regulatory standard, when incorporated into a licence or other legally enforceable instrument, is to help assure that licensees implement appropriate physical security measures to prevent the loss or illegal use, possession, sabotage or removal of sealed sources while they are in transport or in storage during transport.

Comments

The CNSC invites interested persons to assist in the further development of this draft regulatory document by commenting in writing on its content and potential usefulness. Please respond by January 26, 2007. Direct your comments to the postal or e-mail address provided below, referencing file 1-8-8-338.

The CNSC will take the comments received on this draft into account when developing it further. Any comments submitted including names and affiliations, may be made public.

Document availability

This document is available in English or French on the CNSC website at www.nuclearsafety.gc.ca. A paper copy of the document in either official language can be ordered from:

Administrative Assistant—Regulatory Standards and Research Division
Directorate of Safety Management and Standards
Canadian Nuclear Safety Commission
P.O. Box 1046, Station B
280 Slater Street
Ottawa, Ontario, CANADA, K1P 5S9

Telephone: 613-947-3981 or 1-800-668-5284 (Canada only)

Facsimile: 613-995-5086

E-mail: consultation@cnsccsn.gc.ca

Draft Regulatory Standard

S-338

**PHYSICAL SECURITY REQUIREMENTS FOR SEALED
SOURCES DURING TRANSPORT**

Issued for Public Comment by the
Canadian Nuclear Safety Commission
November 2006

TABLE OF CONTENTS

1.0 PURPOSE..... 1

2.0 SCOPE..... 1

3.0 RELEVANT LEGISLATION 1

4.0 APPLICATION 2

5.0 SECURITY REQUIREMENTS..... 3

 5.1 General Requirements for all Categories 3

 5.2 Additional Requirements for Category 2 Radionuclides 4

 5.3 Additional Requirements for Category 1 Radionuclides 5

GLOSSARY 7

ASSOCIATED DOCUMENTS..... 9

PHYSICAL SECURITY REQUIREMENTS FOR SEALED SOURCES DURING TRANSPORT

1.0 PURPOSE

The purpose of this regulatory standard, when incorporated into a licence or other legally enforceable instrument, is to help assure that licensees implement appropriate physical security measures to prevent the loss or illegal use, possession, sabotage or removal of sealed sources while they are in transport or in storage during transport.

2.0 SCOPE

This regulatory standard sets out the minimum physical security measures required for sealed sources while they are in transport or in storage during transport. It includes requirements related to transport vehicles, containers and security plans.

This standard applies to transport by road within Canada only.

3.0 RELEVANT LEGISLATION

The provisions of the *Nuclear Safety and Control Act* (NSCA) and the regulations made under the NSCA relevant to this standard are as follows:

Subsection 24(4) of the NSCA prohibits the Commission from issuing, renewing, amending or replacing a licence, unless in the opinion of the Commission, the applicant (a) is qualified to carry on the activity that the licence will authorize the licensee to carry on; and (b) will, in carrying out that activity, make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed;

Subsection 24(5) of the NSCA provides that a licence issued by the Canadian Nuclear Safety Commission (CNSC) may contain any term or condition that the Commission considers necessary for the purposes of the NSCA;

Paragraph 3(1)(g) of the *General Nuclear Safety and Control Regulations* stipulates that an application for a licence shall contain the proposed measures to control access to the site of the activity to be licensed and the nuclear substance, prescribed equipment or prescribed information;

Paragraph 3(1)(h) of the *General Nuclear Safety and Control Regulations* stipulates that an application for a licence shall contain the proposed measures to prevent loss or illegal use, possession or removal of the nuclear substance, prescribed equipment or prescribed information;

Paragraph 12(1)(c) of the *General Nuclear Safety and Control Regulations* stipulates that every licensee shall take all reasonable precautions to protect the environment and the health and safety of persons and to maintain security; and

Paragraph 12(1)(g) of the *General Nuclear Safety and Control Regulations* stipulates that every licensee shall implement measures for alerting the licensee to the illegal use or removal of a nuclear substance, prescribed equipment or prescribed information, or the illegal use of a nuclear facility.

4.0 APPLICATION

This standard applies to sealed sources of the radionuclides identified below in Table 1, "Activities Corresponding to Thresholds of Categories."

As outlined in IAEA/CODEOC/2004¹, the table is divided into three categories: Category 1 radionuclides are considered high risk, Category 2 radionuclides are considered medium risk and Category 3 radionuclides are considered low risk. The categories reflect an escalating level of risk requiring increased security measures.

The activities given correspond to the threshold activity level for each category.

Table 1: Activities Corresponding to Thresholds of Categories

Radionuclide	Category 1 (TBq)	Category 2 (TBq)	Category 3 (TBq)
Am-241	60	0.6	0.06
Am-241/Be	60	0.6	0.06
Cf-252	20	0.2	0.02
Cm-244	50	0.5	0.05
Co-60	30	0.3	0.03
Cs-137	100	1	0.1
Gd-153	1 000	10	1
Ir-192	80	0.8	0.08
Pm-147	40 000	400	40
Pu-238	60	0.6	0.06
Pu-239/Be	60	0.6	0.06
Ra-226	40	0.4	0.04
Se-75	200	2	0.2
Sr-90 (Y-90)	1 000	10	1
Tm-170	20 000	200	20
Yb-169	300	3	0.3

¹ International Atomic Energy Agency, *Code of Conduct on the Safety and Security of Radioactive Sources*, IAEA/CODEOC/2004, Vienna, 2004.

5.0 SECURITY REQUIREMENTS

The physical security requirements for transport and temporary storage during transport vary depending on whether the aggregate activity of the radionuclide being transported falls under Category 1, 2, or 3. Where more than one category applies, for example, shipments of multiple radionuclides, the applicable requirements shall be based on the more restrictive category.

5.1 General Requirements for all Categories

Regardless of whether the activity of the radionuclide being transported falls under Category 1, 2, or 3, all sealed sources shall be transported in accordance with the applicable NSCA regulations, including the *Packaging and Transport of Nuclear Substances Regulations*, applicable sections of the International Atomic Energy Agency, *Regulations for the Safe Transport of Radioactive Material* (TS-R-1, 1996 edition (revised)), and with Transport Canada's *Transport of Dangerous Goods Regulations*.

In addition, all packages containing sealed sources shall be appropriately protected during transport and temporary storage during transportation. Accordingly, the licensee shall ensure that:

1. The licensee has a contract with a carrier with a proven record for the safety and security of sensitive shipments. The licensee shall verify that the persons who will transport the sealed sources have been screened, for security purposes, for personnel trustworthiness and reliability. The licensee shall consult the CNSC Nuclear Security Division to determine which current national and internationally personnel screening practices are acceptable for this verification. Only persons who have satisfactorily passed the security screening shall have authorized access to the package once it is in transit.
2. The consignee is notified when, where and by whom such packages are being moved, including tracking numbers and expected arrival times.
3. The package is stored in a secure container. The secure container does not replace any other packaging or labelling (i.e., labelling may be required for the secure container) required under any existing regulations. For a container to be considered secure, it shall be
 - a) made of steel or any other material that is resistant to an attack by hand held tools; and
 - b) fitted with the best commercially available keyed or combination padlock that resists attack by hand held tools.

Secure containers that weigh less than 500 kg and are transported in an open conveyance (e.g., open back of a half-ton truck or flat bed truck), shall be securely affixed to the vehicle so as to prevent unauthorized removal of the container.

4. When storing while being transported, the package shall either be stored in a secure container in the vehicle, or in a location that is protected by physical security measures as described in draft CNSC regulatory standard S-322 *Physical Security Requirements for the Storage of Sealed Sources*.²
5. The vehicle operator shall have on his or her person at all times a reliable mobile communication capability and a list of contact persons and their contact numbers in the event assistance is required in an emergency situation.

Alternate methodologies that provide a level of physical security equivalent to that described in this section may be approved by the Commission or a person authorized by the Commission upon receipt of a written submission requesting such approval. When such approval is granted, the licensee shall comply with the approved security arrangements and shall be exempt from the requirements above, to the extent of any inconsistency.

5.2 Additional Requirements for Category 2 Radionuclides

In addition to the requirements of section 5.1, prior to transport of Category 2 radionuclides, the licensee shall:

1. Submit a security plan, with annual updates if there are any changes, for approval by the Commission or a person authorized by the Commission. The security plan shall include the following information:
 - a) The name, quantity, chemical and physical characteristics of the sealed source(s);
 - b) The radiation level in Sv/h measured on the external surface of package;
 - c) A description of the conveyance;
 - d) The proposed security measures; and
 - e) The communications arrangements made among the licensee, the carrier and the consignee.

The security plan may be generic for activity levels up to 11 TBq.

2. Ensure that vehicles are equipped with anti-theft devices. The anti-theft devices shall consist of:
 - a) a vehicle disabling device (e.g., starter disabler); and
 - b) if the vehicle is left unattended, a device that will detect unauthorized entry or attack to the vehicle and sound an audible or visible alarm. If the operator is not within hearing range of the audible alarm or visual range of a visual alarm, the operator shall have the ability to monitor the alarm devices remotely.

These devices shall be activated any time the vehicle containing the package is left unattended.

² Draft document currently in development.

3. When storing while being transported, the package shall either be stored in a secure container in the vehicle, as described in 5.1, or in a location that is protected by physical security measures and is continuously monitored when the package is left unattended.

5.3 Additional Requirements for Category 1 Radionuclides

In addition to meeting the requirements of section 5.1 and 5.2, prior to transport of Category 1 radionuclides, the licensee shall:

1. Include the following additional information in the security plan:
 - a) Communication arrangements made with any police agency along the transportation route;
 - b) The planned route; and
 - c) Alternate routes to be used in case of an emergency.
2. Ensure that any vehicle used for the transport of a Category 1 radionuclide is equipped with:
 - a) a vehicle tracking device that will enable the vehicle to be recovered if stolen; and
 - b) a duress alarm which is continuously monitored.
3. Instruct the alarm monitoring station to advise the appropriate response force upon receipt of a duress alarm.
4. Notify all responsible police agencies along the transportation route prior to transporting the radionuclide.

GLOSSARY

Prescribed information

As defined in Section 21 of the *General Nuclear Safety and Control Regulations*, information that concerns any of the following, including a record of that information:

- a) a nuclear substance that is required for the design, production, operation, or maintenance of a nuclear weapon or nuclear explosive device, including the properties of the nuclear substance;
- b) the design, production, use, operation or maintenance of a nuclear weapon or nuclear explosive device;
- c) the security arrangements, security equipment, security system and security procedures established by a licensee in accordance with the Act, the regulations made under the Act or the licence, and any incident relating to security; and
- d) the route or schedule of the transport of Category I, II or III nuclear material, as defined in section 1 of the *Nuclear Security Regulations*.

Sabotage

Any deliberate act or omission, directed against a nuclear facility or nuclear substances, that

- a) endangers or is likely to endanger the health and safety of any person; or
- b) results or is likely to result in contamination of the environment.

Storage

The holding of radioactive sources in an area that provides for their containment with the intention of retrieval.

ASSOCIATED DOCUMENTS

1. Canadian Nuclear Safety Commission, *General Nuclear Safety and Control Regulations*, Ottawa, 2000.
2. Canadian Nuclear Safety Commission, *Packaging and Transport of Nuclear Substances Regulations*, Ottawa, 2002.
3. International Atomic Energy Agency, *Code of Conduct on the Safety and Security of Radioactive Sources*, IAEA/CODEOC/2004, Vienna, 2004.
4. International Atomic Energy Agency *Regulations for the Safe Transport of Radioactive Material*, TS-R-1, 1996 edition (revised).
5. Transport Canada, *Transportation of Dangerous Goods Regulations*, Ottawa, 2003.