SD 142F/00/en/06.02
52014672

Source Container
QG 020/100/2000
Radiometric Measurement









Supplementary Safety Instructions for Radioactive Sources and Source Containers approved for Use in Canada

Scope of application of this document
The safety instructions contained in this document apply to radioactive sources and source containers which have been approved by the CNSC for the use in Canada.
This document does not substitute the Operating Instructions of the respective source container as given in the table below.
When operating a source container within Canada, the respective Operating Instructions have to be strictly observed as well as the procedures described in this document.

Source Container	CNSC Certificate Number	Operating Instructions
QG 020	094-0104-0-2017	TI 264F
QG 100	094-0115-0-2017	TI 264F
QG 2000	094-0159-0-2017	BA 223F

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1.1 Equipment to be tested

A leak test is required if the source activity is greater than 50 MBq.

1.2 Frequency for leak testing

Subject to other regulations by CNSC the device has to be tested
- once every 12 months for sources in continuous operation
- once every 24 months if the source is placed into continuous storage
- immediately, if the source is placed back into operation after being stored for 12 or more consecutive months (replaces any previous test that may have been done during the previous 12 months while in storage).

Note!
Leak tests are required whenever an incident occurs that may damage the sealed source or shielding. The leak test must be performed as soon as possible after the incident.

1.3 Leak test procedure

Note!
Ensure that the person collecting the leak test samples has
- access to and follows approved leak test procedures
- received radiation safety training to control any associated radiation hazard
- sufficient sampling materials and leak test sampling certificates.

1. Wipe along the gap ...

... between rotatable source insert and housing ... between rotatable source insert and source carrier bar	QG 020/100 Chemical Design
... between rotatable source insert and housing	QG 020/100 Standard-/Euro Design
... source support rod and its bearing bush	QG 2000

2. Analysis of the samples by a CNSC approved laboratory.
   A source is to be considered leaking if more than 200 Bq is detected on a leak test sample.

   In case of an indeed leaking source:
   – immediately discontinue use of the device
   – contact the responsible radiation protection officer for instructions
   – take appropriate measures to control a potential spread of radioactive contamination from the source. Secure the source.
   – notify CNSC that a leaking source has been detected.

1.4 Visible check

If considerable corrosion is visible at the housing (especially at the cover of the radiation channel) measure the radiation level around the device. If values occur exceeding the normal operation level, cordon off the area and contact immediately the responsible radiation protection officer for instructions.
In any case corroded devices should be exchanged as soon as possible.

2 Emergency procedure

2.1 Objective and Overview

This emergency procedure should be put into effect immediately to secure an area in the interests of protecting personnel where an exposed source is known, or suspected, to exist.

Such an emergency exists when a radioisotope is exposed either by it becoming separated from the source container or the source container shutter cannot be closed.

This procedure will safeguard an area until an appropriate radiation protection officer can attend site and advise on corrective action.

The custodian of the radioactive source (the customer's designated "authorized person") is responsible for observing this procedure.

2.2 Procedure

1. Determine the unsafe area by measurement (on site) or by calculation knowing the size and type of source installed from the records.

2. Cordon off the area at the boundary where the radiation level exceeds 2.5 µSv/h (0.25 mR/h) by yellow tape or rope and post international radiation warning signs.

   In case of a shutter that will not close:
   – If part of the area is accessible (e.g. a vessel in the event of a level gauge installation where there is a possibility that a person might enter), the source housing should be unbolted from its mounting and laid face down on the ground in case of QG 020 and QG 100 or put emission channel towards a thick wall in case of QG 2000. The eye bolt on the housing should facilitate safe handling.
   – Personnel should at all times be behind the source housing, not in front of the emission channel (flange of QG 020/100, marked side of QG 2000).

3. If it is not practical to cordon off the entire area or if the source is in immediate danger of moving, it may be necessary to secure the source by relocating it or adding shielding.
   Here, the inverse square law should be observed, i.e. radiation reduces with distance quadratically. The source should only be handled via pliers or tongs and held as far away from the body as possible.
   The time taken to fulfill the exercise should be minimized by rehearsal prior to execution.

4. Inform the local Canadian Nuclear Safety Commission Duty Officer responsible for the area in which the incident has occured, and ask for immediate action.

   Telephone number: (613) 995-0479 (Ottawa)

   This is to be done as soon as possible and not later than 24 hours of the incident being discovered.

5. After thorough assessment of the damage, the CNSC Inspector, in conjunction with Endress+Hauser, will agree a remedy to the specific problem.

Endress+Hauser Canada Ltd.

Head Office
1440 Graham's Lane
Unit 1
Burlington, ON L7S 1W3
Tel: 905-681-9292
1-800-668-3199
Fax: 905-681-9444
E-Mail:
info@ca.endress.com

Montreal Office
6800 Côte de Liesse
Ste. 100
St. Laurent, QU H4T 2A7
Tel: 514-733-0254
Fax: 514-733-2924

Edmonton Office
#101, 18103 - 105 Ave
Edmonton, AB T5S 2L5
Tel: 780-486-3222
1-888-918-5049
Fax: 780-486-3266

Internet
www.ca.endress.com

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