



DNSR Newsletter

A note to CEDOs

Reminder: Only qualified exposure device operators (EDOs) certified by the CNSC, or trainees supervised directly by a certified EDO, may operate an exposure device. The CNSC will consider a worker qualified only if that worker has a valid EDO certification card (that is, a card issued on or after February 1, 2013 that has not expired). This also means that any EDO whose certification card does **not** have an expiry date or whose certification card has expired will **not** be considered qualified to work as a certified EDO. If a CNSC inspector finds an EDO with an older card, the inspector will be making a recommendation for decertification of the EDO.

A note on annual compliance reports

Please note that as of January 1, 2018, the CNSC will accept only those annual compliance reports (ACRs) submitted via the [most current form](#), available on the CNSC website. Please remember to submit your information using the correct, current form for the appropriate licence use type. Licensees who submit an incorrect or incomplete form will be notified and will need to re-submit all information using the correct form, to maintain compliance with the licence condition.

Correction

An article published in the last edition of the *DNSR Newsletter* (Spring 2017) provided a “notice to users of SPEC sources in exposure device model No. 880”. The article reported that the event involved a source model manufactured by SPEC. Upon further review, this information was determined to be inaccurate.

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Highlights from the Regulatory Oversight Report on the Use of Nuclear Substances in Canada: 2016

On October 12, 2017, staff from the Directorate of Nuclear Substance Regulation (DNSR) presented the *Regulatory Oversight Report on the Use of Nuclear Substances in Canada: 2016* to the Commission. Before the presentation at the Commission meeting, the report was available for 30 days for public comment.

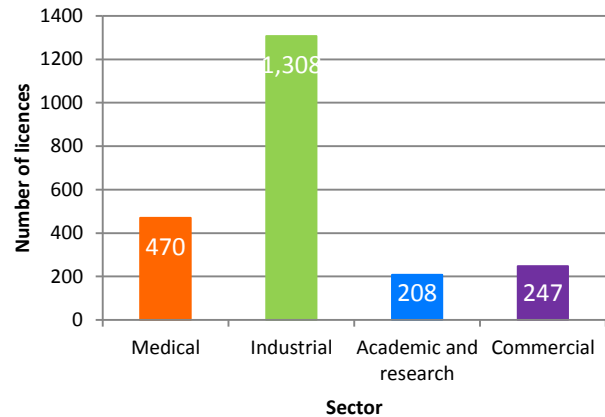
The regulatory oversight report is produced annually. It recaps development in the regulatory program at the CNSC for the use of nuclear substances, and also summarizes the safety performance of licensees who use nuclear substances in the medical, industrial, academic and research, and commercial sectors. The report looks at safety performance in four safety and control areas (SCAs): management system, operating performance, radiation protection and security.

Data for the report comes from sources that include inspection reports, licensing and certification actions, event reports, and information submitted by licensees in their annual compliance reports (ACRs).

Key highlights from the 2016 report are presented below.

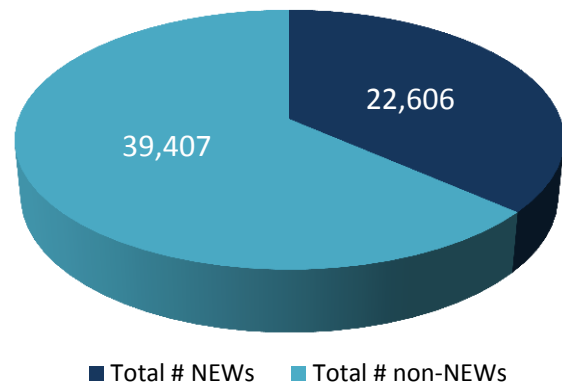
- 1,584 licensees held a total of 2,233 licences. Most licences are in the industrial sector (figure 1).

Figure 1: Number of licensees, 2016



- Doses of 62,013 workers were reported in licensee ACRs. Nuclear energy workers (NEWs) accounted for 36% of the total number of workers (figure 2).

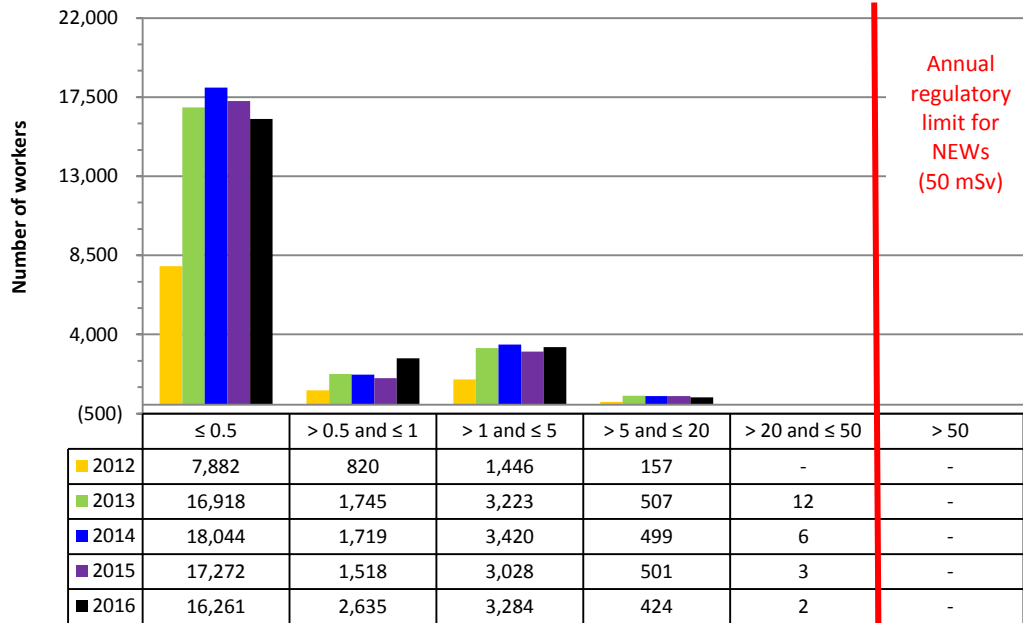
Figure 2: Doses of NEWs and non-NEWS, 2016



- No NEWs received whole body doses above the annual limit of 50 mSv (figure 3).

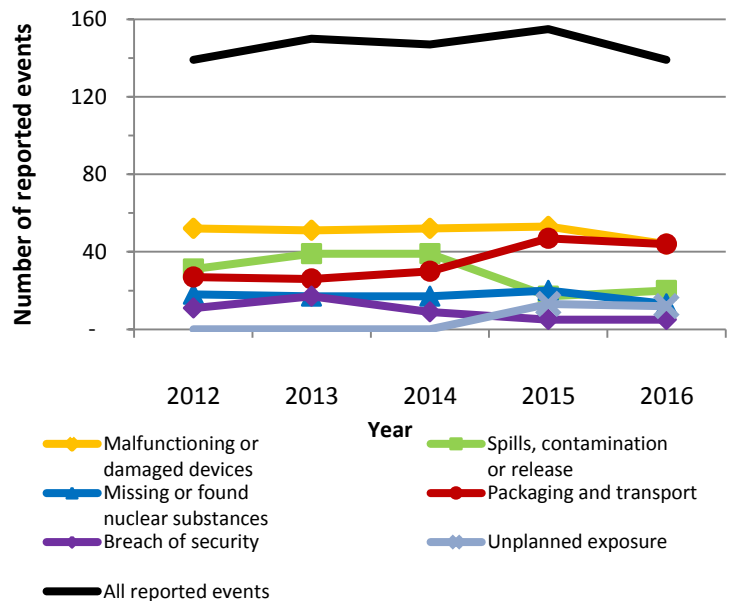


Figure 3: Doses of NEWS, 2012–16



- One NEW received an extremity dose of 1,100 mSv, exceeding the regulatory limit of 500 mSv. (Details of this event were reported in the [DNSR Newsletter, Spring 2017 edition.](#))
- One member of the public received a dose exceeding the regulatory limit of 1 mSv. (Details of this event were reported to the Commission at a [public meeting in December 2016.](#))
- 139 events were reported to the CNSC. This was the lowest number reported in any year since 2012 (figure 4).

Figure 4: Events reported in 2016





The majority of licensees are compliant with the requirements:

- ✓ **97.5%** of licensees received fully satisfactory or satisfactory ratings for the management system SCA.
- ✓ **87.4%** of licensees received fully satisfactory or satisfactory ratings for the operating performance SCA.
- ✓ **84.6%** of licensees received fully satisfactory or satisfactory ratings for the radiation protection SCA.
- ✓ **93.6 %** of licensees received fully satisfactory or satisfactory ratings for the security SCA.

Items of non-compliance noted during inspections were corrected by the licensees to the satisfaction of CNSC staff. When necessary, CNSC inspectors and designated officers took enforcement actions such as issuing orders or AMPs. In 2016, 14 orders and eight AMPs were issued to licensees who had failed to meet regulatory requirements.

The performance results from 2016 indicated that the use of nuclear substances in Canada is conducted safely.

Additional details about the safety performance results presented here can be found in the [complete report](#) which will be available soon on the CNSC website.

Operating experience from the portable gauge industry

The CNSC monitors and tracks all events reported by licensees. This enables the CNSC to perform trend analysis to look for similarities between events. This analysis can then be shared with the licensees so that they can learn from the operating experience of industry peers and identify areas for improvement and best practices.

During the recent construction season, CNSC staff noted a significant increase in events involving portable gauges. Licensees are reminded to ensure that those who are using portable gauges clearly understand all related safety expectations.

Some common areas for improvement include the following points:

- ✓ Always be aware of your surroundings. Injuries on construction sites can happen when operators are not paying attention to what is happening around them.
- ✓ Always secure portable gauges before leaving them unattended. Between May 15 and Aug 31, 2017, seven orders were issued to licensees because workers left gauges unattended at worksites. In the same time period, the CNSC received eight reports about portable gauges that were damaged at construction sites, possibly associated with leaving the gauges unattended or users not being aware of the surroundings.
- ✓ Record every shot taken. A portable gauge user must record every shot taken (even practice shots) to ascertain an accurate dose value when he or she is not wearing a dosimeter.
- ✓ When travelling with a portable gauge, ensure that the proper documentation is available at all times and the portable gauge is properly secured in the vehicle.



Security of sealed sources

The CNSC would like to remind users of Category 3, 4 and 5 sealed sources that the licence condition related to the implementation of [REGDOC-2.12.3, Security of Nuclear Substances: Sealed Sources](#) will become effective May 31, 2018. For the CNSC to ensure that licensees are in compliance with REGDOC-2.12.3, all licensees in possession of Category 3 sealed sources are required to submit a site security plan before January 31, 2018, for CNSC review.

REGDOC-2.12.3 sets out the minimum security measures required to prevent the loss, sabotage, illegal use, illegal possession, or illegal removal of sealed sources while they are in storage and during transportation. The regulatory document also includes requirements for both technical and administrative physical security and provides guidance on how to meet the security requirements. Guidance on how to prepare such a plan is provided in appendix A of REGDOC-2.12.3.

Note that in some cases, even though the categorization of a single source would not require the additional security measures based on its categorization (for example, Category 4), there are situations where licensees in possession of multiple Category 4 sealed sources may be subject to the requirements applicable to Category 3 sealed sources (aggregation) if the total activity in their possession exceeds the activity limit for Category 3 sealed sources. It is important to recognize that there is not a one-size-fits-all approach to aggregation of sources. CNSC staff will consider each situation case by case and evaluate it accordingly.

Licensees in possession of multiple Category 4 sealed sources may be required to aggregate the activity of their sealed sources (that is, consider the total activity of all Category 4 sources in a given area as one) in order to determine the appropriate security measures. Here are some questions licensees need to ask themselves about aggregation:

- Do we possess one or multiple Category 4 sealed sources?
- If in possession of multiple sources, are they held or used in one area (for example in the same room or building) or multiple areas?
- If held in one area, are there effective physical barriers (for example, doors/locks/individual housing) between each source? If breaching a single physical barrier gives access to all sources held in that area, the sources would need to be considered for aggregation.
- If used in multiple areas, are the sources physically attached to a piece of equipment? Are they out-of-reach, requiring the use of a ladder or scaffold to access? Are they dispersed across a large physical area within a facility? If any of these situations applies, it may not be necessary to aggregate the activity of each Category 4 sealed source.

In general, it can be assumed that the following would **not** require aggregation:

- The time required to remove all radiation devices from the storage/use site is longer than the response time.



- Radiation devices are mounted in inaccessible areas or bolted/clamped to vessels and pipes.
- The weight of the radiation devices holding the radioactive sources is sufficient to be considered as an effective form of delay.
- Heavy lifting equipment or special tools are required for the removal.
- The separations from work-accessible areas provide additional and effective delay measures for security and are not accessible to the public.

Categorization and Aggregation Tool (CAT)

The CNSC developed a Categorization and Aggregation Tool (CAT) to assist licensees in determining the appropriate risk categorization of their aggregate activity for their sealed sources.

The aggregation tool was developed to walk licensees through the process of determining if aggregating sealed sources is required based on the storage/use configuration. It allows users to input various radionuclides with activity levels and provide the associated risk category of the aggregate activity. The tool provides an effective way of identifying the risk category based on present inventory and storage/use configuration based on the CNSC REGDOC 2.12.3.

For example, if a single moisture/density gauge with a 333 MBq Cs-137 source and a 1,448 MBq Am-241/Be source was stored in a location, it would be classified as a Category 4 sealed source. However, if 37 similar portable moisture/density

gauges were stored in the same area, the sources become Category 3 for security because a person could access all the gauges if security to the storage area was breached. The manual calculation is shown below.

$$\# \text{ gauges} * ((\text{activity Cs-137})/D) + (\text{activity Am-241/Be})/D))$$

Where, minimum activity limit (D-value) for Cat 3 for Cs-137 sources = 100 000 MBq;

And minimum activity limit (D-value) for Cat 3 for Am-241/Be sources = 60 000 MBq

So, for Cat 3:

$$\# \text{ gauges} = 1 \div ((333/100\ 000) + (1448/60\ 000))$$

$$= 36.4 \text{ gauges}$$

Therefore, having 37 moisture/density gauges in a single location bumps up the categorization to Category 3. Different security measures, as described in REGDOC-2.12.3 *Security of Nuclear Substances: Sealed Sources*, are required in this case.

The CAT can assist in performing the determination of the sealed source categorization for security. To obtain the Categorization and Aggregation Tool (CAT), send an email to cnsccategorization.ccsn@canada.ca.

For further information, contact your CNSC licensing specialist or project officer, or refer to REGDOC-2.12.3, Security of Nuclear Substances: Sealed Sources.

Sharing nuclear safety expertise internationally: CNSC provides regulatory training to Caribbean countries



The CNSC hosted nine Caribbean countries in a training course on the security of radioactive sources

Representatives from nine Caribbean countries participated in classroom and field training hosted by the CNSC from September 11 to October 6, 2017 in Ottawa.

The training covered a wide range of topics, like the *Code of Conduct on the Safety and Security of Radioactive Sources*; the key elements of inspection for nuclear medicine sources and equipment, nuclear gauges, and industrial radiography; International Atomic Energy Agency (IAEA) requirements for safe packaging and transport; and on how to perform incident investigations. Participants also had the opportunity to tour the CNSC's ISO-17925-accredited calibration laboratory, as well as facilities at Health Canada. Participants spent the final week of the course conducting mock inspections with CNSC inspectors from Mississauga, Laval and Ottawa. Many thanks to the licensees who

participated in the mock inspections and provided tours of their facilities.

“Working together to develop and improve competence and expertise of regulatory bodies is key to establishing global nuclear safety,” said Ramzi Jammal, CNSC Executive Vice-President and Chief Regulatory Operations Officer. “Sharing best practices and lessons learned on nuclear safety will contribute to strengthening relationships and building confidence among nuclear regulators worldwide.”

The course, in partnership with the IAEA, was part of a regional cooperation project: *RCA9082, Establishing and Strengthening Sustainable National Regulatory Infrastructures for the Control of Radiation Sources*. Participating countries include: Haiti, Dominica, Belize, Trinidad and Tobago,

Jamaica, Barbados, Guyana, Bahamas, and Antigua and Barbuda.

“The collaboration with the IAEA is integral in ensuring that regulators work towards a global unified approach to the safety of nuclear substances,” said Jammal. “The presence of the trainees in Canada is a testimony to the recognition of the CNSC as a world-class nuclear safety regulator and our aim to be the best nuclear regulator in the world.”

Course participants tour the CNSC laboratory



“This is the first-of-its-kind training for the Caribbean,” said Saul Perez Pijuan, IAEA Section Head, Division of Technical Cooperation for Latin America and Caribbean. “Thank you to the CNSC for the opportunity to share knowledge. We look forward to seeing the application of what we learned to the work at home.”

Why are my cost recovery fees changing?

In addition to the hourly rate, the *Canadian Nuclear Safety Commission Cost Recovery Fees Regulations* set the formulas used to determine both the annual and one-time initial application assessment fees related to licences for nuclear substances and radiation devices, along with licences for Class II nuclear facilities and prescribed equipment. The CNSC has revised its 2017–18 formula fees to recover an increased portion of its regulatory costs. Effective April 1, 2017, adjustments have been made to increase the number of base and variable hours associated with regulatory activities. These adjustments were calculated after a review of the allocation of work efforts charged to licensees. The exact fee adjustment will differ for each licensee and will depend on variables such as licence type, number of locations and number of devices/equipment.

For additional information on the [Cost Recovery Program](#), including FAQs, visit the CNSC website

CNSC regulatory actions

To protect the health and safety of workers, the public and the environment, the CNSC issues regulatory actions to non-compliant licensees.

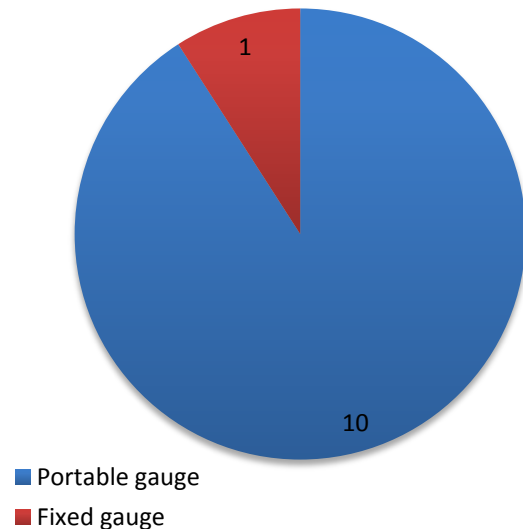
One administrative monetary penalty (AMP) was issued to a DNSR licensee between April 1 and September 30, 2017. It was issued to [Groupe ABS Inc.](#), a portable gauge licensee. The AMP was issued

as a result of the licensee’s repeated failure to take all reasonable precautions to protect the health and safety of persons and to maintain security of radiation devices.

Eleven orders were issued to DNSR licensees between April 1 and September 30, 2017.

- Nine orders were issued to portable gauge licensees for items of non-compliance related to the security of portable nuclear gauges used at worksites and inadequate training of workers operating the portable gauges. Two licensees received two orders each during the time period.
- One order was issued to a portable gauge licensee as a result of the lack of management control over the radiation protection program.
- One order was issued to a fixed gauge licensee following an inspection that found non-compliances regarding the management of the radiation protection program and inadequate training of workers.

Orders issued to licensees by industrial sector, April 1 – September 30, 2017



Orders issued April 1 – September 30, 2017

Industrial sector – portable gauge

[Labo S.M. Inc. \(2 orders\)](#)

[GHD Consultants Ltd. \(2 orders\)](#)

[Groupe ABS Inc.](#)

[Englobe Corp.](#)

[SNC-Lavalin GEM Québec Inc.](#)

[Inter-Cité Construction Ltd.](#)

[42256 Yukon Inc.](#)

[Groupe Conseil SCT Inc](#)

Industrial sector – fixed gauge

[Sable Sand Solutions Inc.](#)