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Regulatory Oversight Report on the Use of Nuclear Substances in Canada: 2020

Rapport de surveillance réglementaire sur l'utilisation des substances nucléaires au Canada : 2020

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Summary

This Commission member document (CMD) presents the *Regulatory Oversight Report on the Use of Nuclear Substances in Canada: 2020*.

Through inspections, reviews and assessments, Canadian Nuclear Safety Commission staff concluded that licensees in the medical, industrial, academic and research, and commercial sectors have made adequate provisions to protect the health, safety and security of persons and the environment.

There are no actions requested of the Commission. This CMD is for information only.

Résumé

Le présent document à l'intention des commissaires (CMD) présente le *Rapport de surveillance réglementaire sur l'utilisation des substances nucléaires au Canada : 2020*.

Au moyen d'inspections, d'examen et d'évaluations, le personnel de la Commission canadienne de sûreté nucléaire a conclu que les titulaires de permis dans les secteurs médical, industriel, commercial, universitaire et de recherche ont pris les dispositions nécessaires pour protéger la santé, la sûreté et la sécurité des personnes et de l'environnement.

Aucune mesure n'est requise de la part de la Commission. Ce CMD est présenté à titre informatif uniquement.

Signed/signé

09-September-2021

—————
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Regulatory Oversight Report on the Use of Nuclear Substances in Canada: 2020



Regulatory Oversight Report on the Use of Nuclear Substances in Canada: 2020 2020

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From left to right:

Inspection of a mobile linear accelerator unit

Working with nuclear substances

Inspection of a portable gauge

Well logging source storage

Storage location at a waste nuclear substance licensee

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Regulatory Oversight Report on the Use of Nuclear Substances in Canada: 2020 2020

Executive Summary

This document presents the Regulatory Oversight Report (ROR) produced by the Directorate of Nuclear Substance Regulation (DNSR) for the activities falling under its regulatory responsibilities: the use of nuclear substances and prescribed equipment in the medical, industrial, academic and research, and commercial sectors. This report also covers select waste nuclear substance licensees, regulated by the Directorate of Nuclear Cycle and Facilities Regulation, which are not reported on in other RORs.

To assess the safety performance of the licensees covered by this ROR, CNSC staff conducted regulatory oversight activities throughout 2020, including inspections, reviews of reports submitted by licensees, reviews of events and incidents, and general communication and exchanges of information with licensees. The results of these oversight activities show that the use of nuclear substances and prescribed equipment in Canada remains safe and secure.

In addition to performance results, the report will provide the Commission with information about stakeholder engagement, which is a critical element of the CNSC's regulatory approach. Given the breadth of licensees regulated in the area of nuclear substances, a particular focus is on reaching and engaging with licensee communities.

In 2020, the global COVID-19 pandemic impacted CNSC staff and licensees, as it did every other aspect of Canadian society. The CNSC activated its Business Continuity Plan on March 15, 2020, and all non-critical oversight activities, including routine on-site inspections, were suspended. While access to CNSC systems was initially limited, which temporarily affected licensing- and certification-related activities, the CNSC ensured that staff received the necessary equipment to work remotely within a short timeframe. As a result, and owing to the fact that the licensing and certification processes for nuclear substances and prescribed equipment were already largely digital, CNSC staff were able to conduct these activities with effectively no interruption of service during the pandemic. The biggest impact of the pandemic was on compliance activities, with the constraints to on-site inspections due to local health guidelines requiring CNSC staff to pivot to remote inspections for most of 2020

Due to the pause in inspections in the early stages of the pandemic, as well as the fact that remote inspections take longer than on-site inspections, CNSC staff conducted fewer inspections in 2020 – less than half the number of a typical year. This reduction in inspections unavoidably introduces an incremental increase in risk, taking into account that the prime responsibility for safety remains with the licensees. However, it is important to consider this risk in context: while it is possible that fewer inspections could lead to a slight increase in the probability of unsafe work practices among the licensees covered by this ROR, the consequences of any resulting incidents remain relatively low (on average) due to the nature of the nuclear substances and prescribed equipment used by these licensees.

Nonetheless, CNSC staff continue to treat any risk seriously and, as a result, staff undertook steps in 2020 to mitigate any risks introduced by the reduction in inspections:

- The revisions to the 2020 inspection plan were made on a risk-informed basis, with the revised plan maintaining a focus on the highest-risk category of licensees – in the end, CNSC staff were successful in exceeding the revised plan for these high-risk inspections
- CNSC staff continued to monitor other performance indicators, including reviewing Annual Compliance Reports and reported events

- We maintained our capacity to respond quickly (in person, if necessary) to any reported event that could pose an immediate risk to health and safety
- We engaged in a campaign to reach out to our licensees, in order to assess their status and remind them of their responsibility for safety

As a result of these measures, it is CNSC staff's conclusion that the incremental increase in risk due to the reduction in inspections in 2020 remained acceptable. This conclusion is substantiated by the 2020 performance results presented in this ROR, which remained consistent with previous years and continued to demonstrate high levels of compliance across the sectors covered. That being said, it's important to note that the smaller sample size of inspections in 2020 makes it challenging to compare performance results year over year. The true impact on performance due to the effects of the pandemic will only be evident after trending data over a number of years – this is something that CNSC staff will continue to monitor closely.

While the increased risk after one year of fewer inspections remains manageable, a continued reduction in inspections moving forward could raise this risk. As such, CNSC staff will continue to apply a risk informed approach when it comes to compliance oversight and inspection planning, as the risk from COVID-19 change.

Based on the CNSC's strong regulatory oversight, flexibility, and immediate action responding to the pandemic, the evaluations presented in this report demonstrate that:

- compliance performance across all sectors was generally high, with licensees undertaking appropriate corrective actions for any instances of non-compliance
- all enforcement actions issued in 2020 were closed in a timely way
- doses to workers remained generally low, with 3 out of the 58,967 workers monitored reporting doses above the annual regulatory limit; while none of these resulted in negative health effects, the CNSC takes any exceedances of a regulatory dose limit seriously and requires the licensee to perform an acceptable investigation so the situation is not repeated
- all reported events were of low or negligible safety significance
- despite the challenges posed by COVID-19, the CNSC's risk-informed approach ensured the safety of nuclear substances and prescribed equipment in Canada.

Use of Nuclear Substances in Canada: 2020

The Regulatory Oversight Report on the Use of Nuclear Substances in Canada: 2020 summarizes the safety performance of 1,496 licensees, which hold a total of 2,079 licences. The CNSC authorizes licensees to use nuclear substances and prescribed equipment in the medical, industrial, academic and research, and commercial sectors. For a full description of the licensees covered within this report, refer to the [technical briefing to the Commission on Nuclear Substances in Canada](#) (CMD 18-M49) Additional data on licensees is available in [Appendix A](#).

This ROR includes certain waste nuclear substances licensees that aren't covered in any other CNSC ROR. By request of the Commission, Appendix [A.6](#) specifically provides additional information on Mississauga Metals and Alloys, related to the record of decision for their exemption request.

CNSC staff use many metrics to evaluate licensees' safety performance. This report uses a subset of these which – when taken together – will provide a well-rounded picture of performance for the licensees covered by this report. The metrics used in this report are:

- compliance performance
- enforcement actions
- doses to workers
- reported events

To measure compliance performance, CNSC staff use a well-established Safety and Control Area Framework. The framework includes 14 safety and control areas (SCAs) covering all technical areas of regulatory oversight. While CNSC staff review and assess performance in each SCA (if applicable), only those that are most useful and applicable in providing a good overall indication of the safety performance of the licensees are covered in the ROR. These are: management system, operating performance, radiation protection, and security. The waste nuclear substance licences included in this report are covered within the commercial sector, and are the only licensees presenting performance data for the environmental protection and conventional health and safety SCAs. This is because, unlike the nuclear substance licensees, waste nuclear substance licensees have the potential for environmental releases as well as a potentially higher risk in the area of conventional health and safety.

In the past, stakeholders have requested that the packaging and transport SCA be included in this ROR. CNSC staff acknowledge that this is an important SCA, given the high volume of transportation activities associated with nuclear substance licensees. However, since the packaging and transport SCA does not apply universally to all nuclear substance licensees, it would be challenging to present performance data in a meaningful way in the ROR. Instead, a review of the reported events related to packaging and transport provides a more meaningful indicator for this SCA – see [Reported Events](#) for an analysis of this indicator.

In addition to the standard review of performance indicators, the 2020 ROR includes a specific analysis of the impacts of the COVID-19 pandemic on DNSR's regulatory oversight. After resolving system access challenges in the early weeks of the stay-at-home order, CNSC staff were able to maintain licensing and certification services under remote working conditions throughout 2020. Even prior to the pandemic, these activities were largely digital, resulting in minimal impacts from the COVID-19 pandemic. On the other hand, compliance efforts were affected by pandemic-related limitations to air and local travel, and due to the fact that some licensees limited their operations because of the pandemic. For example, some licensees in the medical sector were operating at reduced capacity and operating 2-3 days per week,

whereas other medical licensees were operating normally but with restricted activities to accommodate clinically urgent patients. In the industrial sector, some construction sites were closed and limiting site access, some staff were working from home, and some were working under restricted activities. As such, DNSR had to revise its original inspection plan to account for these constraints. The original (pre-pandemic) plan called for approximately 750 inspections; CNSC staff continued to monitor changing conditions throughout the year and adjusted the plan accordingly, leading ultimately to approximately 300 inspections planned for 2020. The revisions were conducted on a risk-informed basis, with priority given to the highest risk inspections. In the end, staff were successful in exceeding the plan, conducting a total of 371 inspections in 2020 – 178 of these were remote inspections and 193 were on-site. A detailed description of compliance effort during the pandemic is included in section 1.6 of the report.

This ROR will include data in both a body and appendices, where the main body of the report will provide a high-level overview of the CNSC's regulatory efforts, along with the licensees' performance; the detailed data to support this overview are found in the appendices.

1.0 Compliance Performance

[Appendix B](#) covers the full 2020 performance data, broken down by SCA, by sector and by sub-sector. In addition, the data show the 5-year performance trends within each of these categories.

During licensing and compliance activities, CNSC staff review the licensee's performance within each relevant SCA by reviewing licensee documents and conducting inspections. Owing to the broad nature of the different activities conducted by the licensees covered, not all SCAs apply to all activities or all licensees. All relevant SCAs are assessed during compliance inspections and reviews of licensees' documents, and a compliance rating is assigned for each SCA. Each SCA covers multiple items: some of these are administrative in nature and are considered relatively low risk, while others are linked to an immediate risk to health safety and security, and therefore any findings against these items during an inspection must be addressed immediately.

All required corrective actions arising from below-satisfactory performance are tracked and followed up by CNSC staff to ensure that all items of non-compliance are addressed to the satisfaction of the CNSC. For any instances of non-compliance that pose immediate risk to health, safety and security, enforcement actions may be taken, such as issuing orders. Administrative Monetary Penalties (AMPs) may also be used as part of a graduated approach to compliance, for issues that do not pose an immediate risk to health or safety.

Staff perform inspections to review and report on the licensee performance under the subset of SCAs evaluated. The following 4 SCAs are the most relevant indicators of safety performance for licensees in the sectors covered in this ROR: management system, operating performance, radiation protection and security. These SCAs are applicable to most of the licensees, and together provide an indication of licensees' overall safety performance. The exception is the waste nuclear substance licensees, for which this ROR presents performance results under 2 additional SCAs: environmental protection and conventional health and safety. A brief overview of each of these SCAs is provided below, with more detail provided in [Appendix B](#).

Overall, as with past years, licensees showed satisfactory compliance ratings in the SCAs evaluated. A list of inspections performed in 2020 is available in [Appendix F](#). Where items of non-compliance were identified, CNSC staff ensured that licensees took appropriate corrective actions. Licensees immediately addressed any items of non-compliance that had immediate risks to health, safety or security.

[Appendix B.5](#) presents the inspection results by sub-sector, which provides another perspective on licensee performance in 2020. These results demonstrate that the performance of the nuclear medicine sub-sector continues to be lower than other sub-sectors, particularly in the operating performance and radiation protection SCAs. CNSC staff continue to work on promoting compliance within this sub-sector, although progress on this front was difficult in 2020 given the challenges in inspecting nuclear medicine licensees this past year: accessing hospitals was difficult during the pandemic and CNSC staff furthermore recognized that these licensees needed to prioritize their resources on the response to COVID-19. As a result, the small number of inspections conducted for this sub-sector focused on those licensees where CNSC staff felt that additional regulatory oversight was required, whether due to poor past performance or because the inspections for those licensees were overdue. CNSC staff will continue to monitor this sub-sector in future, to see if further regulatory response is required.

Even though there were decreased numbers of inspections, due to limitations of travel and access to licensee sites, analysis of all licensee data demonstrated performance ratings were similar to previous years across all SCAs at the sector level. DNSR continued to use a risk-informed approach to inspections, and other compliance activities continued, such as reviews of Annual Compliance Reports (ACR), events, and dose data. Despite the lower number of inspections performed in 2020, CNSC staff are confident that the performance trends identified are a true indication of licensee performance. On the other hand, the smaller sample size this year makes it challenging to compare results year over year, which means it is not possible to draw meaningful conclusions from any apparent upward or downward trending in performance this year. As regulatory activities return to normal in future, subsequent RORs will more accurately identify any deviations in trends. DNSR will closely monitor performance in the coming years, to understand future impacts and adjust the regulatory oversight approach as required.

1.1 Management System

In 2020, licensees continued to maintain strong performance in the management system SCA. Overall, 96% of the licensees inspected received ratings of satisfactory for this SCA, and there were no unacceptable ratings. The management system SCA has been performing with similar results over the past few years.

Refer to [Appendix B.1](#) for additional information.

1.2 Operating Performance

Licensees' performance in the operating performance SCA slightly decreased from previous years. Of the licensees inspected, 83% received ratings of satisfactory for this SCA. There were no unacceptable ratings in this SCA.

Refer to [Appendix B.2](#) for additional information.

1.3 Radiation Protection

Licensee's overall performance in the radiation protection SCA improved from 2019, where 80% of licensees received ratings of satisfactory, compared to 84% with satisfactory ratings in 2020. Even though the total number of inspections was lower, the percent compliance for 2020 is similar to the previous 5 years performance for radiation protection. These ratings need to be considered in the context of lower numbers of inspections, and the reader should not place too much emphasis on these numbers as indicative of overall performance trending.

It is important to note that the revised *Radiation Protection Regulations* came into effect late in the reporting period for this ROR. Therefore, while a downturn in performance is possible immediately following the implementation of new regulatory requirements, no impact is yet evident but may impact the 2021 ROR. Refer to [Appendix B.3](#) for additional information.

There was 1 unacceptable rating for radiation protection for an industrial radiography licensee, resulting in CNSC staff issuing an order. The licensee has complied with the terms of the order and put corrective measures in place to address all items of non-compliance found during the routine Type II inspection that lead to the issuance of the order. The status of the order is closed and more details are found in table 17 of [Appendix C](#).

1.4 Security

In 2020, licensees' performance in the security SCA remains consistent with the previous 5 years, where 93% of the licensees inspected demonstrated they have adequate provisions in place to prevent the loss, sabotage, illegal use, or illegal removal of nuclear substances and prescribed equipment in their care and control.

DNSR licensees continue to maintain strong compliance with applicable Security regulatory requirements, including the general requirements contained in the *General Nuclear Safety and Control Regulations*, as well as in REGDOC-2.12.3, *Security of Nuclear Substances: Sealed Sources and Category I, II and III Nuclear Material, Version 2*, applicable to sealed sources and radiation devices. REGDOC-2.12.3 came into force as a requirement for Category 1 and 2 sealed sources/radiation devices on in May, 2015, and for Cat 3/4/5 sealed sources/radiation devices in May, 2018. In spite of an initial, and expected, reduction in compliance ratings following these new regulatory requirements coming into force, data in the ROR's tables and graphs presents that licensees have regained their compliance with requirements under the Security SCA.

Refer to [Appendix B.4](#) for additional information.

1.5 Environmental Protection and Conventional Health and Safety

Performance in the environmental protection SCA and conventional health and safety SCA are reported on only for the waste nuclear substance subsector. No waste nuclear substance licensees received below expectations or unacceptable ratings in the environmental protection SCA. The waste nuclear substance licensees continue to manage and monitor environmental releases as a result of licensed activities. These releases were kept well below regulatory limits. There were 2 unplanned releases to the environment as a result of licensed activities in 2020. However, the radioactivity concentration of the first release was below unconditional clearance levels and the radioactivity concentration of the second release was well below the licensees' action levels. Therefore, the releases had no impact on the health, safety and security of persons or the environment.

No waste nuclear substance licensees received below expectations or unacceptable ratings in the conventional health and safety SCA. The licensees continue to implement a health and safety program in accordance with the applicable occupational health and safety legislation to protect the health and safety of their workers.

1.6 Compliance Efforts during the Pandemic

At the beginning of the pandemic, to ensure CNSC staff and licensee safety, the CNSC suspended all on-site inspections. During this pause in inspections, staff worked to establish contact with licensees to review their status of operations. For the most part, licensees were continuing to operate, in some manner, despite the pandemic. Once staff were comfortable with their knowledge about licensee

operations, work pivoted to developing an approach for safely and effectively conducting compliance oversight under pandemic conditions. The initial inspection plan was revised to account for the time lost during the early lock-down, leading to an approximately 25% reduction in planned inspections. At the same time, CNSC staff devised processes and procedures for conducting remote inspections, along with a modified compliance verification strategy to help guide the decision as to which type of inspection to conduct, depending on the changing circumstances of the pandemic (see section 1.7 for more information on the experience with remote inspections). Successive waves of the pandemic throughout the year, combined with the realization that remote inspections were taking longer than originally expected, led to ongoing adjustments to the inspection plan. The original plan of approximately 750 inspections was ultimately reduced to approximately 300 planned inspections. In the end, CNSC staff were successful in exceeding this plan, conducting a total of 371 inspections in 2020 – 178 of these were remote inspections and 193 were on-site.

As always, CNSC staff applied a risk-informed approach to developing the initial inspection plan and then to each successive adjustment, maintaining at all times a focus on the highest-priority inspections. All high priority inspections in the revised 2020 plan were completed.

The 371 inspections conducted in 2020 represents approximately half the number carried out in a typical year. This reduction in inspections decreases the CNSC's ability to confirm the safe performance of its licensees. In addition, the reduced presence of inspectors on-site could lead to a decrease in licensee compliance with regulatory requirements. This doesn't mean fewer inspections automatically leads to an abrupt or significant spike in risk, but could rather introduce a gradual increase in probability that some licensees would engage in unsafe work practices. To put this in perspective, the CNSC has an established risk profile for the sectors covered by this ROR, which concludes that the *consequences* of an accident in these sectors (on average) would be relatively low – many licensees in these sectors deal with sealed sources contained in radiation devices or relatively small amounts of nuclear substances, with relatively low levels of radiation. By contrast, the risk profile has assessed the *probability* of an accident to be relatively high, due in part to the large number of licensees covered. A reduction in inspections could lead to an incremental increase in the probability of unsafe work practices leading to an accident, but would not increase the consequences of such an accident – as a result, the total risk level would only increase by a small amount.

In addition to this analysis of the risk profile, it is important to remember that inspections are not the only element of the CNSC's compliance oversight. Throughout 2020, CNSC staff continued to review Annual Compliance Reports submitted by licensees and continued to monitor reported events, both of which provide valuable indicators of safe performance. With all of this taken into account, CNSC staff have concluded that the risk posed by the reduced number of inspections conducted in 2020 remains acceptable.

That being said, CNSC staff recognize that conducting a reduced number of annual inspections is not sustainable going forward. There is a potential for licensee performance to decrease if not inspected regularly. In addition, reduced compliance performance information that would typically be gathered during on-site inspections would eventually impact CNSC staff's ability to make risk-informed licensing decisions. As such, staff are currently focused on re-calibrating the CNSC's regulatory oversight of nuclear substances licensees by steadily increasing the number of on-site inspections as vaccination rates rise and the risks from COVID-19 continue to decline. At the same time, we will continue to make use of the advantages offered by remote inspections, which are further described in the next section.

1.7 Remote Inspections

As noted, CNSC staff developed a modified compliance verification strategy in order to guide the decisions on which type of compliance activity to perform during the pandemic, on-site or remote. These decisions were made on a case-by-case basis, based on the status of the pandemic at that time, with the priority placed on the health and safety of both CNSC and licensee staff.

Fortunately, many inspections could be conducted remotely and staff verified most of the same criteria that would normally be checked as part of an on-site inspection. Remote verification was limited to examining records and photos provided by the licensee as well as conducting basic interviews with the radiation safety officer (RSO). Where possible, staff observed work being performed using videoconferencing software. Staff have deferred some inspections where it was not possible to perform them remotely. These fell into 2 main categories:

- Inspections where verifications of specific security-related regulatory requirements were not possible over remote means due to the sensitivity of information which needed to be exchanged;
- Inspections where independent verification by an inspector was required or where remote inspection technology was not available.

The 2 main challenges to remote inspections identified by staff were having a reliable and secure platform for meeting with the licensee and having an efficient way for licensees to securely send large amounts of documentation. In addition, remote inspections have proven to take longer than expected, and have typically taken longer to conduct than on-site inspections.

In the spirit of continuous improvement, staff collected and analyzed licensee feedback related to the remote inspection process. While licensees all reported that the process was effective and believed it was a positive experience, data gathering and the submission of the requested records was challenging.

Despite the shift to remote inspections, staff continued to respond on site for events, to issue enforcement actions or to perform specific on-site compliance activities if warranted. Staff performed any on-site oversight activities on a risk-informed basis in observance of relevant COVID-19 health protocols.

While they can be effective under certain circumstances, remote inspections do not provide a complete assessment of all performance-based activities. In comparison, on-site inspections allow staff to make better use of visual clues during interviews and they eliminate some of the limitations related to protected document access as well as physical observations of workers performing their tasks. Furthermore, the initial assumption was that remote inspections would take less time overall to complete, however the opposite was observed due to the additional planning required and logistical steps involved in planning remote inspections. Overall, while they are not sufficient on their own, remote inspections provide staff with a functional tool to monitor compliance and they will remain part of the compliance program moving forward, in combination with on-site inspections. Staff are now well placed to address any future disruptions in our ability to conduct on-site inspections during exceptional circumstances.

2.0 Enforcement

[Appendix C](#) presents enforcement action data by sector over the past 5 years.

The CNSC uses a graduated approach to enforcement to encourage compliance. When non-compliance (or continued non-compliance) has been identified, CNSC staff assess the significance of the non-compliance and determine the appropriate enforcement action.

In 2020, the CNSC issued 4 orders and 2 administrative monetary penalties (AMPs) to licensees. Half of these enforcement actions were issued as a result of remote inspections, which further demonstrates the effectiveness of CNSC's regulatory oversight during a pandemic.

As DNSR completed roughly half the typical number of inspections per year, it was also observed that enforcement actions issued were also roughly half the typical number issued, when comparing to numbers in 2019. Although affected by many variables, enforcement actions tend to be issued as a result of inspections; as such, fewer inspections typically results in fewer enforcement actions. Most of the enforcement actions were taken against licensees in the industrial sector, consistent with trends from previous years. All enforcement actions are closed and the CNSC is satisfied that the licensees have addressed the conditions of the orders/AMPs.

3.0 Effective Doses to Workers

[Appendix D](#) presents the full datasets and additional information on effective doses to workers in 2020.

Licensees are required to keep radiation doses to persons below regulatory limits and as low as reasonably achievable (ALARA) in accordance with their radiation protection program referenced in their licence.

In 2020, doses were monitored for 58,967 workers in the 4 sectors. Of those workers, 22,861 were nuclear energy workers (NEWs). The remaining 36,106 were not designated as NEWs and are referred to as non-NEWs in the report. Exposures to radiation continued to be very low for workers covered in this ROR for 2020, consistent with previous reporting years.

In 2020, no NEWs received doses above the regulatory limit of 50 mSv per calendar year, while 3 non-NEWs reported dosimetry readings above the applicable dose limit of 1 mSv per calendar year. The 3 instances are described in the following paragraphs.

A non-NEW received a cumulative effective dose of 1.3 mSv, across 2 dosimetry periods. The worker received a dose of 0.93 mSv between the period of January to March 2020, which, while not above the annual regulatory dose limit, exceeded the licensee's action level. Under typical circumstances, the licensee would have removed the worker from any work likely to result in a further dose in order to avoid exceeding the annual limit. However, due to the COVID-19 pandemic, there was a delay in submission of dosimeters to the licensed dosimetry service provider, which caused a delay in the licensee becoming aware of the action level exceedance. As a result, the worker was allowed to continue working and received a further dose of 0.37 mSv between the period of July to September 2020 (the worker did not receive a dose between the period of April to June 2020 as no work was performed in that period due to the pandemic). The licensee determined that the worker did not follow the established safe work practices, which led to a higher than normal personal dose. An event initial report (EIR) was presented to the Commission in January 2021 in CMD 21-M10.

A non-NEW received an effective dose of 3.54 mSv, as reported for the dosimetry period between October 2019 and December 2019. Although this falls outside the period covered by this ROR, the Radiation Safety Officer received the dosimetry report from the National Dosimetry Service in March 2020, which is why this dose is included in the 2020 data. The licensee determined that part of the dose

was non-occupational and was received while the worker was caring for a relative who had undergone a nuclear medicine test in November 2019. The licensee's investigation was unable to identify with certainty any specific incident or event that could have resulted in a total dose reading of 3.54 mSv. A dose change request for the portion of the dose that was demonstrated to be non-occupational was approved. An EIR was presented to the Commission in September 2020 in CMD 20-M27.

A dosimeter assigned to a non-NEW worker recorded a dose of 1.28 mSv for the period from April to June 2020. The worker was only assigned to an area with a potential for dose exposure for 6 days out of the 3 month dosimetry period, and as is typical practice for this licensee, the employees work in teams of at least 2 people. All dosimetry reports for the other workers showed no dose received. The worker did not lose control of the dosimeter or leave the premises with the dosimeter. Considering there was no excess dose received by the other worker, and owing to the fact that there were no reported failures in access control procedures nor equipment failures during that period, it is highly unlikely that this dose was received from activities regulated by the CNSC; nonetheless, it remains in the 2020 data.

4.0 Reported Events

[Appendix E](#) presents a description of each event reported in 2020.

Licensees are required to have programs in place for the management of unplanned events and accidents. The events that warrant mandatory reporting and the content of the reports are set out in the NSCA, its regulations and the licence conditions. CNSC staff review, assess and track all events reported by licensees.

Since 2014, reported events have been ranked using the [International Nuclear and Radiological Event Scale \(INES\)](#), a tool for communicating the safety significance of nuclear and radiological events to the public. Note that the scale is not a tool for comparing safety performances among facilities or organizations, but rather for effectively communicating the safety significance of events.

CNSC staff assessed 135 events related to nuclear substances and prescribed equipment in 2020 as seen in [Appendix E](#) figure 17. Of these events, 126 ranked as level 0 (no safety significance) under the International Nuclear and Radiological Event Scale (INES) and 7 were ranked as INES level 1 (anomaly).

Of the INES level 1 events, 3 involved doses to non-NEW workers above the 1 mSv dose limit; these were covered in the previous section. The other 4 were related to stolen portable gauges. There was one event involving a portable gauge that was reported stolen by the licensee back in 2013 and was recovered in 2020 after a member of the public found it in a warehouse and notified the CNSC. The CNSC was able to identify the licensee-owner, who was then able to safely recover the portable gauge and confirm that it was in good condition, with both sources in a shielded position. Two events involved the theft of portable gauges that were promptly recovered. Finally, there was one portable gauge that was reported stolen while it was stored in a parked vehicle, which has yet to be recovered. The portable gauge contains a category 4 sealed source, meaning that it is classified as "low risk" and is unlikely to be dangerous.

For all cases of events reported to the CNSC, licensees implemented appropriate response measures to mitigate the impacts of the events and to limit radiation exposure to workers and the public. CNSC staff reviewed the measures and found them to be satisfactory. More information on the events can be found in [Appendix E](#).

As noted above, event data related to transport is a more meaningful indicator than licensee performance ratings for the Packaging and Transport SCA. Out of the 135 events reported in 2020, 31 (23%) were related to transport. For the most part (68%), these events related to minor motor vehicle accidents ("fender benders") where there was no damage to the package being transported and no injury to the

driver. None of the transport-related events were considered risk-significant; all were rated INES level 0. Given the high volume of packages containing radioactive material that are shipped on a regular basis in Canada, the small number of transport events reported in 2020 – all of which were of low risk significance – provide an indicator of the overall level of safety of this activity.

The number of reported events in 2020 is slightly lower than the previous 5 years, however is generally consistent with typical annual numbers. There was a lull in reported events in from March to June 2020, compared to previous years' monthly event data – this time frame corresponds to lock downs across the country. The number of events reported stabilized to average levels midway through the year, corresponding with some lockdowns being lifted and workers gradually returning to the workplace. The lower number of events observed in 2020 could be related to licensees restricting operations during the pandemic, however a more thorough analysis of data over the next few years will help to determine if the pandemic resulted in lower numbers.

5.0 Stakeholder Engagement

Stakeholder engagement and outreach activities are performed by the CNSC to facilitate communication on licenced activities and regulatory expectations between the CNSC, nuclear substance licensees, the public, and Indigenous communities.

Stakeholder engagement and outreach are critical elements of the CNSC's regulatory approach. Given the breadth of licensees regulated in the area of nuclear substances, a particular focus is on reaching and engaging with licensee communities, which leads to increased awareness and better understanding of the regulatory process and requirements. CNSC staff leverage a variety of fora to engage with licensees and promote the use of the tools that are developed to support their compliance with regulatory expectations.

In the early stage of the pandemic, CNSC staff conducted outreach activities to ascertain the operating environment of its licensees, and to verify that all licensees had maintained measures for the safety and security of their nuclear substances. The CNSC individually contacted each DNSR licensee to ensure communications were maintained during the pandemic, and requested updates related to the status of business activity, alternate contact means, and changes to key persons involved in the licensed activity. Specific information was also sought related to additional training required for workers, and the maintenance of required training related to radiation protection and transportation of dangerous goods.

Other CNSC outreach in 2020 included:

- A regulatory policy discussion hosted by the CNSC on February 12, on REGDOC 1.6.2 *Developing and Implementing an Effective Radiation Protection Program for Nuclear Substances and Radiation Devices Licences*
- DNSR Digest: six issues of the DNSR Digest – an email containing brief articles of interest to DNSR licensees – were distributed in 2020. Please note the DNSR Digest replaced the former DNSR Newsletter effective August 2020
- Working Groups:
 - The Radiography Working Group was hosted by the CNSC in 2020
 - There were 2 meetings with the Canadian Radiation Protection Association (CRPA) working group, 1 in person (before the pandemic) and 1 remote. Topics for such meetings are varied, focusing on items of mutual interest, and are intended to foster open communications between CRPA and the CNSC

- February 14 in person discussion on multi modality dose consideration in room approvals, general communication updates and update on REGDOCs
- December 11, virtual discussion on new Radiation Protection regulations, Comments from CRPA on ROR and general discussion of mutual interest

6.0 Conclusion

In 2020, the majority of the inspected licensees were in compliance with the expectations of the SCAs, and all of the enforcement actions taken in 2020 have been closed. Radiation exposure to workers in 2020 continues to be very low and consistent with previous years. For the events reported in 2020, the licensees implemented appropriate responses to address the events, as determined by CNSC staff. CNSC staff continued to host outreach with various stakeholders to keep the public, Indigenous communities and licensees informed.

Adapting to the pandemic environment allowed CNSC staff to leverage the use of alternate performance verification activities, such as remote inspections, and in 2020 the mix of remote and on-site inspections was sufficient to maintain regulatory oversight. However, CNSC staff conclude that remote inspections are most appropriate during exceptional circumstances, and will not be the standard moving forward, as the goal is to return to majority in-person inspections when appropriate and safe to do so.

Overall, CNSC staff saw no significant changes in the distribution of licences, compliance trending, or doses to workers for any of the sectors covered by the report. Licensees corrected identified items of non-compliance to the satisfaction of CNSC staff. Resulting from the CNSC's comprehensive regulatory oversight of the industry, the evaluations of findings for the SCAs demonstrates that licensees made acceptable provisions to protect health, safety, security, and the environment from the use of nuclear substances and prescribed equipment, and took the measures required to implement Canada's international obligations. Based on these evaluations, CNSC staff conclude that the use of nuclear substances and prescribed equipment in Canada remains safe and secure.

Appendix A: Regulatory Program for the Use of Nuclear Substances

This section presents additional regulatory data to complement the information provided in the main part of the document.

A.1 CNSC regulatory effort

Table 1: Licensing and certification in 2020, all sectors combined

| Type of decision | Number of decisions |
|---|---------------------|
| Licensing (issuance of new licenses, licence renewals, licence amendments, licence revocations and licence transfers) | 1,484 |
| Certification of prescribed equipment (radiation devices, Class II prescribed equipment and transport packages) | 63 |
| Certification of exposure device operators (EDOs) (issuance of new certification and renewal of certification) | 393 |
| Certification of Class II RSOs | 24 |
| Total | 1,964 |

Table 2: CNSC staff direct effort for regulating the use of nuclear substances and prescribed equipment in 2020, all sectors combined

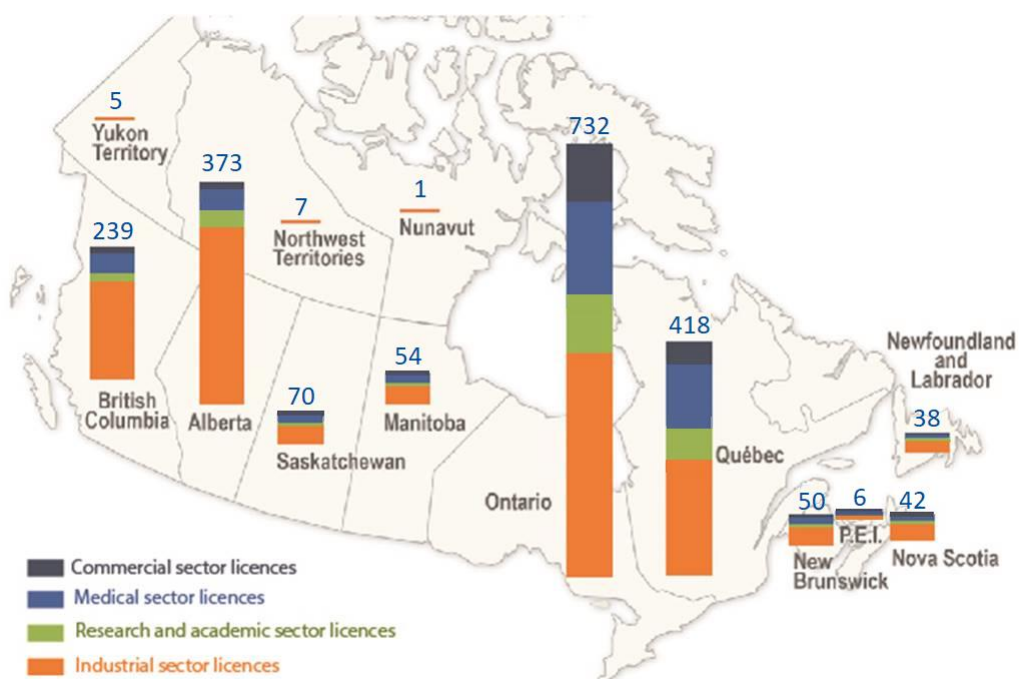
| Activity | Person-days |
|-------------------------|-------------|
| Licensing | 5,433 |
| Certification | 1,299 |
| Compliance verification | 4,966 |

A.2 Licensing

In 2020, there were 2,079 licences held for the use of nuclear substances and prescribed equipment (table 3). The licensees are located throughout Canada, as indicated in figure 1. Note the difference in total number of licenses in table 3 (2,079) versus figure 1 (2,035); this is because 44 licenses were issued to companies headquartered in other countries (primarily the United States) but that service prescribed equipment located in Canada.

Table 3: Number of licences by sector, 2016-2020

| Sector | 2016 | 2017 | 2018 | 2019 | 2020 |
|-----------------------|--------------|--------------|--------------|--------------|--------------|
| Medical | 470 | 457 | 436 | 438 | 445 |
| Industrial | 1,308 | 1,287 | 1,259 | 1,228 | 1207 |
| Academic and research | 208 | 195 | 192 | 187 | 189 |
| Commercial | 254 | 252 | 248 | 237 | 238 |
| Total | 2,240 | 2,191 | 2,135 | 2,090 | 2,079 |

Figure 1: Licensees that use nuclear substances and prescribed equipment are located across Canada

A.3 Certification of prescribed equipment and transport packages

As seen in table 1, designated officers made 63 decisions related to the certification of prescribed equipment and/or transport packages.

A.4 Certification of exposure device operators

Licensees are required under the [Nuclear Substances and Radiation Devices Regulations](#) to permit only CNSC-certified personnel and supervised trainees to use exposure devices containing nuclear substances. In 2020, the CNSC certified 61 new exposure device operators (EDOs) and renewed the certifications of 332 others.

A.5 Certification of Class II radiation safety officers

All licensees that operate Class II nuclear facilities or that service Class II prescribed equipment must have a certified radiation safety officer (RSO) and a qualified temporary replacement. The RSO ensures that licensed activities are conducted safely and all regulatory expectations are met.

In 2020, the CNSC certified 24 Class II RSOs. No Class II RSOs were decertified in 2020.

A.6 Record of Decision- Mississauga Metals and Alloys Exemption Request

As requested by the Commission, CNSC staff report that, pursuant to paragraph 37(2)(c) of the NSCA, the DO made the decision to renew Mississauga Metals and Alloys' (MM&A) Waste Nuclear Substance Licence. The licence, WNSL-W2-3750.00/2022 is valid from May 1, 2021 until February 28, 2022, unless otherwise suspended, amended, revoked, replaced, or transferred.

The DO recognized that the Commission has granted MM&A a temporary exemption from the *Cost Recovery Fees Regulations*, based in part on the understanding that the licensee has committed to providing full payment of arrears in accordance with the Licence Activity Plan, which includes a payment plan, submitted as part of its application for a licence. A licence condition has been added to ensure that MM&A complies with the Licensed Activity Plan, and the elements of this Plan have been included in Appendix A of the MM&A licence. The licence condition states: "The licensee shall comply with the arrears payment schedule as set out in Appendix A of this licence." CNSC staff will monitor MM&A's payments of its arrears and will take appropriate action to respond to any non-compliance.

As part of its application for the renewal of its licence, MM&A submitted a revised Radiation Safety Manual and demonstrated that it has the qualifications to implement the radiation safety program. CNSC staff determined that this satisfies the conditions to close the Order that had been raised further to the November 2019 compliance inspection.

Appendix B: Compliance Performance

As previously noted in the body of the report, it is important to keep in mind when interpreting the data presented, that the decreased number of inspections due to the COVID-19 pandemic affected the performance metric sample size. Since the sample size in 2020 was much smaller than previous years, it is difficult to compare results year-over-year. As a result, the reader should not place too much emphasis on any apparent trending when interpreting performance results.

B.1 Management System

For the management system SCA, 96% of the licensees inspected ensured that adequate processes and programs were in place to achieve their safety objectives (figures 2 and 3). There were no unacceptable ratings in this SCA.

For any below expectation ratings, CNSC staff ensured that licensees took appropriate corrective actions.

Figure 2 : Inspection ratings for management systems, 2016 – 2020

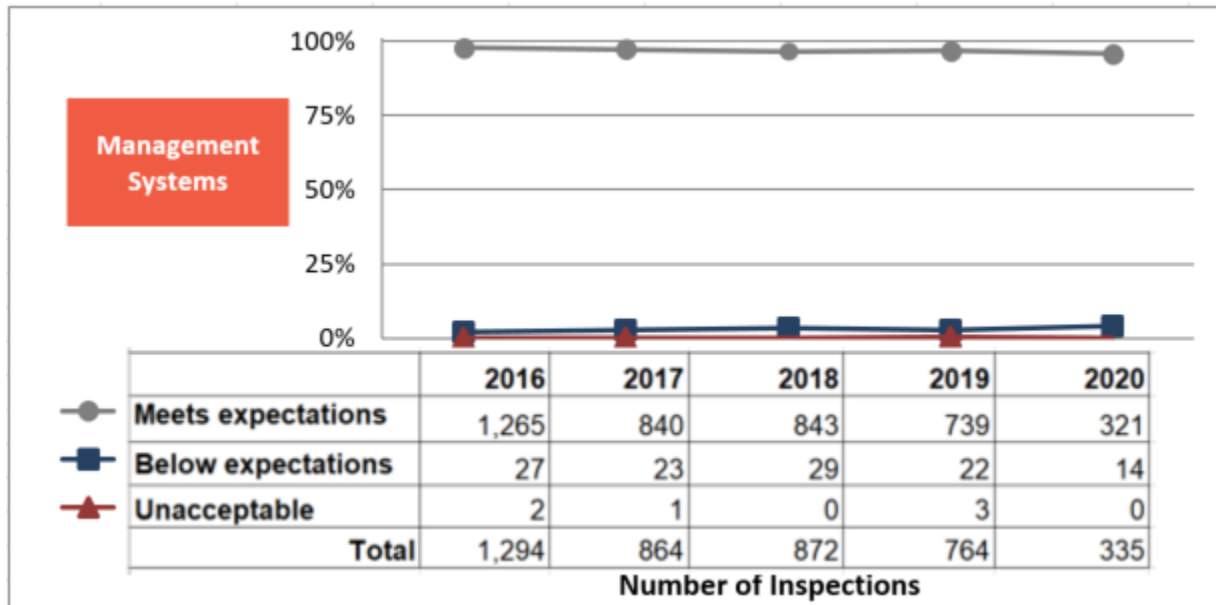
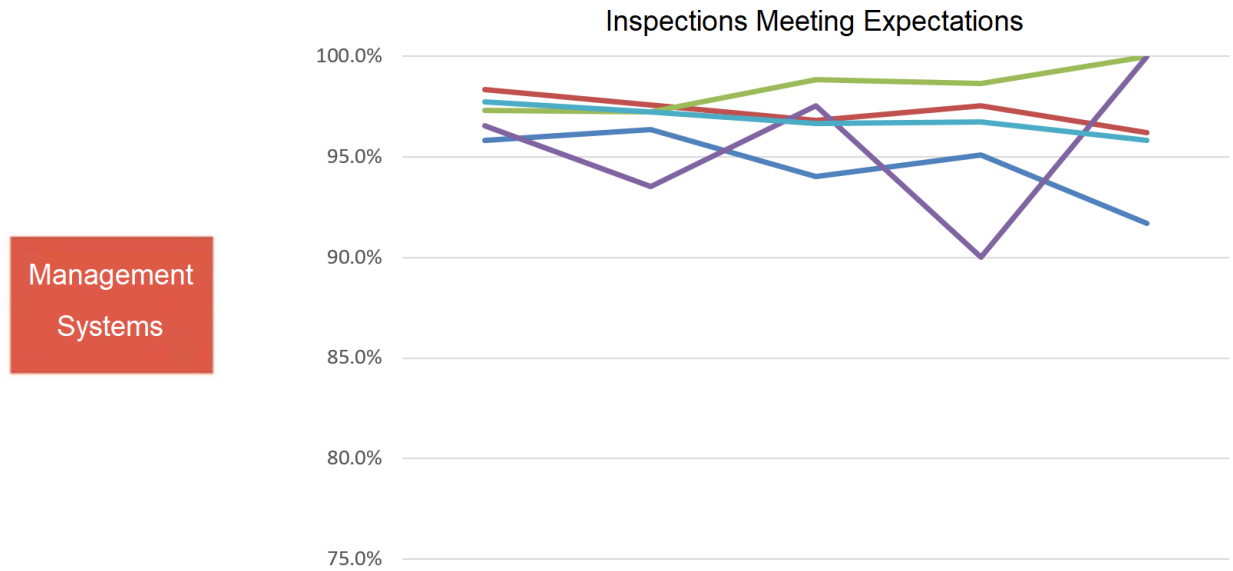


Figure 3: Sector-to-sector comparison of inspection ratings meeting expectations for management systems, 2016- 2020



| Number of Inspections | 2016 | 2017 | 2018 | 2019 | 2020 |
|-----------------------|------|------|------|------|------|
| Medical | 207 | 106 | 110 | 155 | 44 |
| Industrial | 901 | 605 | 608 | 475 | 254 |
| Academic and Research | 73 | 71 | 85 | 73 | 9 |
| Commercial | 84 | 58 | 40 | 36 | 14 |
| All sectors combined | 1265 | 840 | 843 | 739 | 321 |

B.2 Operating Performance

For the operating performance SCA, 83% of the licensees inspected ensured that adequate processes and programs were in place to achieve their safety objectives (figures 4 and 5). There were no unacceptable ratings in this SCA.

For any below expectation ratings, CNSC staff ensured that licensees took appropriate corrective actions.

Figure 4: Inspection performance for operating performance, 2016-2020

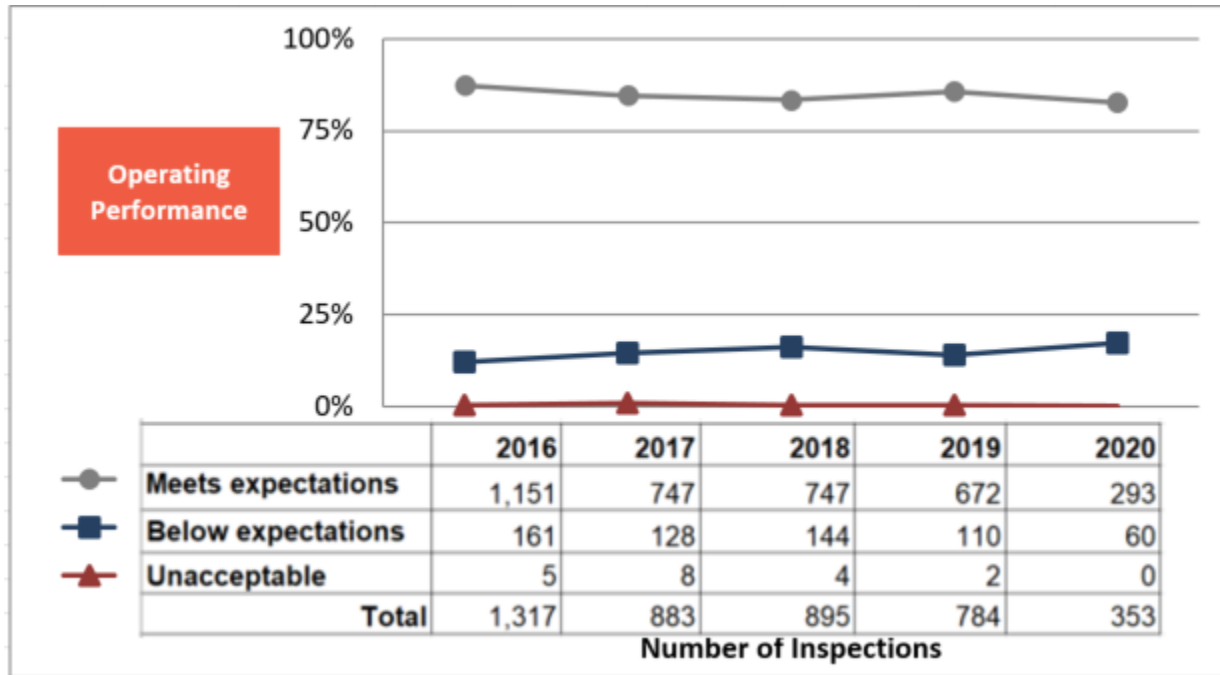
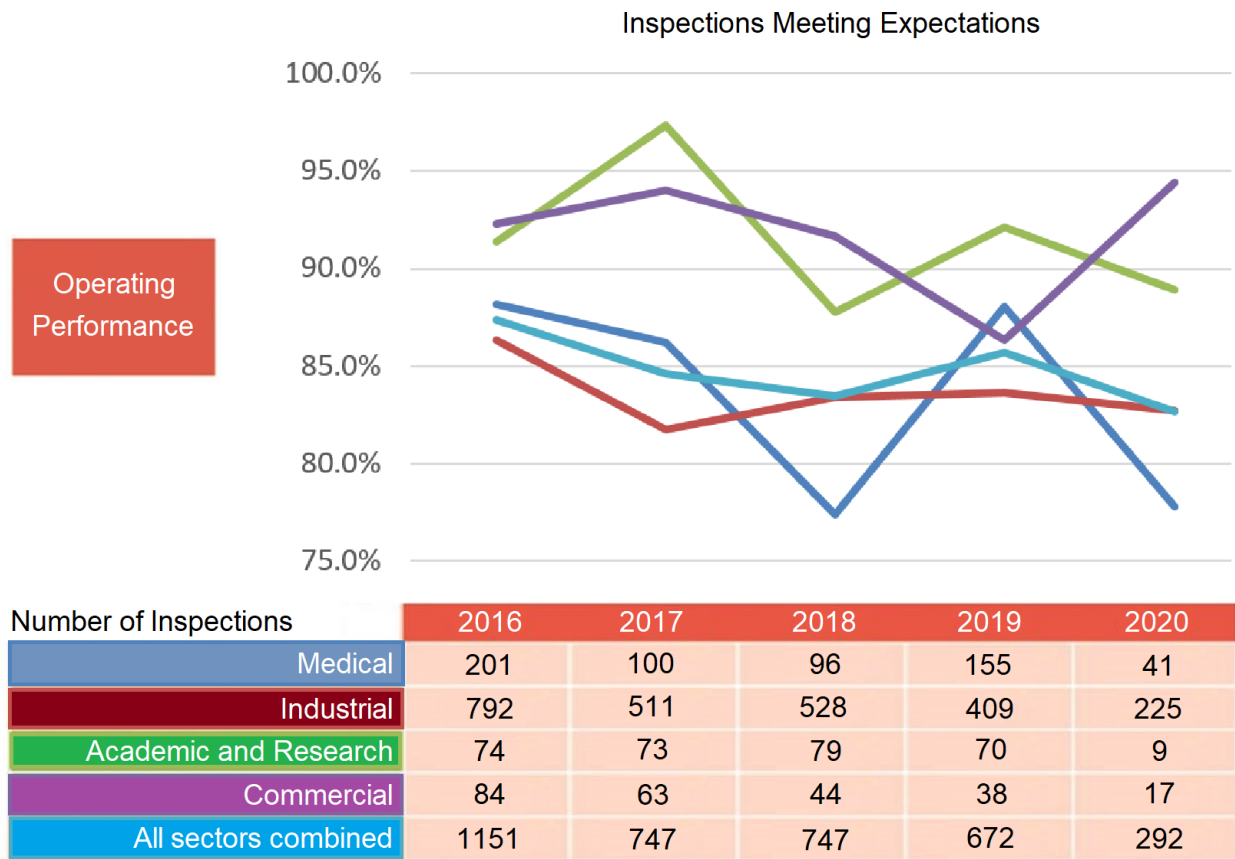


Figure 5: Sector-by-sector comparison of inspections meeting expectations for operating performance, 2016 – 2020



B.3 Radiation Protection

For the radiation protection SCA, 84% of the licensees inspected ensured that adequate processes and programs were in place to achieve their safety objectives (figures 6 and 7).

One industrial licensee received an unacceptable rating in radiation protection. The licensee was issued an order (refer to order #1212 in [Appendix C](#) for further details). The licensee has complied with the terms of the order and put corrective measures in place to address all items of non-compliance found during the routine Type II inspection that lead to the issuance of the order. More details of the order can be found in table 17 of [Appendix C](#). CNSC staff were satisfied with the corrective actions put in place by the licensee and the order is now closed.

For any below expectation ratings, CNSC staff ensured that licensees took appropriate corrective actions.

Figure 6: Inspection performance for radiation protection, 2016 – 2020

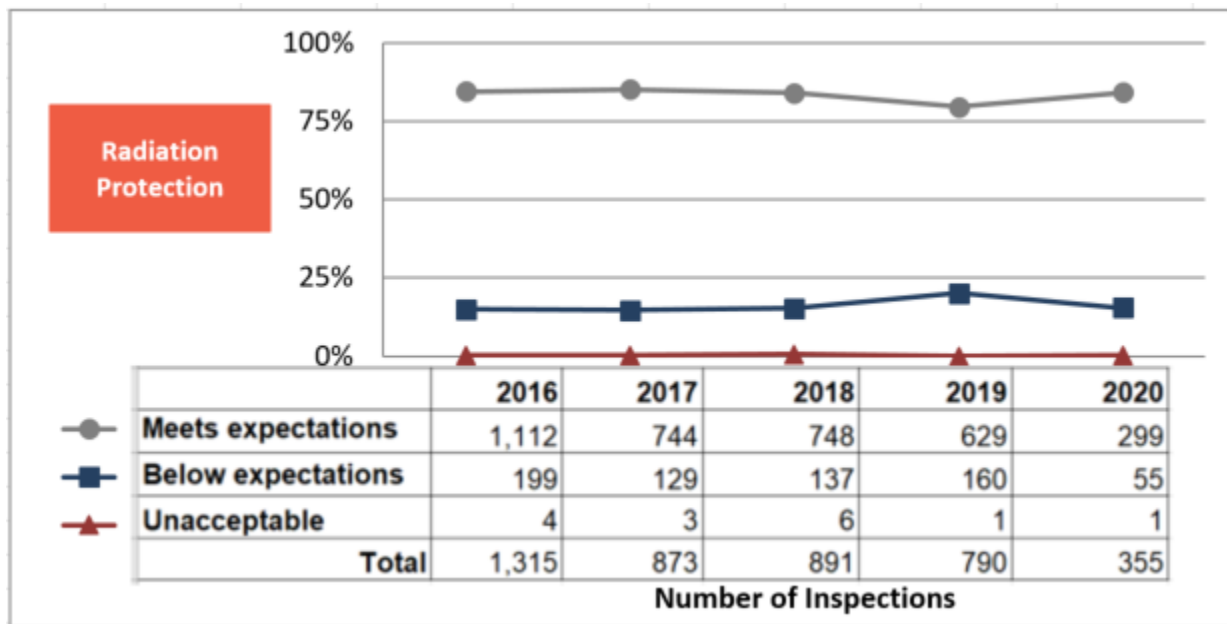
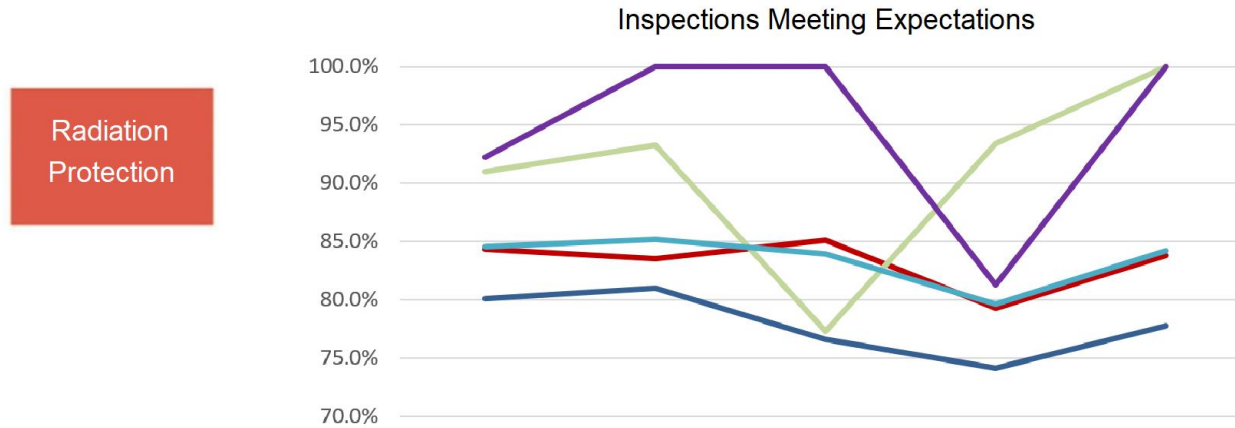


Figure 7: Sector-to-sector comparison of inspections meeting expectations for radiation protection, 2016 – 2020



| Number of Inspections | 2016 | 2017 | 2018 | 2019 | 2020 |
|-----------------------|------|------|------|------|------|
| Medical | 185 | 94 | 95 | 132 | 42 |
| Industrial | 773 | 518 | 539 | 387 | 227 |
| Academic and Research | 71 | 69 | 68 | 71 | 9 |
| Commercial | 83 | 63 | 46 | 39 | 21 |
| All sectors combined | 1112 | 744 | 748 | 629 | 299 |

B.4 Security

For the Security SCA, 93% of the licensees inspected ensured that adequate processes and programs were in place to achieve their safety objectives (figures 8 and 9). None of the licensees received an unacceptable rating for the Security SCA.

For any below expectation ratings, CNSC staff ensured that licensees took appropriate corrective actions.

Figure 8: Inspection performance for security, 2016 – 2020

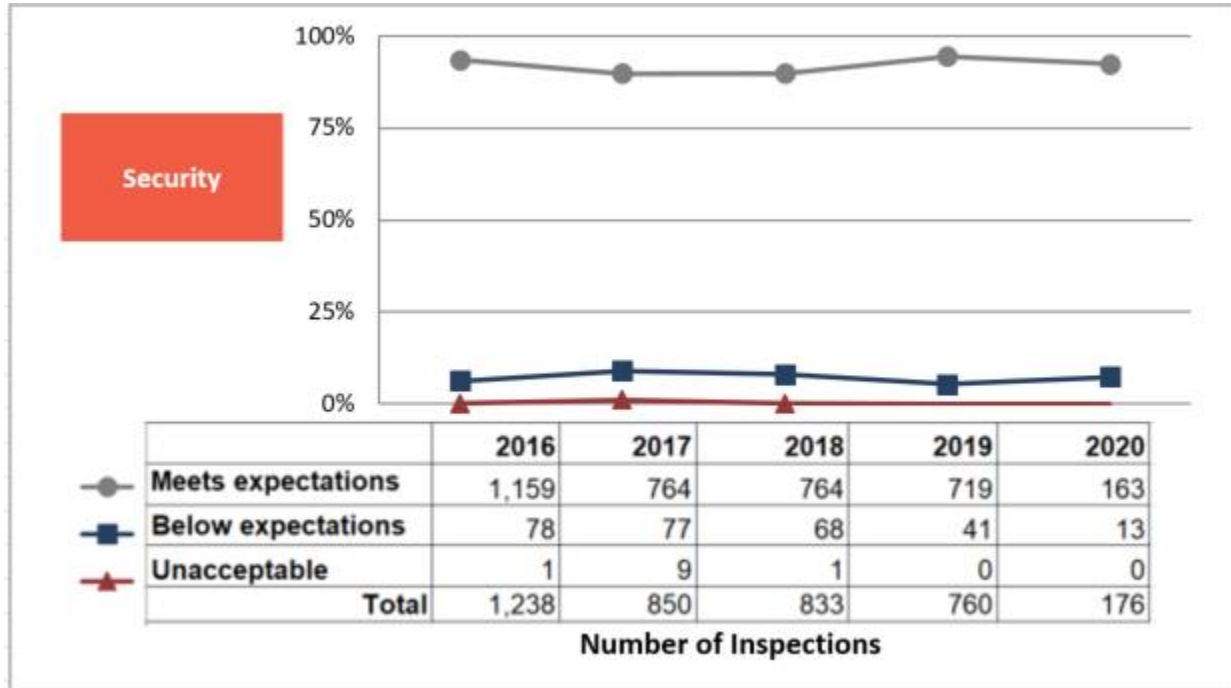
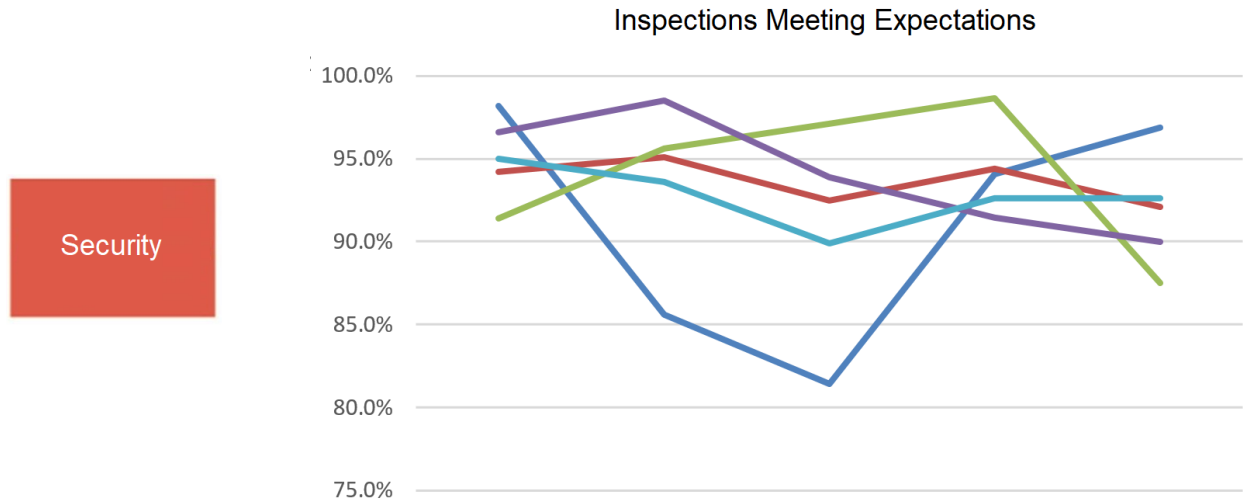


Figure 9: Sector-to-sector comparison of inspections meeting expectations for security, 2016 – 2020



| Number of Inspections | 2016 | 2017 | 2018 | 2019 | 2020 |
|-----------------------|------|------|------|------|------|
| Medical | 190 | 96 | 96 | 158 | 31 |
| Industrial | 830 | 552 | 587 | 457 | 116 |
| Academic and Research | 70 | 66 | 57 | 72 | 7 |
| Commercial | 69 | 50 | 46 | 32 | 9 |
| All sectors combined | 1159 | 764 | 786 | 719 | 163 |

B.5 Inspection rating, by sector

B.5.1 Medical sector

Tables 4 to 7 in this appendix shows the inspection performance of licensees in the medical sector. The performance of the subsectors is shown for the years 2016 – 2020 as a percentage of the inspections that received satisfactory grades for the SCA and the total number of inspections where performance in that SCA was assessed. The number of inspections for the medical sector is the aggregate for the entire sector, including subsectors not highlighted.

A breakdown by subsector is not provided for the security SCA given the potentially sensitive information associated with that SCA.

Table 4: Management system percent of inspections meeting expectations (total number inspections conducted) for subsector of the medical sector, 2016 – 2020

| SCA | Subsector or sector | 2016 | 2017 | 2018 | 2019 | 2020 |
|-------------------|-----------------------------|--------------|--------------|--------------|--------------|-------------|
| Management system | Nuclear medicine | 96% (174) | 98% (91) | 96% (103) | 95% (103) | 94% (47) |
| | Radiation therapy | 67% (10) | 82% (11) | 50% (6) | 100% (4) | 0% (1) |
| | Veterinary nuclear medicine | 100% (9) | 100% (4) | 100% (4) | 75% (4) | (0) |
| | Medical sector | 96% (216) | 97% (110) | 94% (117) | 95% (163) | 92% (48) |

Note: Green indicates >85% of inspections in a year met or exceeded expectations for an SCA. Yellow indicates 80% - 85% of inspections in a year met or exceeded expectations for an SCA. Red indicates < 80% of inspections in a year met or exceeded expectations for an SCA.

Table 5: Operating performance percent of inspections meeting expectations (total number inspections conducted) for subsector of the medical sector, 2016 – 2020

| SCA | Subsector or sector | 2016 | 2017 | 2018 | 2019 | 2020 |
|-----------------------|-----------------------------|--------------|--------------|--------------|--------------|-------------|
| Operating Performance | Nuclear medicine | 86% (184) | 86% (90) | 77% (104) | 87% (155) | 77% (48) |
| | Radiation therapy | 92% (24) | 89% (18) | 67% (12) | 100% (21) | 100% (2) |
| | Veterinary nuclear medicine | 100% (9) | 100% (4) | 100% (4) | 100% (3) | 100% (1) |
| | Medical sector | 88% (228) | 87% (116) | 77% (124) | 88% (176) | 77% (51) |

Note: Inspections for the nuclear medicine subsector were prioritized based on licensees that had not been recently inspected. The majority of completed inspections for this subsector were conducted onsite and at the beginning of the year, prior to the pandemic. The licensees that were inspected during this time were high priority, which led to an increase in findings. The smaller number of inspections completed in 2020 and the higher number of findings led to the overall decrease in performance for this SCA.

Table 6: Radiation protection percent of inspections meeting expectations (total number inspections conducted) for subsector of the medical sector, 2016 – 2020

| SCA | Subsector or sector | 2016 | 2017 | 2018 | 2019 | 2020 |
|----------------------|-----------------------------|--------------|--------------|--------------|--------------|-------------|
| Radiation Protection | Nuclear medicine | 77% (186) | 75% (89) | 74% (104) | 70% (155) | 73% (48) |
| | Radiation therapy | 100% (24) | 100% (19) | 100% (12) | 100% (13) | 100% (2) |
| | Veterinary nuclear medicine | 67% (9) | 100% (4) | 50% (4) | 100% (3) | 100% (1) |
| | Medical sector | 80% (231) | 81% (116) | 77% (124) | 74% (178) | 76% (51) |

Note: Inspections for the nuclear medicine subsector were prioritized based on licensees that had not been recently inspected. The majority of completed inspections for this subsector were conducted onsite and at the beginning of the year, prior to the pandemic. The licensees that were inspected during that period were high priority, which led to an increase in findings. The smaller number of inspections completed in

2020 and the higher number of findings led to the overall decrease in performance for this SCA. However, the areas identified as needing major improvements in 2019 had positive outcomes in 2020, probably due to the performed outreach activities.

Table 7: Security percent of inspections meeting expectations (total number inspections conducted) for subsector of the medical sector, 2016 – 2020

| SCA | Subsector or sector | 2016 | 2017 | 2018 | 2019 | 2020 |
|----------|---------------------|--------------|--------------|--------------|--------------|-------------|
| Security | Medical Sector | 86% (222) | 81% (118) | 91% (119) | 94% (168) | 97% (33) |

B.5.2 Industrial sector

Tables 8 to 11 in this appendix shows the inspection performance of licensees in the industrial sector. The performance of the subsectors is shown for the years 2016 – 2020 as a percentage of the inspections that received satisfactory grades for the SCA and the total number of inspections where performance in that SCA was assessed. The number of inspections for the industrial sector is the aggregate for the entire sector, including subsectors not highlighted.

A breakdown by subsector is not provided for the security SCA given the potentially sensitive information associated with that SCA.

Table 8: Management system percent of inspections meeting expectations (total number inspections conducted) for subsector of the industrial sector, 2016 – 2020

| SCA | Subsector or sector | 2016 | 2017 | 2018 | 2019 | 2020 |
|-------------------|------------------------|---------------|--------------|--------------|---------------|--------------|
| Management system | Portable gauge | 98% (443) | 99% (303) | 98% (321) | 100% (215) | 98% (92) |
| | Fixed gauge | 100% (205) | 94% (130) | 94% (112) | 94% (124) | 94% (94) |
| | Industrial radiography | 97% (201) | 96% (136) | 96% (138) | 98% (114) | 98% (66) |
| | Oil well logging | 100% (48) | 100% (42) | 98% (43) | 100% (24) | 89% (9) |
| | Industrial sector | 98% (916) | 98% (620) | 97% (608) | 98% (487) | 96% (261) |

Note: Green indicates >85% of inspections in a year met or exceeded expectations for an SCA. Yellow indicates 80% - 85% of inspections in a year met or exceeded expectations for an SCA. Red indicates < 80% of inspections in a year met or exceeded expectations for an SCA.

A significant reduced activity in the oil-well logging subsector, unrelated to the pandemic, lead to a large decrease in locations storing and using nuclear substances, resulting in reduced number of planned inspections in 2020. While compliance in the subsector was similar to past years, one slightly lower

performer combined with the low number of performed inspections lead to a decrease in performance for this subsector.

Table 9: Operating performance percent of inspections meeting expectations (total number inspections conducted) for subsector of the industrial sector, 2016 – 2020

| SCA | Subsector or sector | 2016 | 2017 | 2018 | 2019 | 2020 |
|-----------------------|------------------------|--------------|--------------|--------------|----------------|--------------|
| Operating Performance | Portable gauge | 87% (439) | 82% (305) | 86% (326) | 82% (216) | 82% (98) |
| | Fixed gauge | 77% (205) | 70% (136) | 68% (111) | 73% (124) | 71% (94) |
| | Industrial radiography | 94% (199) | 89% (116) | 88% (138) | 93% (114) | 98% (66) |
| | Oil well logging | 90% (48) | 93% (42) | 86% (44) | 100% (24) | 100% (9) |
| | Industrial sector | 86% (917) | 82% (625) | 83% (633) | 83.9% (484) | 82% (267) |

Note: Inspections for the fixed gauge subsector were prioritized based on licensees that had not been recently inspected, licensees that were individually selected based on lower past compliance results, and licensee with specific conditions on their licence permitting specific activities with a greater risk to the safety of workers. This subsector grading has similar low results in the past few years due the way compliance is verified in assessing operating performance. A single finding related to a licensee's procedure will generally lead to a negative impact on the overall performance.

Table 10: Radiation protection percent of inspections meeting expectations (total number inspections conducted) for subsector of the industrial sector, 2016 – 2020

| SCA | Subsector or sector | 2016 | 2017 | 2018 | 2019 | 2020 |
|----------------------|------------------------|--------------|--------------|--------------|--------------|--------------|
| Radiation Protection | Portable gauge | 84% (442) | 82% (306) | 84% (326) | 74% (216) | 83% (98) |
| | Fixed gauge | 78% (205) | 80% (132) | 77% (111) | 73% (124) | 82% (94) |
| | Industrial radiography | 92% (198) | 90% (130) | 91% (138) | 92% (114) | 86% (66) |
| | Oil well logging | 79% (48) | 86% (42) | 91% (44) | 92% (24) | 89% (9) |
| | Industrial sector | 84% (916) | 84% (620) | 85% (633) | 79% (483) | 84% (267) |

Note: Inspections for the industrial radiography subsector were prioritized based on licensees that had not recently been inspected, licensees individually selected based on lower past compliance results, or where a follow-up compliance activity was deemed necessary. The first months of 2020 saw the majority of onsite inspections, and is also when findings with greater negative impacts on the grading were observed. This corresponds to the period of time when most of the inspections were prioritized based on licensees with lower past compliance history. A low number of inspections performed in the remaining months

combined with the past-history of lower performing licensees inspected at the beginning of the year, resulted in a lower grade in 2020.

Table 11: Security percent of inspections meeting expectations (total number inspections conducted) for subsector of the industrial sector, 2016 – 2020

| SCA | Subsector or sector | 2016 | 2017 | 2018 | 2019 | 2020 |
|----------|---------------------|--------------|--------------|--------------|--------------|--------------|
| Security | Industrial Sector | 95% (873) | 91% (610) | 94% (624) | 94% (484) | 92% (122) |

B.5.3 Academic and research sector

Tables 12 to 15 in this appendix shows the inspection performance of licensees in the Academic and Research sector. The performance of the subsectors is shown for the years 2016 – 2020 as a percentage of the inspections that received satisfactory grades for the SCA and the total number of inspections for which performance in that SCA was assessed. The number of inspections for the Academic and Research sector is the aggregate for the entire sector, including subsectors not highlighted.

A breakdown by subsector is not provided for the security SCA given the potentially sensitive information associated with that SCA.

Table 12: Management system percent of inspections meeting expectations (total number inspections conducted) for subsector of the academic and research sector, 2016 – 2020

| SCA | Subsector or sector | 2016 | 2017 | 2018 | 2019 | 2020 |
|-------------------|---|-------------|-------------|-------------|-------------|-------------|
| Management system | Laboratory studies and consolidated use | 97% (71) | 97% (73) | 99% (84) | 99% (74) | 100% (9) |
| | Academic and research sector | 97% (75) | 97% (73) | 99% (86) | 99% (74) | 100% (9) |

Note: Green indicates >85% of inspections in a year met or exceeded expectations for an SCA. Yellow indicates 80% - 85% of inspections in a year met or exceeded expectations for an SCA. Red indicates < 80% of inspections in a year met or exceeded expectations for an SCA.

Table 13: Operating performance percent of inspections meeting expectations (total number inspections conducted) for subsector of the academic and research sector, 2016 – 2020

| SCA | Subsector or sector | 2016 | 2017 | 2018 | 2019 | 2020 |
|-----------------------|---|-------------|-------------|-------------|-------------|-------------|
| Operating Performance | Laboratory studies and consolidated use | 92% (75) | 97% (74) | 88% (86) | 95% (74) | 89% (9) |
| | Academic and research sector | 91% (81) | 97% (75) | 88% (90) | 95% (74) | 90% (10) |

Table 14: Radiation protection percent of inspections meeting expectations (total number inspections conducted) for subsector of the academic and research sector, 2016 – 2020

| SCA | Subsector or sector | 2016 | 2017 | 2018 | 2019 | 2020 |
|----------------------|---|-------------|-------------|-------------|-------------|--------------|
| Radiation Protection | Laboratory studies and consolidated use | 92% (75) | 97% (74) | 88% (86) | 93% (74) | 100% (10) |
| | Academic and research sector | 91% (81) | 97% (75) | 88% (90) | 93% (74) | 100% (10) |

Table 15: Security percent of inspections meeting expectations (total number inspections conducted) for subsector of the academic and research sector, 2016 – 2020

| SCA | Subsector or sector | 2016 | 2017 | 2018 | 2019 | 2020 |
|----------|------------------------------|-------------|-------------|-------------|-------------|-------------|
| Security | Academic and research sector | 96% (73) | 96% (69) | 79% (72) | 99% (73) | 100% (7) |

B.5.4 Commercial sector

Table 16 shows the inspection performance of licensees in the commercial sector. The performance of the sectors is shown for the years 2016 – 2020 as a percentage of the inspections that received satisfactory grades for the SCA and the total number of inspections for which performance in that SCA was assessed. The number of inspections for the commercial sector is the aggregate for the entire sector.

Due to the small number of inspections in each subsector, a breakdown by subsector is not provided. Identifying trends would be difficult in subsectors due to the low number of licensees in many subsectors.

Table 16: Inspection performance for the commercial sector, 2016 – 2020

| SCA | 2016 | 2017 | 2018 | 2019 | 2020 |
|-----------------------|-------------|-------------|--------------|-------------|--------------|
| Management System | 97% (87) | 93% (62) | 97% (41) | 97% (40) | 100% (14) |
| Operating Performance | 92% (91) | 94% (67) | 92% (48) | 89% (36) | 88% (17) |
| Radiation Protection | 92% (90) | 95% (63) | 100% (46) | 83% (48) | 100% (19) |
| Security | 99% (70) | 94% (53) | 93% (41) | 91% (35) | 93% (14) |

Note: Green indicates >85% of inspections in a year met or exceeded expectations for an SCA. Yellow indicates 80% - 85% of inspections in a year met or exceeded expectations for an SCA. Red indicates < 80% of inspections in a year met or exceeded expectations for an SCA.

Appendix C: Enforcement Actions Issued in 2020

As DNSR completed roughly half the typical number of inspections per year, it was also observed that enforcement actions issued were also roughly half the typical number issued, when comparing to numbers in 2019. Although affected by many variables, enforcement actions tend to be issued as a result of inspections; as such, fewer inspections typically results in fewer enforcement actions.

In 2020, CNSC staff issued 4 orders and 2 AMPs to licensees. The majority of the enforcement actions were issued to licensees in the industrial sector, consistent with previous years. A list of orders issued are included in table 17. A list of AMPs issued are included in Table 18.

All enforcement actions are closed and the CNSC is satisfied that the licensees have addressed the conditions of the orders/AMPs.

Figure 10: Sector-to-sector comparison of enforcement actions issued, 2016 – 2020

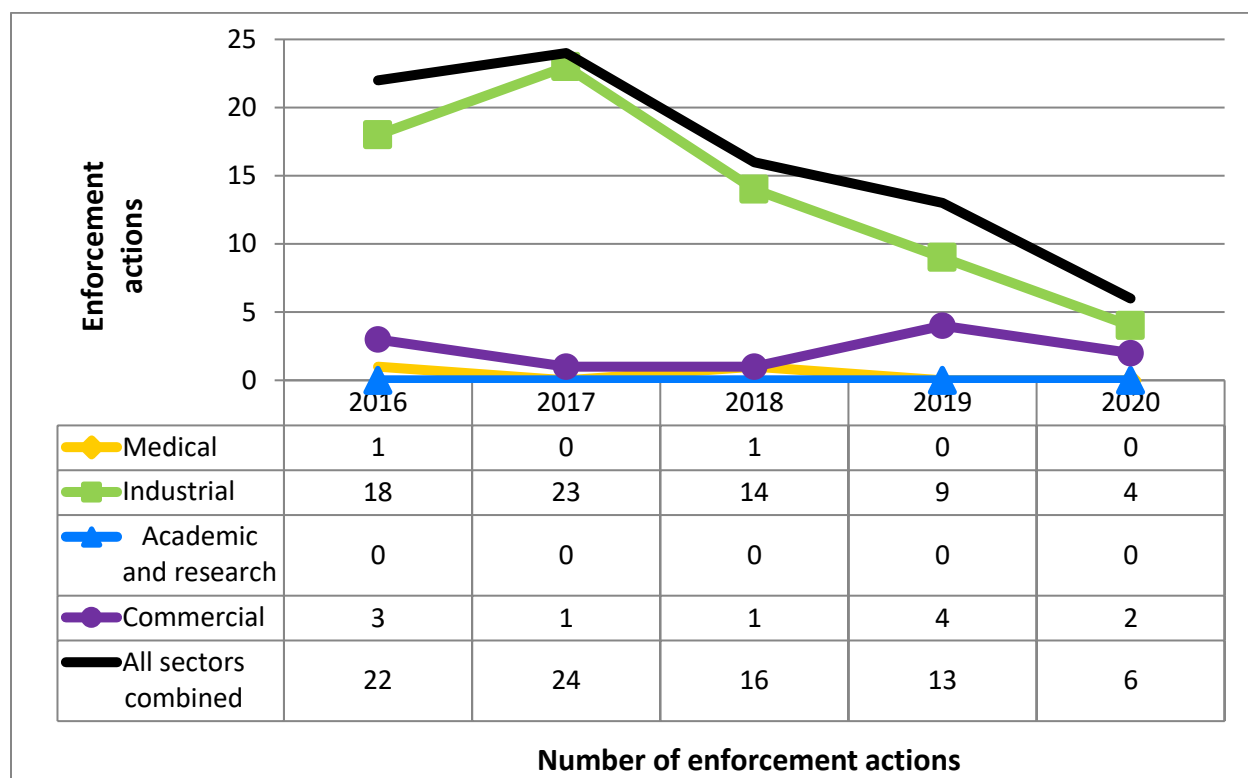


Table 17: Orders issued in 2020

| Issue date (2020) | Order # | Location | Licensee | Sector, subsector | Licensee response | Closure date (2020) |
|------------------------------|----------------|--|-----------------------------------|------------------------------|---|------------------------------------|
| January 16, 2020 | 1227 | 108 Maplecrete Road, Concord, ON L4K 1A4 | Medagh Industrial Recycling Ltd | 880, industrial | The licensee has complied with the terms of the order and transferred their single radiation device to a servicing company authorized to possess the device. | February 3, 2020 |
| February 20, 2020 | 1212 | 441 Esna Park Drive Unit 19 Markham, ON L3R 1H7 | Edward Wong & Associates | 811, industrial | The licensee has complied with the terms of the order and put corrective measures in place to address all items of non-compliance found during the routine Type II inspection that lead to the issuance of the order. | April 16, 2020 |
| March 10, 2020 | 0550 | 300 Prince Philip Drive St. Johns, NL A1B 3V6 | Eastern Regional Health Authority | 516, Commercial | The licensee has complied with the terms of the order and put corrective measures in place to address all items of non-compliance found during the routine Type II inspection that lead to the issuance of the order. | June 5, 2020 |
| October 30, 2020 | 0841 | 4929 7th Line, Unit 2 Rockwood, ON N0B 2K0 | Eric Haugen | 826, Commercial | CNSC took additional enforcement action to arrange the seizure and safe storage of all radioactive material possessed and stored by Kodiak Quality Control Ltd. The order was closed once those actions were completed. | December 3, 2020 |

Table 18: Administrative Monetary Penalties Issued in 2020

| Issue date (2020) | Licensee | Amount | AMP Description |
|----------------------|-----------------------------|--------|---|
| October 20, 2020 | Interior Testing Services | \$1000 | A portable gauge was shipped by the licensee with the shutter fully open, allowing higher levels of radiation exposure outside the package. This event violated IAEA Regulations related to shipment, labelling and packaging in accordance with the <i>Packaging and Transport of Nuclear Substances Regulations, 2015</i> (PTNSR 2015). |
| March 20, 2020 | Kodiak Quality Control Ltd. | \$2770 | On November 30, 2020, the CNSC arranged the seizure and safe storage of all radioactive material possessed and stored by Kodiak Quality Control Ltd., a company based in Rockwood, Ontario. The company previously held a CNSC licence, which expired on October 31, 2020, that authorized it to possess, transfer, export and store nuclear substances and prescribed equipment for distribution purposes. |

Appendix D: Doses to Workers

A total of 58,967 workers in the 4 sectors were monitored for occupational doses in 2020, 22,861 of whom were Nuclear Energy Workers (NEWs). The differences in doses to workers among sectors reflect the nature of the various activities within those sectors. Figure 11 shows the doses received by the 22,861 NEWs monitored in 2020, while figure 12 shows the doses of NEWs from 2016 to 2020.

Figure 11: Sector-by-sector comparison of annual effective doses to all NEWs reported by licensees in 2020

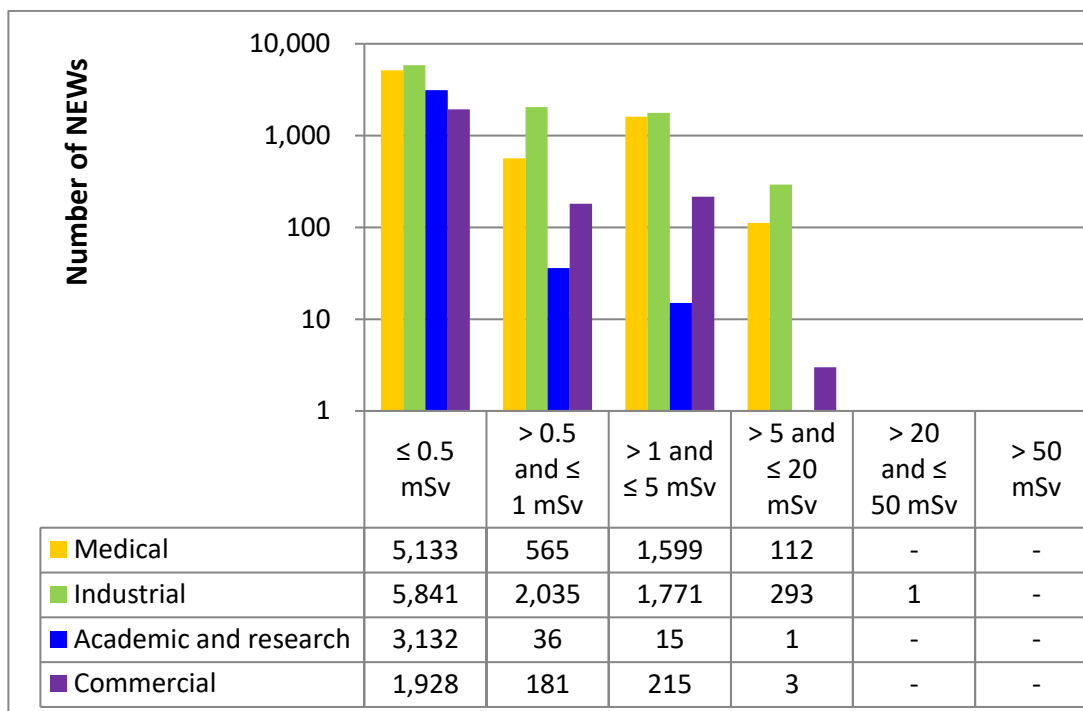
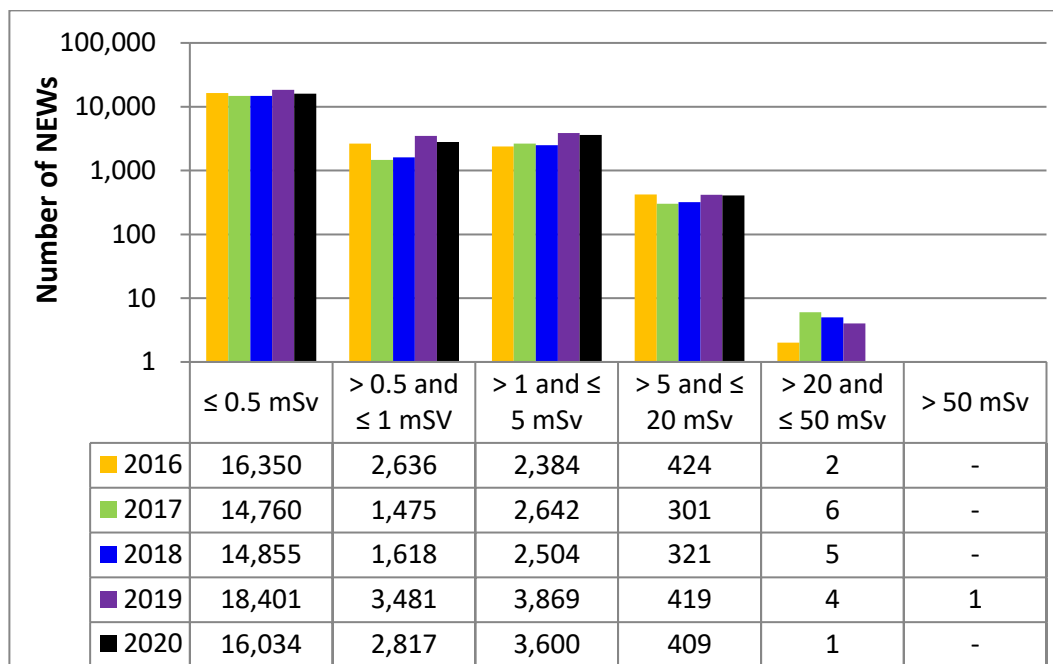


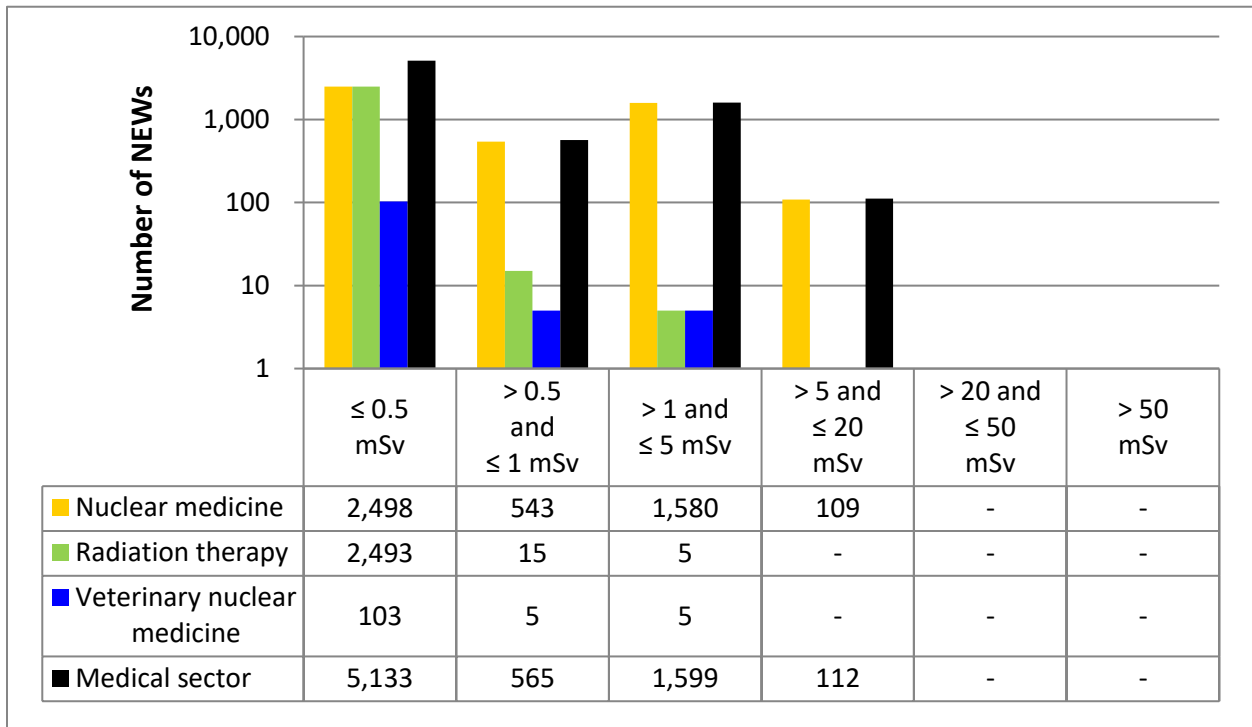
Figure 12: Annual effective doses to NEWs, 2016 – 2020, all sectors combined

Note: While the 2019 data stands, the licensee has since determined that the dose was non-personal and submitted a dose change request.

D.1 Medical sector

This appendix shows the doses received by NEWs in the medical sector, as reported to the CNSC in 2020 (figure 13). Note that the total number of NEWs shown in the medical sector row is the aggregate for the entire sector, including subsectors not highlighted. Results are similar to past years.

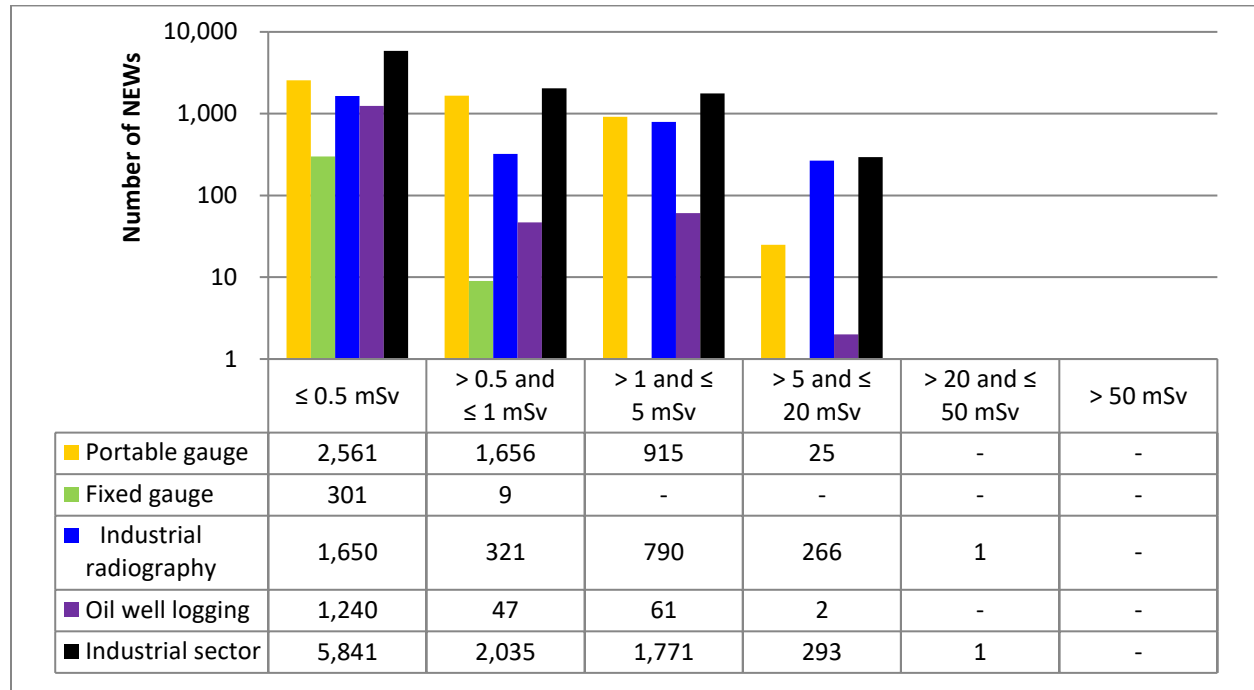
Figure 13: Doses to nuclear energy workers in the medical sector, by subsector reported in 2020. A breakdown by subsector is included.



D.2 Industrial sector

This appendix shows the doses received by NEWs in the industrial sector, as reported to the CNSC in 2020 (figure 14). Note that the total number of NEWs shown in the industrial sector row is the aggregate for the entire sector, including subsectors not highlighted. Results are similar to past years.

Figure 14: Doses to nuclear energy workers in the industrial sector reported in 2020. A breakdown by subsector is included.

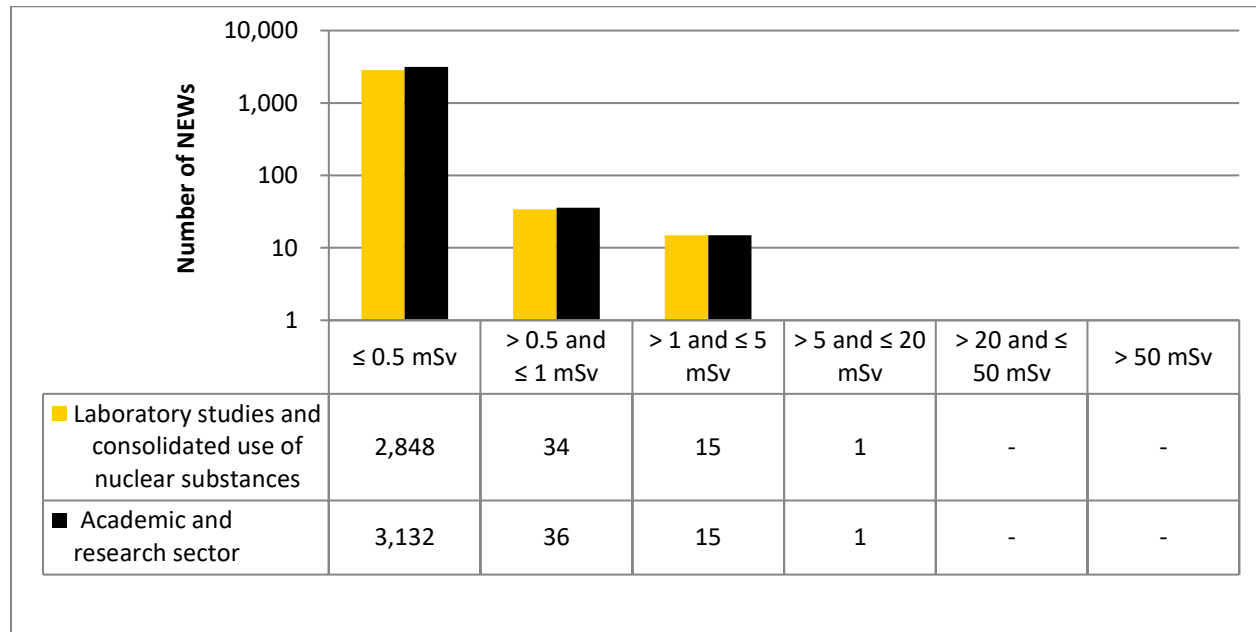


D.3 Academic and research sector

This appendix shows the doses received by NEWs in the academic and research sector, as reported to the CNSC in 2020 (figure 15). Note that the total number of NEWs shown in the academic and research sector row is the aggregate for the entire sector, including subsectors not highlighted. Results are similar to past years.

Doses received by NEWs working at the CNSC laboratory remained very low, with all workers receiving doses below 0.5 mSv.

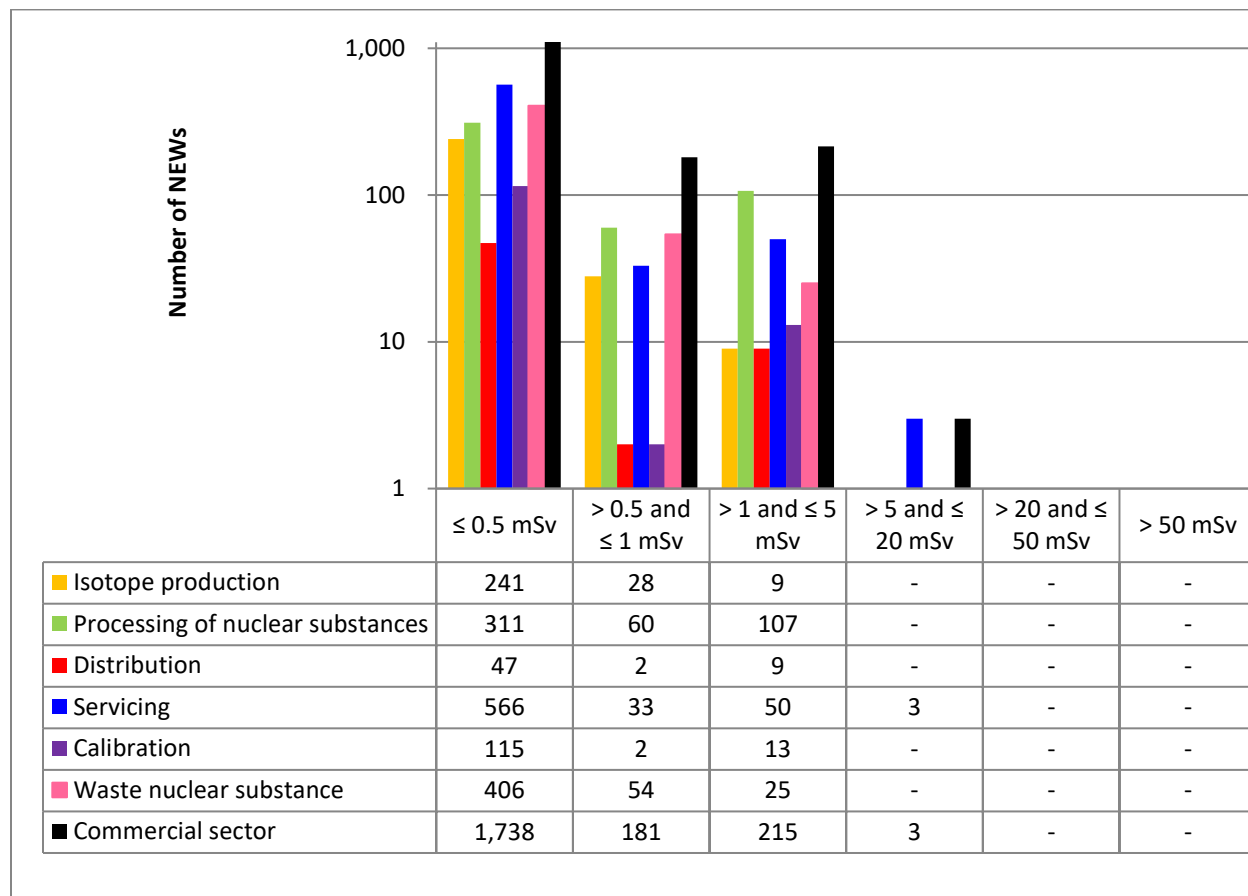
Figure 15: Doses to nuclear energy workers in the academic and research sector reported in 2020. A breakdown by subsector is included.



D.4 Commercial sector

This appendix shows the doses received by NEWs in the commercial sector, as reported to the CNSC in 2020 (figure 16). Note that the total number of NEWs shown in the commercial sector row is the aggregate for the entire sector, including subsectors not highlighted. Results are similar to past years.

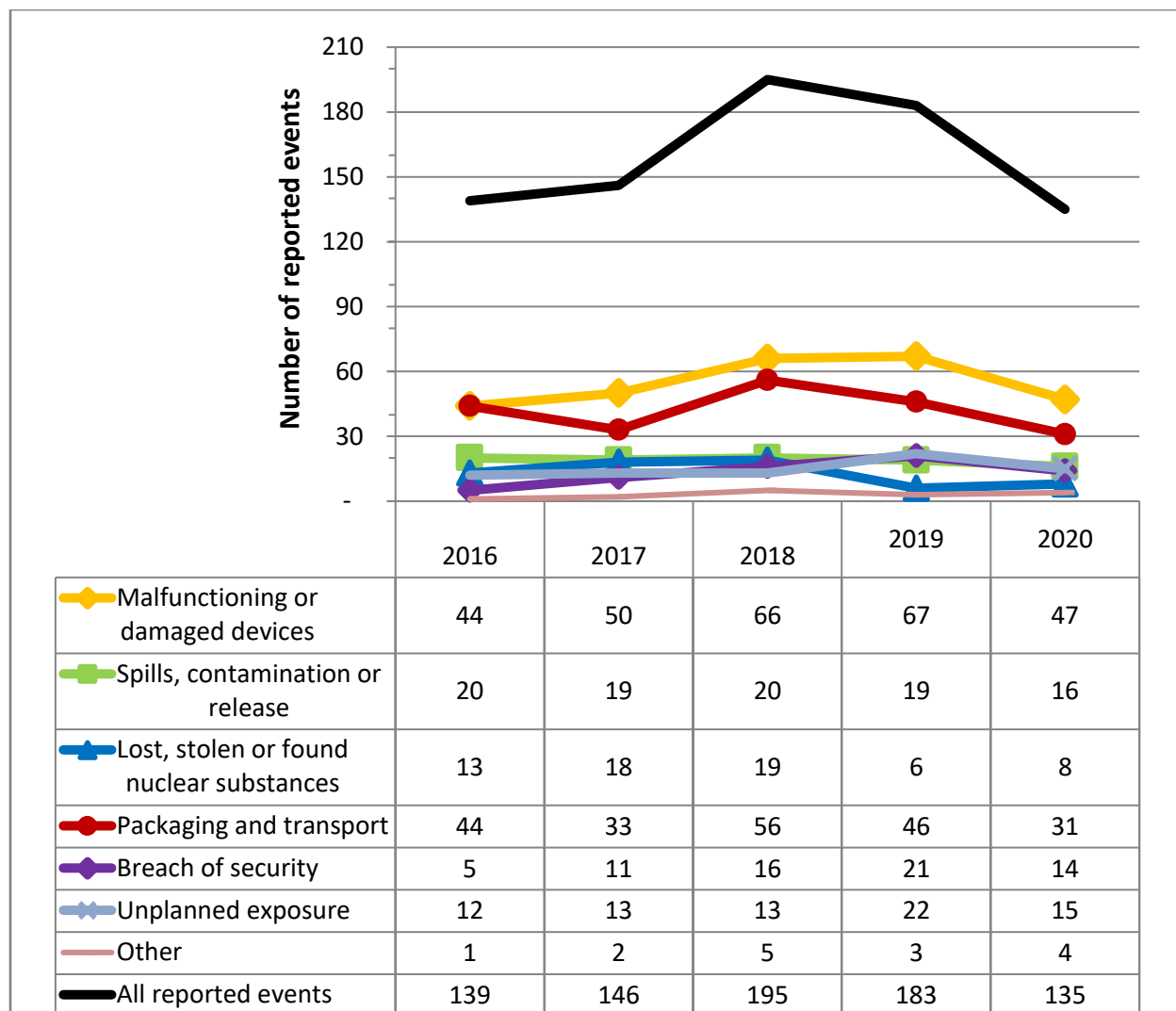
Figure 16: Doses to nuclear energy workers in the commercial sector reported in 2020. A breakdown by subsector is included.



Appendix E: Reported Events

CNSC staff assessed 135 events related to nuclear substances and prescribed equipment in 2020. The number of reported events in 2020 is slightly lower than the previous 5 years, however is generally consistent with numbers reported over this time-period. Of these events, 126 ranked as level 0 (no safety significance) under the International Nuclear and Radiological Event Scale (INES) and 7 were ranked as INES level 1 (anomaly). Of all of the events reported, licensees implemented appropriate response measures to mitigate the impacts of the events and to limit radiation exposure to workers and the public. CNSC staff reviewed the measures and found them to be satisfactory.

Figure 17: Reported events from 2016 – 2020 all sectors combined



Note: Unplanned exposures include individuals crossing safety barriers while industrial radiography was occurring, skin contamination events, and any events where regulatory limits were exceeded.

Table 18: Events reported to CNSC in 2020

| Event ID | Date reported | INES rating | Event type | Sector | Event summary |
|----------|---------------|-------------|--------------------|------------|--|
| 4854 | January 10 | 0 | Device damaged | Industrial | Broken shutter on fixed gauge. Repair made. |
| 4855 | January 10 | 0 | Device malfunction | Industrial | Shutter on fixed gauge stuck in open position. Gauge disposed of. |
| 4856 | January 11 | 0 | Device malfunction | Industrial | Posi-lock mechanism on exposure device failed to engage. An old guide tube was the problem. Device sent for inspection and maintenance. |
| 4861 | January 16 | 0 | Device malfunction | Industrial | Portable gauge shipped with open shutter received by servicing company |
| 4864 | January 17 | 0 | Unplanned exposure | Industrial | Client employee (member of the public) crossed radiography barrier while shots in progress. No overexposure. |
| 4865 | January 17 | 0 | Lost | Medical | Lost iodine-125 seed (category 5 sealed source). Not recovered. |
| 4866 | January 20 | 0 | Unplanned exposure | Industrial | An operator error resulted in doses of 0.18 mSv and 0.01 mSv to NEWs. The worker failed to verify that the Posi-lock was engaged. No overexposure. |
| 4867 | January 21 | 0 | Unplanned exposure | Medical | A NEW received skin contamination with technetium-99m while dispensing dose. Dose to left hand (extremity) was 263 mSv (below reg. limit). No overexposure. |
| 4871 | January 22 | 0 | Breach of security | Academic | The motion detector of Gammacell area found unarmed and area unattended. |
| 4874 | January 24 | 0 | Unplanned exposure | Medical | A NEW received skin contamination with iodine-131 while dispensing dose. Dose to skin was 95 mSv (below reg. limit). No overexposure. |
| 4875 | January 24 | 0 | Lost | Medical | Lost iodine-125 seed (category 5 sealed source). Not recovered. |
| 4876 | January 25 | 0 | Transport-MVA | Industrial | A vehicle carrying a portable gauge was involved in a motor vehicle collision. No damage to the package or the gauge. No injuries. |
| 4877 | January 27 | 0 | Transport-MVA | Industrial | A vehicle carrying a portable gauge was involved in a motor vehicle collision. No damage to the package or the gauge. No leaks. No injuries. |
| WNS1 | January 28 | 0 | Transport | Commercial | Tear in transport package door seal. Metal bins inside the container intact. No contamination. |
| 4879 | January 29 | 0 | Unplanned exposure | Industrial | An operator error resulted in doses of 0.04 mSv to NEW. The worker failed to verify that the source was fully retracted into the shielded position. No overexposure. |
| 4884 | February 6 | 0 | Device malfunction | Industrial | Portable gauge with partially open shutter transported to servicing provider. |
| 4885 | February 10 | 0 | Breach of security | Medical | Staff ID access card and hot lab key were lost. Found 3 days later. |

| Event ID | Date reported | INES rating | Event type | Sector | Event summary |
|----------|---------------|-------------|--------------------|------------|--|
| 4903 | February 10 | 0 | Device malfunction | Industrial | Stuck shutter on fixed gauge. Able to close it. Device tagged out. |
| 4887 | February 12 | 0 | Contamination | Industrial | Failed leak test on cobalt-60 source in fixed gauge (no personal contamination) |
| 4890 | February 12 | 0 | Transport-MVA | Industrial | A vehicle carrying a portable gauge was involved in a motor vehicle collision (2 incidents). No damage to the package or the gauge. No injuries. Leak tests conducted; no leaks. |
| 4891 | February 19 | 0 | Transport-MVA | Commercial | A vehicle carrying empty packages was involved in a minor vehicle collision. Very minor. No damage to the packages. No injuries. |
| 4892 | February 19 | 0 | Device malfunction | Industrial | Gauge transported with partially open shutter. |
| 4893 | February 20 | 0 | Transport issue | Industrial | Portable gauge received with damaged Type A package |
| 4894 | February 20 | 0 | Breach of security | Academic | Alarm panel malfunctioned. Second alarm panel not armed. |
| 4896 | February 21 | 0 | Device malfunction | Industrial | Source rod on portable gauge could not be retracted. With force, the rod was retracted to shielded position. Device cleaned. |
| 4900 | February 23 | 0 | Breach of security | Medical | Alarm system not functioning but other controls in place. All nuclear substances accounted for. |
| 4899 | February 25 | 0 | Transport-MVA | Industrial | A vehicle transporting a portable gauge was involved in a minor motor vehicle collision. No damage to the package or the gauge. No injuries. |
| 4902 | February 25 | 0 | Device damaged | Industrial | Cracked source rod on portable gauge |
| 4901 | February 27 | 0 | Device malfunction | Industrial | Portable gauge shipped with open shutter. |
| 4925 | February 28 | 0 | Spill | Commercial | Major spill of 100 MBq fluorine-18 in quality control room |
| 4939 | February 28 | 0 | Unplanned exposure | Medical | Medical Linac activated while technician still in the room. No measurable dose received. No overexposure. |
| WNS2 | March 3 | 0 | Transport | Commercial | Package damaged due to load shift during transport. No contamination |
| 4906 | March 4 | 0 | Transport-MVA | Commercial | A vehicle carrying technetium-99m was involved in a minor motor vehicle collision. No damage to the packages. No injuries. |
| 4908 | March 6 | 0 | Transport-MVA | Industrial | A vehicle carrying a portable gauge was involved in a motor vehicle collision. No damage to the gauge. No injuries. |
| 4911 | March 10 | 1 | Unplanned exposure | Medical | A non-NEW exceeded regulatory limit (3.54 mSv) part of which was non-occupational dose (worker is caring for cancer patient at home) with corresponding dose change request. |

| Event ID | Date reported | INES rating | Event type | Sector | Event summary |
|----------|---------------|-------------|--------------------|------------|---|
| 4912 | March 11 | 0 | Device damaged | Industrial | A portable gauge was crushed at a construction site. No leaks. No overexposure. |
| 4915 | March 19 | 0 | Unplanned exposure | Medical | Unplanned exposure to member of public (8.6 uSv) as a result of cremating a patient treated with Lu-77 prior to recommended waiting time. |
| 4932 | March 19 | 0 | Unplanned exposure | Industrial | Vessel entry done contrary to procedure. 328 uSv to non-NEW. No over exposure. |
| 4916 | March 24 | 0 | Spill | Medical | Spill > 100 EQ technetium-99m. A NEW received minor skin contamination (46 mSv). No overexposures. |
| 4917 | March 26 | 0 | Transport issue | Commercial | Unfastened safety seal on Type A package |
| 4923 | April 7 | 0 | Device malfunction | Industrial | Fixed gauge malfunction due to loss of power (with closed shutter). Unable to restart gauge after loss of power. |
| 4927 | April 18 | 0 | Device malfunction | Industrial | Fixed gauge with shutter stuck in closed position. Gauge is now repaired. |
| 4930 | April 23 | 0 | Device damaged | Industrial | Crushed portable gauge by asphalt roller. No overexposures. No loss of containment. |
| 4940 | April 27 | 0 | Other | Medical | Flooding destroyed a nuclear medicine clinic. No loss in containment. |
| 4934 | April 27 | 0 | Device damaged | Industrial | Flooding destroyed exposure devices. No loss of containment. |
| 4935 | April 29 | 1 | Stolen | Industrial | A portable gauge (category 4) in a locked vehicle was stolen. Recovered the next day in an apartment. |
| 4936 | April 30 | 0 | Transport-MVA | Commercial | A vehicle carrying technetium-99m was in a minor motor vehicle collision with a deer. No damage to the packages. |
| 4941 | May 4 | 0 | Other | Industrial | Portable gauges flooded. No loss in containment. |
| 4950 | May 20 | 0 | Transport-MVA | Industrial | A vehicle transporting a portable gauge was in a motor vehicle accident. The driver fell asleep. No damage to the gauge. No injuries. |
| 4951 | May 25 | 0 | Spill | Medical | Spill > 100EQ of fluorine-18 with skin contamination. No overexposure. |
| 4952 | May 26 | 0 | Device damaged | Industrial | Crushed portable gauge. No overexposure. No loss in containment |
| WNS3 | June 2 | 0 | Spill/ release | Commercial | Water leak due to cracked line. Contamination levels below unconditional clearance levels. |
| 4955 | June 3 | 1 | Found | Industrial | A portable gauge (category 4) previously stolen, was recovered in the public domain in a warehouse. Recovered by licensee. No damages. |
| 4957 | June 8 | 0 | Device malfunction | Industrial | Fixed gauge with shutter stuck in closed position. |
| 4966 | June 26 | 0 | Transport issue | Industrial | Type A package with portable gauge inside melted when close to running generator. No loss in containment. |

| Event ID | Date reported | INES rating | Event type | Sector | Event summary |
|----------|---------------|-------------|--------------------|------------|--|
| 4967 | June 27 | 0 | Device damaged | Industrial | Steel bars landed on portable gauge and damaged casing. No loss in containment. No injury. |
| 4970 | July 7 | 0 | Unplanned exposure | Medical | A non-NEW received skin contamination with technetium-99m while dispensing a dose. Dose to the hands was 28 mSv. No overexposure. |
| 4988 | July 7 | 0 | Unplanned exposure | Medical | 3 NEWs received skin contamination when fluorine-18 vial broke. Max dose to extremity 0.79 mSv. No overexposure. |
| 4972 | July 8 | 0 | Spill | Medical | Spill > 100EQ of technetium-99m. Spill cleaned up. No skin contamination. No overexposures. |
| 4974 | July 14 | 0 | Device damaged | Industrial | Cracked drive cable discovered during maintenance. No overexposures. |
| 4975 | July 16 | 1 | Stolen | Industrial | A portable gauge (category 4) in a parked car was stolen. Both the car and the gauge were stolen. Local police were notified. Not recovered. |
| 4976 | July 16 | 0 | Transport-MVA | Industrial | A vehicle transporting a portable gauge was involved in a minor rear-end vehicle collision. No damage to the gauge. |
| WNS4 | July 16 | 0 | Release | Commercial | Unauthorized release of wastewater. Estimated activity concentration below licensees' action level |
| 4977 | July 17 | 0 | Transport-MVA | Industrial | A vehicle transporting a portable gauge was involved in a minor vehicle collision. The vehicle was hit on the side door. No damage to the gauge. |
| 4978 | July 21 | 0 | Device damaged | Industrial | Truck ran over a portable gauge. No loss in containment. No overexposures. |
| 4979 | July 21 | 0 | Transport-MVA | Industrial | A vehicle transporting a portable gauge was involved in a motor vehicle accident. The vehicle was hit on the side door. No damage to the gauge. |
| 4981 | July 22 | 0 | Breach of security | Medical | Brachytherapy without secondary barrier in place for about a week. No actual breach. No nuclear substances missing. |
| 4982 | July 23 | 0 | Transport issue | Industrial | Portable gauge transported outside its Type-A package. |
| 4983 | July 23 | 0 | Device malfunction | Industrial | Malfunctioning radiography guide tube. No overexposures. |
| 4985 | July 24 | 0 | Breach of security | Academic | Unavailability of site security personnel. No nuclear substances missing. |
| 4987 | July 28 | 0 | Transport-MVA | Industrial | A vehicle transporting a portable gauge was involved in a motor vehicle accident. The vehicle rear-ended another car. No damage to the gauge. |
| 4989 | August 4 | 0 | Device damaged | Industrial | Damaged fixed gauge. No loss in containment. Gauge properly disposed of. |
| 4990 | August 4 | 0 | Device damaged | Industrial | Portable gauge struck by vehicle and damaged on construction site. No loss of containment. |

| Event ID | Date reported | INES rating | Event type | Sector | Event summary |
|----------|---------------|-------------|--------------------|------------|--|
| 4991 | August 4 | 0 | Device malfunction | Industrial | Portable gauge with open shutter transported to servicing company. No overexposures. |
| 5004 | August 4 | 0 | Device damaged | Industrial | Damaged portable gauge on construction site. No loss in containment. |
| 4994 | August 6 | 0 | Breach of security | Academic | Security breach at a basic level lab. Lab door left opened over night by custodial staff. All nuclear substances accounted for. No nuclear substances missing. |
| 4997 | August 9 | 0 | Device damaged | Industrial | Handle of a portable gauge broke. Gauge in the fully shielded position. No loss in containment. |
| 4998 | August 10 | 0 | Breach of security | Industrial | Security breach. All nuclear substances accounted for. Security measures augmented. |
| 5008 | August 10 | 0 | Breach of security | Medical | Security system door found disarmed. No nuclear substances missing. No exposure. No loss of control. |
| 5000 | August 11 | 0 | Device damaged | Industrial | Corroded shutter on fixed gauge. Gauge in closed position, gauge removed and disposed of. |
| 5001 | August 12 | 0 | Device damaged | Industrial | Fixed gauge with stuck shutter in open position. Barrier set up at 10uSv/hr. No overexposures. |
| 5002 | August 13 | 0 | Transport-MVA | Industrial | A vehicle transporting a portable gauge was involved in a minor motor vehicle collision. No damage to the gauge. |
| 5003 | August 15 | 0 | Device damaged | Industrial | Fire at a plant with fixed gauges. No loss in containment. |
| 5011 | August 20 | 0 | Device damaged | Industrial | Damaged portable gauge on construction site. No loss in containment. |
| 5013 | August 21 | 0 | Transport issue | Commercial | Damaged package due to rain. No loss in containment. |
| 5014 | August 23 | 0 | Transport-MVA | Industrial | A vehicle transporting a portable gauge was involved in a motor vehicle collision. No damage to the gauge. |
| 5019 | August 25 | 0 | Transport-MVA | Commercial | A vehicle transporting technetium-99m was involved in a motor vehicle collision. No loss in containment. No injuries. |
| 5021 | August 31 | 0 | Spill | Medical | Spill of technetium-99m on a treadmill. No overexposure. |
| 5023 | September 1 | 0 | Device damaged | Industrial | Damaged airline fitting disconnected. In shielded position. |
| 5022 | September 2 | 0 | Spill | Medical | Spill > 100 EQ technetium-99m on hot lab floor. No skin contamination. |
| 5024 | September 3 | 0 | Device damaged | Industrial | Damaged handle of a portable gauge due to a fall. Gauge in shielded position. |
| 5027 | September 11 | 0 | Breach of security | Medical | Security system door found disarmed. No nuclear substances missing. No exposure. No loss of control. |
| 5037 | September 16 | 1 | Unplanned exposure | Medical | A non-NEW received whole body dose 1.28 mSv, exceeding limits. The dose is likely not associated with activities |

| Event ID | Date reported | INES rating | Event type | Sector | Event summary |
|----------|---------------|-------------|--------------------|------------|--|
| | | | | | regulated by the CNSC but will remain in the 2020 data. |
| 5030 | September 17 | 0 | Device damaged | Industrial | Damaged portable gauge on construction site. No loss in containment. |
| 5031 | September 18 | 0 | Device damaged | Industrial | Sheared off bolts due to vibrations on a fixed gauge. Gauge in shielded position. |
| 5032 | September 18 | 0 | Device damaged | Industrial | Damaged portable gauge on construction site. No loss in containment. |
| 5033 | September 21 | 0 | Device malfunction | Industrial | Metal shaving in an exposure device causing blockage. No overexposure. |
| 5034 | September 21 | 0 | Other | Commercial | Sprinkler system activated at a licensed location. No contamination. |
| 5039 | September 23 | 0 | Spill | Medical | An iodine-125 seed (17 MBq, over 1EQ) was cut in half. No overexposures |
| 5041 | September 25 | 0 | Device damaged | Industrial | Damaged portable gauge. Gauge hit by vehicle, source rod broke (in shielded position). No loss in containment. |
| 5042 | September 28 | 0 | Other | Industrial | Loss of control of exposure device. Exposure device left behind on a work site. Other licensee took control in the mean time. No overexposures. Exposure device recovered. |
| 5044 | September 29 | 0 | Transport-MVA | Commercial | A vehicle transporting fluorine-18 was involved in a minor motor vehicle collision. No damages. No loss in containment. |
| 5045 | September 29 | 0 | Breach of security | Academic | Breach of security. Security system not armed, no intrusion. |
| 5061 | October 1 | 0 | Transport issue | Medical | Reception of a package with internal contamination. Minor skin contamination (8.9 mSv). No overexposures. |
| 5049 | October 2 | 0 | Transport-MVA | Industrial | A vehicle transporting a portable gauge was involved in a minor motor vehicle collision. No damage to the gauge. |
| 5050 | October 5 | 0 | Transport issue | Medical | Reception of a package with internal contamination. No overexposures. Contained. |
| 5051 | October 5 | 0 | Contamination | Commercial | Failed leak test on Cs-137 source. No personal contamination. Source sent for disposal. |
| WNS5 | October 7 | 0 | Security | Commercial | Security event. Confidential |
| 5056 | October 13 | 0 | Device damaged | Industrial | Damaged portable gauge on construction site. No loss in containment. |
| 5057 | October 15 | 0 | Transport-MVA | Industrial | A vehicle transporting a portable gauge was involved in a minor motor vehicle collision. No damage to the gauge. |
| 5059 | October 16 | 0 | Device damaged | Industrial | Damaged portable gauge on construction site. No loss in containment. |
| 5062 | October 22 | 0 | Lost | Medical | Lost source with 5 MBq of iodine-125 (category 5). Source not recovered. |
| 5063 | October 22 | 0 | Spill | Medical | Spill > 100EQ technetium-99m with minor skin contamination below 50 mSv to extremity. No overexposure. |

| Event ID | Date reported | INES rating | Event type | Sector | Event summary |
|----------|---------------|-------------|--------------------|------------|--|
| 5064 | October 22 | 0 | Device damaged | Industrial | Damaged portable gauge when technician backed up truck on it. No loss of containment. |
| 5066 | October 27 | 0 | Unplanned exposure | Industrial | Member of the public crossed radiography barrier. No overexposure. |
| 5132 | October 30 | 0 | Device malfunction | Academic | Irradiator malfunction. The motor of irradiator had to be changed. No overexposures. |
| 5068 | November 3 | 0 | Device malfunction | Medical | Self shielded Irradiator door interlock malfunction. Equipment repaired. No overexposures |
| 5069 | November 4 | 0 | Transport issue | Commercial | Receipt of broken vial (inner package) with iodine-131. No contamination. |
| 5072 | November 6 | 0 | Device damaged | Industrial | Damaged portable gauge when bulldozer ran over it. No loss in containment. |
| 5074 | November 9 | 1 | Unplanned exposure | Academic | Dose limit exceeded for a non-NEW (1.3 mSv). |
| 5076 | November 13 | 0 | Transport-MVA | Industrial | A vehicle transporting a portable gauge was involved in a minor motor vehicle collision. No damage to the gauge. |
| 5077 | November 16 | 0 | Spill | Commercial | Spill > 100 EQ technetium-99m. No skin contamination. No overexposures. |
| 5078 | November 17 | 0 | Device damaged | Industrial | Minor damage to portable gauge when fell onto the ground. No loss in containment. |
| 5081 | November 17 | 0 | Lost | Industrial | Lost radiation device, XRF analyser, (category 5). Source not recovered. |
| 5079 | November 18 | 0 | Spill | Medical | An iodine-125 seed was cut during a procedure. No contamination. No overexposures. |
| 5083 | November 20 | 0 | Device damaged | Industrial | Minor damage to portable gauge when fell onto the ground. No loss in containment. |
| 5084 | November 23 | 0 | Transport-MVA | Commercial | A vehicle transporting empty packages was involved in a minor motor vehicle collision. No injury to driver. |
| 5085 | November 23 | 0 | Device damaged | Industrial | Source retrieval due to dent in cable (max dose 31 uSv). |
| 5087 | November 25 | 0 | Unplanned exposure | Industrial | Improper vessel entry. 8 non-NEWs received 18 uSv each during improper vessel entry. |
| 5137 | December 2 | 0 | Spill | Commercial | Spill > 100EQ of fluorine-18. No skin contamination. |
| 5097 | December 10 | 0 | Device malfunction | Industrial | Sealed source would not retract in the source holder. |
| WNS6 | December 11 | 0 | Security | Commercial | Security event. Confidential. |
| 5099 | December 16 | 1 | Stolen | Industrial | A portable gauge (category 4) stolen from a parked truck. Recovered the same day. |
| 5100 | December 18 | 0 | Spill | Commercial | Spill > 100 EQ technetium-99m. No skin contamination. No overexposures. |
| 5106 | December 23 | 0 | Breach of security | Medical | Security system door found disarmed. No exposure. No loss of control. No nuclear substances missing. |

Appendix F: Inspections conducted in 2020

Table 19: Inspections conducted in 2020

| Inspection date | Licensee name | City | Province | Inspection type | Sector |
|-----------------|--|--------------------------|----------|-----------------|------------|
| 2020-01-02 | Sirati & Partners Consultants Ltd. | King City | ON | Type II | industrial |
| 2020-01-09 | GeoPro Consulting Limited | Richmond Hill | ON | Type II | industrial |
| 2020-01-09 | ARCADIS Canada Inc. | Richmond Hill | ON | Type II | industrial |
| 2020-01-13 | Acorn Packaging Inc. | Mississauga | ON | Type II | industrial |
| 2020-01-13 | 2061607 Alberta Inc. | Grande Prairie | AB | Type II | industrial |
| 2020-01-14 | Uniboard Canada Inc. | Laval | QC | Type II | industrial |
| 2020-01-14 | Inspectrum Testing Inc. | Grande Prairie | AB | Type II | industrial |
| 2020-01-14 | Galey Inspection Services Ltd. | County of Grande Prairie | AB | Type II | industrial |
| 2020-01-14 | Resolute FP Canada Inc. / PF Résolu Canada Inc. | Montreal | QC | Type II | industrial |
| 2020-01-14 | Resolute FP Canada Inc. / PF Résolu Canada Inc. | Montreal | QC | Type II | industrial |
| 2020-01-14 | Honeywell Ltd | Mississauga | QC | Type II | commercial |
| 2020-01-14 | 9372-2619 Québec inc. | Alma | QC | Type II | industrial |
| 2020-01-14 | Pembina Pipeline Corporation | Calgary | AB | Type II | industrial |
| 2020-01-15 | Resolute FP Canada Inc. / PF Résolu Canada Inc. | Montreal | QC | Type II | industrial |
| 2020-01-15 | Groupe Conseil SCT inc. | Sainte-Julie | QC | Type II | industrial |
| 2020-01-15 | Cal Frac Well Services Ltd. | Calgary | AB | Type II | industrial |
| 2020-01-15 | Cal Frac Well Services Ltd. | Calgary | AB | Type II | industrial |
| 2020-01-15 | Honeywell Ltd | Mississauga | QC | Type II | commercial |
| 2020-01-16 | J.L. Shepherd and Associates | San Fernando | CA | Type II | commercial |
| 2020-01-16 | Inspectrum Testing Inc. | Grande Prairie | AB | Type II | industrial |
| 2020-01-16 | S.G.H. Inspection Ltd. | Grande Prairie | AB | Type II | industrial |
| 2020-01-16 | Centre intégré universitaire de santé et de services sociaux | Chicoutimi | QC | Type II | medical |
| 2020-01-16 | Resolute Growth Canada Inc. / Croissance Résolu Canada Inc. | Saint-Félicien | QC | Type II | industrial |
| 2020-01-17 | Centre intégré universitaire de santé et de services sociaux | Chicoutimi | QC | Type II | medical |
| 2020-01-17 | Centre intégré universitaire de santé et de services sociaux | Chicoutimi | QC | Type II | medical |
| 2020-01-17 | Healthy Heart Institute Inc. | Red Deer | AB | Type II | medical |
| 2020-01-20 | Golder Associates Ltd. | Mississauga | ON | Type II | industrial |
| 2020-01-20 | Miller Paving Limited | Markham | ON | Type II | industrial |
| 2020-01-20 | Baker Hughes Canada Company | Calgary | AB | Type II | industrial |
| 2020-01-20 | Baker Hughes Canada Company | Calgary | AB | Type II | industrial |
| 2020-01-20 | Wright Quality Services Inc. | Edmonton | AB | Type II | industrial |
| 2020-01-21 | Terraprobe Testing Ltd. | Brampton | ON | Type II | industrial |
| 2020-01-21 | Terraprobe Testing Ltd. | Brampton | ON | Type II | industrial |
| 2020-01-21 | Medical Imaging Consultants | Edmonton | AB | Type II | medical |

| Inspection date | Licensee name | City | Province | Inspection type | Sector |
|-----------------|--|----------------|----------|-----------------|------------|
| 2020-01-21 | TISI Canada Inc. | Oakville | ON | Type II | industrial |
| 2020-01-21 | TISI Canada Inc. | Oakville | ON | Type II | industrial |
| 2020-01-21 | Alco Gas & Oil Production Equipment Ltd. | Edmonton | AB | Type II | industrial |
| 2020-01-21 | Alco Gas & Oil Production Equipment Ltd. | Edmonton | AB | Type II | industrial |
| 2020-01-21 | Peto MacCallum Ltd. | Toronto | ON | Type II | industrial |
| 2020-01-21 | Coca-Cola Refreshments Canada Company/ | Toronto | ON | Type II | industrial |
| 2020-01-22 | City of Edmonton, Engineering Services Section | Edmonton | AB | Type II | industrial |
| 2020-01-22 | Medical Imaging Consultants | Edmonton | AB | Type II | medical |
| 2020-01-22 | London Health Sciences Centre | London | ON | Type II | a&r |
| 2020-01-22 | London Health Sciences Centre | London | ON | Type II | a&r |
| 2020-01-22 | London Health Sciences Centre | London | ON | Type II | a&r |
| 2020-01-22 | Triquest Nondestructive Testing Corp. | Calgary | AB | Type II | industrial |
| 2020-01-22 | 2273044 Ontario Inc. | Vaughan | ON | Type II | medical |
| 2020-01-22 | Wood Canada Limited / Wood Canada Limitée | Oakville | ON | Type II | industrial |
| 2020-01-22 | DS Consultants Ltd. | Vaughan | ON | Type II | industrial |
| 2020-01-22 | KMH Cardiology Centres Incorporated | Mississauga | ON | Type II | medical |
| 2020-01-22 | KMH Cardiology Centres Incorporated | Mississauga | ON | Type II | medical |
| 2020-01-23 | Syncrude Canada Ltd. | Calgary | AB | Type II | industrial |
| 2020-01-23 | Peterborough Regional Health Centre | Peterborough | ON | Type II | medical |
| 2020-01-23 | Peterborough Regional Health Centre | Peterborough | ON | Type II | medical |
| 2020-01-23 | Stuart Hunt & Associates Ltd. | Edmonton | AB | Type II | commercial |
| 2020-01-23 | St. Joseph's Health Care, London | London | ON | Type II | medical |
| 2020-01-23 | St. Joseph's Health Care - London | London | ON | Type II | medical |
| 2020-01-23 | St. Joseph's Health Care, London | London | ON | Type II | a&r |
| 2020-01-23 | St. Joseph's Health Care - London | London | ON | Type II | medical |
| 2020-01-23 | St. Joseph's Health Care, London | London | ON | Type II | medical |
| 2020-01-23 | Triquest Nondestructive Testing Corp. | Calgary | AB | Type II | industrial |
| 2020-01-24 | TISI Canada Inc. | Oakville | ON | Type II | industrial |
| 2020-01-24 | Labatt Brewing Company Ltd. / La Brasserie Labatt limitée | Toronto | ON | Type II | industrial |
| 2020-01-24 | 3M Canada Company | London | ON | Type II | industrial |
| 2020-01-29 | Stantec Consulting Ltd. | Edmonton | ON | Type II | industrial |
| 2020-01-29 | Centre Intégré Universitaire de santé et de services sociaux | Trois-Rivieres | QC | Type II | medical |
| 2020-01-29 | Centre Intégré Universitaire de santé et de services sociaux | Trois-Rivieres | QC | Type II | medical |
| 2020-01-30 | PQ Canada Company | Toronto | ON | Type II | industrial |

| Inspection date | Licensee name | City | Province | Inspection type | Sector |
|-----------------|--|----------------|----------|-----------------|------------|
| 2020-01-30 | Centre intégré universitaire de santé et de services sociaux | Trois-Rivieres | QC | Type II | medical |
| 2020-01-30 | Centre intégré universitaire de santé et de services sociaux | Trois-Rivieres | QC | Type II | medical |
| 2020-01-30 | Dow Chemical Canada ULC | Calgary | AB | Type II | industrial |
| 2020-01-30 | Dow Chemical Canada ULC | Calgary | AB | Type II | industrial |
| 2020-02-03 | Northriver Midstream Inc. | Calgary | AB | Type II | industrial |
| 2020-02-03 | Northriver Midstream Inc. | Calgary | AB | Type II | industrial |
| 2020-02-03 | Kodiak Quality Control Inc. | Guelph | ON | Type II | commercial |
| 2020-02-04 | Willow Creek Mining Complex Limited | Tumbler Ridge | BC | Type II | industrial |
| 2020-02-04 | Brule Mining Complex Ltd. | Tumbler Ridge | BC | Type II | industrial |
| 2020-02-04 | Stasuk Testing and Inspection Inc. | Burnaby | BC | Type II | industrial |
| 2020-02-05 | Iotron Industries Canada Inc. | Port Coquitlam | BC | Type II | industrial |
| 2020-02-05 | Canadian Food Inspection Agency | Ottawa | ON | Type II | industrial |
| 2020-02-05 | Atomic Inspection Services Ltd. | Fort St. John | BC | Type II | industrial |
| 2020-02-05 | Buffalo Inspection Services (2005) Inc. | Edmonton | AB | Type II | industrial |
| 2020-02-05 | NDT Group Inc. | Brantford | ON | Type II | industrial |
| 2020-02-06 | Core Laboratories Canada Ltd. | Calgary | AB | Type II | industrial |
| 2020-02-06 | Atomic Inspection Services Ltd. | Fort St. John | BC | Type II | industrial |
| 2020-02-06 | Buffalo Inspection Services (2005) Inc. | Edmonton | AB | Type II | industrial |
| 2020-02-06 | Gemtec Consulting Engineers and Scientists Limited | Fredericton | NB | Type II | industrial |
| 2020-02-10 | Tomlinson Enterprises Ltd. | Sarnia | ON | Type II | industrial |
| 2020-02-10 | Scanning Technologies Inc. | Sherwood Park | AB | Type II | industrial |
| 2020-02-11 | BAKOSNDT Ltd. | Whitecourt | AB | Type II | industrial |
| 2020-02-11 | The Graff Company Ltd. | Mississauga | ON | Type II | industrial |
| 2020-02-11 | NOVA Chemicals Corporation | Sarnia | ON | Type II | industrial |
| 2020-02-11 | NOVA Chemicals Corporation | Sarnia | ON | Type II | industrial |
| 2020-02-11 | Spartan Controls Ltd. | | AB | Type II | commercial |
| 2020-02-12 | ARLANXEO Canada Inc. | Sarnia | ON | Type II | industrial |
| 2020-02-12 | Shell Canada Limited | Calgary | ON | Type II | industrial |
| 2020-02-12 | Shell Canada Limited | Calgary | ON | Type II | industrial |
| 2020-02-12 | Vingrity NDT & Technical Inc. | Edmonton | AB | Type II | industrial |
| 2020-02-13 | Bluewater Health | Sarnia | ON | Type II | medical |
| 2020-02-13 | J.T. Donald Consultants Limited | Markham | ON | Type II | industrial |
| 2020-02-13 | Clean Harbors Environmental Services | Corunna | ON | Type II | industrial |
| 2020-02-13 | Terrapex Environmental Ltd. | Toronto | ON | Type II | industrial |
| 2020-02-14 | Medical Imaging Centres Inc. | Mississauga | ON | Type II | medical |
| 2020-02-18 | University of Ottawa | Ottawa | ON | Type II | a&r |
| 2020-02-18 | Forward Engineering & Associates Inc. | Toronto | ON | Type II | industrial |

| Inspection date | Licensee name | City | Province | Inspection type | Sector |
|-----------------|--|----------------|----------|-----------------|------------|
| 2020-02-18 | CNOOC Petroleum North America ULC | Calgary | AB | Type II | industrial |
| 2020-02-18 | Peto MacCallum Ltd. | Toronto | ON | Type II | industrial |
| 2020-02-18 | Cenovus Energy Inc. | Calgary | AB | Type II | industrial |
| 2020-02-19 | Weatherford Canada Partnership | Calgary | AB | Type II | industrial |
| 2020-02-19 | Weatherford Canada Ltd. | Calgary | AB | Type II | industrial |
| 2020-02-19 | Weatherford Canada Ltd. | Calgary | AB | Type II | industrial |
| 2020-02-19 | Weatherford Canada Ltd. | Calgary | AB | Type II | industrial |
| 2020-02-19 | University Health Network | Toronto | ON | Type II | medical |
| 2020-02-19 | University Health Network | Toronto | ON | Type II | medical |
| 2020-02-19 | University Health Network | Toronto | ON | Type II | medical |
| 2020-02-19 | University Health Network | Toronto | ON | Type II | commercial |
| 2020-02-19 | University Health Network | Toronto | ON | Type II | commercial |
| 2020-02-19 | Trans Mountain Pipeline ULC | Calgary | AB | Type II | industrial |
| 2020-02-19 | Trans Mountain Pipeline ULC | Calgary | AB | Type II | industrial |
| 2020-02-19 | Canadian Natural Resources Limited | Calgary | AB | Type II | industrial |
| 2020-02-19 | Centre intégré universitaire de santé et de services sociaux | Pointe-Claire | QC | Type II | medical |
| 2020-02-19 | Suncor Energy Inc./Suncor Énergie Inc. | Calgary | AB | Type II | industrial |
| 2020-02-20 | Institut de recherches cliniques de Montréal | Montreal | QC | Type II | a&r |
| 2020-02-20 | Institut de recherches cliniques de Montréal | Montreal | QC | Type II | medical |
| 2020-02-20 | Wesdome Gold Mines Ltd. | Toronto | ON | Type II | industrial |
| 2020-02-20 | Industrial Radiography Supplies & Services Inc. | Edmonton | AB | Type II | commercial |
| 2020-02-20 | D. Crupi & Sons Limited | Toronto | ON | Type II | industrial |
| 2020-02-20 | Edward Wong & Associates Inc. | Markham | ON | Type II | industrial |
| 2020-02-20 | SGS Canada Inc. | | ON | Type II | industrial |
| 2020-02-20 | Qualitest Canada Ltd. | Nisku | AB | Type II | industrial |
| 2020-02-20 | Sultan Management Group Inc. | | AB | Type II | industrial |
| 2020-02-20 | Le Groupe Dimension Multi Vétérinaire Inc. | Montreal | QC | Type II | medical |
| 2020-02-20 | Le Groupe Dimension Multi Vétérinaire Inc. | Montreal | QC | Type II | medical |
| 2020-02-21 | Canadian Construction Materials Engineering & Testing Inc. | Burnaby | BC | Type II | industrial |
| 2020-02-21 | Cott Corporation | Pointe-Claire | QC | Type II | industrial |
| 2020-02-24 | Oshaneck Inspection Services (1972) Ltd. | Fox Creek | AB | Type II | industrial |
| 2020-02-24 | Inspectrum Testing Inc. | Grande Prairie | AB | Type II | industrial |
| 2020-02-24 | Genpak Ltd. | Aurora | ON | Type II | industrial |
| 2020-02-24 | CIUSSS de l'Est-de-l'Île-de-Montréal | Montreal | QC | Type II | medical |
| 2020-02-24 | CIUSSS de l'Est-de-l'Île-de-Montréal | Montreal | QC | Type II | medical |

| Inspection date | Licensee name | City | Province | Inspection type | Sector |
|-----------------|---|----------------|----------|-----------------|------------|
| 2020-02-24 | CIUSSS de l'Est-de-l'Île-de-Montréal | Montreal | QC | Type II | medical |
| 2020-02-24 | WSP Canada Inc. | Montreal | ON | Type II | industrial |
| 2020-02-25 | 20/20 ND Technology Inc. | Grande Prairie | AB | Type II | industrial |
| 2020-02-25 | Certified Testing Systems (2009) Inc. | Kitchener | ON | Type II | industrial |
| 2020-02-25 | Gamma Spec NDT Ltd. | Grande Prairie | AB | Type II | industrial |
| 2020-02-25 | S.G.H. Inspection Ltd. | Grande Prairie | AB | Type II | industrial |
| 2020-02-25 | Seven Generations Energy Ltd. | Calgary | AB | Type II | industrial |
| 2020-02-25 | Kinectrics Inc. | Toronto | ON | Type II | commercial |
| 2020-02-26 | Trican Well Service Ltd. | Calgary | AB | Type II | industrial |
| 2020-02-26 | TechSpec NDT Limited | Grande Prairie | AB | Type II | industrial |
| 2020-02-26 | Jubilant DraxImage Inc. | Kirkland | QC | Type II | commercial |
| 2020-02-27 | Intrepid NDE Testing Corp. | Grande Prairie | AB | Type II | industrial |
| 2020-02-27 | TechSpec NDT Limited | Grande Prairie | AB | Type II | industrial |
| 2020-02-28 | The Michener Institute of Education at UHN | Toronto | ON | Type II | a&r |
| 2020-03-03 | University College of the Fraser Valley | Abbotsford | BC | Type II | medical |
| 2020-03-03 | Dörken Systems Inc. | Beamsville | ON | Type II | industrial |
| 2020-03-03 | Valley Geotechnical Engineering Services Ltd. | Langley | BC | Type II | industrial |
| 2020-03-03 | Intertek Testing Services NA Ltd | Coquitlam | BC | Type II | industrial |
| 2020-03-03 | Bartek Ingredients Inc. | Stoney Creek | ON | Type II | industrial |
| 2020-03-04 | Cott Corporation | Pointe-Claire | QC | Type II | industrial |
| 2020-03-04 | Wood Canada Limited / Wood Canada Limitée | Port Hope | ON | Type II | industrial |
| 2020-03-05 | Frontier Sonde Inc. | Richmond | BC | Type II | industrial |
| 2020-03-05 | Eastern Regional Health Authority | St. John's | NL | Type II | commercial |
| 2020-03-06 | Similco Mines Ltd. (Copper Mountain) | Vancouver | BC | Type II | industrial |
| 2020-03-09 | EnergySolutions Canada Corporation | Brampton | ON | Type II | commercial |
| 2020-03-09 | Kodiak Quality Control Inc. | Guelph | ON | Type II | commercial |
| 2020-03-10 | SNC- Lavalin GEM Ontario Inc. | Vaughan | ON | Type II | industrial |
| 2020-03-10 | Atlantic Steel Processing Inc. | Mississauga | ON | Type II | industrial |
| 2020-03-12 | Grey Bruce Health Services | Owen Sound | ON | Type II | medical |
| 2020-03-12 | Grey Bruce Health Services | Owen Sound | ON | Type II | medical |
| 2020-03-12 | GM Blueplan Engineering Limited | Guelph | ON | Type II | industrial |
| 2020-03-13 | Harold Sutherland Construction Ltd. | Kemble | ON | Type II | industrial |
| 2020-04-28 | Abraflex (2004) Ltd. | Paisley | ON | Type II | commercial |
| 2020-07-02 | Owens Corning | Guelph | ON | Type II | industrial |
| 2020-07-08 | Cott Corporation | Pointe-Claire | QC | Type II | industrial |
| 2020-07-21 | Coca-Cola Refreshments Canada Company/ | Toronto | ON | Type II | industrial |

| Inspection date | Licensee name | City | Province | Inspection type | Sector |
|-----------------|--|---------------|----------|-----------------|------------|
| 2020-07-22 | Moosehead Breweries Limited | Saint John | NB | Type II | industrial |
| 2020-07-29 | Cascades Canada ULC | Montreal | QC | Type II | industrial |
| 2020-07-30 | EPC Industries Limited | Amherst | NS | Type II | industrial |
| 2020-08-05 | HLV2K Engineering Limited | Mississauga | ON | Type II | industrial |
| 2020-08-09 | Best Theratronics Ltd. | Ottawa | ON | Type II | commercial |
| 2020-08-13 | Sylvia Fedoruk Canadian Centre for Nuclear Innovation Inc. | Saskatoon | SK | Type I | commercial |
| 2020-08-19 | Ray-Tech Inspection Inc. | Beaverlodge | AB | Type II | industrial |
| 2020-08-20 | Albéa Canada Inc. | Brampton | ON | Type II | industrial |
| 2020-08-20 | Construction DJL Inc./ | Boucherville | QC | Type II | industrial |
| 2020-08-25 | Packall Packaging Inc. | Brampton | ON | Type II | industrial |
| 2020-08-26 | Parkland Geotechnical Consulting Ltd. | Red Deer | AB | Type II | industrial |
| 2020-08-27 | Construction Testing Asphalt Lab Ltd. | Cambridge | ON | Type II | industrial |
| 2020-08-27 | Big Guns Energy Services Inc. | Calgary | AB | Type II | industrial |
| 2020-08-27 | ROHI Engineering Ltd. | Ponoka | AB | Type II | industrial |
| 2020-08-27 | Celanese Canada ULC | Edmonton | AB | Type II | industrial |
| 2020-08-28 | Aurora Inspection Limited | Sexsmith | AB | Type II | industrial |
| 2020-08-28 | Mistras Canada, Inc. | Red Deer | AB | Type II | industrial |
| 2020-08-28 | Mistras Canada, Inc. | Red Deer | AB | Type II | industrial |
| 2020-08-28 | Nortech Advanced N.D.T. Ltd. | Edmonton | AB | Type II | industrial |
| 2020-08-28 | Greater Niagara Medical Imaging Inc. | St Catherines | ON | Type II | medical |
| 2020-08-31 | International Paper Company | Calgary | AB | Type II | industrial |
| 2020-08-31 | Evolution Mining Gold Operations Ltd. | Toronto | ON | Type II | industrial |
| 2020-08-31 | Evolution Mining Gold Operations Ltd. | Toronto | ON | Type II | industrial |
| 2020-08-31 | Canadian Nuclear Safety Commission | Ottawa | ON | Type II | a&r |
| 2020-09-02 | IRISNDT Corp. | Edmonton | AB | Type II | industrial |
| 2020-09-02 | J.R. Paine & Associates Ltd. | Edmonton | AB | Type II | industrial |
| 2020-09-02 | Healthwise Diagnostics Inc. | Thornhill | ON | Type II | medical |
| 2020-09-02 | Domtar Inc. | Espanola | ON | Type II | industrial |
| 2020-09-02 | Buffalo Inspection Services (2005) Inc. | Edmonton | AB | Type II | industrial |
| 2020-09-03 | CMD Medical Imaging Centre Inc. | Thornhill | ON | Type II | medical |
| 2020-09-03 | Trans Mountain Pipeline ULC | Calgary | AB | Type II | industrial |
| 2020-09-03 | Kelt Exploration Ltd. | Calgary | AB | Type II | industrial |
| 2020-09-08 | College of the North Atlantic | Stephenville | NL | Type II | industrial |
| 2020-09-08 | NuVista Energy Ltd. | Calgary | AB | Type II | industrial |
| 2020-09-09 | Golder Associates Ltd. | Mississauga | ON | Type II | industrial |
| 2020-09-09 | Toronto Cardiology Associates Inc. | Toronto | ON | Type II | medical |
| 2020-09-09 | Athabasca Oil Corporation | Calgary | AB | Type II | industrial |
| 2020-09-09 | Stantec Consulting Ltd. | Dartmouth | NS | Type II | industrial |

| Inspection date | Licensee name | City | Province | Inspection type | Sector |
|-----------------|--|---------------|----------|-----------------|------------|
| 2020-09-10 | Milestone Engineering Services Ltd. | Wabasca | AB | Type II | industrial |
| 2020-09-10 | ConocoPhillips Canada Resources Corp. | Calgary | AB | Type II | industrial |
| 2020-09-11 | Capital City Paving Ltd. | Victoria | BC | Type II | industrial |
| 2020-09-15 | Tuboscope Vetco Canada ULC | Nisku | AB | Type II | industrial |
| 2020-09-16 | Breton N.D. Testing Incorporated | Reserve Mine | NS | Type II | industrial |
| 2020-09-16 | Aecom Canada Ltd. | Burnaby | AB | Type II | industrial |
| 2020-09-17 | Island Asphalt Ltd. | Saanichton | BC | Type II | industrial |
| 2020-09-17 | Centre intégré universitaire de santé et de services sociaux | Montreal | QC | Type II | medical |
| 2020-09-18 | PM Technical Services Ltd. | Cobble Hill | BC | Type II | industrial |
| 2020-09-18 | 8109796 Canada Inc. | Longueuil | QC | Type II | industrial |
| 2020-09-21 | Stantec Consulting Ltd. | Dartmouth | NS | Type II | industrial |
| 2020-09-22 | Canada Fluorspar (NL) Inc. | St. John's | NL | Type II | industrial |
| 2020-09-22 | Canada Fluorspar (NL) Inc. | St. John's | NL | Type II | industrial |
| 2020-09-22 | WSP Canada Inc. | Toronto | ON | Type II | industrial |
| 2020-09-23 | Golder Associates Ltd. | Mississauga | ON | Type II | industrial |
| 2020-09-23 | Terraprobe Testing Ltd. | Brampton | ON | Type II | industrial |
| 2020-09-23 | Terraprobe Testing Ltd. | Brampton | ON | Type II | industrial |
| 2020-09-23 | Soil Engineers Ltd. | Richmond Hill | ON | Type II | industrial |
| 2020-09-23 | Soil Engineers Ltd. | Richmond Hill | ON | Type II | industrial |
| 2020-09-23 | Border Paving Ltd. | Red Deer | AB | Type II | industrial |
| 2020-09-23 | Forward Engineering & Associates Inc. | Toronto | ON | Type II | industrial |
| 2020-09-23 | Kollaard Associates Inc. | Kemptville | ON | Type II | industrial |
| 2020-09-23 | Thomas Cavanagh Construction Limited | Ashton | ON | Type II | industrial |
| 2020-09-23 | GHD Consultants Ltd. | Saint-Laurent | QC | Type II | industrial |
| 2020-09-23 | CIMA + S.E.N.C | Laval | QC | Type II | industrial |
| 2020-09-23 | Construction DJL Inc./ | Boucherville | QC | Type II | industrial |
| 2020-09-23 | British Columbia Cancer Agency | Vancouver | BC | Type II | a&r |
| 2020-09-23 | EXP Services Inc. / Les Services EXP Inc. | Levis | QC | Type II | industrial |
| 2020-09-23 | Best Theratronics Ltd. | Ottawa | ON | Type II | commercial |
| 2020-09-24 | Highlands Operations Limited | Saint John | NB | Type II | industrial |
| 2020-09-28 | College of the North Atlantic | Stephenville | NL | Type II | industrial |
| 2020-09-28 | Collective Arts Brewing Limited | Hamilton | ON | Type II | industrial |
| 2020-09-29 | Western Memorial Regional Hospital | Corner Brook | NL | Type II | medical |
| 2020-09-29 | Western Memorial Regional Hospital | Corner Brook | NL | Type II | medical |
| 2020-09-29 | Ryzuk Geotechnical Ltd. | Victoria | BC | Type II | industrial |
| 2020-09-29 | SNC -Lavalin Industrial Atlantic Inc. | Mount Pearl | NL | Type II | industrial |
| 2020-09-29 | SNC -Lavalin Industrial Atlantic Inc. | Mount Pearl | NL | Type II | industrial |

| Inspection date | Licensee name | City | Province | Inspection type | Sector |
|-----------------|---|---------------|----------|--------------------|------------|
| 2020-09-29 | Associate Veterinary Clinics (1981) Ltd. | Calgary | AB | Type II | medical |
| 2020-09-29 | Honeywell Ltd | Lachine | QC | Type II | commercial |
| 2020-09-30 | Canadian Royalties Inc. | Montreal | QC | Type II | industrial |
| 2020-09-30 | Schlumberger Canada Limited | Calgary | AB | Type II | industrial |
| 2020-10-01 | City of Calgary | Calgary | AB | Type II | industrial |
| 2020-10-01 | McIntosh Lalani Engineering Ltd. | Calgary | AB | Type II | industrial |
| 2020-10-01 | Terracon Geotechnique Ltd. | Calgary | AB | Type II | industrial |
| 2020-10-01 | TISI Canada Inc. | Oakville | ON | Type II | industrial |
| 2020-10-01 | New Brunswick Power Corporation | Fredericton | NB | Type II | industrial |
| 2020-10-01 | Stantec Consulting Ltd. | Dartmouth | NS | Type II | industrial |
| 2020-10-01 | Imperial Oil Resources Limited/Pétrolière Impériale Ressource | Calgary | AB | Type II | industrial |
| 2020-10-02 | Canadian Natural Resources Limited | Calgary | AB | Type II | industrial |
| 2020-10-05 | Bay Cardiac Diagnostic Inc. | Toronto | ON | Type II | medical |
| 2020-10-06 | Minerai de Fer Québec Inc. | Montreal | QC | Type II | industrial |
| 2020-10-07 | The Corporation of the City of Oshawa | Oshawa | ON | Type II | industrial |
| 2020-10-07 | Quantum Pertrophysics Sigma | Blackfalds | AB | Type II | industrial |
| 2020-10-07 | Wood Canada Limited / Wood Canada Limitée | Port Hope | ON | Type II | industrial |
| 2020-10-08 | St. Marys Cement Inc. (Canada) | Toronto | ON | Type II | industrial |
| 2020-10-09 | Cardiovascular Care Centre Inc. | Etobicoke | ON | Type II | medical |
| 2020-10-09 | First Inspection and Testing Group Ltd. | Fort McMurray | AB | Type II | industrial |
| 2020-10-09 | Kinectrics Inc. | Teeswater | ON | Type II | commercial |
| 2020-10-13 | Non-licensee | Vancouver | BC | External complaint | commercial |
| 2020-10-14 | Provincial Health Services Authority | Vancouver | BC | Type II | commercial |
| 2020-10-16 | Ballard Power Systems Inc. | Burnaby | BC | Type II | industrial |
| 2020-10-16 | AllRock Consulting Limited | Corner Brook | NL | Type II | industrial |
| 2020-10-16 | AllRock Consulting Limited | Corner Brook | NL | Type II | industrial |
| 2020-10-16 | Teck Coal Limited | Vancouver | BC | Type II | industrial |
| 2020-10-16 | Teck Coal Limited | Vancouver | BC | Type II | industrial |
| 2020-10-17 | Strilkiwski Contracting Ltd. | Dauphin | MB | Type II | industrial |
| 2020-10-19 | Acuren Inc. | Edmonton | AB | Type II | industrial |
| 2020-10-19 | Kamit Group Ltd. | Edmonton | AB | Type II | industrial |
| 2020-10-20 | DST Consulting Engineers Inc. | Thunder Bay | ON | Type II | industrial |
| 2020-10-22 | LH North Ltd. | Rosslyn | ON | Type II | industrial |
| 2020-10-23 | Canadian Natural Resources Limited | Calgary | AB | Type II | industrial |
| 2020-10-23 | The Toronto Cardiac Clinic Inc. | Toronto | ON | Type II | medical |
| 2020-10-22 | Eastern Regional Health Authority | St. John's | NL | Type I | commercial |

| Inspection date | Licensee name | City | Province | Inspection type | Sector |
|-----------------|--|---------------------|----------|-----------------|-------------|
| 2020-10-26 | Grand River Hospital Corporation | Kitchener | ON | Type II | medical |
| 2020-10-27 | Construction Norascon Inc. | Amos | QC | Type II | industrial |
| 2020-10-28 | Aker Solutions Asset Integrity and Management Canada Inc. | St. John's | NL | Type II | industrial |
| 2020-10-28 | Canadian Natural Upgrading Limited | Calgary | AB | Type II | industrial |
| 2020-10-29 | Apex Diagnostic Services Inc. | Mississauga | ON | Type II | medical |
| 2020-10-30 | SoilTech Consulting Ltd. | Prince George | BC | Type II | industrial |
| 2020-11-03 | Nova Scotia Power Incorporated | Halifax | NS | Type II | industrial |
| 2020-11-04 | Nova Scotia Power Incorporated | Halifax | NS | Type II | industrial |
| 2020-11-04 | Alberta-Pacific Forest Industries Inc. | Edmonton | AB | Type II | industrial |
| 2020-11-04 | NARL Refining Inc. | Come by Chance | NL | Type II | industrial |
| 2020-11-04 | NARL Refining Inc. | Come by Chance | NL | Type II | industrial |
| 2020-11-04 | Canadian Kraft Paper Industries Ltd. | The Pas | MB | Type II | industrial |
| 2020-11-05 | Les Diamants Stornoway (Canada) Inc. / Stornoway Diamonds (C | Longueuil | QC | Type II | industrial |
| 2020-11-06 | British Columbia Institute of Technology | Burnaby | BC | Type II | a&r |
| 2020-11-06 | British Columbia Institute of Technology | Burnaby | BC | Type II | industrial |
| 2020-11-06 | British Columbia Institute of Technology | Burnaby | BC | Type II | commercial |
| 2020-11-06 | Arauco Canada Limited | St Stephen | NB | Type II | industrial |
| 2020-11-06 | E Construction, a division of N.P.A. Ltd. | Edmonton | AB | Type II | industrial |
| 2020-11-06 | National Research Council | Ottawa | ON | Type II | a&r |
| 2020-11-10 | Fundy Engineering & Consulting Limited | Saint John | NB | Type II | industrial |
| 2020-11-13 | Nighat Geo Services Inc. | Edmonton | AB | Type II | industrial |
| 2020-11-16 | Husky Oil Operations Limited | Calgary | AB | Type II | industrial |
| 2020-11-18 | WestPine M.D.F. | Vancouver | BC | Type II | industrial |
| 2020-11-19 | West Fraser Mills Ltd. | Hinton | AB | Type II | industrial |
| 2020-11-19 | Goldcorp Canada Ltd. | South Porcupine | ON | Type II | industrial |
| 2020-11-19 | Geowest Testing Services Ltd. | North Vancouver | BC | Type II | industrial |
| 2020-11-19 | Geninnovation (9152-4629 Québec Inc.) | Ville Saint-Laurent | QC | Type II | industrial |
| 2020-11-19 | Geotrek Land Survey Ltd. | Calgary | AB | Type II | industrial |
| 2020-11-19 | University of Guelph | Guelph | ON | Type II | medical/a&r |
| 2020-11-20 | Knight Vision Inspections Inc. | Regina | SK | Type II | industrial |
| 2020-11-23 | Brody Inspection Ltd. | Valleyview | AB | Type II | industrial |
| 2020-11-24 | Kawartha Diagnostic Imaging Ltd. | Peterborough | ON | Type II | medical |

| Inspection date | Licensee name | City | Province | Inspection type | Sector |
|-----------------|--|----------------|----------|-----------------|------------|
| 2020-11-25 | Impexus Medical Imaging Inc. | Woodbridge | ON | Type II | medical |
| 2020-11-25 | ALSTOM Power Installation Canada Inc. | New Waterford | NS | Type II | industrial |
| 2020-11-26 | Milner Power Inc. | Calgary | AB | Type II | industrial |
| 2020-11-26 | Vale Newfoundland & Labrador Limited | St. John's | NL | Type II | industrial |
| 2020-11-26 | Canadian Construction Materials Engineering & Testing Inc. | Burnaby | BC | Type II | industrial |
| 2020-11-26 | EXP Services Inc. / Les Services EXP Inc. | Sydney | NS | Type II | industrial |
| 2020-11-27 | Ezeflow Inc. | Granby | QC | Type II | industrial |
| 2020-11-27 | Ezeflow Inc. | Granby | QC | Type II | industrial |
| 2020-11-30 | Autoliv Canada Inc. | Tilbury | ON | Type II | industrial |
| 2020-12-01 | Université du Québec à Trois-Rivières | Trois-Rivieres | QC | Type II | industrial |
| 2020-12-02 | Regional Health Authority B | Fredericton | NB | Type II | medical |
| 2020-12-02 | Regional Health Authority B | Fredericton | NB | Type II | medical |
| 2020-12-02 | Resolute FP Canada Inc. / PF Résolu Canada Inc. | Montreal | QC | Type II | industrial |
| 2020-12-03 | West Fraser Mills Ltd. | Slave Lake | AB | Type II | industrial |
| 2020-12-03 | Taranis Contracting Group Ltd. | Thunder Bay | ON | Type II | industrial |
| 2020-12-04 | 860851 Alberta Ltd. | Edmonton | AB | Type II | industrial |
| 2020-12-04 | Pembroke Regional Hospital Inc. | Pembroke | ON | Type II | medical |
| 2020-12-04 | Pembroke Regional Hospital Inc. | Pembroke | ON | Type II | medical |
| 2020-12-04 | React Radiography Ltd. | Edmonton | AB | Type II | industrial |
| 2020-12-07 | Streamline Inspection Limited | Rocky View | AB | Type II | industrial |
| 2020-12-07 | Journey Engineering Corporation | Calgary | AB | Type II | industrial |
| 2020-12-08 | RTD Quality Services Inc. | Edmonton | AB | Type II | industrial |
| 2020-12-08 | Alco Gas & Oil Production Equipment Ltd. | Edmonton | AB | Type II | industrial |
| 2020-12-08 | Centre intégré universitaire de santé et de services sociaux | Trois-Rivieres | QC | Type II | medical |
| 2020-12-08 | Centre intégré universitaire de santé et de services sociaux | Trois-Rivieres | QC | Type II | medical |
| 2020-12-09 | BAKOSNDT Ltd. | Whitecourt | AB | Type II | industrial |
| 2020-12-09 | BAKOSNDT Ltd. | Whitecourt | AB | Type II | industrial |
| 2020-12-09 | Tusk Inspection Services Inc. | Fox Creek | AB | Type II | industrial |
| 2020-12-09 | Kamit Group Ltd. | Edmonton | AB | Type II | industrial |
| 2020-12-10 | Reliance OFS Canada Ltd. | Calgary | AB | Type II | industrial |
| 2020-12-10 | Cordax Evaluation Technologies Inc. | Calgary | AB | Type II | industrial |
| 2020-12-10 | Plains Midstream Canada ULC | Calgary | AB | Type II | industrial |
| 2020-12-10 | Plains Midstream Canada ULC | Calgary | AB | Type II | industrial |
| 2020-12-11 | Inter-Cité Construction Limitée | Chicoutimi | QC | Type II | industrial |
| 2020-12-11 | EnviroGeotech Consulting Inc. | Medicine Hat | AB | Type II | industrial |
| 2020-12-11 | Kontur Geotechnical Consultants Inc. | Port Coquitlam | BC | Type II | industrial |

| Inspection date | Licensee name | City | Province | Inspection type | Sector |
|------------------------|--|--------------|-----------------|------------------------|---------------|
| 2020-12-14 | Southern Alberta Institute of Technology | Calgary | AB | Type II | industrial |
| 2020-12-14 | WAV Inspection Ltd. | Brooks | AB | Type II | industrial |
| 2020-12-15 | Stasuk Testing & Inspection Ltd. | Burnaby | BC | Type II | industrial |
| 2020-12-15 | Groupe Conseil SCT inc. | Sainte-Julie | QC | Type II | industrial |
| 2020-12-15 | Groupe Conseil SCT inc. | Sainte-Julie | QC | Type II | industrial |
| 2020-12-15 | Trans Mountain Pipeline ULC | Calgary | AB | Type II | industrial |
| 2020-12-15 | Canadian Cutting & Coring (Toronto) Ltd | Brampton | ON | Type II | industrial |
| 2020-12-16 | West Fraser Mills Ltd. | Blue Ridge | AB | Type II | industrial |
| 2020-12-16 | West Fraser Newsprint Ltd. | Vancouver | AB | Type II | industrial |
| 2020-12-16 | Centre intégré de santé et de services sociaux des Laurentid | Saint-Jerome | QC | Type II | medical |
| 2020-12-16 | Centre intégré de santé et de services sociaux des Laurentides | Saint-Jerome | QC | Type II | medical |
| 2020-12-16 | MEG Energy Corp. | Calgary | AB | Type II | industrial |
| 2020-12-16 | NWP Industries General Partner Ltd.. | Innisfail | AB | Type II | industrial |
| 2020-12-17 | BWXT Canada LTD. | Cambridge | ON | Type II | industrial |
| 2020-12-17 | Groupe Conseil SCT inc. | Sainte-Julie | QC | Type II | industrial |
| 2020-12-18 | McMaster University | Hamilton | ON | Type II | a&r |
| 2020-12-18 | Erie Shores Healthcare | Leamington | ON | Type II | medical |
| 2020-12-18 | Acuren Inc. | Edmonton | AB | Type II | industrial |
| 2020-12-18 | Mevex Corporation | Stittsville | ON | Type I | commercial |
| 2020-12-23 | Walgren Soils Testing Ltd. | Nelson | BC | Type II | industrial |
| 2020-12-23 | Bruce MacNeil Engineering Ltd. o/a BME Engineering Ltd. | Bedford | NS | Type II | industrial |

Appendix G: Compliance Rating Level

The following rating levels, as shown in table 26, reflect the transition in rating terminology used by the CNSC. While some inspection reports may still use the previous rating levels, licensees that use nuclear substances and radiation devices can expect this transition to take place in time.

At the direction of the Commission, the fully satisfactory rating will no longer be used in regulatory oversight reports (ROR) starting with the 2020 ROR. Where compliance meets or exceeds expectations, a rating of “Satisfactory” is assigned. Fully satisfactory ratings in previous RORS will not be changed.

Table 26: Compliance rating terminology

| Previous rating level | Description | New rating level | Description |
|-----------------------|------------------------------------|------------------|--------------------|
| A and B | Meets expectations | SA | Satisfactory |
| C | Improvement is required | BE | Below expectations |
| D | This area is seriously compromised | | |
| E | Breakdown | UA | Unacceptable |

Satisfactory (SA)

Safety and control measures implemented by the licensee are sufficiently effective. In addition, compliance with regulatory requirements is satisfactory. Compliance within the SCA meets requirements and CNSC expectations. Any deviation is minor and any issues are considered to pose a low risk to the achievement of regulatory objectives and CNSC expectations. Appropriate improvements are planned.

Below expectations (BE)

Safety and control measures implemented by the licensee are marginally ineffective. In addition, compliance with regulatory requirements falls below expectations. Compliance within the SCA deviates from requirements or CNSC expectations to the extent that there is a moderate risk of ultimate failure to comply. Improvements are required to address identified weaknesses. The licensee is taking appropriate corrective action.

Unacceptable (UA)

Safety and control measures implemented by the licensee are significantly ineffective. In addition, compliance with regulatory requirements is unacceptable and is seriously compromised. Compliance within the SCA is significantly below requirements or CNSC expectations, or there is evidence of overall non-compliance. Without corrective action, there is a high probability that the deficiencies will lead to unreasonable risk. Issues are not being addressed effectively, no appropriate corrective measures have been taken and no alternative plan of action has been provided. Immediate action is required.

Appendix H: Relevant Documents

H.1 Act and regulations

- [*Nuclear Safety and Control Act*](#)
- [*Administrative Monetary Penalties Regulations*](#)
- [*Class II Nuclear Facilities and Prescribed Equipment Regulations*](#)
- [*General Nuclear Safety and Control Regulations*](#)
- [*Nuclear Substances and Radiation Devices Regulations*](#)
- [*Packaging and Transport of Nuclear Substances Regulations, 2015*](#)
- [*Nuclear Security Regulations*](#)
- [*Radiation Protection Regulations*](#)
- [*Nuclear Non-proliferation Import and Export Control Regulations*](#)
- [*Canadian Nuclear Safety Commission Cost Recovery Fees Regulations*](#)
- [*Transport of Dangerous Goods Act, 1992*](#) (Transport Canada)
- [*Transportation of Dangerous Goods Regulations*](#) (Transport Canada)

H.2 Regulatory documents

- [*REGDOC-1.4.1, Licence Application Guide: Class II Nuclear Facilities and Prescribed Equipment*](#) (was draft in 2020, published in 2021)
- [*REGDOC-1.5.1, Application Guide: Certification of Radiation Devices or Class II Prescribed Equipment*](#)
- [*REGDOC-1.6.1, Licence Application Guide: Nuclear Substances and Radiation Devices, Version 2*](#)
- [*REGDOC-2.2.2, Personnel Training, Version 2*](#)
- [*REGDOC-2.2.3, Personnel Certification: Radiation Safety Officers*](#)
- [*REGDOC-2.2.3, Personnel Certification: Exposure Device Operators*](#) (and the associated [*CSA PCP-09 Certified Exposure Device Operator Personnel Certification Guide*](#))
- [*REGDOC-2.5.5, Design of Industrial Radiography Installations*](#)
- [*REGDOC-2.5.7, Design, Testing and Performance of Exposure Devices, Version 1.1*](#)
- [*REGDOC-2.9.1, Environmental Protection: Environmental Principles, Assessments and Protection Measures, Version 1.1*](#)
- [*REGDOC-2.12.3, Security of Nuclear Substances: Sealed Sources and Category I, II and III Nuclear Material, Version 2.1*](#)
- [*REGDOC-2.14.1, Information Incorporated by Reference in Canada's Packaging and Transport of Nuclear Substances Regulations, 2015*](#)
- [*REGDOC-3.2.1, Public Information and Disclosure*](#)
- [*REGDOC-3.2.2, Indigenous Engagement, Version 1.1*](#)
- [*REGDOC-3.5.2, Compliance and Enforcement: Administrative Monetary Penalties, Version 2*](#)
- [*REGDOC-3.5.2, Compliance and Enforcement, Volume II: Orders under the Nuclear Safety and Control Act*](#)
- [*REGDOC-3.5.3, Regulatory Fundamentals, Version 2*](#)
- [*REGDOC-3.6, Glossary of CNSC Terminology*](#)

Other Relevant Documents (some have since been superseded by REGDOCs published in 2021)

- [*G-91, Ascertaining and Recording Radiation Doses to Individuals \(2003\)*](#)
- [*G-121, Radiation Safety in Educational, Medical and Research Institutions \(2000\)*](#)

- [G-129, rev. 1, *Keeping Radiation Exposures and Doses “As Low as Reasonably Achievable \(ALARA\)”*](#)
- [G-228, *Developing and Using Action Levels* \(2001\)](#)
- [GD-150, *Designing and Implementing a Bioassay Program* \(2010\)](#)
- [G-147, *Radiobioassay Protocols for Responding to Abnormal Intakes of Radionuclides* \(2003\)](#)
- [RD-58, *Thyroid Screening for Radioiodine* \(2008\)](#)
- [S-260, *Making Changes to Dose-Related Information Filed With the National Dose Registry* \(2004\)](#)
- [RD-364, *Joint Canada-United States Guide for Approval of Type B\(U\) and Fissile Material Transportation Packages*\(2009\)](#)
- [Regulatory Policy P-290, *Managing Radioactive Waste*](#)