canadian nuclear association cna anc association nucléaire canadienne

July 19, 2019

Mr. B. Torrie
Director General, Regulatory Policy Directorate
Canadian Nuclear Safety Commission
P.O. Box 1046
280 Slater Street
Ottawa, Ontario K1P 5S9

Canadian Nuclear Association Comments on REGDOC 2.7.1: Radiation Protection

Dear Mr. Torrie:

The Canadian Nuclear Association (CNA) and its members would like to thank the CNSC for the opportunity to comment on REGDOC 2.7.1. The CNA has collaborated with its members to review the proposed regulatory document in detail. Our detailed comments are contained in the attached document; however, the CNA would like to highlight several areas of concern:

- The proposed REGDOC does not distinguish between requirements and guidance. In fact, it introduces the use of "must" to signal requirements. This term is not used in other REGDOCs and has the potential to lead confusion. Compliance works best when both the regulator and the licensee both have a clear understanding of what is an obligation and what is optional.

- The attached detailed comments highlight a number of places where there is a duplication of requirements and guidance between this REGDOC and other REGDOCs, in particular REGDOC 2.9.1: Environmental Protection. This can lead to inconsistency and confusion.

- Our members expressed considerable concern with the section on labelling and believe that the best way to resolve this confusion is to convene a workshop to create a common understanding the key terms and requirements.

1610 – 130 rue Albert St. Ottawa ON K1P 5G4 cna.ca

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Once again, thank you for the opportunity to comment on this REGDOC. If you have any questions or concerns, please contact me at couplands@cna.ca or 613-237-4262 ext107.

Sincerely,

Steve Coupland
Director, Regulatory and Environmental Affairs
Canadian Nuclear Association

1610 – 130 rue Albert St. Ottawa ON K1P 5G4 cna.ca

Industry Comments on draft REGDOC-2.7.1, Radiation Protection

#	Document/Excerpt of Section	Industry Issue	Suggested Change *(if applicable)*	Major Comment/ *Request for Clarification*	Impact on Industry, ***if major comment***
1.	**General**	It is premature to review this draft until amendments to the Radiation Protection Regulations (RPRs) are finalized. This draft is based on the proposed version of the Regulations in DIS-13-01, though some feedback from the "What we Heard Report" was not incorporated.	Wait for the RPRs to be officially updated and extend the consultation phase of REGDOC 2.7.1 until the proclamation of any changes to the Radiation Protection Regulations.	MAJOR	Industry is concerned that the CNSC is not expecting changes in draft regulations as shown in the REGDOC. While licensees' existing programs already capture much of what is in the existing RPRs, proposed new language in this draft -- like that in the instrumentation section and the requirement to demonstrate a monitoring program for action levels -- will be challenging from a compliance perspective. The abundance of new requirements in this draft will require updates to *REGDOC-3.1.1, Reporting Requirements for Nuclear Power Plants* and will increase the number of unscheduled reports. While many of these new requirements are common practice across the industry, they have been effectively managed through industry standards and internal procedures, not regulations. With proposed changes to the RPRs and REGDOC-2.7.1, deviations from these industry standards will now be considered a noncompliance with the NSCA and RPRs and reportable as such.
2.	**Preface / Introduction**	The Radiation Protection Regulations are referred to as the Regulations throughout the text, but are never referenced specifically (i.e., the RPRs are not referenced in the reference section and the grey box at the top of page 1 will eventually be deleted). Its definition can be inferred from the text used in Section 2. However, the term "Regulations" is used before Section 2, so the reader could be confused about which regulations are specifically being considered (i.e., the RPRs or any and all CNSC regulations). Some referenced sections (like 20(3)) don't exist. There are multiple cases of this ambiguity.	Upon first reference, clarify what regulations are being cited. For instance, amend the 1st sentence of the Purpose to read, "This regulatory document provides requirements and guidance for the application of the Radiation Protection Regulations."	*Request for Clarification*	

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3.	**Section 1.2, Para 1**	Industry has concerns with the inclusion of members of the public in this REGDOC. If members of the public relate to people outside the site boundary, not visitors or contractors, this REGDOC provides very little guidance and in almost all cases, points to *REGDOC 2.9.1* for environmental protection. The issue is conflicting requirements between the Safety and Control Areas of Radiation Protection and Environmental Protection. It should be acceptable for both REGDOC 2.7.1 and 2.9.1 to elaborate on respective requirements of the Radiation Protection Regulations.	Revise the scope to read, "…ensure the protection of workers and site visitors and contractors." State that protection of members of the public, in terms of radiological risk and all other aspects of risk, are addressed in CNSC REGDOC-2.9.1.	MAJOR	Duplication of requirements and guidance between Radiation Protection (REGDOC 2.7.1) and Environmental Protection (REGDOC 2.9.1) will lead to inconsistency and as a result, potential non-compliance. As a matter of public perception, this document offers very little in terms of their protection, and thus protection of the public should not be within the scope of this document.
4.	**2**	Including the role of the "caregiver" is appropriate in this REGDOC, but may be out of place in Section 2. In the proposed amendments to the RPRs, the role of the "caregiver" is to be defined in Section 1, with other definitions.	Move the caregiver definition/description to Section 3, which is more suitable for medical-related discussions.	*Request for Clarification*	
5.	**4**	Industry believes the bullet list of examples under "Program development and implementation" may create more confusion than clarity regarding requirements and guidance.	Delete the examples, which may be interpreted as mandatory by some readers.	*Request for Clarification*	
6.	**4, para. 2**	There is no accepted methodology for directly measuring dose to the lens of the eye in mixed beta and gamma radiation fields and the cost of developing such a method, or a method to estimate the dose based on surrogate measurements,	Amend to read, "If ~~the time and resources~~ the absence of an accepted methodology for ~~required for~~ direct measurement ~~as a result of monitoring outweigh the usefulness of~~ prevents the	MAJOR	In the absence of accurate dosimetry for lens of the eye in beta radiation fields, surrogate measurements will be used to provide a conservative estimate of dose. Surrogate measurements may result in dose estimates that are five to six times greater than the actual lens dose. The dose estimates will need to be further verified through field study and cor-

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		would be significant. Also, surrogate measurements are overly conservative.	licensee from ascertaining the quantity and concentration ~~using that method~~, then quantity and concentration may be estimated."		rected for the shielding effect of personal protective equipment. The application of surrogate measurements to large groups of workers will compound the need for corrections. These conservative, surrogate dose measurements will result in the unnecessary removal of personnel from work. Boilermakers and other skilled trade workers will receive conservative dose estimates at various licensed sites. Additionally, radiation data histories for workers from outside the country may not be available, or information on how their lens of the eye dose was determined. The regulator bears some responsibility for setting limits that are in fact measurable.
7.	**Section 4, Para 2**	Effluent monitoring is well prescribed in REGDOC 2.9.1 and is generally considered a part of the Environmental Protection Program – not the Radiation Protection Program. Furthermore, it is stated that the decision for direct measurement is based on "usefulness" of measurement. In contrast, REGDOC 2.9.1 refers to direct measurement where releases are not low risk, or release quantities are low and difficult to measure.	Remove the entire paragraph.	MAJOR	Duplication of requirements and guidance between Radiation Protection (REGDOC 2.7.1) and Environmental Protection (REGDOC 2.9.1) will lead to inconsistency and as a result, potential non-compliance.
8.	**4, para. 5**	"The effectiveness of the radiation protection program's implementation should be evaluated at regular intervals established by the licensee, and performance goals and objectives should be used. Monitoring of performance against established goals and objectives should be done using performance indicators or metrics that are easily gathered as part of the program's	How can this be evaluated in the case of the lens of the eye dose measurement? Lens of the eye dose cannot be "easily gathered as part of the program's outputs."	MAJOR	Effectively puts licensees out of compliance. Creates a significant and unnecessary administrative burden.

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		outputs."			
9.	**4.1.3**	The section "process for the application of ALARA" does not actually describe a process.	The example process (steps 1-6 on page 7) should be deleted. Implementation of this example process for all work is not achievable. It is sufficient to make reference to ICRP publication 101b which is already preceding the list. Delete "~~The following steps provide an example of a process for assessing options for achieving ALARA:…and subsequent list~~"	MAJOR	The industry will still not clearly understand what the expected process is.
10.	**4.1.4, para. 2**	A member of the public would not influence the dose of a Nuclear Energy Worker in every instance.	"Social factors that could be considered include equity, sustainability, individual benefit, social benefit and social trust. In ~~all~~ some instances, the views of the public may also be relevant."	*Request for Clarification*	
11.	**Section 4.1.5, Para 2**	The last sentence refers to staying informed of technological advances in protective equipment and instrumentation. As there is with the ALARA concept, there should be a graded approach referred to in this recommendation.	Revise last sentence to read: "In a manner that is commensurate with the specific radiological risks, licensees should keep themselves…"	*Request for Clarification*	
12.	**Section 4.1.5, Pg. 8, last paragraph (point 5) – "Dose constraints…"**	Is there a need to include this paragraph? The dose constraint aspect was intentionally **NOT** included in the revised Regs. The CNSC's rationales were written in the DIS-13-01, *Proposals to Amend the Radiation Protection Regulations* and the	Remove it.	MAJOR	Concern is if the dose constraint is to be used to manage work it could be treated as a regulatory limit which causes additional administrative burden.

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		industry agreed with those rationales: - "The CNSC has also noted that licensees have made significant progress in incorporating the ALARA concept into their radiation protection programs. In addition, the CNSC verifies, on an ongoing basis, that licensees are continually seeking opportunities to incorporate the principle of optimization into their programs and work practices." - "It decided that introducing a requirement for dose constraints is unnecessary at this time. This decision was made in light of the current, very clear regulatory expectations for radiation protection programs, as well as significant licensee progress in adopting the optimization principle."			
13.	**section 4.2 paragraph 4**	The statement to commitment to conventional safety does not belong in this REGDOC.	Last sentence should be revised to read, "…managers can demonstrate both personal and corporate commitments ~~s~~ to ~~conventional safety and~~ radiation protection in the workplace	*Request for Clarification*	
14.	**4.3**	Industry notes that REGDOC-2.2.2 fully covers requirements for establishing training requirements. Inclusion of additional information or examples introduces confusion. For example, The word "indoctrination" is associated with negative connotations, and is not appropriate. Also, retraining could be interpreted as a full repeat / redo of initial training.	Delete all except reference to REGDOC-2.2.2.	*Request for Clarification*	

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15.	**Section 4.4.1, Pg. 13, 5th para – Access to areas…interlocks."**	The phrase "lockable doors" sounds too descriptive for vague terms "high dose rates" and "high level of contamination".	Industry suggests replacing it with "robust barrier" rather than "lockable doors" because descriptive wording used for vague words, e.g. high level of contamination.	*Request for Clarification*	
16.	**Section 4.4.1, "Ventilation and containment systems", last bullet**	"…discharges from the facility will be as per authorized levels" could be interpreted (especially by the public) that releases to the environment are at release limits, when in fact they must be below release limits.	Revise last bullet to read: "…so that discharges from the facility will be below authorized release limits."	*Request for Clarification*	
17.	**Section 4.4.3, Pg. 14, para 2nd**	It should be emphasized that this philosophy should be applied to all radiological hazard types (e.g. alpha, beta/gamma). Conventional hazards should be considered as well when selecting RPPE.	Add words such as, "all radiological hazard types (e.g. alpha, beta/gamma), as well as conventional hazards should be considered when selecting RPPE."	MAJOR	As written, it could be a benefit if applied consistently across all types of radiation. If not, it could cause contradictions within licensees radiation protection programs.
18.	**Section 4.4.3, Pg. 14, 3rd, 1st sentence – "Workers should be trained in the use of PPE prior to use."**	At some facilities, not all workers are required to be trained to use PPE, particularly workers who are under direct protection of a qualified person. In this situation, the qualified personnel providing the protection would perform the selection and required inspections prior to use for unqualified personnel.	Suggest revising as follows: "PPE should be selected and inspected by personnel who have obtained training."	MAJOR	Qualified workers are trained in the selection and use of RPPE. The administrative burden of training other workers, including training records, is not commensurate with the risk. For example, Respiratory protection using tight fitting negative pressure face masks does require training. Putting on over shoes and coveralls for contamination control purposes does not.
19.	**Section 4.4.3, Pg. 14, 7th para – "Individuals should shower… contaminated workplaces"**	The proposal is overly onerous and unnecessary from a worker safety perspective. There are instances where a worker may	Remove this sentence.	MAJOR	The use of personal protective contamination clothing (anti-Cs) is an industry accepted practice used to reduce the potential spread of contamination to the worker's skin or clothing.

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		enter the contaminated places several times in the shift or day. There is no need to take a shower every time an entry is made if no contamination on the body occurs.			There is a financial cost to licenses to provide showering time and facilities. Making this a requirement would add likely 30 minutes or more of time per person per day without an increase in personal safety.
20.	**Section 4.4.4, Pg. 15, 3rd para.**	Clogged filters do not result in a leak through a filter. In addition, a pressure differential testing is not necessarily required for re-useable cartridges. This is also addressed in CSA-Z94.4-18, section 10.2.2.4 Particulate Filters 10.2.2.4.1 Particulate filters shall be replaced a) If they become damaged or unhygienic; or b) Based on the employer's change-out schedule. 10.2.2.4.2 Particulate filters (N, P, and R filters) shall be replaced when breathing becomes difficult or as recommended by the manufacturer.	Consider revising this paragraph and/or referencing CSA-Z94.4-18. Since respirator filters capture particles, cartridges and filters should be replaced on a regular basis as per the manufacturers' recommendations. Re-use of cartridges should follow manufacturers' recommendations/procedure.	MAJOR	Manufacturers routinely identify the practices / requirements for their equipment. The draft wording may be inconsistent with manufacturers' requirements, pose a safety risk to workers if the licensee's testing and cleaning is not in accordance with the manufacturer, and/or lead to an administrative burden.
21.	**Section 4.5, Pg. 15, last paragraph, last sentence – "At a minimum…supervising the job."**	This sentence implies that approval of work plans can be done without being reviewed by a qualified Radiation Safety professional such as a Health Physicist. This can introduce a risk of getting a radiological event as radiological hazards may NOT be assessed properly.	Delete the last sentence in Section 4.5.	MAJOR	Without involvement of RP department, i.e. a qualified Radiation Safety professional such as a Health Physicist, it can introduce a risk of getting a radiological event as radiological hazards may NOT be assessed properly by line supervision..
22.	**Section 4.6**	Licensees have significant concerns with	**Amend to read, "**Licensees should	MAJOR	Compliance is more difficult when requirements are not clear

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		the section on monitoring. As currently written, it repeats information contained in other parts of the REGDOC, including Section 25 and Appendix B.2, which inadvertently promotes more confusion than clarity. The section also provides guidance through a series of examples and "should" statements which surround a single "must" statement to make monitoring records available to CNSC staff. Based on experience with other REGDOCs, licensees are concerned that guidance will be improperly viewed as defacto requirements by some inspectors.	establish, maintain and review workplace monitoring under the radiation protection program to support ~~The type and frequency of workplace monitoring should allow for the evaluation and review of the radiological conditions in all radiological workplaces, as well as assessment of radiation exposures. It should also be based on dose rate, radioactivity concentration in air and surface contamination, and their expected fluctuations, and on the likelihood and magnitude of exposures in anticipated operational occurrences and accident conditions. This information should be used in support of~~ pre- and post-job evaluations, work planning, contamination control and management of radiological control operations. Significant changes in monitoring results should be identified, ~~and~~ trends analyzed ~~periodically. C~~ and corrective actions ~~should be~~ taken as necessary. Workplace monitoring records must be available for inspection by CNSC staff. ~~The records~~ and should ~~also~~ be ~~readily~~ available to workers. . ~~The programs for monitoring of the workplace should specify:~~ ~~• the quantities to be measured~~		and concise and when guidance is confused with requirements or repeated in many parts of the same documents. While there are many common features across the industry, licensees need to manage their programs in ways that best meet their individual site needs and to record their monitoring efforts appropriately.

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			~~• where and when the measurements are to be made and at what frequency~~ ~~• the most appropriate measurement methods and procedures~~ ~~• investigation levels and the actions to be taken if they are exceeded~~ ~~Particular attention should be given to the selection and use of instruments to ensure that their performance characteristics are appropriate for the specific workplace monitoring situation. This should include consideration of alarming capabilities of instrumentation where warranted. Guidance on considerations related to the acquisition, use, maintenance, calibration and testing of radiation instrumentation and equipment are provided in section 25.~~ Additional guidance on workplace monitoring programs is provided in appendix B.		
23.	**5**	More clarity could be inserted into the final sentence of the 2nd paragraph, which currently reads, "Radiation exposures due to naturally occurring nuclear substances must be considered if those exposures occur as a direct result of a CNSC-licensed activity, such as exposures to radon and radon progeny in uranium mining and	The implication is that nuclear power plants do not need to consider exposures due to NORM, in particular radon and progeny. For clarity, the point should be explicitly (not implicitly) made.	*Request for Clarification*	

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		milling."			
24.	**Section 5, 3rd bullet**	"A description of the dosimetric model that was used to obtain the dose from measured data" is not entirely clear. Is this applicable to TLD measurements? If so, this would be the responsibility of a dosimetry service. If this is only applicable to internal dose estimation, that should be specified. If it relates to Section 5.2, a cross-reference should be made.	Add more detail to this bullet so the licensee knows which dose-related records to keep.	*Request for Clarification*	
25.	**Section 5.4.1, Pg. 19, 2nd para., second last sentence –"Licensees who possess… Devices Regulations."**	We are paraphrasing the NSRD regulations; which can lead to inconsistencies.	Recommend to reference to the NSRD regulations instead of specifying the length of the wear period. Remove the paraphrasing of the regulations.	*Request for Clarification*	
26.	**5.4.2**	PAS program includes appropriate location, QC program, PM program, and MDLs. This only applies if PAS is used to assign dose.	Add this clarification to this section	MAJOR	Needing to apply more rigor than necessary to a test not used for dosimetry purposes.
27.	**Pg. 20-21, section 6**	The context of the section does not meet the intent of the definition of the Action Level. Action Level is designed as being indicative of a significant loss of RP control. Lowering Action Level means more events are to be expected, this may cause unnecessary concerns to workers and members of public. Industry suggests	The action Level is not the level that should keep changing over time. That is more appropriate for administrative levels or other systems used for optimization. Therefore, the CNSC should consider revising this section to allow flexibility in monitoring the	MAJOR	Increasing number of events that exceed the Action Level may cause unnecessary concerns to workers and members of public. There is an administrative burden with every Action Level report.

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		that the section should be written such that it's tied to a significant event/incident rather than a continual improvement concept. Industry use administrative levels (or precursor indicators) to alert potential issues.	performance. Allowance for administrative levels or other mechanisms can be recommended.		
28.	**Section 6, Para 2**	Action levels for environmental protection are for releases of nuclear substances, hazardous substances and physical stressors (not physical parameters).	Remove as this is covered in RegDoc-2.9.1.	*Request for Clarification*	
29.	**6**	How are the "administrative levels" different from the "investigation levels" in section 4.6.1?	If intended to be the same, use the same words throughout the document. Preference is for Investigation level since it reduces confusion when abbreviating.	*Request for Clarification*	
30.	**Section 6.1, 3rd bullet**	There appears to be a formatting or punctuation issue in the 3rd bullet.	Add formatting or punctuation before "incorporate use of the selected action levels…".	*Request for Clarification*	
31.	**7**	Licensees already have internal processes to determine who is a NEW.	Remove the sentence: "This requires that a case-by-case factual determination be made…..for the licensee."	*Request for Clarification*	
32.	**7 Para 5, pg. 24**	The term 'timely manner' is ambiguous	Replace 'timely manner' with 'a minimum of annually'	*Request for Clarification*	
33.	**7.0 Provision of Information to Nuclear Energy Workers**	The requirement to inform all NEWs of their activities during an emergency may not be realistic depending on the level of detail expected. Emergencies, by their	Amend the requirement to indicate that licensees should provide a general description of expected responsibilities during	MAJOR	Depending on the level of detail expected, this may be impossible with several thousand nuclear energy workers on some sites at any given time. Without clarity, this could unintentionally create instant and widespread non-

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		very nature, are not always predictable and it may not be possible to accurately foresee the emergent conditions.	emergency scenarios and include an explanation of risks with doses up to the emergency dose limits without explaining specific responsibilities.		compliance.
34.	**7.0 Provision of Information to Nuclear Energy Workers**	Industry supports the repeal of the provision for a female NEW to self-disclose her pregnancy to the licensee as long as the regulations and this supporting REGDOC are clear with regard to licensees' obligations. This proposal aligns with the international practice of voluntary self-disclosure of pregnancy and nursing.	Amend this section to clarify that the responsibility lies with the pregnant or nursing NEW to declare their status to the licensee in writing. Until such a declaration is provided, the licensee has no obligation to accommodate work assignment or dose limits associated with pregnant or nursing status. Specifically, amend the bullet at the top of page 25, to read, "of the female NEW rights once they declare ~~if~~ they are pregnant or breastfeeding.'	MAJOR	Without this clarification, it is difficult for licensees to comply with the requirement to ensure that pregnant workers are not used in the control of an emergency. Also, the risks and rights may have been given to the female NEW many years prior to becoming pregnant. Declaring pregnancy to the licensees affords an opportunity to provide her with the most current information and refresh her on the risks.
35.	**Section 7, Pg. 23, last paragraph – "There is an obligation… for the general public (which is 1 mSv per calendar year)."**	It is not clear whether this statement excludes those (e.g. helpers, volunteers, policemen, etc.) who participate in the control of an emergency.	should add: "… limit for the general public (which is 1 mSv per calendar year) under normal operational conditions." Or "…limit for the general public (which is 1 mSv per calendar year), excluding dose received from emergency activities."	MAJOR	Volunteers from the public (staffed at off-site emergency centres) may participate during an emergency and may receive a dose exceeding 1 mSv.
36.	**Section 7, Pg. 25, 3rd para.**	In addition to the paper-based format, written acknowledgement can also be in digital format such as email, completion	Revise to include: "In addition to the paper-based format, written acknowledgement	MAJOR	Easier to track and enhance the ability to search, and reduces administrative burden of managing paper records

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		of a computer-based training, etc.	can also be in digital format such as email, completion of a computer-based training, etc."		
37.	**Section 8, third para.**	Industry seeks clarification on the intent of the 3rd paragraph. As currently written, it inadvertently suggests that non-nuclear energy workers would require similar training to NEWs.	Clarify whether this section means all users of dosimetry must be informed of risks, regardless of their NEW status (e.g. a non-NEW using dosimetry to get from point A to point B, which may require traversing a short section in Zone 2?).	*Request for Clarification*	
38.	**13, para. 3**	This information is challenging to retrieve for foreign workers and, in particular, those who are from countries such as the United States where the decision was taken not to reduce the lens of the eye dose limit per ICRP 118. Also, as indicated earlier in the text, within Canada, the NDR is subject to privacy legislation.	Change to 'the licensee must also consider *available* dose information that the NEW had received prior to the commencement of the work for the licensee in order to ensure that the licensee is managing the worker's dose below the effective dose limits..."	MAJOR	The information on NEW dose may not exist due to differences in regulatory requirements in other jurisdictions.
39.	**14**	Mentions separating left and right hands. Meeting Dose Limits is not required for separate hands.	Modify to specify that the highest recorded dose of either hand will be compared to a dose limit.	*Request for Clarification*	
40.	**15. Emergencies**	As per the previous comment on pregnant or nursing NEWs, industry believes additional context is needed for the 6th paragraph in this section, which currently reads, "As per section 15 of the Regulations, licensees must not ask pregnant women to participate in the	Change the wording to: "As per section 15 of the Regulations, licensees must not ask women who have declared pregnancy to participate in the direct control of an emergency."	MAJOR	If female NEWs are not required to declare pregnancy, the licensee is vulnerable and at risk of assigning work to the Without this clarification, it is difficult for licensees to comply with the requirement to ensure that pregnant workers are not used in the control of an emergency.

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		direct control of an emergency." This clause assumes the licensee knows the woman is pregnant, which may not be the case. The responsibility lies with the pregnant or nursing NEW to declare their status to the licensee in writing. Until such a declaration is provided, the licensee has no obligation to accommodate work assignment or dose limits associated with pregnant or nursing status.			
41.	**Section 15, Pg. 33, 6th para. – "As per Section 15 of the Regulations … "**	Industry interprets it as a pregnant worker may participate in control of an emergency as long as she resides in a "radiologically stable and safe location" where the potential dose to be received is not exceeding 4 mSv (as per section 13). Is Industry's interpretation is correct? Clear expectation regarding participating in control of an emergency is necessary as there may be instances where pregnant or breastfeeding NEWs whose duties or presence are required in the control room (e.g. Shift Managers, Authorized Nuclear Operators, etc.) during a nuclear incident.	Provide clarification on the statement.	*Request for Clarification*	
42.	**Section 15, Pg. 34, 1st para. – "Once the emergency… by the Commission."**	As indicated in pg. 32, 7th para, licensees agree and support that the doses received during an emergency are treated separately from the normal occupational doses. However, these doses become part of the individual's life time dose. In the event where the worker gets hired	Provide a mechanism/guidance for reporting emergency dose to the NDR.	*Request for Clarification*	

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		by a different employer (nuclear facility) within 5 years post emergency event, the current practice requires the individual lists all their historical doses in the past 5 years. This means that doses received during emergency must be listed. As described in the paragraph, "a worker should not be prevented from returning to future planned work because of doses received during an emergency. However, … by the Commission". Due to potential restrictions and relevant info, this may prevent the individual from employment. How are emergency doses to be reported to the National Dose Registry, such that they are excluded from routine operating dose limits?			
43.	**Section 20**	Industry has significant concerns with the section on labelling and believes a workshop with CNSC staff is necessary to ensure common understanding. Licensees agree containers and devices containing nuclear substances should be labelled to alert persons to the presence of a nuclear substance and the real or potential hazard/risk that exists. However, NEWs are trained to recognize hazard levels and understand the risks when reading posted radiation fields (e.g. mrem/h, mSv/h, MPCa or DAC, cpm, etc.) Given this, listing radionuclides and associated activities on waste containers intended to stay within a nuclear facility	Industry requests the CNSC host a workshop to ensure the requirements are clearly understood and key terms defined. Items for discussion could include: - Defining 'container' and 'device'. Does it mean radiation device per NSRD regulations? - Applying the exemption to the labelling requirements for containers or devices in an area subject to the boundary and point of access signs in s. 21.		For containers intended to be used only within the licensee's facility, like those for waste, adding specifics on radionuclides inadvertently creates a safety risk from additional and unnecessary handling when staff are already trained to evaluate risk based on hazard conditions (dose rates or air concentrations). Waste cans are frequently emptied by trained and qualified staff. There is also an administrative burden that would require each bag or container to be sampled, analyzed, tags printed and affixed to the item. Also, clear regulations promote better compliance. The absence of definitions can lead to licensees' interpretations which may not meet the intent of the regulation's requirements.

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		does not improve the safety for personnel. Licensees agree that containers/sources shipped out of the facility should have the appropriate specifics.	- Clarify what does CNSC means by the phrase "in transit" - Clarify the reference to Paragraph 20(3) in the RPRs. There is no paragraph 20(3) in the current RPRS.		
44.	**25**	There are instances where the manufacturer specifications may not meet industry best practices and/or may be overly prescriptive.	Remove Manufacturers specifications from the RegDocs.	*Request for Clarification*	
45.	**Section 25, Pg. 39, "Radiation Detection and Measurement Instrumentation"**	"Licensees are required by section 24.1 of the Regulations to ensure that instruments and equipment used for radiation measurements are appropriately selected, tested and calibrated for their intended use." In addition to instruments and equipment used for the direct protection of people (survey instruments, contamination monitors) laboratory instruments, stack monitors and reactor regulating instruments are also used to measure radionuclides in samples, radioactive effluent, etc.	Clarify that this is for instruments and equipment used for direct protection of people.	MAJOR	Some instruments are accessible at reduced frequencies, such as in the reactor vault, and may only be available 24 to 36 month intervals. There is a financial and administrative burden to stop operations and check calibrations more frequently.
46.	**Section 25, Pg. 39, 4th para. – "Licensees are required by section 24.1 of the Regulations…"**	Section 24.1 does not exist in the current RPRs, though it does in the draft version in Canada Gazette I. As per comment#1, itis premature to review this draft until amendments to the Radiation Protection Regulations (RPRs) are finalized.	Review and revise.	*Request for Clarification*	
47.	**Section 25, Pg. 39, 5th**	Spell out DRDs in first use.	Review and revise.	*Request for Clarification*	

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	para., last sentence – "As well, DRDs and air monitoring /sampling …"				
48.	**Section 25, Pg. 39-41**	Section 20 of the NSRD refers to radiation survey meters, and requirements for calibration under the Act and Regs. Section 25 of REGDOC 2.7.1 seems to broaden the definition considerably, to all instruments and equipment being used to measure radiation being appropriately calibrated.	Clarify that this section pertains only to radiation instrumentation used for personnel protection purposes**.**	MAJOR	Systems use instruments to measure radiation for reactor control and other purposes, not just in the scope of protecting personnel. Ion chambers in the reactor measure neutron flux for control purposes, not radiological safety. There are several examples.
49.	**25.2**	It is not practical to check large area detectors using uniformly contaminated planar sources.	Change Sentence to: "These tests should be conducted …. Similar to the dimension of the detector, **where practical**.	*Request for Clarification*	
50.	**25.2**	Licensees seek clarity on: 1. The intention of 2nd sentence, 2nd paragraph, which reads, "Measurements must therefore be made using an efficiency-checked instrument with the best available predetermined detection efficiency …" is overly prescriptive.	Change the sentence to: "Measurements must therefore be made using an efficiency-checked instrument with ~~the best available predetermined~~ **an appropriate** detection efficiency …	*Request for Clarification*	
51.	**25.2; 2nd para**	There is no safety benefit to this requirement which adds a large administrative burden and is not practical in the field.	Remove 2nd to last sentence in this paragraph: "The measurements, in counts per second…centimeter".	MAJOR	There is no safety benefit to this requirement which adds a large administrative burden.
52.	**Pg. 43, Appendix A - A.6**	There could be confusion over the level of risk information required to be provided to visitors. As written, it could be	Amend the 2nd sentence to read: "They should however be informed of the radiological	MAJOR	Misunderstanding the intent of this sentence, could cause confusion and unnecessary anxiety among visitors.

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		interpreted to be the same level as required for a NEW. In addition, visitors may lack the background information and/or context required to properly understand probabilities and consequences of accidents, leading to a significant overestimation of risk which could create unwarranted anxiety.	hazards in the facility. Remove "and the risk of accidental radiation exposures".		
53.	**B.1.1**	CNSC is holding the Industry to a standard of contamination of (10uSv) per year, which is misaligned with the CNSC's own guidance on safe dose levels (<1mSv/y has no safety significance). The recommendations do not align with existing regulations (PT NSR & NS RDR). There is a further misalignment in terminology. Conditional clearance levels are defined in terms of activity concentration (i.e. Bq/g) in NSRDR. However, this section talks about surface contamination limits being set in terms of conditional clearance levels. Surface contamination levels for release should be set in terms of surface contamination (Bq/cm^2), following PTNSR.	Retain current levels consistent with PT NSR & NS RD. Remove last sentence from the paragraph. Clarify when activity concentration and surface contamination criteria are to apply.	MAJOR	Licensees cannot comply when there are inconsistencies between REGDOCS & regulations.
54.	**B.1.1**	Using 0.1 Bq/cm^2 (from ANSI/HPS N13.12) presents potentially unresolvable issues with remediation of radium facilities.	Align with existing regulations (PT NSR). Remove the reference from ANSI/HPS N13.12 from this paragraph.	MAJOR	The technology may not be present to meet such stringent clearance levels for certain alpha emitters due to the background of radon-222 or radon produced as a result of TENORM. In addition these values from ANSI/HPS N13.12 are not aligned with PTNSR.
55.	**B.1.1**	ANSI/HPS N13.12-2013 does not deal	REGDOC-1.6.1 should be revised	MAJOR	Licensees will be unable to implement REGDOC-1.6.1 and

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		with 'removable surface-contamination' limits. Therefore this guidance appears to limit total contamination only. This is in contrast to REGDOC-1.6.1 which only limits 'removable surface-contamination'.	to conform to this new standard. The methodology used to develop the REGDOC-1.6.1 limits (IAEA-TECDOC-855) was considered and rejected by ANSI/HPS.		REGDOC-2.7.1 concurrently.
56.	**App C – General**	Many of the equations provided in this appendix have specific limitations that are not described.	Add notes for each equation as applicable on limitations.	*Clarification*	
57.	**C.6**	The list of information that should be linked to a record is very extensive. While licensees do not disagree with the majority of the information listed, it is not necessary to have all that information linked to a record. The fact that it is accessible in some form should be sufficient. Recording these pieces of information with each record is redundant.	Modify the requirement to say that the information should be available, but not necessarily associated with each record.	MAJOR	Excessive administrative burden of maintaining redundant records, with no improvement on safety.
58.	**Section C.8**	Section C-8 is too prescriptive for a REGDOC.	Should be rewritten to include general principles rather than instructions.	MAJOR	Licensees are accountable for determining how to meet requirements set by Regulator. Level of detail provided in the instructions confuses these accountabilities.
59.	**C.8**	Some licensees and the PTNSR specify wipe areas (or averaging areas) of 300 cm^2 instead of the specified 100 cm^2.	Refer to the PTNSR for large area checks.	MAJOR	Licensees would be forced to average contamination levels over different areas if an object will be shipped or simply released. This would be, and is already in some cases, confusing and error-likely. Wasted effort will be spent by industry and the Regulator on events where contamination levels are not measure in the same way.
60.	**C11**	Licensees believe there are passages in these sections that are more appropriate as "should" statements rather than	Amend the following to read, - " …the MDA should ~~must~~ be calculated for the most restric-	*Request for Clarification*	

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		"must" statements that are legally required by regulations.	tive scenario - " …instrument should ~~must~~ stay stationary"		
61.	**C.9**	The efficiency equation is deceptive without the use of "absolute" as many detectors list intrinsic efficiency.	Add the word "absolute" before the word "efficiency" in the given equation.	*Request for Clarification*	
62.	**C.9**	The method for determining absolute efficiency is applicable for only a point source,	Remove the equation as it causes confusion and is not applicable in certain scenarios	MAJOR	Calibration sources are rarely point emitters, and the geometry of the source will highly affect the absolute efficiency. The equation also causes confusion and is not applicable in certain scenarios.
63.	**C.10**	The sentence "the result will indicate the lowest count that would indicate the presence of contamination at the limit" is incorrect.	This needs to be re-worded along the lines of "This result is the limit of contamination".	*Request for Clarification*	
64.	**C.10**	This section does not actually note the "Critical Level" and how to use it. The whole purpose of relating a measurement to a criterion is to determine if radiation is present above some a priori level (i.e. can the detector system detect what it needs to detect).	The critical level must be included; however the Gaussian formula is even more sensitive to errors at low background levels than the MDA formula. The Poisson version should be included.	MAJOR	The Critical Level and not MDA or other metrics determine if radiation is present during a detection. Using the MDA or other metric would under-report occurrences of radiation detection.
65.	**C.11**	The formulas are based on the same counting time as background counting time. This may be true if used in ratemeter mode, but if instruments are used in scalar mode, this is not necessarily true. MDA is defined at the 95% confidence level. This is one option, but MDA does not need to be defined at this level. It could be defined at the 90% level or some	Formulas need to be generic (allowing for difference in count times) or just provide a reference. Licensees should be allowed to decide the confidence level for the definition of MDA as a function of risk.	*Request for Clarification*	

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		other level depending on risk.			
66.	**C.11** **C.12** **C.13**	The equations provided do not account for ALPHA counting.	To provide either Poisson equations or note that the equations do not apply in low background.	MAJOR	The result of using equations that are not appropriate for low-level counting is magnified the lower the background levels. If not described correctly, alpha detection by licensees will be inadequate. See MARLAP Attachment 20A *Low-Background Detection Issues*.
67.	**C.11** **C.12** **C.13**	All these sections deal only with static measurements. Most contamination detection methods employ a scanning method. No formulae are presented for scanning.	Scanning for radioactivity presents different challenges, including human factors as a source of error.	MAJOR	Some licensees may not recognize that the formulas presented are not applicable for scanning. Licensees who may not have highly technical staff in their full time employ may benefit from recommendations on where to get guidance on these topics.
68.	**C.11** **C.13**	The term 4.66 in two (2) equations is incorrectly rounded, the value is 4.65 (i.e. 1.644853627*sqrt(2)*2).	Change the value to 4.65.	*Request for Clarification*	
69.	**C.11**	The MDA formula is not applicable for dynamic reading instruments and only apply to static scalar measurements.	Add a formula for the MDA of an instrument that has continuous analog readings displayed.	MAJOR	The MDA formula provided is incorrect for many circumstances.
70.	**C.11**	The MDA formula is not applicable for scanning instrumentation, the most common method for contamination measurements.	The CNSC may refer to NUREG 1507.	MAJOR	Some licensees may not recognize that the formulas presented are not applicable for scanning. Licensees who may not have highly technical staff in their full time employ may benefit from recommendations on where to get guidance on these topics.
71.	**C.12**	This section requires uncertainty to be reported with each measurement. This is excessive when measurement systems have been shown to meet MDA values and/or other criteria. It is also a very high	Remove this Section.	MAJOR	Operators are not in a laboratory environment. This is not useful or realistic. If this section is to be kept, it should be provided as an example, not a requirement.

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		degree of rigor for on-site measurements. For those that are not highly familiar with this area, the wording can be misunderstood and lead to unnecessarily rigid interpretation on what is otherwise a reasonable concept that measurements should have a defined level of accuracy.			
72.	**C.13**	The MDA is set at half the contamination criterion. There has been enough conservatism built into deriving the contamination criterion.	These equations should be removed in entirety.	MAJOR	Placing the MDA at half the contamination limit may place undue strain on licensees.
73.	**Appendix C. 14.3 Detector output**	One of the common non-portable monitoring instruments for alpha/beta wipe count is a silicon base semiconductor detector which is commonly known as PIPS (Passivated Implanted Planar Silicon).	Add PIPS to Table C.1 Sample table.	*Request for Clarification*	
74.	**C.14.3**	Very low energy photon emitters do not respond well even in thin crystals.	Include methods of determining contamination levels are met according to B.1.1.	*Request for Clarification*	
75.	**C.14.3**	G-M detectors are usually calibrated for Cs-137, a gamma emitter. Why does the CNSC not recommend Thin-window G-M detectors for gamma emitters?	Include gamma radiation as applicable for G-M detectors.	*Request for Clarification*	
76.	**C.14.3**	There is no reference to Table C1 in the document to this table indicating its purpose.	Include reference to the table or remove the table.	*Request for Clarification*	
77.	**Pg. 56, Appendix D: *Calibration of***	This appendix provides guidance and expectations on calibration of Radiation	Provide a definition for DRDs.	*Request for Clarification*	

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	Radiation Survey Meters and Direct Reading Dosimeters (DRDs)	Survey Instrument and DRDs. However, it does not mention expectations on Electronic Personal Dosimeters (EPDs). Nowadays, almost all utilities use EPDs. Does the CNSC imply DRDs as EPDs?			
78.	**Pg. 58, Appendix D - D.7**	Some licensees, append the future calibration date.	Amend to include the 'future' calibration date or date of calibration.	*Request for Clarification*	
79.	**Appendix D3, p.56**	There are specifics for calibration, e.g. DRD on torso phantom, that may not be consistent with manufacturers' recommendations (3a). Manufacturers have provided robots and other equipment and jigs for EPD/DCD etc.	Appendix D should be replaced to have calibration procedures that are in accordance with equipment manufacturers' recommendations. (see first paragraph D5 "The manufacturer's recommended calibration method, if any, is followed,".	MAJOR	May result in equipment not being calibrated as recommended. Administrative burden of placing each EPD on a torso phantom (several thousand per year) requiring additional labour.
80.	**D.3**	The distance from floor and ceiling is 1 meter but scattering objects is 0.5 meters.	Specify 0.5 meters for all minimum distances.	*Request for Clarification*	
81.	**Appendix D.8 Documentation of calibration**	In order to meet regulatory requirements, licensees must make available a document for each radiation survey meter that includes the following information:	In order to meet regulatory requirements, licensees must make available a document for each radiation survey meter that includes the following information, where applicable:	*Request for Clarification*	
82.	**D.8**	The calibration source could be an x-ray device.	Suggest including Voltage, Current, and effective energy to x-ray sources.	*Request for Clarification*	