DS442 Regulatory Control of Radioactive Discharges to the Environment

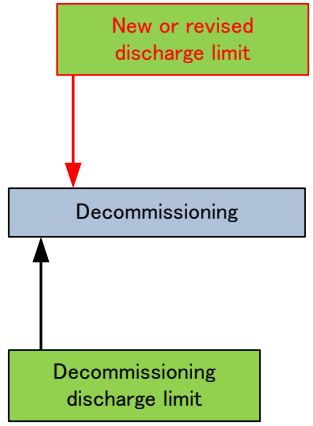
COMMENTS BY REVIEWER Reviewer: Page 1 of 1 Country/Organization: Japan/ Nuclear Regulation Authority (NRA) Date: 2015-10-12				RESOLUTION			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1	1.14/5 (p.4)	…provided ~~by IAEA~~ in Ref. [39].	Editorial.	X			
2	Reference [44] (p.52)	…Safety Guide, IAEA Safety Standards Series No. GS-G-2.**1**, Vienna (2007).	Editorial	X			

DS442 Regulatory Control of Radioactive Discharges to the Environment

COMMENTS BY REVIEWER Reviewer: Page 1 of 2 Country/Organization: Japan/ Nuclear Regulation Authority (NRA) Date: 2015-10-09				RESOLUTION			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1	1.4/8 (p.1)	The decision to permit such releases should take into account the radiation principles of justification, optimisation, and dose limitation, and safety principles."	Clarification	X			
2	1.10/2,3 (p.3)	Add an applicable reference regarding "*migration of liquids containing radioactive material into underground water*" to this text.	Ref. [41-43] are applicable to disposal and post-disposal and Ref. [44] is applicable to accidental release. DS427 (Ref. [8]) would be applicable to this event.			X	We are excluding from this safety guide the migration of radionuclides. Ref [42] and [43] include consideration on migration of radionuclides from disposal (geological and bore-hole), which is out of the scope of this safety guide (those migrations are not considered 'discharges').
3	1.13/1 (p.4)	…naturally occurring radioactive substances[x] in non-nuclear or non-radiation-related industries. Footnote X : The term of "radioactive" for "radioactive substance" is referred to definition of "radioactive(1)" in the IAEA safety glossary 2007 [Ref. 3], and should not be confused with the 'regulatory' meaning of radioactive (2): 'Designated in national	It is informative for the person who does not assume English a native language to attach a footnote of the definition of "radioactive substances" from GSR Part3, because the term "radioactive material" is usually used in the Safety Standards.	X	The comment is noted. We changed the text to 'naturally occurring radioactive ~~substances~~ material' and we put in a footnote the definition from the Safety Glossary.		

		law or by a regulatory body as being subject to regulatory control because of its radioactivity.' The 'scientific' meaning of radioactive refers only to the presence of radioactivity, and gives no indication of the magnitude of the hazard involved.					

DS442 Regulatory Control of Radioactive Discharges to the Environment

COMMENTS BY REVIEWER Reviewer: Page 2 of 2 Country/Organization: Japan/ Nuclear Regulation Authority (NRA) Date: Oct. 2015				RESOLUTION			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
4	3.1/1-3 (p.7)	The Fundamental Safety Principles [1] establish, among others, **safety objective mentioned that the fundamental safety objective is to protect people and the environment from harmful effects of ionizing radiation.** ~~principles for ensuring the protection of the public and the environment, now and in the future, from harmful effects of ionizing radiation.~~	Correct citation. See Section 2 of SF-1. Regarding the protection of the public and the environment, now and in the future, from harmful effects of ionizing radiation, principle 7 mentions "*people and the environment, present and future, must be protected against radiation risks*".				
5	Figure 2 (p.15)		See para.5.10. "A new, or revised, discharge authorization may be required when operation concludes to take account of the likely changes to the discharges during the decommissioning process. This authorization should provide the new discharge limits prior to the start of the decommissioning activities. In some situations, operation and decommission activities may be overlapping, needing consideration in the authorization of the relevant discharge limits."				
6	5.41/4 (p.24)	The description "However, it is recognized that if further reductions can be made easily with little or no cost then they should be made." should be deleted.	There is no need to consider any dose reduction below exemption criteria.				

DS442, Regulatory Control of Radioactive Discharges to the environment (Step 11)

COMMENTS BY REVIEWER Reviewer: Radiation Protection & Radioactive Waste Safety Department Page 1 of 1 Country/Organization: Republic of Korea/ Korea Institute of Nuclear Safety Date: October 9, 2015				RESOLUTION			
Comment No.	Para/Line No.	Identified problem/Proposed new text	Reason/Description	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1	Page 11 §3.20	… These requirements include making "provision for ~~maintaining~~ <u>continuous</u> records of discharges, results of monitoring…"	Gaseous and liquid discharge have to be continuously monitored for guarantee the discharge limit.			X	The text is quoting from GSR Part 3 (can't be changed). Nevertheless, the comment is noted and the frequency of monitoring is discussed in 5.76.
2	Page 2 §1.8	The objective of this safety guide is to provide <u>for</u> governments, regulatory bodies, applicant,…	The verb 'provide' takes the preposition 'for' for expression 'to object'.	X			

Finland WASSC NUSSC comments on DS442 Regulatory Control of radioactive Discharges to the Environment

COMMENTS BY REVIEWER Reviewer: Page.... of.... Country/Organization: Finland/STUK Date: 5th Oct, 2015				RESOLUTION			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1	p. 30, 5.62	When direct irradiation influences the exposure conditions of the representative person~~, this doses should be estimated and added to the doses due to the radioactive discharges.~~ the doses should be estimated and be taken into account when controlling the radioactive discharges.	If the public is exposed to the direct radiation, it must be taken into account along with the radioactive discharges when determining the total exposure. When controlling the discharges, for example, when setting the discharge limits, the direct radiation has to be taken to account so that public dose limits are not exceeded. (IAEA definition of discharge does not include direct radiation.)	X	When direct irradiation influences the exposure conditions of the representative person, the resulting doses should be estimated and taken into account when setting discharge limits on radioactive discharges, so that the established dose criteria is not exceeded.		
2	p. 37, 5.95	— Requirements relating to analytical laboratories accreditation *or qualification. If accreditation is used as a means to demonstrate qualification the related requirements should be issued.*	Accreditation is one mean of demonstrating qualification. Also other approached should be possible.	X			

Draft Safety Guide DS442 "Regulatory Control of Radioactive Discharges to the Environment" (Draft 6 dated August 2015)
Status: STEP 11 – Second review of the draft safety standard by the SSCs

Note: Blue parts are those to be added in the text. ~~Red parts~~ are those to be deleted in the text.

	COMMENTS BY REVIEWER Reviewer: **Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB)** (with comments of GRS) Page 1 of 5 Country/Organization: **Germany** Date: 2015-10-09				RESOLUTION			
Relevance	Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
2	1	General	We gratefully acknowledge that most of our comments on the previous draft version 5 have been accepted and the current version of DS442 has been further upgraded and aligned with the related Safety Guides DS427 and DS432. Our remaining notes, aiming for improvements and corrections in the text, are presented below.	Comment only.	X			
1	2	1.1	"Facilities and activities[1] [1] that give rise to radiation risks, ~~use radioactive[2] sources,~~ including nuclear reactors, are required to be designed, built, licensed, operated and maintained in a manner to prevent, or minimize the consequences of radioactive releases to the environment, providing adequate levels of protection for the public and the environment."	Clarification. In the original text of Para 1.1, in combination with footnote No. 2, the terms 'radioactive', 'radioactive sources' and 'nuclear reactors' are mixed in an inadmissible manner. This might be confusing for the reader of the Safety Guide. All three terms are well-defined (see IAEA Safety Glossary and GSR Part 3) and must be kept separately. The proposed modifications are consistent with the wording used in GSR Part 3 and SF-1. In case of acceptance,	X			

Relevance: 1 – Essentials 2 – Clarification 3 – Wording/Editorial

				footnote No. 2 is dispensable and can be deleted. See also our related comment on Para 1.13.				
3	3	1.4	Last sentence: "The decision to permit such releases should take into account the radiation principles of justification, optimisation, and dose limitation."	Clarification; alignment with the text in Para 2.1.	X			
2	4	Footnote No. 7 to 1.11	1st sentence: "The authorization process for facilities and activities, with wider aspects related to the system of protection and safety, ~~and protection,~~ is established in ~~GRS~~ GSR Part 3 [2]."	Wording/Editorial. The system of protection and safety is an essential cornerstone of GSR Part 3.	X	Note: Refers to current foot note 5. It is now modified according to the comment.		
1	5	1.13	"~~The~~ This Safety Guide covers a wide range of facilities and activities ~~considered cover a wide range of radioactive sources~~ that give rise to radiation risks. For example, from ~~those~~ radioactive sources used in the general industry, in medicine and research up to nuclear installations. This Safety Guide also covers …"	Clarification. In the original text, the terms 'radioactive sources' and 'nuclear installations' are mixed in an inadmissible manner. This might be confusing for the reader of the Safety Guide. Both above-mentioned terms are well-defined (see IAEA Safety Glossary and GSR Part 3) and must be kept separately.	X			
3	6	2.1	"… to control radioactive releases to the environment from a facility or activity in planned exposure~~s~~ situations …"	Grammar.	X			
3	7	Footnote No. 9 to 2.7 (b)	"For example, in authorized, justified and planned operational conditions that lead~~s~~ to transitory increases of exposures."	Grammar.	X	Note: Refers to current foot note 7. It is now modified according to the comment.		
3	8	3.5	"Although t~~T~~he system of protection and safety required by the IAEA Safety Standards~~, was~~ is founded primarily on considerations of the radiological protection of humans, it also aims to provide for appro-	To improve wording. Protection from harmful effects of non-ionizing radiation is outside the scope of GSR Part 3 (see Para 1.39	X			

Relevance: 1 – Essentials 2 – Clarification 3 – Wording/Editorial

			priate protection of the environment against the harmful effects of ionizing radiation [2].”	therein).				
3	9	4.1	“… (for example releases of naturally occurring radioactive materials at ~~its~~ their original levels), …”	Grammar.	X			
2	10	4.2	“Key factors for the decision ~~In order to decide~~ whether a discharge authorization is required ~~key factors~~ are ~~that~~ whether the overall practice ~~should be~~ is justified and, subsequently, whether the practice can be excluded or exempted from regulatory control.”	Clarification and consistency with the decision process illustrated in Figure 1 of this Safety Guide.	X			
3	11	5.7	1st sentence: “~~GRS~~ GSR Part 3 requires that for setting discharge limits, the results of radiological environmental impact assessments …”	Editorial correction.	X			
3	12	5.33	2nd sentence: “This is particularly important when the representative person may live in a neighbouring country, for example, in the case where the facility is to be constructed ~~at~~ close to national border or on an international waterway.”	Less restrictive wording.	X			
3	13	5.45	Last sentence: “… a radionuclide specific source and environmental monitoring programme; …”	Grammar.	X			
3	14	5.60	Last sentence: “Extreme or unusual habits should not dictate the characteristics of the representative person~~s~~ considered [16].”	Elsewhere in this document, ‘representative person’ is used.	X			
2	15	5.62	“In s~~S~~ome facilities or activities, radiation sources can contribute to ~~may result in~~ the external exposure of members of the public located in the close vicinity through direct gamma irradiation and, in some cases, sky scattered gamma ray radiation (sky-shine).	Text has been aligned with the related Paras 5.13 and 5.27 of the Draft Safety Guide DS427 “Prospective Radiological Environmental Impact Assessment and Pro-	X			

Relevance: 1 – Essentials 2 – Clarification 3 – Wording/Editorial

			Examples are ~~For instance, from~~ sources stored in the facility (i.e. ~~from~~ spent fuel or radioactive waste storages), ~~from~~ sources used in the facility or activity (i.e. ~~from~~ industrial irradiators), and ~~from~~ components of the facility (like nuclear reactors or coolant or steam systems). When direct irradiation influences the exposure conditions of the representative person, this dose should be estimated and added to the doses due to the radioactive discharges."	tection of the Public for Facilities and Activities" (version 7 dated August 2015). The proposed phrase "can contribute to the external exposure of members of the public" indicates that the exposure pathways are strongly site-dependent.				
2	16	5.96	4th sentence: "However, regulatory bodies may choose to undertake independent monitoring in any case for other reasons (see para ~~5.94~~ 5.97 below)."	Wrong paragraph is referred to here. Valid reasons for undertaking independent monitoring are specified in Para 5.97.	X			
3	17	6.5	"~~It should be taken into account that,~~ GSR Part 3 states in Schedule I, para I-4., that "for radionuclides of natural origin, exemption of bulk amounts of material is necessarily considered on a case by case basis by using a dose criterion of the order of 1 mSv in a year, commensurate with typical doses due to natural background levels of radiation" [2]. It should be taken into account that in such ~~In these~~ cases the exemption criteria may ~~result~~ be higher than the exemption criteria for anthropogenic radionuclides (e.g. of the order of 10 µSv in a year) and, consequently, influencing the specification and use of dose constraints, if applicable. The specification and use of constraints is discussed in the Annex."	1st and 2nd sentence: More appropriate wording. Last sentence: Editorial.	X			
3	18	Ref. [8]	"INTERNATIONAL ATOMIC ENERGY AGENCY. ~~A General Framework for~~ Prospective Radiological Environmental Impact Assessment and Protection of the Public for Facilities and Activities, IAEA Safe-	This is the current working title of the Draft Safety Guide DS427 (version 7 dated August 2015).	X			

Relevance: 1 – Essentials 2 – Clarification 3 – Wording/Editorial

			ty Standards Series, Safety Guide DS427, in preparation, IAEA, Vienna."					
3	19	Ref. [33]	"~~INTERNATIONAL ATOMIC ENERGY AGENCY, Assessing the need for radiation protection measures in work involving minerals and raw materials, Safety Reports Series No. 49 (Vienna, 2006);~~"	In the list of references, the Safety Reports Series No. 49 (cited in footnote No. 24 to Para 6.2) inadvertently occurs twice: Ref. [31] and Ref. [33]. Delete [33] and renumber the subsequent references accordingly.	X	(Ref [33] deleted; renumbering will be done during final edition)		
3	20	Ref. [42]	"INTERNATIONAL ATOMIC ENERGY AGENCY, Geological~~.~~ Disposal Facilities for~~.~~ Radioactive Waste, ~~for protecting people and the environment.~~ Specific Safety Guide, IAEA Safety Standards Series No. SSG-14, Vienna (2011)."	Citation of the correct title of the Safety Guide SSG-14.	X			
3	21	Ref. [44]	"INTERNATIONAL ATOMIC ENERGY AGENCY, Arrangements for Preparedness for a Nuclear or Radiological Emergency Safety Guide, IAEA Safety Standards Series No. GS-G-2.1, Vienna (2007)."	Correction of the IAEA Safety Standards Series number.	X			
3	22	Annex I, I-10	2nd sentence: "On the other hand, for facilities or activities located in extremely remote areas, e.g. a uranium mine, ~~in an extremely remote area,~~ it may be reasonably assumed that there are no other contributing sources and, consequently, a higher specific dose constraint could be set."	Unnecessary duplication of text in this sentence.	X			
2	23	Annex I, I-45	"While in principle the discharge authorization should have the same validity period than the authorization of the practice (para ~~5.72~~ 5.74 in this Safety Guide), some regulatory bodies issue discharge authorizations that have a shorter period of validity, subject to a revision within the framework of a periodical safety review."	Wrong paragraph is referred to here. Guidance on the period of validity of the discharge limits is provided in Para 5.74.	X			

Relevance: 1 – Essentials 2 – Clarification 3 – Wording/Editorial

Draft Safety Guide DS 442 – USA Comments
Regulatory Control of Radioactive Discharges to the Environment

COMMENTS BY REVIEWER Reviewer: US NRC (Contact: Boby Eid, Boby.abu-eid@nrc.gov) Page..1.of 3... Country/Organization: USA/US NRC Date: October 9, 2015				RESOLUTION			
Comment No.	Para/Line No.	Proposed new text/Comment	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/ rejection
General Comments							
1.	**General**	The current DS442 version has been improved; however a few Paras need to be clarified further to ensure an overall consistency and clarity within document and with DS427 (see specific comments below).	Clarity & Consistency	X			
Specific Comments & Editorials							
	5.22	Modify Para 5.22 to read: 5.22. The dose constraint, set for a single source, should be expressed in terms of annual effective dose; it should be below the limit set for the effective dose from all regulated sources (e.g.; 1 mSv per year), **or as required by regulatory authorities,** Regulatory and **could be** higher than the level of dose which could be considered for exemption, **or clearance (**e.g.; of the order of 10 μSv in a year [2]). Therefore, in practical terms, dose constraints **are typically established by operators,** and likely to fall within the range of **0.1 to <1 mSv** per year [7].	This Para was modified for the following reasons: 1. Regulatory authorities may establish dose limits for discharges from all sources at a regulated facility to be less than 1mSv/y. This is due to the fact that discharges from other contiguous facilities may also contribute to dose received by members of the public. For example, under USNRC regulations 10 CFR Part 20, Appendix B, Table 2, Effluent radionuclide release limits for air and water were established on the basis of <0.5 mSv total effective dose equivalent to a member of the public. In addition, the sum of doses from all radionuclides should be less than 0.5	X	The comment is noted. It will be elaborated and discussed during WASSC/RASSC/NUSSC meetings		

			mSv. 2. Exemption may be granted when dose impacts could be more than regulatory limits (e.g.; more than 10 µSv). Therefore, the term "exemption" may correspond to doses different that the 10 µSv in a year. 3. Dose constraints are typically established by the operator to ensure compliance with higher regulatory dose limits and to have early corrective measures. In fact Figures I-1 and I-2 show that these constraints upper limits are far less than 1mSv. Therefore, the less sign "< " was added.				
	5.68	Modify Para 5.68, to read as given below: 5.68. When determining the location and lifestyle habits of the representative person for remote sites with little or no local populations, consideration should also be given **to potential ecological risks (see DS427) particularly when developing alternative discharge limits based on a theoretical representative person using an** exposure scenario with restrictions to access land use practices such as fishermen, hunter/trapper or other seasonal or periodic land use practice that may be associated with the nearest community.	Clarity: When a regulatory authority allows for developing alternate discharge limits that may exceed those promulgated in its regulations, consideration should be given to addressing potential ecological risks and a credible dose impact scenario accounting for all potential pathways.	X	Text was modified		

	5.101	Modify Para 5.101 to read: 5.101. Reports from the discharge monitoring programs should include the main operational and discharge data in the period covered by the report and a conclusion on trends observed by comparison with previous results. They should demonstrate that the discharges **are within the authorized limits, or as approved by the regulatory authority. Inspection reports as well as QA/QC of laboratory analytical data should accompany discharge monitoring program reports.**	Completeness: Modified to reflect a flexibility that regulatory authority may allow discharge limits to be exceeded for certain operational needs during a specific period of time; however the average annual discharge limits would not be exceeded. In addition, reports of discharge monitoring programs should also include inspection reports as well as QA/QC of monitoring data.	X	Text was modified		