TITLE: DS453; Occupational Radiation Protection

COMMENTS BY REVIEWER Reviewer: Country: **JAPAN**				RESOLUTION			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1	DOSIMETRIC QUANTITIES 2.27 - 2.73 P8-P18	This section should be limited to a brief summary of protection and operational quantities as in the RS-G-1.1, and details should be described in Annex.	The current descriptions are too detailed for intended readers of the main text.			***R***	RSG1.1 was limited because detailed guidance provided in RSG1.2 and RSG1.3. DS453 is a comprehensive guide superseding 5 existing guides. Moreover, description of the quantities cannot be in Annex and should be part of the document that should be followed.
2	2.32 P9	It should be changed the formula (4) as follow: $E \cong H_{p(d)} + \ldots$ (4)	To see the ICRP publ.103 para. (145).	***A***			
3	2.32 Eq.(4)	$H_p(d) \rightarrow H_p(10)$	To see the ICRP publ.103 para. (145).			***R***	Only generalized definition is provided here.
4	2.33 P9	This paragraph should be described in later section such as in 7.228.	This paragraph describes special quantities applied to accidental exposure, and is too detailed too detailed for intended readers of the mail text.			***R***	It would be more appropriate in the current place as all the dosimetric quantities generic explanations are described here.
5	2.33	The values of $RBE_{T,R}$ should be	The necessary data for	***A***	Already provided		

	P9	included in this document.	proper dose assessment should be included in this document.		in the BSS-definition of terms. Should we copy here too?		
6	2.35/L1 P10	It should be clearly that Protection quantities cannot be measured directly.	To clarify the reason to need Operational quantities.	***A***			
7	2.35/L5-11 and Fig.1 P10	The description on Q(L) should be moved to Annex.	This explanation is too detailed for intended readers of the main text.			***R***	Provided for completeness.
8	2.44/L4 P12	Explanation of H*(d) should be deleted.	Only *H**(*10*) is defined as *H**(*d*) ambient dose equivalent in ICRP Publ. 103(B163) and recent relevant ICRU report 66.	***A***			
9	2.51 P13	The following description should be added in this paragraph: the $H_T(\tau)$ is unnecessary in usual occupational radiation protection, except for accidental over-exposure situations.	In usual occupational radiation protection, only dose coefficients for the committed effective dose, $e(\tau)$, are used as in the FIG.2. In order to avoid confusion of the readers, this sentence should be added.	***A***			
10	2.52 P13	H_T (g) should be h_T (g).	The notation of dose coefficient is lower case.			***R***	Follows the BSS.
11	2.53 P13	It should be added that, in occupational exposure, the group of age g is Adults, except for apprentices.	To avoid confusion of the readers, it is necessary to clarify the difference in dose assessment for the public.	***A***			
12	3.38/L1 P25	From Schedule III of GSR Part3, ~~f~~For occupational exposure of apprentices ...	These dose limits are important as new numerical limits.	***A***			
13	3.51/L1	Although the RPP may include	Because the scope of this	***A***			

	P27	protection of both workers and the public, this ~~section~~ document focuses only on those aspects dealing with the protection of workers.	document is occupational radiation protection				
14	3.92/L1 P35	When engineered ~~and operational~~ controls are not sufficient to provide an optimized level of protection for the tasks to be performed, …	Because there is no description of "operational controls" in this document.			***R***	Generic statement mentioned to caution the readers. Detailed description of the operational controls is beyond the scope of the document.
15	3.94/L1 P35	… process as appropriate by following graded approach for various facilities.	All of these items are not always needed for all facilities. Necessity depends on the risk level of the facility.	***A***	Modified text will be added to reflect the meaning.		
16	3.116/L5 P41	… 5 or 6 mSv for instance.	Another option of number could exist. This is relating to 3.124.	***A***			
17	3.128/ L9 P43	What is the meaning of "other contributions"? A relating qualifier would be needed for clear description.	Confirmation	***A***	Clarity will be provided.		
18	3.128 - 3.130 P43-44	In the main text, "Recording levels" should start from basic explanation based on effective dose, as in the 6.9.1 in ICRP Publ.75, and the implementation in external exposure (ex. lower detection limit is usually used as recording level for external exposure) should also be described.	The current description is only for internal exposure, and general discussions need to be described.	***A***	Good point. Adequate description will be added by checking ICRP Pub.75.		
19	4.2 and	It is necessary to make clear the	The current document,			***R***	Categories in 4.19

	4.19 P55 and P60	relationship between the four worker groups in 4.2 and three categories in 4.19.	old and new groups and categories of emergency workers are mixed, i.e. four groups in 4.1. are the groups in the GSR Part3 and GSR Part 7, and three categories in 4.19. are defined in SS No.RS-G-1.1. It is necessary to make clear the relationship between new and old groups and categories for clear implementation of this document.				apply to only for emergency workers specified in 4.2 (a) and not for other workers. Based primarily on tasks associated with them.
20	Table 3 Note (c) P59	The dose is to the 100 cm^2 dermis (skin structures at a depth of 40 mg/cm^2 (or 0.4 mm) below the body surface, corresponding to the critical depth of 30-50 mg/cm^2 for dermal atrophy/thinning). or corresponding to the (epidemimal) thicknesses for the palm of the hand and the sole of the foot).	The choice of the depths for assessing the skin dose in cases of the high dose exposures, where the deterministic effect arises, seems a matter of some controversy. Therefore, additional explanation on a value of 40 mg/cm^2 should be included. The relevant references should be included.	***A***	Accepts first option and changes will be made.		
21	5.1/L1 P63	5.1(a) ~~and (b)~~ of the GSR Part3~~BSS~~	5.1(a)(i) and (ii) of the GSR Part3 are corresponding with 5.1 and 5.2, respectively.			***R***	5.1(b) of the BSS is linked to 5.1(a). Further guidance is already provided in the para 5.2 in DS453.
22	5.1/L6 P63	A~~n~~ nuclear or radiation emergency,~~-exposure situation~~ after an	Consistency with GSR Part3 5.1 (a)(ii)	***A***			

		emergency exposure ~~such a~~ situation has been declared ended. (a) (i)... ~~(b)~~ (ii)...					
23	5.14/L4 P65	This means that only those remedial and/or protective actions that are expected to yield sufficient benefits to outweigh the detriments associated with taking them, including detriments in the form of radiation risks, the cost of such action and any harm or damage caused by the action, should be considered for inclusion in the protection strategy.	DEFINITIONS in the GSR Part3 describes the justification as, "2. The process of determining for an emergency exposure situation or an existing exposure situation whether a proposed protective action or remedial action is likely, overall, to be beneficial; i.e., whether the expected benefits to individuals and to society (including the reduction in radiation detriment) from introducing or continuing the protective action or remedial action outweigh the cost of such action and any harm or damage caused by the action."	***A***			
24	5.14/L1 P65	The relevant authority ~~protection strategy for a particular existing exposure situation~~ has to ~~be~~ establish~~ed~~ the protection strategy for a particular existing exposure situation in accordance with the principle of justification.	Clarification of the subject.	***A***			
25	5.21/L1	Reference levels are generally	Para. 5.8 in GSR Part3:				

	P66	expressed in terms of annual effective dose to the representative person in the range 1–20 mSv.	Reference levels shall typically be expressed as an annual effective dose to the representative person in the range 1–20 mSv or other equivalent quantity,	***A***			
26	5.50/L3 P72	… comprise predisposal management, transport and disposal. According to set the reference level depending to the situation, material satisfying the applicable clearance criteria for planned exposure situations (see para. 3.7) can be …	Because of existing exposure situation.			***R***	Clearance criteria are set for planned exposure situations and if the residue/waste material satisfies the clearance criteria they can be removed from further regulatory control.
27	6.13/L3 P85	However, this may not be the case for radiation fields of high energy neutrons or particles ~~neutrons or high energy particles~~ in accelerator facilities, …	Even in accelerator facilities, except for high energy (more than a few tens of MeV), $H_p(10)$ is used in external dose assessment for neutrons and this is appropriate as described in ICRP Publ. 116.	***A***			
28	7.7/L9 P105	In Japan, the weighted sum of the doses at trunk under the lead apron and at neck is used to estimate the total effective dose.	This method would give a good estimate of the total effective dose.	***A***	More references are already provided.		
29	Footnote 9 P106	Polymethylmethacrylate (PNNA) → polymethylmethacrylate (PMMA)	Typographical error	***A***			
30	7.12/L2	… by the dosimetry service provider	There is a case that the	***A***			

	P107	with the cooperation of management of the facility, taking into account …	period of dosimeter deployment is determined not only by the dosimetry service provider but also the management of the facilities, in particular, in the case of active personal dosimetry.				
31	7.16/L5-8 P108	(c) Extremity dosimeters, giving information on Hp(0.07) for beta–photon radiation ~~(and for neutrons if neutron sources are being handled)~~; (d) Eye lens dosimeters, giving information on Hp(3) or Hp(0.07) for beta–photon radiation ~~(and for neutrons if neutron sources are being handled)~~ — dosimeters designed specifically for Hp(3) are not yet widely available, however (see para. 2.39);	In the case of neutrons, the values of $H_p(10)$, $H_p(3)$ and $H_p(0.07)$ are similar in most cases, and Hp(10) can provide an appropriate estimate of $H_p(3)$ and $H_p(0.07)$. Therefore, even in the neutron source handling, eye lens dose can be estimated by the monitoring of $H_p(10)$.	***A***	This will be checked again and modified.		
32	7.23/L1 P109 7.24/L2 P109 II.49/L7 P205	"high energy neutrons" → "fast neutrons"	In the field of radiation protection dosimetry, the term "high energy neutrons" is usually used for neutrons with the energy of more than 20 MeV, as in the ICRU Report 66. To avoid unnecessary misleading, neutrons of less than 20 MeV should be described as "fast neutrons" in general.	***A***			
33	7.46	$\{1+2H_0/(H_0+H_1)\}$ →	Typographical error	***A***			

	Eq.(24) P113	$\{1-2H_0/(H_0+H_1)\}$	(Safety Guide No.RS-G-1.3 also mistaken)				
34	7.57/L2 P116	H'(0.07) → H'(0.07,Ω)	Typographical error	***A***			
35	7.122/L2 P129	This is ~~particularly~~ the case for 4 to 20 MeV and more than 50 Mev neutrons.	As described in paragraphs of (241) and (242) in ICRP Publ. 116, the neutron energy range where the operational quantities underestimate the effective dose become narrowed, now only in the regions from 4 to 20 MeV and of high energy, by the change of neutron radiation weighting factors in ICRP Publ.103.	***A***			
36	7.230/L11 P148	(c) Extremity dosimeters, giving information on the skin dose at depth of 0.4 mm ~~Hp(0.4)~~ for beta-photon radiation (and for neutrons if criticality is expected) for evaluation of AD_T in the dermis for the palm of the hand and the sole of the foot ~~(skin structures at a depth of 0.4 mm)~~.	The term, Hp(0.4), abruptly presented in para. 7.230, is not conventional and may be confused with operational quantity; therefore, it should not be used.	***A***	Text will be modified.		
37	Chapter 9	It should be add a Green house, Food (local exhaust), Glove box, Manipulator etc., as examples of ENGINEERED CONTROLS.	Comment	***A***			
38	Chapter 9	BSS → GSR Part3	Editorial			***R***	Throughout the guide GSR Part 3 is referred as the BSS and is qualified in

							the beginning.
39	SPILLAGE OF RADIOACTIVE MATERIAL P179	The description on establishing standard operational procedures is important; hence this paragraph should be moved to sub-section "GENERAL CONSIDERATIONS." It should move the paragraph 9.23 in top of "SURFACE CONTAMINATION" and "DECONTAMINATION OF EQUIPMENT AND PERSONNEL." Paragraph 9.23 should be moved to beginning part of "SURFACE CONTAMINATION" and "DECONTAMINATION	Clarification			***R***	The present version is more appropriate for distinguishing spillage and surface contamination. More text will be added as per the UK comment 47.
40	SURFACE CONTAMINATION P179	SURFACE CONTAMINATION → CONTAMINATION CONTROL	Clarification			***R***	Already sub-section is titled contamination control programme.
41	Appendix Ⅳ Fig.6 P213	Boxes putting right and left sides should be completed. Delete the letter "r" in the box regarding gastrointestinal tract.	Editorial	***A***	Boxes are open		
42	II.40/L11 P203	"polycarbonate, cellulose nitrate and CR-39 (allyl diglycol carbonate)." → "polycarbonate and cellulose nitrate."	CR-39 is the same material as PADC.	***A***			

COMMENTS BY REVIEWER Country/Organization: **SWEDEN** / SSM				RESOLUTION			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
	3.43	The dose limit of 50 mSv should not be exceeded	It can't be accepted that the dose limit can be exceeded if there is not an accident situation.	***A***	3.43 is relevant for any incident or accident. Text will be modified.		
	3.84	…effective dose more than 6 mSv …. No contamination can be spread to the surrounding areas	In Sweden categorization should be made if there is a risk to get more than 1 mSv per year or risk for contamination spread (supervised area) and for controlled area more than 6 mSv per year.			***R***	Several considerations should be there for fixing boundaries for controlled area. It cannot be purely based on a level of dose for example contamination potential, accident potential etc
	3.118	For work **with risk for** internal exposure….	No work should be planned to give internal exposure			***R***	Internal exposure can be the prime exposure route in some operations and it is important that the full weight of the occupational radiation protection regime is implemented, but internal exposure cannot always be removed.
	6.21		Authority personal is not			***R***	Authority personnel are under the

			included				employer and if occupationally exposed they should be categorized as occupationally exposed worker.

COMMENTS BY REVIEWER Reviewer: Multiple Country/Organization: **USA** comments				RESOLUTION			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1	General	DS453 should address in more detail updated record keeping for workers' exposure particulalry those workers working for different clients and international radiation workers. The issue is the ultimate responsible party to have a dynamic timely update of worker exposure records for those continuously moving from one employer to another.	Completeness	***A***	p.6.70 covers this aspect. Additional guidance is provided in a Safety Report for itinerant workers due for publication. This report will be referenced at the end of the para 6.81.		
2	Pg 3 1.11/line 2	The acronym "NORM" used in this section should be defined either in the text or in a table of acronyms	All acronyms in text should be defined	***A***	Expanded in the text where it appears first time.		
3	Pg 11 2.39		Reconsider if the guidance is adequate given the new, lower limits for lens of the eye.	***A***	Detailed guidance already provided in Section 7. Will be checked again.		
4	Pg 15, Table 1	Change the half-life for 214-Po from "164 µSv" to "164 µsec"	Editorial	***A***			
5	Pg 20 3.12(b)	Delete the phrase "and between workers and members of the public"	If workers and members of the public have	***A***			

			different annual dose limits (such as is the case between occupational workers at nuclear power plants (average dose limit of 20 mSv) and members of the public (dose limit of 1 mSv), then the collective exposure should not be distributed between workers and members of the public.				
6	Pg 23 3.27	Expand the section on Dose Constraints to describe the objectives of dose constraints for controlling public exposures	This section states that dose constraints are applied to occupational exposure and to public exposure in planned exposure situations. However, this section does not describe the objectives of dose constraints for controlling public exposures.			***R***	Public exposure is dealt in DS432 and is out of the scope of this guide.
7	Pg 35 3.92/line 7	Add the following sentence, "For certain types of personal protective equipment (e.g.,, respiratory equipment), workers should be given routine medical evaluations to evaluate whether the worker has any medical conditions which would restrict the use of such devices."	The use of certain types of personal protective equipment, such as respiratory equipment, could pose medical issues for certain individuals.			***R***	Occupationally exposed workers need health fitness to work. Section 10 provides detailed guidance. In particular see 10.3(b) and 10.4(b)
8	Pg 38 3.107	Add to end of paragraph: "Consideration must also be given to the potential for accidental exposures in determining the necessity for individual	Completeness.	***A***			

		monitoring."					
9	Pg 45 3.133	Amend first sentence to read: "…include any assessed equivalent doses or intakes, including skin and lens of the eye, as appropriate."	Completeness. While the phrase "assess equivalent doses" can be taken to include lens of the eye and skin, explicit mention is appropriate to avoid misinterpretation.	***A***			
10	Pg 69 5.39 and following	Consider deletion of material that is not specific to occupational exposure.	It is not obvious how this is specific guidance related to occupational exposure. This seems to be duplicative of other IAEA guidance, and could be deleted from here.			***R***	This part covers workers in existing exposure situation and is relevant.
11	Pg 84, section 6.3(c)	"…with irradiation of the newborn child by penetration radiation from radionuclides in maternal tissues and from the environment:"	Completeness. Environmental exposures are significant sources of newborn irradiation.	***A***			
12	Pg 96 6.72	Added guidance needed to cover situation where individual may be receiving exposure from more than one licensee in the same assessment period and potential exposure in multiple member states. The safety guide does not mention the use of radiation passports to document occupational exposure.	Completeness. Occupational exposure may be happening at more than one licensee concurrently. For example, physicians may have practice privileges as multiple medical licensees, and be receiving exposures from these multiple licensees during the course of a work week or period.			***R***	Para 6.71 provides guidance on dose record, radiation passbook etc.
13	Pg 119 7.74	Amend to read as: "…the International Organization	Completeness. National standards, such as the	***A***			

		for Standardization (ISO) or equivalent national standards, and should…"	American National Standards Institute (ANSI) may also be used.				
14	Pg 150, section 7.242	Although this is more thoroughly discussed in Annex A, a comment about the minimum detectable limit is needed for the biodosimetry methods listed.	Completeness. The biodosimetry methods mentioned are not appropriate for low dose (less than 50 to 100 mSv) exposures.	***A***			
15	Pg 158 8.10	Amend list for completeness of safety culture. The list does not include management emphasis and management engagement	Completeness. Safety Culture for a service provider should be no different from Safety Culture for a licensee. The list is not complete.	***A***	This will be checked again and include as appropriate.		
16	Pg 160 8.19 and following	Consider deletion of material that is not specific to occupational exposure.	In is not obvious how this is specific guidance related to occupational exposure. This is a contracting issue.			***R***	This is to include the contents of GSG3.2 and is as per the approved DPP.
17	Pg 192, section 10.22 line 3	Change to read "…conditions and where appropriate ~~to~~ management should take corrective actions in consultation with the occupational physician."	Editorial. Clarifying who should take corrective action.	***A***			
18	Pg 193, section 10.29, line 3	Change to read "sickness reports and medical history reports. ~~but should exclude information on radiation exposures~~."	If radiation exposure is excluded from medical records, especially in circumstances where there has been an over exposure and medical consultation is needed, where is the radiation exposure information recorded?	***A***	Suggested text: Information on radiation exposures should also be recorded on a case by case basis especially in over exposure cases.		

19	Pg 202, section II.30, line 1	Change to read "Nuclear track emulsions ~~are suitable~~ can be used for fast neutron dosimetry."	In a following paragraph, II.35, the authors state that "this method (track emulsions) is to be avoided." If this method is to be avoided, how can it be a suitable method?	***A***			
20	Pg 213, section IV.1, line 5	Change to read "a fraction of the ingested radionuclide(s) gets absorbed into the blood."	Editorial.	***A***			
21	Pg 248, Annex A	General comment. The minimum detectable level for each of the assays described and the amount of preparation time needed should be included in the annex.	There is often a misconception that biodosimetry can be used to assess public exposures after all accidents or incidents involving potential exposure to radionuclides. The majority of the techniques described are not suitable for exposures less than 1 to 50 mSv, are resource intensive, and may require days to process.	***A***	Duration and preparation time is already provided. Need to discuss with experts to add appropriate text on minimum detectable level.		

COMMENTS BY REVIEWER Reviewer: BMU, BfS, GRS Country/Organization: **GERMANY**				RESOLUTION			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
0			**This draft is in a very well advanced state and is widely supported by the German experts**				
1	2.51	The doses expected to result from a given intake *I* are called the	Following the definition for the committed	***A***			

		committed equivalent dose $H_T(\tau)$ to tissue or organ *T* and the committed effective dose $E(\tau)$, where τ is the time after the intake over which the dose is integrated. For occupational exposure <u>of adults</u>, τ is taken to be 50 years, irrespective of the age at intake. <u>For occupational exposure of apprentices and students between the ages of 16 and 18 τ is the time to the age of 70 years.</u>	effective dose in the BSS, τ is 50 years for adults and the time to age 70 years for intakes by children.				
2	2.66	In practice, the progeny will rarely, if ever, be in equilibrium, and the PAEC will therefore be some fraction of the equilibrium value. This fraction is called the equilibrium factor, F <u>:</u> <u>F=PAEC/PAEC (equilibrium)</u>	Inclusion of the formula for the equilibrium factor F for clarification.	***A***			
3	2.71	When adopting this approach, an appropriate value for the equilibrium factor *F* has to be assumed. The use of a default value of 0.4 is usually adequate for ~~this purpose~~ <u>indoor Radon in dwellings and similar workplaces</u>. It has been found that most values of *F* in indoor air are within 30% of this value. <u>However, workplaces such as water treatment facilities or underground mines may show significantly lower F values</u>.	The F factor strongly depends on the room size and also humidity of the air.	***A***			
4	2.73	The potential alpha energy of ^{212}Pb is <u>6.91×10^{-8}</u> J/Bq, while that of ^{212}Bi is <u>6.56×10^{-9}</u> J/Bq. The contribution of the parent, radionuclide, ^{220}Rn, is more than an order of magnitude lower than that of ^{212}Bi. Since ^{212}Pb	Same unit [J/m³] as in para 2.63 ff should be used.	***A***			

		contributes almost all of the total potential alpha energy, its activity concentration in air can be used as a surrogate for PAEC, in which case a ^{212}Pb concentration of 1 Bq/m3 corresponds to a PAEC of 6.91x10^{-8} J/m3.					
5	3.15	…and the establishment of investigation levels (see paras 3.121-3.127).	Editorial.	***A***			
6	3.84	This area being adjacent to controlled areas, dose rate based boundary may be set up so that the workers would not receive an annual effective dose more than 1 mSv.	Referring to BSS para III-3, an effective dose of 1 mSv in a year corresponds to the dose limit for public exposure. Why is the dose limit for the workers within the supervised area limited to the same value as for areas of the general public? The German practice is that in the supervised area more than 1 mSv/year, but less than 6 mSv/year may be possible.	***A***	Text will be modified as per UK comment No.4 to make it clear. 1 mSv is the outer boundary for supervised areas.		
7	3.108 (a)	Replace "and in luminizing" by "and in manufacturing of gaseous light sources"	This is more exact.	***A***			
8	3.149	Workers' knowledge of the fundamentals of protection and safety, their level of training and their competence to perform the specified tasks safely should be evaluated, and determined to be adequate, prior to any unsupervised	Clarification of the responsibilities.	***A***			

		assignment. A process for the evaluation of workers' knowledge, level of training and competence should be established by the management.					
9	3.161	As a result of the criteria in paras 3.158 and 3.160, the following open list gives examples of industrial activities that are, or may be, subject to the requirements for planned exposure situations [22]:	A number of industries that require mining or processing of highly mineralised waters (like coal mining of geothermal energy production) are dealing with residues with activity concentration far above 1 Bq/g. For example, more industrial activities are listed in Annex V of the EU-BSS.			***R***	Most of the literatures and Agency's database on NORM conferences reassures the list of industries identified in Ref.[22]. No increasing evidences on worker exposure were reported from other sectors to include in the list.
10	3.164	When deciding upon the optimum regulatory option (exemption, notification, registration or licensing) due account should be taken of the effect (and effectiveness) of existing controls that may reduce doses and that may be already in place as a result of other forms of regulation, such as occupational health and safety (OHS) regulation, (…)	Clarification.	***A***			
11	3.171	~~In all likelihood,~~ E.g. for underground workplaces there may be limitations on the amount of ventilation that can be supplied and/or where there may be a significant release of ^{222}Rn into the air from radium rich minerals (such	A prominent exposure situation with high radon activity concentration caused by degassing of Radon from ground water is working in a water treatment plant.			***R***	The present text already covers this point adequately. Minute details may not be required.

		as in underground uranium mines) or from radium rich water (such as in underground mines and groundwater treatment plants). ^{222}Rn might get released directly from Radon-rich groundwater resulting in activity concentration of the ambient air at workplaces (either permanently, frequently or seldom occupied) clearly exceeding the reference value for ^{222}Rn (see para. 5.79).					
12	3.172	Its half-life is 1.265 billion years. ~~Potsassium~~ Potassium-40 in the body is homeostatically controlled and any excess is excreted.	Editorial.	***A***			
13	4.21	Female workers who are aware that they are pregnant or breast–feeding should, in order to provide adequate protection for the embryo or foetus, notify the appropriate authority and ~~typically~~ should be excluded from emergency tasks listed in Table 2 ~~and~~ or the infant should be ~~are~~ afforded the level of protection as required for members of the public (para 3.114 of the BSS and para ~~1~~I.4 of the GSR Part 7).	In order to provide adequate protection for the embryo or foetus, pregnant or breast-feeding woman should be excluded from emergency tasks. The correct reference to GSR Part 7 is "para I.4" (Appendix I).	***A***			
14	5.66	In temperate zones, the air inside buildings is normally at a slightly lower pressure than the air outdoors as a consequence of the air inside the building being warmer than the air outside. Artificially caused pressure	Operation of a ventilator in a bathroom or a kitchen may result in pressure differences of 4 – 12 Pa.			***R***	There could be several factors with respect to regions and may not be appropriate to go into the minute details.

		difference may result from operation of ventilation systems like in bathrooms or kitchens. This causes a convective flow which, together with the effect of the wind blowing over chimneys and other openings, draws soil gas and hence radon into the building. In addition to pressure differences, other factors, including relative humidity and soil moisture, can also influence radon levels in buildings.					
15	5.68	Indoor radon concentrations in private dwellings differ between countries because of differences in geology, climate, construction materials, construction techniques, type of ventilation provided (natural or other-wise) and domestic habits. Within individual countries, there may be marked regional variations. Data on indoor radon concentrations around the world are given in Ref. [34]. The arithmetic mean values for various countries vary from 7 to 200 Bq/m3. Arithmetic mean values in high background areas vary from 112 to 2745 Bq/m3. In some parts of northern Europe, maximum values of up to 84 000 Bq/m3 have been reported. The population weighted worldwide arithmetic mean is 39 Bq/m3.	Clarified that data for private dwellings are used. For Bavarian water treatment facilities, indoor radon concentrations exceeding some 100.000 Bq/m³ had been reported.	***A***			
16	5.74	The identification of workplaces with enhanced Radon concentration may benefit from the information	Much more investigations had been carried out to identify radon prone areas	***A***	In some countries it is from workplaces to		

		gathered during identification of radon prone areas for dwellings. Radon concentrations measured in above ground workplaces could provide ~~important~~ input to the identification of radon prone areas for dwellings.	for private homes than for workplaces.		homes. Text will be modified to reflect this point.		
17	5.83-5.91		The methods for reducing radon in buildings benefit from the findings of Radon prevention from the private sector. This is a compilation of some methods but it had to be mentioned that the portability to workplaces is limited. In example the basement of workplaces that consider heavy loads to be handled differ significantly from a private dwellings basement. Ventilation at workplaces is often higher than at home.	***A***			
18	5.88	In any water treatment plant, the air spaces of frequently entered spaces should be well ventilated to prevent the build-up of high radon concentrations. In the case that ventilation is forbidden to avoid the infiltration of germs to the water, a strict separation of rooms is recommended.	Clarification.	***A***	First part will be included. Additional texts suggestted would be too case specific and may not require such a recommendation in the guide.		
19	5.88	~~This is not normally a problem, because the workers usually make~~	Even with a short period of inspection in the order			***R***	Not amply reported in the literature of

		~~only brief periodic inspections in such areas.~~	of a few hours of exposure, a Radon concentration at 2 MBq/ m^3 may reach a level that will result in a dose of 6 mSv.				such a high occupancy situation. This would be exceptional case.
20	5.104	At present, it would seem that there is little justification for such additional measures. However, slight modifications of flight routes and altitudes own a potential to reduce the dose per flight and should be considered in accordance with the ALARA principle.				***R***	Based on the available information the average doses are not high and as such do not call for suggested recommendation. However, optimization is duly considered and included in the section.
21	7.10 (c) (ii)	If adequate eye shields are not used, separate eye lens dosimetry is necessary and $H_p(3)$ is the ~~only acceptable~~ recommended quantity to be measured, but not Hp(10); however, Hp(0.07) is typically overestimating the dose;	This seems to be in contradiction to para 7.16 (d) stating: "The following types of dosimeter may be used: … (d) Eye lens dosimeters, giving information on Hp(3) or Hp(0.07) for beta–photon radiation (and for neutrons if neutron sources are being handled)." However, since suitable Hp(3) dosimeters are not yet widely available (see beginning of para 7.10), this formulation is too	***A***			

			strong. In addition, in this energy region, Hp(0.07) leads to a conservative overestimation of the dose. In the case that the maximum beta energy is known and a suitable correction factor is well determined, measuring of Hp(0.07) may be used.				
22	7.10 (c) (i) Footnote 9	(PMMA) instead of (PNNA)	usual abbreviation	***A***			
23	7.12	The period of dosimeter deployment (the monitoring period) should be established by the dosimetry service provider, taking into account the type of work being performed, the anticipated exposure associated with the work, the characteristics of the dosimeters (e.g. fading characteristics), ~~and~~ the overall limit of detection of the dosimetry system and , if applicable, additional requirements by the regulatory body.	As the dosimetry service is approved by the regulatory body (see para 7.83), the regulatory body may limit the monitoring period for special cases e.g. in the context of the licensee process.	***A***			
24	7.21/9	Delete: ”on the wrist, or”	The correction factors for dosimeters on the wrist are very high for inhomogeneous fields. The factor and the associated uncertainties are often not considered.	***A***	This will be checked and corrected.		
25	7.98	(d) For beta contamination monitors, beta emissions at or below the minimum energy for which the monitor is to be used. Periodic testing of workplace	Clarification.	***A***	Adequate text will be added to reflect the need for a suitable reference source when		

		monitoring instruments used in NORM industries has to be carried out by means of a suitable NORM reference source.			dealing with NORM.		
26	7.106a	To cope with the nuclide vectors of NORM industries, a reference calibration factor has to consider the major contribution of U and Th decay chain radionuclides (Radium and daughter products)	Add a new para.			***R***	Para 7.104 specifies generically. Specific highlighted text for NORM may not be necessary as calibration procedures should take into account the radionuclides involved.
27	8.103	To be sure that the measurement results will comply with international standards, each measurement device that has an influence on the results should be calibrated before being put into service and at defined intervals afterwards. The standards used for these calibrations should be traceable to the International System of Units (SI). ~~In some cases — for instance in connection with ^{222}Rn — the only means of providing confidence in measurements is through~~ Participation in suitable international intercomparison exercises is recommended.	Even for Rn-222 or Rn-220 Radon and their progenies, traceability to a standard is possible.	***A***			
28	10.34	Examples of such therapies include increasing the ~~rate of removal of actinides from the body~~ excretion rate of incorporated actinides by Ca-DTPA	Editorial	***A***			

29	II.15/1st	"when photons below 12 keV and/or beta radiation" instead of "when beta radiation and/or photons below 12 keV"	To avoid misunderstanding, energy of beta radiation can be higher than 12 keV	***A***			
30	III. 35	Semiconductor detectors are normally based on silicon ~~and~~ or germanium	Clarification.	***A***			
31	V.40	(b) A silicon solid state detector with associated electronics, which again provides information on gross alpha activity or provides nuclide specific information, or	Clarification.	***A***			
32	V.41	For workplace monitoring of ^{222}Rn in air, the concentration is determined either as an instantaneous measurement based on a single air sample, known as a 'grab sample', or as a time integrated measurement. [Line skip] Instantaneous measurements have traditionally been made using an alpha scintillation cell, commonly referred to as a Lucas cell. In this method, a sample of the air is collected in a detector ~~150 ml glass~~ chamber. The inside surface of the chamber has a scintillation coating comprising a layer of silver activated zinc sulphide. The air sample is filtered to remove the ^{222}Rn progeny, leaving only the parent radionuclide ^{222}Rn inside the chamber. As the	Lucas cell: Not essentially a glass chamber but also metal. Not essentially 150 ml but also other volumes.	***A***			

		^{222}Rn as well as ingrowing progeny decays by emitting alpha particles, the scintillations from the alpha decay condition are counted at a known equilibrium by a photomultiplier mounted on top of the chamber. [Line skip] Other techniques are available for instantaneous measurement of ^{222}Rn. These include the pulse-counting ionization chamber technique and the double-filter sampler technique. The double-filter sampler technique can be used for measuring both ^{222}Rn and ^{220}Rn. Air is passed through a chamber after removal of ^{222}Rn progeny and ^{220}Rn progeny by an inlet filter. The decay of ^{222}Rn and ^{220}Rn during passage through the chamber generates decay progeny which are collected on an outlet filter. The alpha emissions from the decay progeny on the outlet filter are counted, the results of which are used to back-calculate the ^{222}Rn and ^{220}Rn concentrations. [Line skip] Time integrated measurements can be made by using nuclear track detectors known as 'radon cups', by using TLDs, or by using devices known as electret passive environmental radon monitors (E-PERMs). [Line skip]	Rather often, equilibri-um between Radon and progeny in the Lucas cell is ensured. E-Perm is a commercial brand of the company Radelec. None of the radiometric				

		So-called ‘continuous’ monitoring techniques are available. They do not provide truly continuous measurements, but are based on frequent instantaneous sampling using either adaptations of the instantaneous sampling methods described above or are based on other specific techniques. Active pumping or diffusion of Radon gas into the sensitive volume of a high-voltage chamber allow deposition of ingrowing shortly positively charged radon progeny on the surface of a silicon surface barrier detector for subsequent alpha spectroscopy. This method allows separation of ^{222}Rn from ^{220}Rn. Portable instruments are available that are relatively rugged and lightweight. They have been used quite extensively in mining environments including underground mines. Portable instruments can be equipped with alarms which are triggered when a specified ^{222}Rn concentration is exceeded.	measurement techniques that are based on counting impulses is able to deliver a result in real time. Alpha spectroscopic principals are missing although widely used.				

COMMENTS BY REVIEWER					RESOLUTION		
Reviewer: PHE Country Organisation: **United Kingdom**			Date: 11 September 2013				
Comment Nr	Para Nr. & Line	Proposed new text	Reason	Accepted	Accepted modified as follows	Rejected	Reason if modified/rejected
1	3.27 & 3.28		Both of these paragraphs are direct quotes from the BSS and need to be quoted as such.			***R***	Minor changes are made to bring into the context of occupational exposure.
2	3.65		The introduction of the RPO here is rather out of place and may be taken to imply that an RPO is a QE. Better to move this sentence to the previous section where management arrangements are described.			***R***	RPO is also a qualified expert for radiation protection and present position is more appropriate.
3	3.78 Line 1	Replace “very small” with “small”.	Many laboratories in research and medical applications use small amounts of radioactive material where there is minimal risk of any significant exposure. The use of “very” implies the designation of controlled areas in most circumstances, which would not result in any benefits and would impose unnecessary controls.	***A***			

4	3.84	As with controlled areas, the definitions of supervised areas are best based on operational experience and judgement but, again, use may be made of a dose rate to define the boundary. A reasonable objective would be to ensure that those workers exposed outside designated areas should receive the same level of protection as if they were members of the public. This would imply the use of a dose rate based on an effective dose of 1 mSv in a year as one possible means of defining the outer boundary of a supervised area.	Current wording unclear.	***A***	Text will be modified accordingly for more clarity.		
5	3.86 & 3.91	Both of these paragraphs could benefit by making reference to the role of the RPO.				***R***	SG is leaving to the management decision.
6	3.172	Natural potassium contains 0.0117% 160 g of potassium element in the body (not 160 g K-40)	Typos.	***A***			
7	5.87	Change *used only in exceptional circumstances* to *only carried out when there are no other straightforward options.*	Such an approach is not exceptional and may be the only option for an occupied building.	***A***			

8	7.143 Line 1	Change *are increasingly being used* to *are now generally used*	This change in approach happened about 10 years ago (the papers referenced are 9 years old).			***R***	Many operating plants in developing Member States increasingly adopt SAS as part of dosimetry regime in many applications, particularly in fuel fabrication and mining workplaces. Although, 9 years old the references quoted are technically relevant and comprehensive for the current scenario.
COMMENTS BY REVIEWER					RESOLUTION		
Reviewer Country Organisation: MOD, **UK**							
Comment Nr	Para Nr. & Line	Proposed new text	Reason	Accepted	Accepted modified as follows	Rejected	Reason if modified/rejected
9	General comment	The preface to the report makes it clear that it is supposed to give general guidance on what are effectively the underlying radiation protection philosophy issues and the management approach. It is also supposed to give detailed guidance on particular technical matters, including monitoring and assessment of worker doses. A key concern with this document is that both of these matters are jumbled up. As a result, it is difficult to identify what is overarching management issues and what are the technical issues.				***R***	This document is superseding five existing safety guides and three of them are too technical. However, the draft safety guide tried to keep the main technical area in Section 7. Draft is prepared in line with the approved DPP.

10	General comment	The document is also very repetitious; for example every chapter contains a discussion of justification, optimisation and limits. These could all be addressed in a single Chapter, and this could reduce the length of the document by about 20-30 pages by itself.				***R***	All the basic principles are discussed in the relevant chapters for consistency and clarity with respect to each exposure situations such as planned, emergency and existing.
11	General comment	The document makes statements about monitoring and other issues but does not address why such things are important. As an example, para 7.251 contains essential information on what the records of occupational exposure should contain, but the importance of these items is lost as it is not clearly referenced in the contents of the chapter and the next paragraph. The text to explain why records are needed is not written clearly.				***R***	Text is prepared in accordance with the Agency's safety standards style. The guide is explaining how to meet the requirements in the BSS on occupational exposure. The prime use is not for compensation issues and the guide is for Occupational Radiation Protection.

12	Para 7.252(g)	Para 7.252(g) appears to be the only mention of the need to have records to deal with claims. Given today's society, the defence of claims is one of the key reasons to maintain both dosimetry and the subsequent records. This is not clearly identified, nor is the resulting issue that there is a need for records to be legally admissible. This sort of use of records could be addressed at the beginning in "policy" chapters and the vast majority of the detail then contained elsewhere.				***R***	See resolution of the above comment 11.
COMMENTS BY REVIEWER					RESOLUTION		
Reviewer Country Organisation: ONR HSE**, UK**			Date: 20 September 2013				
Comment Nr	Para Nr. & Line	Proposed new text	Reason	Accepted	Accepted modified as follows	Rejected	Reason if modified/rejected
13	General Comment	The draft Safety Guide appears to place too much emphasis on aspects of dosimetry, which although an important technical area is only one part of the radiological control arrangements. Some topics such as engineering control and prior radiological evaluation could usefully be expanded and feature earlier in the text. Alternatively, consider changing title to include dosimetry.	To achieve a better balance between practical occupational radiation protection and a technical review on aspects of dosimetry.			***R***	Prepared in accordance with the approved DPP
.14	General Comment throughout	The draft guide highlights that there are several different types of workers, eg itinerant workers, visitors, contractors, sub contractors etc.(see para 3.110, 3.146) It may be helpful to set out which dose limits are expected to apply to the various categories of workers. Experience has shown that it is sometimes not easy to link the correct dose limit to the relevant worker group.	UK legislation and dose limits refers to employees rather than workers.			***R***	Dose limit is with respect to occupational workers, apprentices and pregnant workers. No separate limit is specified by the BSS for itinerant workers, visitors and contractors.

15	Para 2.25, line 6	Suggest including words 'limits and conditions as appropriate' after operating procedures.		***A***			
16	Para 2.34, line 1	Suggest that the term collective dose is qualified by ` in combination with individual dose'	Reason for comment is that there is no numerical limit on collective dose or guidance on how many workers might make up the collective group.			***R***	Para 2.34 line 2 and 3 clarifies that the collective dose quantities takes account of exposure of all inviduals in a group over a given time period or during a given operation.
17	Para 2.59, line 1	Suggest changing should to may	Text as written may not take account of transient operations such as movements which might be unrepresentative of average DAC values and any effects of PPE.	***A***			
18	Paras 2.61 – 2.73	See general comment above about detailed dosimetry, can this section be moved to an Annex?	This section appears to be quite detailed for the many body of the text, would it be better moved to an Annex?			***R***	This is important text to take account the RSG1.6.
19	Para 3.11	Consider expanding to include points in next box.	There are a number of possible health and safety management models. In the UK the Health and Safety Executive has successfully adopted an approach set out in publication HS(G)65 based upon the principles of Policy, Organisation, Planning, Monitoring, Audit and Review – also known by the acronym POPMAR, This has recently been updated to reflect an approach based upon Plan, Do, Act Check. HSE's website has more details.	***A***	3.11(b) will be modified and the missing items planning and monitoring will be added.		

20	Para 3.12	Suggest including an additional item on relevant sector good practice.		***A***			
21	Para 3.25	Suggest inclusion of the need for a prior radiological evaluation.				***R***	Para 3.52 details out the prior radiological evaluation and to avoid repetition.
22	3.52 et seq	Suggest moving this section nearer the start of guide and consider inclusion of text as in HSE's L121 document, paras 36 -58 (Work with Ionising Radiation: Ionising Radiations Regulations 1999, Approved Code of Practice and Guidance, ISBN 978 0 7176 1746 3, download free from www.hse.gov.uk).	Prior radiological evaluation, also known as prior risk assessment, is a key part of any radiological control programme			***R***	Agree that prior radiological evaluation is a key point and that is the reason it is written at the beginning of the Radiation Protection Programme which is more appropriate.
23	3.91	Additional text suggested to show the advantages of supervision of local rules being assigned to a responsible person in direct contact with the work.	Supervision of local rules remote from the workplace is unlikely to be successful.	***A***	Text will be modified as: In remote workplaces such a responsibility should be assigned to the direct supervisor at the site of the work.		
24	3.116, line 1	Suggest adding in normal and foreseeable abnormal conditions.		***A***			
25	General comment	There may be advantages in highlighting the need to adequately characterize the workplace spectrum on which to base subsequent monitoring programmes, see Section 7 and paras 7.13 and 7.22	Employers may be able to use dosimetry factors which are local to the workplace and are more representative of worker exposure than ICRP defaults.	***A***	At the end of the para 3.117 following text will be added. Where possible site specific data on characterization of the workplace should be preferred than using default values.		

26	General comment	Internal dosimetry based upon SAS and PAS may be difficult to achieve in practice, this is partly due to establishing the variation of PAS and SAS with time and space, combined with worker occupancy.		***A***	Agreed. However, in certain workplaces such as mining industry this is a practice being followed.		
27	General comment	Where the term dose is used in the text there may be advantages in distinguishing between legal dose and dose used for local operational control purposes.				***R***	There is no definition provided for legal dose in the glossary and may lead to confusion.
28	Para 4.8	Suggest including an additional item indicating tolerable levels of dose before the need to evacuate emergency workers	Advantages in setting a pre-determined upper level for emergency responders.			***R***	Emergency workers specified under 4.2 (a) are not subject to evacuation. They are subject to guidance values for restricting further exposure in line with paras 4.14-4.16.
29	Para 4.15	The decision to exceed dose thresholds should be recorded and presumably authorized by the emergency controller.				***R***	It would be highly impractical for life saving actions and for volunteers the risk is informed in advance.

30	Para 4.18	No mention in this section of the need to establish safe working times.		***A***	Modified text will be added at the end of para 4.19. Any limit in duration of work undertaken by emergency workers and conditions by which they will conduct the work should be implemented by planning the emergency work driven by dose guidance values.		
31	Para 4.29	General comment – one of the learning points following Fukushima was the importance of psychological aspects on workers and public.		***A***	Already covered in paras 4.30, 4.32 and 4.8		
32	Paras 5.28 – 5.38	Query if this section is within the scope of a guide on radiological protection.				***R***	Included for completion sake. According to the advice of the RASSC this could be modified.
33	General comment	There is limited reference in the guide for the security of sources partly those of high activity and for the transport of sources both within and outside facilities to comply with relevant IAEA guidance.				***R***	Out of scope of the guide.
34	Para 5.62	Criteria should be established to enable the employer / licensee to relinquish control of the affected area.				***R***	Agree that there should be established criteria to judge when the remediation has been completed and release the area for any further remediation requirements. This would be more appropriate for the safety guide on remediation- DPP468.

35	Para 6.64	Suggest adding ` changes in fitness for work'		***A***			
36	Para 6.78	Suggest adding ' lessons learned/operational experience'		***A***			
37	Para 6.82	The level of detail in this para may be inappropriate.				***R***	More detailed guidance will be available in a separate Safety Report under preparation.
38	Para 7.12, line 1	The period of deployment should be established by the employer taking advice as appropriate from a Qualified Expert and the Dosimetry Service		***A***			
39	Para 7.54, line 1	Suggest adding the need to also consult the appropriate RPO/Qualified Expert		***A***			
40	Para 7.105	Editorial – calibration of personal dosimeters appears in a section titled calibration of instruments.				***R***	Calibration aspects are covered in general in this section.
41	7.117 et seq	Editorial – possible repetition of material in other sections?		***A***	Will be checked and removed any repetitions.		
42	7.124	Clarification needed on whether dose estimate is for legal or operational control purposes. There may be difficulties in establishing a reliable legal dosimetry system based on workplace monitoring and occupancy alone.				***R***	This depends on case specific situations. Many workplaces in developing Member States use workplace monitoring data for dose evaluation.

43	7.133	It may be helpful to note that the sensitivity of internal monitoring is generally much less than that for external so making the demonstration of compliance with dose limits difficult.				***R***	It depends on type of radionuclides evaluated and other factors and would be a controversial statement.
44	Section 8	General comment that this section appears very detailed and possibly outside the scope of the Safety Guide – possible Annex?				***R***	Included as per the approved DPP.
45	Section 9	General comment that engineered measures should feature earlier in the Safety Guide and be expanded to include items such as zoning of contamination areas, graduated challenge, primary and secondary containment methods.		***A***	Structured as per the approved DPP. More text will be added in the suggested area.		
46	Para 9.4	The use of plastic catch bins for leaks may not be the optimum option particularly when fissile liquors are being processed. Operator response to leaks should form part of the prior risk assessment and contingency arrangements.		***A***	Text may not need any revision as 9.4 is a generic statement.		
47	Para 9.22	Suggest expanding to include restricting access to the area, implementing contingency plans, monitoring of affected persons, advice from Qualified Expert, management of waste arisings, notifications to relevant authorities.		***A***			
48	9.26 (ii)	Note that fissile liquors may require special measures.		***A***			
49	9.39	Employer to seek advice from a Qualified Expert as appropriate		***A***			
50	9.48	The effectiveness of decontamination procedures should be periodically reviewed and target levels identified in local procedures.		***A***			

51	9.53	It is important that PPE correctly fits the wearer.	A recent study in the UK has shown that correct sizing of PPE can make a significant contribution to standards of radiological protection and reduced error rates.	***A***			
52	10.21	Workers should be able to appeal to the regulatory authority to challenge a decision on fitness to work.				***R***	There should be normal employment processes that allow any decisions to be appealed; in this case appealing to the regulator may not be appropriate as in many Member States there are no medical competencies with the regulator for radiation protection.

COMMENTS BY REVIEWER Reviewer: ENISS Pages 1 of 1 Date: 30.09.2013 Country/Organization: ENISS							
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
General		DS 453 with its about 260 pages is more a handbook than a guidance standard. The reason for that is probably that the BSS already have a degree of detail which corresponds to a guidance document.				***R***	DS453 combines and supersedes five existing standards and that is the reason for large volume.

	The DS 453 to a certain degree repeats the provisions of the BSS without giving more detailed guidance. This is especially the case regarding optimization and the use of dose constraints. The description of the optimization process is very theoretical and reflects perhaps, if at all, the circumstances in a large and complex facility with a highly educated and trained staff. E.g. no dentist would ever follow this procedure when installing a dental X-ray device. This is only one example demonstrating that this guidance standard needs to be rewritten to be usable for practical purposes.			***R***	DS453 provides generic guidance and wherever appropriate BSS texts are quoted for elaboration. Optimization is explained in detail with respect to each exposure situations. Specific guidance on medical practices will be provided in DS399.
	As time for studying the document was extremely short for a 260 pages document and other documents in addition were on the agenda we would like to urge the IAEA to postpone the decision about the delivery for the Member States comments to the next meeting of the Safety Committees.			***R***	We appreciate that the document is highly complex and difficult to follow by single expert as there are several technical areas. However, the draft was provided on committee website in time and many members commented. Opportunity will be available further when the document is with the MS for review.

COMMENTS BY REVIEWER Reviewer: **Radiological Protection Working Group** Page.... of.... Country/Organization: **World Nuclear Association** Date: 30th September 2013				RESOLUTION			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
General 1	All	Adjust the timescale for revising the Safety Guide to take into account the results of the 2nd International Conference on Occupational Radiation Protection (December 2014).	The 2nd International Conference on Occupational Radiation Protection represents an opportunity to engage the international community of experts on the issue of occupational radiological protection. It would be better if this document were not finalized before that key forum had a chance to discuss it.			***R***	This will delay the process significantly. Safety guide would be a good basis for discussion on its implications and future revision could consider the outcome of the conference.
2	All	Consider separating out the very detailed content into a more appropriate level of document, e.g. 'RP Handbook'.	The present content of the document goes into a level of detail not typical of other Safety Guides, e.g. practical advice on dust control, ventilation, etc.			***R***	The appearance of a hand book is caused by the merging of five existing safety guides. The content is as per the approved DPP.
Specific 1	3.122	Investigation levels play an important role in monitoring programmes as tools for use by management. Investigation levels should be defined at the planning stage of activities and may be revised on the basis of operational experience. Investigation levels can be set in terms of virtually any measurable quantity related to the individual or the working environment. They should be defined	According to ICRP recommendation, investigation levels should be defined as the optimization tool by management in the RPP. So that levels should not be defined for regulatory purpose essentially.			***R***	The current text is flexible enough and fully in line with ICRP recommendations. The text do not specifies that it should be defined by regulatory body but suggests that regulatory body also

		by management in the RPP, their purpose being to facilitate the control of operations and exposures.					can specify investigation levels.
2	10.28	Delete all this paragraph	Investigation levels should not be defined for regulatory purpose essentially.			***R***	This is to facilitate control of exposure. The text says regulatory body ***may*** require and not ***should*** require.