

Comments on TG102 Report: Radiation Detriment Calculation

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1. General Comments

O In Publication 103, the Commission showed that the revised risk estimates are somewhat lower than the previous estimates (Publication 60), largely due to the change from DS86 to DS02. However, the Commission kept the dose limits by simply saying that the decrease in risk was not significant enough to justify another change of dose limits. However, it had been better to justify the Commission's decision on the dose limit numbers by comparing the revised cumulative risk of workers and members of the public, at given constant annual doses, with the presumed acceptable risks, as done in Fig. C-9 in Publication 60. Now, given that the Commission prepares a report focused on radiation detriment, it would be good to provide such information to support the rationale in the dose limits. This backup is particularly needed because Publication 60 is replaced by Publication 103 (i.e. Publication 60 is not effective anymore).

Considering the fact that the Commission's judgment on the size of unacceptable risk, for workers and for members of the public, in Publication 60 is based on the circumstances in the 1980s, it is time to revisit its validity from the contemporary perspective.

Without this backup, the objective of this draft report is hardly understood. Is it necessary to provide the stories behind the detriment numbers 15 years later after Publication 103? Most of them appeared already in Publication 103. Some typos in Publication 103's detriment values can be amended by errata. What we need is the quantitative rationale behind the dose limits.

Large part of the draft report describes uncertainties in detriment estimates by showing the results of sensitivity analysis simply assuming extreme values of each parameter used in the calculation of detriment. Such information may be of worth to refer as an internal document of the Commission, or individual members of the Commission may write a paper on the subject. But what would be the meaning or value of the report as an official publication of the Commission? I am afraid it will contribute little to clarification of the scientific background of the RP system. Rather, it may add confusion and cause misleading.

O The DDREF value 2, together with the concept of DDREF itself, is based on Commission's judgement. In this regard, it is questionable to present a sensitivity analysis of its effect on the radiation detriment. For instance, in spite of the scientific uncertainties in the values of radiation weighting factors and tissue weighting factors, we consider these values are fixed and not subject to uncertainty.

2. Specific comments

Page	Line No	As is	Comments
2	94	It also considers. . .	It also covers . . . (Detriment may not consider)
2	97	the International Commission on Radiological Protection (ICRP) on	the Commission (Traditional expression)
2	101	They include dose. . .	They are dose. . . (parameters of the greatest influence should be fully listed)
3	119	used to	used by the Commission to
3	126	quality of life	degradation of quality of life (Should be negative effects for parallelism with other factors. The same hereinafter)
3	132	, and review of	, advances in cancer therapy, and review of
4	174	weight-average	weighted-average
5	178	unweighted mean. . .between the four	equally-weighted(or simple) mean. . .among the four
6	237	different facets	different aspects
7	280	by ICRP	by the Commission
8	297	...of the effect'.	...of the effect'(para.##).
8	312	(e.g. 20	(i.e. 20
9	331	ICRP <i>Publication 26</i>	<i>Publication 26</i>
9	347	...of life lost.	...of life lost. Here, the effective equivalent dose given in rem is roughly equivalent to 10 mSv of effective dose. (or give it in the footnote).
10	382	...radiation.	...radiation. (Need to add here a sentence specifically mentioning the changes in DS86 from T64D, which caused the sudden and large increase of radiation risk.)
15	483	...a composite population.	...a composite population data.
15	483	...compile rates	...compile (specify) rates
18	535	...models considered	...models used
24	662	Figs. 3.8 and 3.9	Figures 3.8 and 3.9
29	732	...were defined	...were calculated
29	734	...(Table 3.1).	...(Table 3.1). [Better to show the equation here; $\mu_{ic,j} = w_j\mu_{ic,RR} + (1 - w_j)\mu_{ic,AR}$]
29	734	Weights of 0.5 were used for	Even weights of 0.5 were assigned to both projection models for
30	771	...0.1 Gy per hour(ICRP, 1991).	...6 mGy per hour(ICRP, 2006). [Para 239 of Pub. 99 gives 6 mGy/h. Pub. 60 should be referred only in historical context because it is not an effective document anymore.]
32	Table	Adult workers	Working-age population
37	924	...14 organs or tissues	...13 organs/tissues for male and female
39	992	...small, but using....50%.	...small. (remaining part is not relevant to sensitivity).
43	1048	'standard detriment') for various cancers, along with....change).	'reference detriment'[or 'base-case detriment'] for various cancers. (Avoid to call 'standard').
43	1049	In reference to...Publication 103,	In following columns,
52	1288	...can help,	...can help (what?)
53	1333	(Implication of Para 116)	(Such information may be interesting as a

			scientific paper, but unaffordably complicated to be implemented in RPS)
53	1348	(implication of para 119)	(Due consideration is already taken in current RPS. E.g. the low dose limit of 1 mSv, avoiding unsteady working conditions).
53	1349	...length of life	...further extension of life
56	1418	...and weighting to adjust for	...weighted by