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NUCLEAR ENERGY INSTITUTE

April 30, 2015

Mr. Michael D. Purdie
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: NRC Revision of NUREG-1530

Project Number: 689

Dear Mr. Purdie:

On behalf of the nuclear industry, the Nuclear Energy Institute[1] is pleased to respond to your invitation to provide input on the staff's forthcoming revision of NUREG-1530.[2] The summary of the revision that you provided at the public meeting held on April 2, 2015[3] was very helpful. We are also very pleased to note in your summary of the April 2nd meeting[4] that the NRC staff will allow for a 60-day public comment period on the draft revision of NUREG-1530. We appreciate this affirmative response to our request for this extension made during the April 2nd meeting.

With the understanding that our insight on the forthcoming draft revision of NUREG-1530 is limited to what was presented in the briefing and the presentation slides[5] shown at the April 2nd meeting, we offer a compliment and a concern.

The compliment is on the staff's recognition of the International Commission on Radiation Protection's (ICRP's) judgement that the per-rem health detriment below certain doses and dose rates is lower by a factor of two

[1] NEI is the organization responsible for establishing unified nuclear industry policy on matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include all utilities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel fabrication facilities, materials licensees, and other organizations and individuals involved in the nuclear energy industry.
[2] "Reassessment of NRC's Dollar Per Person-Rem Conversion Factor Policy", U.S. NRC Office of Nuclear Regulatory Research, December 1995. ADAMS Accession Number ML063470485.
[3] Notice of April 2, 2015 Meeting to Discuss NUREG-1530, Revision 1, "Reassessment of NRC's Dollar per Person-Rem Conversion Factor Policy", ADAMS Accession Number ML15068A046.
[4] "Summary of April 2, 2015, Category 3 Public Meeting on NUREG-1530, Revision 1, 'Reassessment of NRC's Dollar Per Person-Rem Conversion Factor Policy'", Memorandum from M. D. Purdie to T. Inverso, US NRC, April 20, 2015, ADAMS Accession Number ML15098A649
[5] Category 3 Public Meeting Slides, "NUREG-1530, Revision 1, 'Reassessment of NRC's Dollar Per Person-Rem Conversion Factor Policy'", April 2, 2015, ADAMS Accession Number ML1506A112.

when compared to higher doses and dose rates that have resulted in observable human health effects. Slide 18 in the presentation accurately indicates that this judgement is intrinsic to the ICRP's cancer slope coefficient, which the staff will use to derive a revised "best estimate" dollar-per-person-rem value.

The concern is on a related aspect of population dose analysis. Specifically, during the briefing there was no mention of the guidance contained in ICRP Publication 103[6], about aggregation and uncertainty in estimating population radiation exposures. In paragraph 221, Publication 103 cautions:

> *"When exposures occur over large populations, large geographical areas, or long time periods, the total collective effective dose is not a useful tool for making decisions because it may aggregate information inappropriately and could be misleading for selecting protective actions. To overcome the limitations associated with collective effective dose, each relevant exposure situation must be carefully analysed to identify the individual characteristics and exposure parameters that best describe the exposure distributions among the concerned population for the particular circumstance. Such an analysis – by asking when, where and by whom exposures are received – results in the identification of various population groups with homogeneous characteristics for which collective effective doses can be calculated within the optimization process…In practical optimization assessments, collective doses may often be truncated…"*

This means, for example, that the determination of offsite radiation exposures in a regulatory analysis should reflect the identification of appropriate population groups for which collective effective doses can be calculated and, depending on uncertainty and other characteristics, truncated. From the information provided in the April 2nd briefing, we cannot say whether this issue should be addressed in the revision of NUREG-1530 or elsewhere (e.g., SECY-14-0002). We have attached a copy of the pertinent portion of ICRP 103 for your reference.

Again, thank you for the April 2nd briefing and the invitation to provide feedback on the briefing.

If you have any questions in this matter, please contact me.

Sincerely,

James E. Slider

Attachment

[6] Annals of the ICRP 37 (2-4), "The 2007 Recommendations of the International Commission on Radiological Protection", ICRP Publication 103, Ontario, Canada, 2007.

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