UNITED NATIONS **NATIONS UNIES**

UNITED NATIONS SCIENTIFIC COMMITTEE ON THE EFFECTS OF ATOMIC RADIATION
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Ref: UNSCEAR/69/22/26 18 July 2022

Subject: Letters to UNSCEAR Chair, Ms. Jing Chen

Dear Mr. Kurokawa,

I would like to thank you for the letters dated 30 June, 17 July, 12 July and 16 July 2022 with a number of detailed questions about attachment A-9 of the report of the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) 2020/2021, annex B, which the Committee has made available as part of the supplementary information to the report.

I will firstly like to address the question on the typographical errors that you have identified in your first letter. You are correct that the text in paragraph 4 of attachment A-9[1] (and in paragraphs 18 and A29 of the text of the UNSCEAR report) should have read "…. in Fukushima **and Ibaraki** Prefectures". Please accept my apologies for this omission which can be addressed with a corrigenda of this report. The accompanying tables do, however, make it clear that measurements were made in both Fukushima and Ibaraki Prefecture. You are also correct that the units in figure A-9.V should have been "Bq/m^2" and "not Bq/m^3". Thank you for pointing out the need for this correction which will be addressed in due course.

Thank you also for the typographical error you have identified in your fourth letter. In the first sentence of paragraph 23 of attachment A-9, the text should have read "…. (the former of concentrations estimated from deposition scaling and the latter of modelled concentrations based directly on ATDM)". As noted on the front page of attachment A-9, this publication has not been formally edited and can be addressed in a corrigenda.

Let me now address your subsequent detailed queries about apparent inconsistencies between deposition velocities and deposition densities estimated from the figures in attachment A-9 and values obtained from other sources. You are, of course, welcome to carry out your own independent checks on

[1] Atmospheric Transport, Dispersion and Deposition Modelling of Air Concentration over Japan

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the methods that UNSCEAR has used to estimate doses. However, as you acknowledge, many of the figures in attachment A-9 cover a too large area to extract relevant information from them. These figures were included in the attachment to provide qualitative illustrations, not the detailed underlying data.

It may be more helpful for your purposes if you were to directly access the data that UNSCEAR has used. In the context of your queries, there are two sources of information that are relevant:

a) The measurement data as described in attachments A-5 to A-8[2] of the UNSCEAR report;

b) The results of the atmospheric transport, dispersion and deposition modelling carried out by the researchers at the Japan Atomic Energy Agency (JAEA) and reported in Terada et al. (2020)[3].

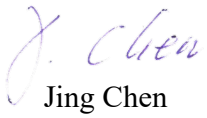
Detailed results from this modelling were provided to the Scientific Committee for the purposes of its work on the report. These detailed results are the property of JAEA and you would need to approach JAEA to obtain access to them.

I would also draw your attention to the fact that the results presented in Figure A-9.V are for the reference date of June 14th, 2011, as reported in Saito and Onda, 2015[4]. Since the radioactive decay of ^{131}I (half-life of about 8 days) is much faster than that of ^{137}Cs (half-life of about 30 years), the initially much higher deposition levels of iodine would have decreased to much lower deposition levels by June 2011. This is the reason for many of the apparent anomalies you have identified. I apologize that the reference date for these figures is not given in the current text which can also be addressed in a corrigenda.

I would also draw your attention to the potential shortcomings of the types of comparison you are attempting to make. Estimates (of both air concentrations and deposition levels) made using Atmospheric Transport, Dispersion and Deposition Modelling (ATDM) models are associated with considerable uncertainty at any given location, as illustrated, for example, in Figure A-9.XII (and Figure A-I in the UNSCEAR report). Whichever method has been used to estimate air concentrations, whether directly from ATDM modelling or by scaling measured deposition densities by bulk deposition velocities estimated using ATDM, instances of apparently anomalous or counter-intuitive air concentrations and/or deposition velocities are almost certain to arise at some locations. The Scientific Committee has relied on measurement data wherever possible to make its dose estimates, but, in the absence of widespread measured air concentrations, the Committee has had to rely on model predictions while recognizing their large associated uncertainties. These uncertainties have, however, been taken into account in the estimated distributions of dose provided in attachment A-21[5] for various groups of the population in Fukushima Prefecture.

I hope that you will find the above information useful, as well as the UNSCEAR outreach event in Iwaki on 21 July 2022[6].

Yours sincerely,



Jing Chen
Chair
United Nations Scientific Committee
on the Effects of Atomic Radiation

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[2] UNSCEAR 2020/2021 Report Volume II

[3] Terada, H., H. Nagai, K. Tsuduki et al. Refinement of source term and atmospheric dispersion simulations of radionuclides during the Fukushima Daiichi Nuclear Power Station accident. J Environ Radioact 213: 106104 (2020).

[4] Saito, K. and Y. Onda. Outline of the national mapping projects implemented after the Fukushima accident. J Environ Radioact 139: 240-249 (2015).

[5] https://www.unscear.org/unscear/uploads/documents/publications/UNSCEAR_2020-21_Annex-B_Attach_A-21.pdf

[6] https://www.unscear.org/unscear/uploads/res/events/ffup-ii-outreach-event-japan-2022_html/ISSUED_Iwaki_Invitation_2207012_rev1.pdf