INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION

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Resolution of Public Consultation Comments for

ICRP *Publication 144* Dose Coefficients for External Exposures to Environmental Sources

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Background

ICRP is grateful for the time and effort taken to review and comment on draft publications during their public consultation period. Active public consultations are a valuable part of developing high-quality publications. Comments are welcome from individuals and organisations, and all are considered in revising the draft prior to publication.

To ensure transparency, comments are submitted through the ICRP website and visible by visiting www.icrp.org.

Public Consultation

This draft report was available for public consultation from July 2018 to October 2018. Responses were received on behalf of the following organisations: Public Health England (PHE) - Kelly Jones; International Society of Radiological Technology - Alfred Stewart Whitley; The Dutch National Institute for Public Health and the Environment (RIVM) - Teun van Dillen; Australian Radiation Protection and Nuclear Safety Agency - Cameron Lawrence. Commenting as individuals: Fumiaki Takahashi, Japan Atomic Energy Agency (JAEA); Ichiro Yamaguchi, National Institute of Public Health; Jun Ichiro Tada, N. P. O. Radiation Safety Forum; Alex Malins, Japan Atomic Energy Agency.

The revised report was approved for publication by the Main Commission during its Houston meeting, 3rd – 6th May 2019, with agreement on some final revisions.

Resolution of Comments

The constructive comments received during public consultation are gratefully acknowledged and have helped the authors improve the report.

Most of the reviewers were appreciative that ICRP will now publish age-dependent dose coefficients for external exposures of members of the public to environmental sources of ionizing radiation, similar to the dose coefficients provided for intakes of radionuclides (inhalation, ingestion), and especially welcomed the provision of radionuclide-specific coefficients that relate environmental contamination levels with environmental monitoring quantities such as ambient dose equivalent rate.

One of the main concerns expressed was that, while age-dependent dose coefficients were calculated with elaborate, up-to-date computational tools, including age and sex dependent

computational anthropomorphic phantoms, the estimated effective dose coefficients rely on age and sex averaged tissue weighted factors. As a response, the following key paragraph has been added to the introduction:

'However, it should be noted that the current ICRP system of radiological protection uses a simplified set of tissue weighting factors in the calculation of effective dose, based on sex- and age-averaged relative detriment values and specifies only two nominal detriment values: 5.7 × 10^{-2} Sv^{-1} for the whole population and 4.2 × 10^{-2} Sv^{-1} for adults (ICRP, 2007). Thus, recognised differences in detriment and relative detriment (the contribution of the various organs and tissues to total detriment) as a function of age at exposure are not taken into account other than in the differences between the two nominal detriment values (ICRP, 1991, 2007). This approach is adopted principally because the application of the effective dose coefficients is in the protection of either the public or workers and dose limits, constraints and reference levels are set to apply to each of these groups. Thus, differences in effective dose-rate coefficients as a function of age shown in this report relate only to differences in physical size and organ masses and do not address differences in detriment per Sv. Similarly, differences in organ absorbed dose-rate coefficients do not inform on differences in stochastic risk per Gy as a function of age at exposure.'

Most of the comments received were of technical and editorial issues; the vast majority of them have been addressed in the revised manuscript. Moreover, the Main Points were substantially shortened and focused on results.