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Resolution of Public Consultation Comments for

ICRP *Publication 143* Paediatric Reference Computational Phantoms

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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 August to November 2018. Representing their institution, Francesco Ria, Paul Segars, and Ehsan Samei from Duke University suggested that the report might mention other published phantoms and phantom libraries.

Resolution of Comments

ICRP has adopted a set of reference phantoms that were derived from the University of Florida phantoms but are not identical to them. ICRP phantoms will be used to calculate ICRP dose coefficients. Having a reference set of phantoms – and of dose coefficients for external exposures and intakes of radionuclides – should promote consistency in assessment of doses. Variations in assessed dose have occurred for CT examinations, for example, because of the use of different phantoms (Brady et al. 2012, Shrimpton et al. 2016). In future, ICRP will provide dose coefficients for medical X-ray imaging (new Task Group 113) as well as other exposures of workers, public and patients.

We accept that others will wish to use their own phantoms, including those based on reference man data from Publication 89 (ICRP 2002) as well as phantom libraries that consider a range of individual body and organ sizes. It will be of interest to compare organ doses obtained with different phantoms with those from the ICRP reference phantoms.

For a comprehensive summary of the development of paediatric computational phantoms, including individualized paediatric phantom libraries as well as phantoms based on Publication 89 (ICRP 2002) reference data, the reader is referred to the review article by Kainz et al. (2019).

References

Kainz W, Neufeld E, Bolch W E, Graff C G, Kim C H, Kuster N, Lloyd B, Morrison T, Segars P, Yeom Y S, Zankl M, Xu X G and Tsui B M W 2019 Advances in Computational Human Phantoms and Their Applications in Biomedical Engineering - A Topical Review *IEEE Trans Radiat Plasma Med Sci* **3** 1-23.

Brady Z, Cain TM, Johnston PN. 2012. Comparison of organ dosimetry methods and effective dose calculation methods for paediatric CT. Australas Phys Eng Sci Med **35**117–134.

Shrimpton PC, Jansen JTM, Harrison JD. 2016. Updated estimates of typical effective doses for common CT examinations in the UK following the 2011 national review. Br J Radiol **89**:20150346.