TASK GROUP 122
Update of Detriment Calculation for Cancer

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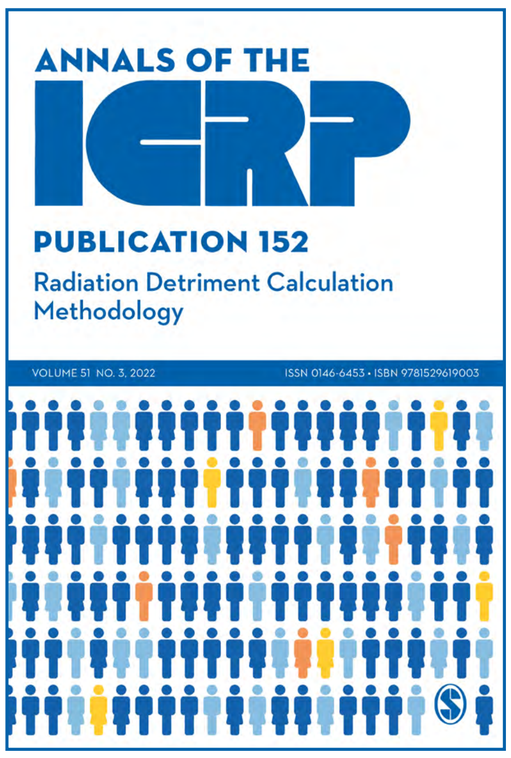
Background

Calculation methodology and perspectives on the evolution of radiation detriment have been reviewed recently by ICRP Task Group 102 on Detriment Calculation Methodology in ICRP Publication 152 (published 2022).



The radiation detriment is the sum of the relative contribution of each organ or tissue to the total radiation exposure. Detriment calculation methodology is a two steps process. The first step is to calculate nominal cancer risk coefficients for a set of organs and tissues, plus heritable effects. The second step is a weighting for disease severity, based on judgements concerning lethality, quality of life, and years of life lost.

The Detriment calculation methodology requires revision to reflect the evolution of scientific knowledge and ensure adequate expert judgments in the ongoing revision of the radiological protection system.

Objectives

The Task Group's major goal is to analyse current information on all elements of calculating cancer detriment, assess the consequences of updating detriment calculation components, and discuss appropriate improvements.

1. Cancer Risk Models:

- Assess radiation-related cancer risk changes since 2007.
- Investigate risk transfer to different populations.
- Explore incorporating non-LSS studies.

2. Nominal Risk Calculation:

- Examine translating brief exposure risks to chronic scenarios.
- Reconsider exposure scenarios and risk coefficient methods.
- Reevaluate target populations.

3. Cancer Severity Weighting:

- Assess updating parameters reflecting cancer diagnosis and treatment.
- Explore alternative methods for combining risk coefficients.

4. Reference Population:

- Examine how risk heterogeneity affects detriment.
- Address limitations in current detriment calculation.

5. Detriment Calculation Scheme:

- Integrate updates for cancer risk, severity, and reference population.
- Identify and quantify sources of uncertainty.
- Investigate separate detriment values for genders and age groups.
- Assess the impact on effective dose and protection recommendations.

Timeline

Q2 2022

- TG 122 established with Terms of Reference

January 2023

- Introductory Meeting

March 2023

- Experinces shared on the calculation of Radiation Detriment and the story behind ICRP Publication 152 (Nobuhiko Ban)

April 2023

- Results of Analysis of solid cancer in the LSS of atomic bomb survivors: 1985-2009 (Alina Brenner)

October 2023

- Experinces shared on radiation risk modelling and risk transfer in ProZES and relation to detriment calculation (Markus Eidemüller and Aleksander Ulanowski)

Q4 2026

- Draft report for public consultation

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