Response to International Commission on Radiological Protection (ICRP) consultation

DOSE COEFFICIENTS FOR INTAKES OF RADIONUCLIDES BY MEMBERS OF THE PUBLIC: PART 1

Summary

The Environment Agency is responsible for ensuring that doses to the public from permitted discharges of radioactive waste in England are kept as low as reasonably achievable. We use the recommendations of the ICRP when making assessments of radiological impact on members of the public from discharges and disposals of radioactive waste.

We welcome the International Commission on Radiological Protection’s (ICRP) review and update of dose coefficients for intakes of radionuclides by members of the public as we seek to ensure our decisions are based on the best available science and data.

As users of dose coefficients for intakes of radionuclides by members of the public, we suggest the ICRP could better support the adoption and application of these revised values by:

- reviewing the accessibility of the report and accompanying electronic annex;
- providing clearer guidance on which dose coefficients should be used in the absence of site specific data;
- providing clearer information on the levels of uncertainty in the values presented;
- providing additional information on the underpinning reasons for any significant changes to values compared with ICRP publication 119; and
- informing and engaging with stakeholders in advance of proceeding and future publications.

1.0 Introduction

The UK’s radiological protection legislation, standards and policy, including environmental permitting, are underpinned by the recommendations and other publications of the International Commission on Radiological Protection (ICRP).

The Environment Agency regulates the disposal of radioactive waste in England. We do so under Schedule 23 of the Environmental Permitting Regulations 2016 (EPR16). EPR16 states that we, as the regulator, should use the values presented in ICRP publication 119 when estimating effective and equivalent doses from internal exposure to radiation.

We note that the values presented in this series of reports will supersede the values provided in ICRP publication 119 and hence, once these reports are finalised and published, a UK policy decision will need to be made about if, when and how to adopt these new values.
The publication of this series of reports will have direct impact on assessments of radiological impact on members of the public, as such our response to this consultation focusses on the use and application of the values provided.

We have discussed this consultation with our colleagues at the Office for Nuclear Regulation (ONR) who have confirmed their agreement and support for the points raised in our response.

2.0 Accessibility and Consolidation

We consider that ICRP should endeavour to make sure that its publications and content are understandable and accessible to all. This should include users with visual, hearing, cognitive or motor impairments, as well as those with learning difficulties.

We would encourage ICRP to review this publication and consider whether it meets the accessibility needs of all users. Web content accessibility guidelines we use in the UK can be found online at Web Content Accessibility Guidelines (WCAG) 2.0 (w3.org).

We welcome ICRP’s suggestion to provide an accompanying electronic annex to the reports and would urge ICRP to publish this alongside the reports and consider whether the format of such an annex will allow for easy electronic data manipulation and data export by users.

We also note that ICRP plans to publish the updated values as a series of 3 reports over several years meaning that the data will be distributed across 3 reports with different publication dates. Again, we welcome ICRP’s suggestion to provide an accompanying consolidated electronic annex to hold all the data as we consider it important that the ICRP publish the data in a consolidated format so that reference to and use of the data is straightforward for users.

3.0 Application of the values

We welcome the inclusion of the additional chemical forms presented in this report compared with those included in ICRP 119, this will support us in undertaking more realistic assessments of the impact of discharges of radioactive waste where detailed information on discharges is available.

When permitting discharges of radioactive waste in England, we often undertake screening assessments of radiological impact. In our screening assessments, we use generalised assumptions about discharges in the absence of site-specific data to make an initial, cautious assessment of the impact of a given discharge. This includes making assumptions about the chemical form of discharges made into the environment.

We welcome the detail included in the report regarding which chemical forms and absorption types of radionuclides should be assumed in the absence of site-specific information when selecting inhalation dose coefficients.

We note that where inhalation dose coefficients are provided for multiple gaseous or vapour forms of a radionuclide, guidance is not provided on which gaseous or vapour form to assume in the absence of site-specific information. We assume in such cases users should select the most conservative value for screening assessment purposes; however, it would be helpful if ICRP could provide recommendations on which values to select in these cases.
We also note where ingestion dose coefficients are provided for more than one chemical form, the report does not indicate which should be assumed in the absence of site-specific data. We assume the soluble or ‘in food’ form should be selected in most instances as this would lead to the most conservative estimation of dose in most cases, however it would be helpful if ICRP could make this explicit, especially where there are exceptions to this.

Given the size and complexity of the report, we suggest it would be helpful if ICRP present the recommendations on which values to select in the absence of site-specific data more clearly. We suggest ICRP could identify these recommendations in the tabulated dosimetric data at the end of each chapter, as well as highlight them in the accompanying electronic annex to aid users in selecting appropriate values.

4.0 Uncertainty

We recognise ICRP’s position that for regulatory purposes the dose coefficient values are fixed by convention and are not subject to uncertainty. However, we also note that there are uncertainties in the process of estimating dose and risk that affect the derivation and application of these reference values.

We welcome the information provided on the sources of uncertainty in the parameter values and models used in the derivation of dose coefficients. However, it is difficult to interpret how these sources of uncertainty, when combined, affect the dose coefficient values themselves.

In the UK we have previously commissioned work to explore the reliability of ICRP dose coefficients (HPA-CRCE-048 (publishing.service.gov.uk)). We consider it would be useful if ICRP were to undertake a similar exercise to help users understand the reliability of the parameter values presented in this series of reports.

5.0 Significant changes

We note that for some radionuclides (for example some forms of Pb-210, Pb-212 and Bi-210) the dose coefficient values are between 2 and 10 times higher than those presented in ICRP 119. Changes of this magnitude could have a material impact on existing assessments of radiological impact on the public from currently permitted discharges.

Whilst we welcome the explanatory text included in the report detailing key aspects of how the dose coefficient values have been derived, the text does not make explicit which aspects of the derivation have changed since the production of ICRP 119. Understanding the reasons behind significant changes to dose coefficient values is important to us as a regulator so that we can account for these changes when reviewing assessments for previously permitted activities which may now have a greater impact that when originally assessed.

We suggest that where there are significant changes to dose coefficient values in comparison to ICRP publication 119 the report should make clear the main underpinning reasons for these changes. This will support us to communicate effectively with our permit holders, stakeholders and the public.

6.0 Scope

We note that revised dose coefficients are available for the same representative age groups as presented in ICRP 119. This alignment is helpful and will aid the adoption of the new values. We note that revised dose coefficients for the foetus are not
provided and that it could be a number of years before revised values for this age group are available. It would be helpful if ICRP could make recommendations on how assessment of doses to this age group should be performed until revised values are made available.

7.0 Engagement

We would request that the ICRP proactively raises the profile of the forthcoming publications of revised public dose coefficients, and similar future publications and considers prior engagement with stakeholders. The announcement of expected publication dates and scope of each part of any publication would enable the UK to plan for the implantation of these values more efficiently. We are aware that The Office for Nuclear Regulation wrote to Dr Ruhm on 20th December 2022 (letter ONR-TD-GT-22) requesting further engagement and explaining the context for this request.

8.0 Further information

Further information or background to this response can be obtained from Christiana Dowds, Senior Nuclear Regulator, christiana.dowds@environment-agency.gov.uk.

This response is dated May 2023.