Dose Coefficients of ICRP – Their Computational Development and Current Status

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Major current efforts within the International Commission on Radiological Protection (ICRP) Committee 2 are the development of dose coefficients for inhalation and ingestion of radionuclides, and those for exposure to environmental radiation fields. These efforts build upon fundamental changes in radiation and tissue weighting factors (*Publication 103*), radionuclide decay schemes (*Publication 107*), computational phantoms of the adult reference male and female (*Publication 110*), external dose coefficients for adult reference workers for idealised radiation fields (*Publication 116*), and models of radionuclide systemic biokinetics (*Publication 130*). In this presentation, we will review the overall computational framework for both external and internal dose coefficients. For the former, the computations entail the characterisation of environmental radionuclide distributions, the transport of radiation particles through that environment, and the tracking of energy deposition to the organs of the exposed individual. For the latter, the work entails assessment of organ self-dose and cross-dose from monoenergetic particle emissions (specific absorbed fraction), the absorbed dose per nuclear transformation (S value), the time-integrated activity of the radionuclide in source tissues (inhalation, ingestion, and systemic biokinetic models), and their numerical combination to yield the organ equivalent dose or effective dose per activity inhaled or ingested. Various challenges are reviewed that were not previously seen in the development of *Publication 30* dose coefficients – which were based upon much more simplified biokinetic models and computational phantoms. Progress toward the development of dose coefficients to members of the general public – adolescents, children, infants, and fetus – is also reviewed.