NCRP Commentary No. 30:
Using Personal Monitoring Data to Derive Organ Doses for Medical Radiation Workers, with a Focus on Lung

National Council on Radiation Protection and Measurements

NCRP Commentary No. 30, *Using Personal Monitoring Data to Derive Organ Doses for Medical Radiation Workers, with a Focus on Lung,* is a thorough analysis of the issues and approach for estimating doses from individual monitoring data for medical radiation workers.

Estimating radiation risk from epidemiologic studies of exposed individuals is challenging and depends substantially upon estimates of the dose received. Uncertainties are present in all estimates of dose, and exposures of medical radiation workers are particularly challenging because of the introduction and use of protective shielding, the rapid changes in medical technologies over time, and the propensity for individuals to have exposures in many facilities over the course of their careers.

Individuals at medical facilities responsible for radiation safety and epidemiologists can use this report to:

- **Review the mechanisms by which dosimetry data were derived.**
- **Understand radiation risk estimates for medical radiation workers**

This Commentary provides extensive guidance for estimating organ doses using personal monitoring information for occupationally exposed medical staff. The Commentary focuses on deriving total organ doses received over a worker's career for use by radiation epidemiologists studying occupationally exposed medical workers. The Commentary expands on the general guidance in NCRP Report No. 178, *Deriving Organ Doses and Their Uncertainty for Epidemiological Studies,* by presenting organ dose conversion coefficients specific for several radiation exposure settings found in health care facilities.

The emphasis on the lung recognizes the current interest to understand whether the differences in lung cancer risk between males and females observed in the Japanese survivors of the atomic bombings are also seen in medical workers. The population of U.S. medical personnel contains many females and males who during their careers have received highly fractionated doses extending over decades. The Commentary presents dose conversion coefficients for all of the major organs and tissues for which the International Commission on Radiological Protection has developed tissue weighting factors.

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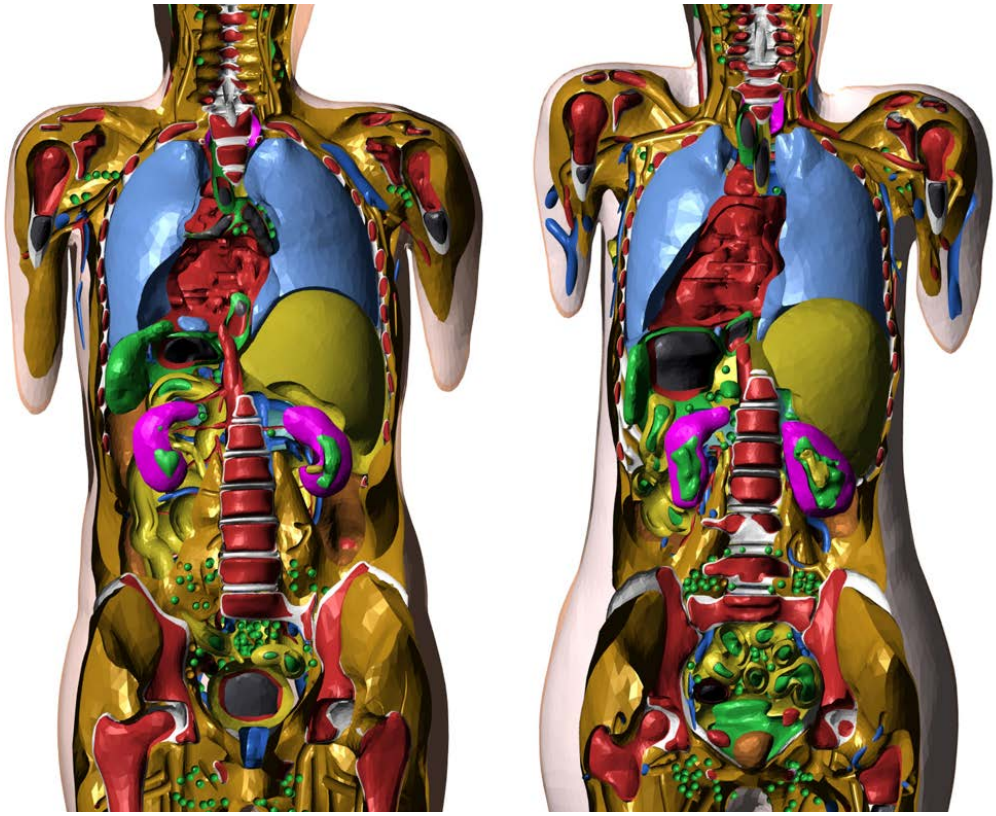

The Commentary describes an approach for using personal monitoring data to estimate lung and other organ doses and highlights specific precautions applicable to epidemiologic study of medical radiation workers. This approach and information are valuable as support for the Million Person Study of Radiation Workers and Veterans, as a compilation of the historical elements of dosimetry, and to support ongoing estimates of risk for male and female populations.

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