

The Mayak Worker Dosimetry System (MWDS-2013): How to Weight the Absorbed Dose to Different Lung Regions in the Calculation of Lung Dose

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In the Mayak Worker Dosimetry System-2013, lung dose is calculated as an average of the three absorbed doses to the bronchial, the bronchiolar and the alveolar regions. Previous epidemiological studies involving Mayak Workers have used a lung dose calculated as the total energy deposited in the lungs divided by the mass. These two definitions lead to very different estimates of lung dose, especially for radon dosimetry. This paper uses the results of recent epidemiological studies to justify the use of a regionally weighted lung dose ($w_i = 1/3, i = 1, 3$) over the use of an 'average lung' dose.

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