

Brain Dosimetry and High-LET Exposure

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Brain Dosimetry and High-LET Exposure is the fourth seminar in the series of NASA seminars on the Million Person Study of U.S. Radiation Workers and Veterans (MPS). It discusses radiation dosimetry and biokinetic modeling as it relates to high-LET doses to organs for internally deposited radionuclides, with a focus on brain. The overarching goals of this research are:

- To improve estimates of brain dose from alpha (helium nuclei) emitters among Manhattan Project workers and radium dial painters within the MPS as a possible surrogate for brain dose from high-radiations encountered on long space flights, and specifically,
- To provide guidance for epidemiologic studies as to the optimum way to characterize brain tissue dose from alpha-particle emitting radionuclides in relationship to the occurrence of dementia, Alzheimer's, Parkinson's, other motor neuron diseases and cognitive impairment.

The Brain Dosimetry and High-LET Exposure research is summarized in Leggett RW, Tolmachev SY, Boice JD. Potential improvements in brain dose estimates for internal emitters. *Int. J. Radiat. Biol.* 2018: Published online. DOI: 10.1080/09553002.2018.1554923

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