

USTUR Whole Body Case 0682: 23-y Follow-up of the ^{238}Pu Glove Box Explosion at Mound

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Anderson et al. (1970) published an early health physics assessment (*Health Phys.* **18**:631-639) of three workers contaminated in the 1968 explosion of a ^{238}Pu glove box at the Mound Laboratory, Miamisburg. This USTUR whole body donor (Case 0682) was 'Employee C' in that assessment. He died in 1991 at age 71 y, from an acute myocardial infarction, with incidental findings of adenomatous hyperplasia of the prostate and non-malignant meningioma.

USTUR has not previously published the results of the radiochemical analyses performed in this case. Unfortunately, all samples of soft tissues were 'lost' due to freezer malfunction. However, measurements of the ^{238}Pu activity retained in a comprehensive sample of the skeleton were obtained. These could be compared with USTUR's previously published measurements of all tissues from an accidental $^{238}\text{PuO}_2$ ceramic particle inhalation at Los Alamos National Laboratory [Case 0259: *Health Phys.* **84**:2-33 (2003)]. Simultaneous analysis of the fecal and urinary excretion data in the Mound case, together with the ^{238}Pu activity retained in the skeleton, clearly indicated exposure to a bi-modal ^{238}Pu aerosol. This was comprised primarily of large, insoluble $^{238}\text{PuO}_2$ particles, with a secondary component of $^{238}\text{PuO}_2$ 'smoke.' Most of the systemic uptake (and organ dose) resulted from the inhaled 'smoke.'

Dr. James will describe the methods used to analyze the bioassay and skeletal data in this case, and the calculated doses received by the major body organs. These 'actual' doses will be compared with the estimates made by the health physicists at the time of the accident.

For more information, please contact Dr. Sam Glover, NIOSH/OCAS, Cincinnati, OH, seg3@cdc.gov, (513) 533-6829.

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