

## **Evaluation of the NCRP Wound Model Using USTUR Plutonium-Contaminated Wound Cases**

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In 2007, the National Council on Radiation Protection (NCRP) published report No. 156 entitled, "Development of a Biokinetic Model for Radionuclide-Contaminated Wounds for Their Assessment, Dosimetry and Treatment." This wound model represents the first attempt to develop a conceptual dosimetric model for radionuclide transport in the human body; however its retention coefficients, based heavily on animal experimental data, require specific testing to determine whether the NCRP wound model is a good predictor of plutonium behavior in human wound cases. In a poster study presented at the 2007 Annual Meeting Health Physics Society, we showed that the NCRP wound model retention coefficients yielded a highly significant statistical fit to the plutonium-contaminated U.S. Transuranium and Uranium Registry (USTUR) wound Case 0262 urinary and whole body data when no prior assumptions were made about the absorption category of the plutonium and IMBA combined the six absorption categories to find the best solution. This study builds on the 2007 study by testing the NCRP wound model's retention coefficients' ability to find a statistically significant dosimetric solution to additional USTUR plutonium-contaminated wound cases. The absorption categories were narrowed to those recommended by the NCRP for plutonium solution chemistry (strong, avid, particle, fragment) in order to obtain the 'best' maximum likelihood solution to the bioassay data.

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