

Development of Dose Conversion Coefficients for Radionuclides Produced in Spallation Neutron Sources

Quarterly Progress Report 5/1/04 – 8/31/04

UNLV/AAA University Participation Program

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Principal Investigators

Project Summary

The research consortium comprised of representatives from several universities and national laboratories has successfully generated internal and external dose conversion coefficients for twenty radionuclides produced in spallation neutron sources. These dose coefficients fill data gaps exist in Federal Guide Report No. 11 and in Publications 68 and 72 of the International Commission on Radiological Protection (ICRP). Currently, more nuclear data is needed for the rare radionuclides produced from a mercury target.

Personnel

Principal Investigators:

- Dr. Phillip Patton (Health Physics)
- Dr. Mark Rudin (Health Physics)

Graduate Assistants

- Deanna Tuttle, summer only (Health Physics)
- Ashley Gann, summer only (Health Physics)
- Tserenpagma Chaoui, summer only (Health Physics)

National Laboratory Contacts

- Brent Boyack, AAA Project Leader for NEPA/Safety at Los Alamos National Laboratory
- Tony Andrade, Los Alamos National Laboratory

University and National Laboratory Participants

- Idaho State University
- Georgia Institute of Technology
- University of Florida
- University of Tennessee
- Oak Ridge National Laboratory
- Francis Marion University

Management Issues

Personnel Issues:

The two man graduate students that started the project have both graduated and move elsewhere. Therefore, three new graduate students worked on the project over the summer.

Budget Issues:

All expenditures appear to be on target and consistent with the budget set forth in the project proposal considering the extension. However, since the budget was carried over from the previous year, funds will not be able to support more than one graduate student.

Technical Issues

The following technical work has been performed to date on the DCC project:

Submitted the Data from this Work to National Journals

Two papers have been submitted from this work. Both papers were submitted to the Health Physics Journal. Currently, both have been accepted with minor changes. I am currently revising the articles as suggested. The papers discuss the developed methodology of calculating dose coefficients and present the values of these coefficients.

Calculated Dose Coefficients for Radionuclides in Category 2

Dose coefficients were calculated for 6 radionuclides in Category 2. All other radionuclides that were in Category 2 lacked sufficient data to perform the calculations.

Presentation of Project at National and Local Meetings

The scope of work of the UNLV/AAA DCC project was presented at the following national meeting:

Investigation and Calculation of Dose Coefficients for Radionuclides Produced in a Spallation Neutron Source using the ENSDF and NUBASE Nuclear Databases. Y Song, J Shanahan, M Rudin, and P Patton, Health Physics Society National Meeting, Washington, DC; July 11 – 15, 2004.

Note: The abstract was published in the Health Physics Journal Vol. 86; NO. 6 (Suppl).