



Internal Correspondence

MARTIN MARIETTA ENERGY SYSTEMS, INC.

Date: January 7, 1994
 To: Barry A. Berven
 From: K.F. Eckerman, 7509, MS 6383 (4-5251)
 Subject: The Boston-Oak Ridge Uranium Study

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The above study, conducted by the Massachusetts General Hospital, the Veterans Administration, and the Health Physics Division of Oak Ridge National Laboratory in the 1950s, should be called to the attention of those tabulating past experimental studies involving humans. This study is documented in the references listed below.

The study's initial objective was to determine if enriched uranium and neutrons could be used in therapy in a manner similar to work with boron salt and neutron irradiation for patients with advanced brain tumors. ORNL was interested in information on the metabolism of uranium in man that could be obtained as a byproduct of this study. Eleven patients in terminal stage of central nervous system disease were injected with uranium solution. Insufficient uptake of uranium in the tumors was achieved to realize therapeutic application; however, a very complete effort was made to define the metabolism of uranium from the data acquired in the study.

During the past year, we discovered that data on 3 of the 11 subjects has apparently never been used in any technical publications. In collaborative efforts with Drs. Durbin (Berkeley) and Wrenn (Utah), these additional subjects will be noted in future publications. The study was conducted using hospital patients with "informed consent" at a time when such studies were easier to arrange. Dr. Stannard, in his historical review, commented "Although there is no evidence that these administrations were in any way harmful or ill-considered at the time, it is difficult to imagine a present-day 'human use' committee approving them."

Literature

Luessenhop, A.J., J.C. Gallimore, W.I.L. Sweet, E.G. Struxness, and J. Robinson. 1958. The toxicity in man of hexavalent uranium following intravenous administration. *Am. J. Roentgenol. Radium Ther. Nucl. Med.* 79:83-100.

Struxness, E.G., A.J. Luessenhop, S.R. Bernard, and J.C. Gallimore. 1956. The distribution and excretion of hexavalent uranium in man. In *Proceedings of the International Conference on the Peaceful Uses of Atomic Energy*, Vol. 10, pp. 186-96. Held in Geneva, Aug 8-20, 1955. New York: United Nations.

Bernard, S.R. 1958. Maximum permissible amounts of natural uranium in the body, air, and drinking water based on human experimental data. *Health Phys.* 1:288-305.

KFE:bbc

cc: D. E. Reichle
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