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August 16, 1984

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Dr. Roy Thompson  
PNL  
P.O. Box 999  
Richland, WA 99352

Dear Roy:

I decided to send a copy of some of my scratchings concerning possible Pu body burdens (liver and bone) based on Pu concentrations we have measured in foods and soil at Bikini Island (Attachment 1). These body burdens are compared with the urine concentrations observed in the Bikinians and also compared with other observations recently reported in human subjects.

The net result is that with Pu concentrations we have measured at Bikini Atoll in soil and vegetation, with current models and a range of values for parameters in the models and with recent empirical observations of the relationships between Pu in urine and that in liver, it is difficult to develop a reasonable scenario which could account for the high (60fCi/l per day) urine Pu concentration observed. To do so requires consumption of large quantities of soil or very high gut transfer coefficients or very different fractional depositions of Pu transferred across the gut or very different turnover times for Pu from the sites of deposition or all of the above.

It appears that even with the range of fractional deposition values recently reported by Thomas, Healy, and McInroy<sup>1</sup> (i.e. bone and liver both ranging from 20-90% but together accounting for 100% of the deposition) and with the range of values usually mentioned for turnover times in liver and bone, that neither of these factors could be combined in a way to remotely account for the results.

the correct answer is to all of this because it would affect our bone marrow dose estimates for returning populations if the observed urine concentrations are as reported.

If you have any questions on this material please give me a call.

Best regards,

A handwritten signature in cursive script that reads "Bill".

William L. Robison  
Section Leader  
Terrestrial & Atmospheric Sciences

WLR/mt  
encls.

<sup>1</sup>R.G. Thomas, J.W. Healy, and J.F. McInroy  
Plutonium Partitioning Among Internal Organs  
Health Physics 46: 839-844 (1984)

DOCUMENT DOES NOT CONTAIN ECI

Reviewed by DG Keenan Date 5/1/97

REPOSITORY PNNL  
COLLECTION Marshall Islands  
BOX No. 5690  
FOLDER Enewetak