

~~SECRET~~

document consists of 1 pages
No. 4 of 6 Copies, Series A

401810

Dr. John C. Bugher, M.D., Director
Division of Biology and Medicine

May 21, 1954

Gordon M. Dunning, Health Physicist
Biophysics Branch, Division of Biology and Medicine

INTERPRETATION OF URINALYSES FOR PU IN RONGELAP NATIVES

SYMBOL: BMBP:GMD

*Access # 326-78
Box 3
File =
NMB-B*

This is a follow-up to your request for interpretation of Pu data on Rongelap natives contained in the attached paper.

According to LASL research, the relationships between Pu excretion, body burden, and time after exposure may be expressed in the equation

$$U = 0.23 t^{-0.77}$$

where: U = urinary excretion per day in percentage of ingested dose
t = time after ingestion.

On the 24th day, the percentage of excretion would have been about 0.02 of the ingested dose. Assuming that the rate of excretion of urine was 1.5 liters/day, then

$$1 \text{ d/n/1} = \frac{1.5}{(2.2 \times 10^6)(2 \times 10^{-4})} = \sim 3.4 \times 10^{-3} \mu\text{c.}$$

The maximum permissible body burden recommended by Handbook 52 for Pu is $4 \times 10^{-3} \mu\text{c.}$ Therefore

$$\frac{4 \times 10^{-2}}{3.4 \times 10^{-3}} = \sim 12 \text{ d/n/1 at 24 days} \quad \text{BEST COPY AVAILABLE}$$

would correspond to a maximum permissible body burden.

Three of the readings on the attached data sheet are at or above this value. However, there appears to me to be uncertainty concerning the reliability of the data since it is unlikely, for example, that patient Kotao would have excretion rates of Pu that differ by a factor of 100 on two successive days.

Attachments: data sheets in Dr. Harley, NIO (N.S.37078)

DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW	
DETERMINATION (CIRCLE NUMBER(S))	
1. CLASSIFICATION RETAINED	
2. CLASSIFICATION CHANGED TO:	
3. CONTAINS NO DOE CLASSIFIED INFO	
4. COORDINATE WITH:	
5. CLASSIFICATION CANCELLED	
6. CLASSIFIED INFO BRACKETED	
SINGLE REVIEW AUTHORIZED BY:	
A.A.S. 11: 7/1/74	
REVIEWER (ADD):	
NAME: [Signature]	
DATE: 7/1/74	

This document is defined as CONFIDENTIAL

DISTRIBUTION: cy 1A - addressees

OFFICE	BMBP	2A - G.M. Dunning
SURNAME	DUNNING: MACK	3A - BMBP
DATE	5-21-54	4,5,6A - B&M Files

5012005