[redacted] [redacted]

405027

156

Lewis L. Strauss
Chairman

September 1, 1954

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

INFORMATION RELATIVE TO MAP ON FALLOUT

SYMBOL: BMBP:GMD

The following information is to clarify the chart on fallout furnished you by the Division of Biology and Medicine.

The fallout pattern from the March 1, 1954 detonation at the Pacific Proving Ground was superimposed on the Eastern Coast of the United States using Washington as ground zero and intentionally oriented in the direction shown. Whereas this direction of fallout would not be unusual for this part of the country, there are two major factors to be considered in transposing such data:

(1) The detonation was over an extension of a Pacific island rather than over a city, and

(2) The wind structure in that part of the Pacific is not identical with the Eastern United States.

These factors would not invalidate the transposition but would suggest caution in a rigid interpretation of the numerical radiation doses.

The numbers shown on the map represent the theoretical maximum infinity gamma radiation doses expressed in roentgens. The calculations were based on the assumptions that the fallout material remained in place until its activity had decayed to an insignificant level and that the personnel had remained continuously out-of-doors. The actual expected doses would be something less than the infinity doses and would depend on the loss of activity through weathering, the shielding offered by buildings, and the duration of stay of personnel in the area. Since an actual radiation dose would be a function of these parameters, one [redacted] may be used for illustration. At Philadelphia an unshielded population would have received about 500 r during the first day after fallout and an additional 200 r during the next day. This represents approximately the LD-50 radiation dose, i.e., about one half [redacted] would be expected to die in the next few weeks.

Unless there be heavy rainfall or strong winds it would not be expected that the above radiation doses would be significantly reduced

OFFICE ▶	BMBP	BMD				
SURNAME ▶	DUNNING:MMacK.	BUGHER		MEDICINE, HEALTH & SAFETY		
DATE ▶	9/1/54	9/1/54	[redacted]			

Form AEC-318 (Rev. 9-53) U. S. GOVERNMENT PRINTING OFFICE 16—62761-3

by the process of weathering in the first one to two days. The amount of reduction of radiation doses by shielding of buildings varies widely but the following information may serve as a rough guide.

Location of Personnel in Philadelphia	Percentage of Out-of-door Dose Rates	Expected Effects from Exposure During the First Two Days
Out-of-doors	100%	Mortality about 50% All would suffer some degree of illness.
On the first floor of a frame house	50%	Mortality about 20% All would suffer some degree of illness.
Cellar of a frame house	10-20%	Mortality: none 10-20% would suffer some degree of illness.
Within a reinforced concrete multi-story building	1-10%	Mortality: none None or very few would be ill.

Since the above estimates are based on the assumption that the personnel remain in the place indicated for the period of one to two days, they would still be confronted with the choice of remaining in the radiation area or of evacuating the city.

DISTRIBUTION; copies 1&2A - addressee
3A - BMBP Reading File
4,5,6A - B&M Files

[redacted]

OFFICE ▶					
SURNAME ▶					
DATE ▶			[redacted]		

Form AEC-318 (Rev. 9-53) U. S. GOVERNMENT PRINTING OFFICE 16—62761-3