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31 JUL 1951

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From: Commanding Officer, U. S. Naval Radiological Defense Laboratory
To: Chief, Bureau of Ships (Code 348)
Chief, Bureau of Medicine and Surgery

Subj: Calculated risk figures for exposure of personnel to external ionizing radiations, comments on

Ref: (a) BuShips ltr S90/1-4(348) Ser 348-68 to CO, USNRDL dtd 24 Feb 1951

1. By reference (a) the U. S. Naval Radiological Defense Laboratory was requested to furnish the Bureau of Ships and the Bureau of Medicine and Surgery with informal opinions as to the obvious possible implications which would prevail if the so-called "operational tolerance dosages" suggested by an Ad Hoc Committee and reported in a letter from Mr. Carlton Shugg of the U. S. Atomic Energy Commission to Mr. Robert LeBaron, Chairman, L.C., U.S.A.E.C., were adopted. The suggested dosages are as follows:

a. For troops acutely exposed to gamma rays:

50 r - No effect.

100 r - Significant radiation sickness, but not enough to destroy the effectiveness as a fighting unit.

150 r - Rapid deterioration of effectiveness.

b. Dosage to render an air crew inefficient during a flight mission:

75 r

c. Number of times an aircraft crew could accept 25 r per mission:

8

d. Number of missions a submarine crew could make at 25 r per mission:

8

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By I. LP NARS, Date 7-6-94

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2. It is the opinion of the majority of the staff of the Laboratory that if these "operational tolerance dosages" are adopted, the effects of the specified dosages upon personnel will be substantially as predicted by the Committee.

3. The adoption of a 25 r repeated dosage over a limited time with the option of utilizing the 75 to 100 r dosage for a single operation will have a significant effect upon emergency decontamination procedures. It is felt that practically all emergency actions required under conditions of a contaminating attack can be accomplished without exposing personnel to dosages in excess of these limits. Furthermore, if these dosages are adopted for emergency industrial operations, a substantial reduction in the overall cost of such operations can be affected. With respect to the design of shielding for the protection of personnel under conditions where weight is a limiting factor, the adoption of the 100 r instantaneous dosage figure may permit designers to consider the provision of such shielding.

A. L. BECKER

J. L. BIRD
By direction

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