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DEPARTMENT OF DEFENSE  
 RESEARCH AND DEVELOPMENT BOARD  
 COMMITTEE ON MEDICAL SCIENCES  
 Washington 25, D. C.

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JOINT PANEL ON THE MEDICAL ASPECTS OF ATOMIC WARFARE

BAW 200/5

Agenda, 8th Meeting

ITEM 8 - Summary of Recommendation of the Joint Panel on Medical Aspects of Atomic Warfare Pertaining to Radiac Instrumentation (For information only)

DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW  
 DETERMINATION (CIRCLE NUMBER(S))  
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 REVIEWER (ADD):  
 NAME: W. C. [unclear]  
 DATE: 12/17/94

1. Air contamination (BAW Program Guidance, 29 Nov. 1950).

Detection devices should record long lived alpha emitters at levels of 0.1 to 100 microcuries per M<sup>3</sup> of air.

Beta emitters should be recorded at levels of 1 to 1000 microcuries per M<sup>3</sup> of air, an accuracy to be achieved of plus or minus 20% from 5% of full scale to full scale.

2. Surface contamination (alpha, beta, gamma survey).

The range of the meters should extend from the order of 0.5 milliroentgen per hour up to 500 r per hour.

3. Food and water contamination in period immediately following nuclear explosion. (AEC-WFBale, 12/13/50). These are about 25 times the ordinary peace time tolerances. For emergency instruments, make the scale cover 1/25 to 4 times these values, if the range of the meter is a hundred-fold. (verbal agreement Bale-Evans-Failla, 18 April 1951).

Time Water is to be consumed	Acceptable Beta Activity microcuries per cc.	Gamma Activity disintegrations per min. per cc.	Acceptable Alpha Activity microcuries per cc.	Alpha Activity disintegrations per min. per cc.
10 days	$9 \times 10^{-2}$	$2 \times 10^5$	$5 \times 10^{-3}$	$1.1 \times 10^4$
One month	$3 \times 10^{-2}$	$7 \times 10^4$	$1.7 \times 10^{-3}$	$3.7 \times 10^3$

4. Beta emitters, assuming maximum energy 1 mev and plane area (ground) source, (letter, Major Hartering to Dr. Pisani, 6 Nov. 1950, summarizing a mail survey).

- (a) Threshold skin erythema dose for a pure beta emitter: 200 rep.
- (b) Dose of pure beta emitters necessary to produce skin damage (other than erythema): 1500 to 2000 rep.

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- (c) Dose necessary to produce a casualty from no shielding other than inherent situation shielding and ordinary combat shoes and clothing: 5000 to 7000 rep.
- (d) "Combat tolerance" dose: 3000 to 5000 rep.

When a combined beta and gamma hazard exists, beta should be disregarded at least for military hazard until at least 300 r gamma source is present.

- 5. Whole body gamma radiation (BAW Program Guidance, 29 Nov. 1950).

Development and issue of personnel dosage indicating devices reading in steps of the order of 50 r or less, up to 600 r.

- 6. Whole Body gamma radiation (letter M.W. Boyer to R. LeBaron, 10 January 1951; Joint Panel concurred at Seventh Meeting 25-26 Jan. 1951)

- a. Effect of radiation on troops in the field:

If substantial numbers of men receive acute radiation doses substantially above 100r, there is grave risk that fighting units will rapidly become ineffective.

- b. Effect of a single exposure on an air crew:

Radiation doses substantially above 75r are considered to very seriously reduce the odds for successful completion of mission.

- c. Effect of repeated exposures on an air or submarine crew, assuming 25 r exposure per mission:

It is probable that at least eight such missions can be carried out at weekly or longer intervals before the chance of mission failure becomes large due either to illness during the mission or significant general deterioration in health and ability.

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