STANDARD FORM NO. 64

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PUBLIC HEALTH SERVICE—SSS

TO : [illegible], PHS Off-Site Activities
[illegible], Las Vegas, Nevada

DATE: June 15, 1959

FROM : R. H. Neill, Special Projects Branch, DEH

SUBJECT: Inhalation Doses Sr^{89} and Sr^{90}

403461

Although I'm sure you have calculated something similar to this before, I'm enclosing a copy of some air doses for radio-strontium during Hardtack II. The numbers are quite low.

I only wish we had some continuous ground level air sampling data from other series. It would be interesting to compare the results.

Has anyone done anything similar to this for Iodine? This one is much too complex for me to even begin to calculate here. But Kermit Larsen's results on I^{131} and I^{133} concentration in rabbit thyroids seem to indicate that some calculations are called for.

The only concern that I have is that our filter is collecting a reasonable amount of total particulates, and especially the [illegible] micron material. However, even increasing the results by a factor of ten still leaves a very small % of the permissable.

Bob

R. H. Neill
Special Projects Branch

Attachment.

PS. Bob regards to Ball.

BEST COPY AVAILABLE

CALCULATION OF AVG. Sr^{89} AND Sr^{90} AIR DOSE
IN OFF-SITE COMMUNITIES DURING PHASE II, HARDTACK

Avg. air concentration for two months 1×10^{-4} uc/M^3 Total Beta

1×10^{-10} uc/ml

Old NCRP MPC Sr^{89} in air 2×10^{-8} uc/ml (occ. 12 hr. day)

1×10^{-8} " (occ. 24 hr. day)

1×10^{-9} " (off-site pop, 24 hr. day)

	A	B	C	D	E	F
	$Sr^{89} + Sr^{90}$ / TOTAL BETA %	TOTAL BETA ACTIVITY uc/ml	Sr^{89} (PRESENT) uc/ml	Sr^{89} (MPC) uc/ml	Sr^{89} Actual/Perm. %	Sr^{90} Actual/Perm.
If avg. Activity is D + 1	6.8	1×10^{-10}	6.8×10^{-12}	1×10^{-9}	0.7 %	0.35%
If avg. Activity is D + 2	3	1×10^{-10}	3×10^{-12}	1×10^{-9}	0.3%	0.15%
If avg. Activity is H +12	9.0				1%	0.5%
	BOLLES & BALLEAU USNRDL 456	PHS HARDTACK II Report	A x B*	OLD NCRP HB 52	C/D	MPC E(1/180)(100/1)

*Excluding fractionation, shortly after fission Sr^{89}/Sr^{90} = 180 on an activity basis. (KERBY) Therefore, the Sr^{90} present is less than $\frac{1}{2}$ of 1% of the 89 and can be ignored in calculating (C).

Including factors for new ICRP general population value (80/30) for Sr^{90} still keeps the peak value around 0.35 x (80/30) or 0.9% of the allowable.

The obvious conclusion of this calculation shows that airborne Sr^{89} and Sr^{90} was of little hazard in off-site communities during the past series.

BUT IS SLOW FISSIONING OF U^{235} APPLICABLE TO PLUTONIUM?