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HW-11987

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Group 5

GROUP 1 OF 1, SERIES RA

A SECOND ANNUAL CHECK OF RADIOACTIVITY IN UPLAND WILD-FOWL

NEAR THE H.W. PROJECT

Summary:

During the regular hunting season (October 10 to 20) ten male ring-necked pheasants, *Phasianus colchicus torquatus*, were collected by local hunters from five localities extending from thirty-five miles west to seventy miles east of the 200 Area waste stacks. Seven tissue and a gut sample from each bird were assayed for beta-emitting material. Bone, liver, and gut of each were checked for alpha emitters. In most cases the levels were below the minimum detectable level which was usually about 0.005 $\mu\text{C}/\text{kg}$ depending on sample size available. The thyroid gland of the fowl from the nearest location, (about 15 miles S.S.E.) was highest in beta activity with an activity of 0.06 $\mu\text{C}/\text{kg}$ (approximately 1/50 of tolerance). Positive thyroid values were found in four others. Gut and spleen values of about 0.01 $\mu\text{C}/\text{kg}$ were found in only two birds each. Bone and liver occasionally indicated very low alpha activity values of less than 0.003 $\mu\text{C}/\text{kg}$.

Introduction:

Positive values detected in most birds sampled in 1947 suggested the desirability of a similar survey this year. (1) During the months preceeding, the monthly vegetation contamination levels assembled by Site Survey indicated trends comparable to those in bird tissues for the two years. (2, 3) The decrease in thyroid levels, however, was much greater than the decrease in vegetation levels during the intervening year.

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Method:

The method used was similar to that described in the 1947 report except that only pheasants were examined and that spleen tissues were taken this year while testes samples were omitted, since no detectable activity was found in the testes samples assayed in 1947. Unfortunately, birds were not available in quantities adequate for statistically valid data.

Results:

The extremely low levels found in birds indicate that the present control of atmospheric contamination is adequately effective. The decrease in thyroid activity during the past year is a fair and practical index of the effectiveness of extended slug cooling in controlling range contamination by ^{131}I created in uranium fission. The following table shows the differences in levels of beta radioactivity of 1947 and 1948 fowls. Actual hazards involved may be estimated on the basis that $3\text{ }\mu\text{C }^{131}\text{I/kg}$ are "tolerable" according to latest recommendations for the tolerance dose, 300 mrep/week.

LOCATION AND APPROX. DISTANCE FROM WASTE STACKS	RADIOACTIVITY IN THYROIDS		OTHER POSITIVE BETA RADIOACTIVITY	
	1947	1948	1947	1948
Sunnyside, Mabton and Grandview 30 - 35 Mi. S.W.	4 birds, highest two were $0.33\text{ }\mu\text{C/kg}$ & $0.9\text{ }\mu\text{C/kg}$	4 birds, all less than $0.01\text{ }\mu\text{C/kg}$	approx. $0.01\text{ }\mu\text{C/kg}$ in kidney & liver of one bird	approx. $0.01\text{ }\mu\text{C/kg}$ in gut of one bird.
Near Prosser 20 Mi. S. W.	1 bird $0.3\text{ }\mu\text{C/kg}$	1 bird approx. $0.01\text{ }\mu\text{C/kg}$	bone $0.06\text{ }\mu\text{C/kg}$ muscle $0.01\text{ }\mu\text{C/kg}$	None
Near Benton City 15 Mi. South	6 birds, highest two were $0.8\text{ }\mu\text{C/kg}$ & $1.3\text{ }\mu\text{C/kg}$	2 birds, approx. $0.01\text{ }\mu\text{C/kg}$ & $0.04\text{ }\mu\text{C/kg}$	Bone and gut 0.01 in one bird	spleen $0.007\text{ }\mu\text{C/kg}$ & $0.01\text{ }\mu\text{C/kg}$ one gut $0.10\text{ }\mu\text{C/kg}$
8 Mi. N.W. Richland* 15 Mi. S.S.E.	2 birds, 1.4 and $5.0\text{ }\mu\text{C/kg}$	1 bird $0.06\text{ }\mu\text{C/kg}$	liver and gut ~ 0.1 in one bird	None
Prescott and Washtucna 70 Mi. East	2 birds, 0.6 and $0.9\text{ }\mu\text{C/kg}$	2 birds, approx. $0.01\text{ }\mu\text{C/kg}$ in one bird	gut $0.007\text{ }\mu\text{C/kg}$ in one bird	None

* A mature jack rabbit taken from this location on the same day was similarly assayed. The thyroid was higher by a factor of three, ($0.18\text{ }\mu\text{C/kg}$) than that of the pheasant and the gut contents had activity of $0.10\text{ }\mu\text{C/kg}$.

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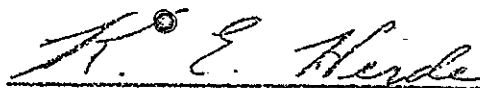
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Alpha activity was evident in twelve of the 30 plates counted, but results were usually not enough above counter background to be conclusive. Bone samples of both birds from Wishtuena were positive in four, fifteen-minute counts of each plate. Samples had alpha radioactivity of about 0.002 μ c/kg.

Appreciation is expressed to the several project workers who cooperated in contributing sample material. Technical assistance was given by Miss M. J. Buys of the Zoology Group.

Bibliography:

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