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 Commissioner

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EXCRETION OF Y-90 FROM Sr-90 BODY BURDEN; RADIATION DOSES IN NATURE

SYMBOL: EMBP;RAD

Excretion of Y-90 from Sr-90 body burden

There are several papers in the literature which indicate that Y, following intravenous injection, is retained very persistently by the body. As examples, you might be interested in the work by Comar⁽¹⁾ in cattle; Capp, Axelrod, and Hamilton⁽²⁾ in rats; Rayner, Tutt and Vaughan⁽³⁾ in rabbits; and Kidman, Tutt, and Vaughan⁽⁴⁾ in rabbits. In the last 3 examples the retention of Y and Sr was directly compared, and Y was the greater. Arnold at Utah, as I mentioned to you orally, found for dogs not only that the Y-90 was essentially 100% retained in the body, but also that it remained at the site of the parent Sr-90 atoms without redistribution within the body.

The absence of Y and rare earths in animal skeletons can be explained, as you suggested, by the low gut uptake of these elements. In the National Bureau of Standards Handbook 52, comparative gut uptake of Y and Sr is given as 1:1000.

Comparative Sr-90 and natural radiation doses -

The radiation dose rate resulting from 1 S.U. Sr-90 body burden in comparison with natural radiation is approximately as follows:

1 S.U. Sr-90	5×10^{-6} rep/day	(skeleton)
Cosmic rays (sea level)	10^{-4}	(whole body)
Natural radioactivity in environment	10^{-4}	(whole body)
K-40 in body	10^{-4}	(whole body)
Ra in body	5×10^{-5}	(skeleton)
C-14 in body	3×10^{-6}	(whole body)

CC: Dr. Dunham, B&M
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REFERENCES

(Ltr. dtd. 10/25/54 fr R.A.Dudley to W.F.Libby)

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