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Rutgers Environmental Health and Safety
Building 4127 • Livingston Campus • P.O. Box 5077 • New Brunswick • New Jersey 08903-5077 • 908/932-2550

October 9, 1992

Mr. Anthony Demitriades
Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19405

Gentlemen:

RE: Overexposure of ring badge at Rutgers University

On September 17, 1992, Rutgers Environmental Health & Safety (REHS) received a phone call from Landauer Corporation to report an unusually high reading for a ring badge belonging to [REDACTED] a student of Dr. Robert Niederman (authorization Number [REDACTED]).

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The value for the ring badge exposure for the period April 15, 1992 to July 14, 1992 was 128,960 millirems, far in excess of the yearly permissible limits of 75,000 millirems. The results of the whole body dosimetry for the same period showed nothing above background (minimum M).

During that period [REDACTED] only use of radioactivity was during the performance of two iodinations, one on June 16, 1992 and June 29, 1992. The activities of ^{125}I used were 1.5 mCi and 5 mCi respectively. In both instances, the radioactive iodine was delivered the same day of the iodination and used immediately. The radioactive waste generated was stored in the hood. No other isotopes were used. The thyroid uptakes performed within 48 hours after each iodination showed no significant trapping in the thyroid (below):

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Date	Thyroid Counts	Background	Net
June 17, 1992	239	229	10 <1 nanocurie
July 1, 1992	237	207	30 <3 nanocurie

The same day of September 17, a thorough survey of the laboratory was carried out by the Radiation Safety Officer. Wipes were taken from 25 sites throughout the laboratory, including benches, hoods, desks, refrigerators, etc. A portable scintillation detector was used to check for contamination. A repeat thyroid uptake performed with a portable detector was again normal. [REDACTED] did not recall any reddening on his fingers or hands.

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The results of the survey (see enclosed wipe survey results) showed only two small areas in the hood with very minor contamination (203 and 123 dpm) the largest about twice background.

When did they send the badges? ~~Mid~~ End of July.
this one possibly ~ Aug 1-7.
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Mr. Anthony Demetriades

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External exposure to a vial of ^{125}I would yield an exposure rate of 570 mRem/hour at contact per mCi of activity. There is a possibility that the ring badge was left in the hood for at least 70 hours next to the 3 mCi of liquid waste stored in the hood. [REDACTED] reported that the ring badge was misplaced between July 1 and July 20. The badge was subsequently mailed to REHS. He stated that he wore his whole body badge and ring badge during both iodinations.

Landauer Corporation has indicated there was no evidence of contamination of the ring badge or other anomalies, during a re-analysis of the dosimetry data; however, the possibility of a faulty badge cannot be completely ruled out, but it appears unlikely.

In conclusion, we discount exposure to the individual investigator because (1) the dose indicated by the whole body badge was background (2) there was no trapping of iodine in the thyroid and (3) results of the REHS survey show no surface contamination in the laboratory (with the exceptions in the hood). We feel that the overexposure was probably due to direct exposure of the ring badge alone to a source of ^{125}I (vial or waste) and does not reflect a true exposure to [REDACTED]. We will write to Landauer and direct them to delete this ring badge exposure from [REDACTED] radiation exposure history. Please notify us if you have any questions or concerns for this action.

Sincerely yours,



Elan Gandsman
Radiation Safety Officer

Encs.



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