

2200

Mallinckrodt

BOX 6172 LAMBERT FIELD • ST. LOUIS, MISSOURI 63145 • 314 AX 1-0540

NUCLEAR

NUCLEAR CONSULTANTS

RADIOPHARMACEUTICALS

October 5, 1967

Director
Isotopes Branch
Division of Materials Licensing
U.S. Atomic Energy Commission
1717 "H" Street
Washington 25, D.C.

Gentlemen:

Thyroid measurements performed on 9/7/67 revealed the presence of 0.65 μ c of Iodine-131, or 4.68 times the permissible quantity, in the vicinity of the thyroid gland of an individual. A contamination survey using a Geiger-Mueller probe revealed extensive external contamination of the hair on the back of the individual's head and neck. The individual was aware of the contamination in that he indicated that he had washed the area before reporting for the thyroid check. A subsequent scrubbing showed that the activity was fixed in the hair. Another thyroid check was made with a "side view" of the thyroid gland presented to the detector which excluded a portion of the contaminated area from the viewing field. This count resulted in a value 3.25 times permissible.

Since we were unable at that time to determine what fraction of this value was actually in the gland, the total value of 3.25 was included in the weekly average. This resulted in the value 2.28 entered on the enclosed Fractional Permissible Iodine-131 Thyroid Burden record. The individual's quarterly average thyroid burden was 91% of permissible.

The only work scheduled for this individual for several months which involved Iodine-131 was production of diagnostic capsules. The personal contamination was a result of work with the diagnostic capsule production machine. The available information allowed us to reconstruct the following series of events.

A small leak developed in one of the lines to the dispensing mechanism. The operator noticed that the capsules assayed too low. Although this was probably due to a small air bubble in one of the lines, the operator responded by making an adjustment in the dispensing mechanism to increase

Information in this record was deleted
in accordance with the Freedom of Information
Act, exemptions 6

FOIA- 96-343
9701270251

DUPLICATED
FOR DIV. OF COMPLIANCE

265

4/3

9701270251 970123
PDR FOIA
FLOYD96-343 PDR

-2-

the delivered volume. In so doing, his gloves contacted a contaminated surface. He then supported himself while straightening to a standing position by holding onto the underside of the benchtop which supports the hood. Another adjustment was necessary at which time he leaned under the base cabinet. The back of his head and neck contacted the surface previously contaminated by his glove resulting in a transfer of the activity.

We have concluded that the contamination incident was due in part to the inexperience of the particular individual. Although he was carefully instructed in the operation of the machine, he lacked the total awareness of potential hazards innate in some individuals and developed in others through experience and training.

As a result, we have restricted the operators of the diagnostic capsule machine from making any adjustments of the dispensing mechanism located in the base cabinet under the hood containing the capsule machine. Only supervisory personnel thoroughly experienced in the operation of the dispensing mechanism may make such adjustments.

In addition, the operator of the diagnostic capsule machine must report to the health physics laboratory for an external contamination survey and a thyroid burden measurement every two hours on each day of capsule production. If there is any indication of external contamination or a rise in the thyroid burden, capsule production will be stopped immediately until corrective measures can be made. Supervisory personnel must also report to the health physics laboratory for similar checks within one hour after making any adjustment or repair to the dispensing mechanism.

To prevent contamination of the authorized supervisory personnel, under circumstances similar to those previously described, a head cover and neck cover are required to be worn when making any repairs or adjustments of the dispensing mechanism. As a further precautionary measure, respirators have been ordered which will be required to be worn by the supervisors while making adjustments as soon as they are received.

These precautionary and corrective measures should prevent a similar re-occurrence and will be continued with the present equipment.

Sincerely yours,

MALLINCKRODT/NUCLEAR

Donald W. Soldan

Donald W. Soldan, Manager
Health Physics Department

DWS/ba

Enc.

Copy to Manager, Region III

October 5, 1967

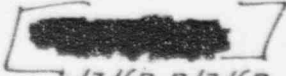
MALLINCKRODT/NUCLEAR

Ex 6

The individual referred to in this report as Laboratory Assistant #1
is [REDACTED]

MALLINCKRODT/NUCLEAR

1967 FRACTIONAL PERMISSIBLE IODINE-131 THYROID BURDEN*

<u>NAME</u>	<u>SOCIAL SECURITY NUMBER</u>		<u>IDENTIFICATION NUMBER</u>	
LABORATORY ASSISTANT # 1				
<u>Period of Exposure</u>	<u>1/2/67-4/3/67</u>	<u>4/3/67-7/3/67</u>	<u>7/3/67-10/2/67</u>	<u>10/2/67-1/1/68</u>
<u>Week Starting</u>	<u>1 st. quarter</u>	<u>W. S. 2nd quarter</u>	<u>W. S. 3rd quarter</u>	<u>W. S. 4th quarter</u>
1/2		4/3	7/3 .53	10/2
1/9		4/10	7/10 .27	10/9
1/16		4/17	7/17 .50	10/16
1/23		4/24	7/24 .76	10/23
1/30		5/1	7/31 .81	10/30
2/6		5/8	8/7 .57	11/6
2/13		5/15	8/14 .70	11/13
2/20		5/22	8/21 .96	11/20
2/27		5/29	8/28 .92	11/27
3/6		6/5 .12	9/4 2.28	12/4
3/13		6/12 --	9/11 2.03 (Terminated	12/11
3/20		6/19 .10	9/18 1.02**	12/18
3/27		6/26 .15	9/25 .51**	12/25
Quarterly Average		.12	.91,	

* Fractional Permissible Thyroid Burden based on a permissible quarterly average thyroid burden of 0.14 microcuries of Iodine-131.

** Calculated Values

Summer employee terminated on 9-15-67.