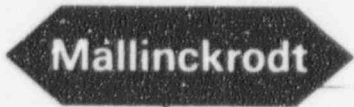


10/21/67 - H/67

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

NUCLEAR

NUCLEAR CONSULTANTS

RADIOPHARMACEUTICALS

October 20, 1967

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

Dear Sir:

Thyroid measurements performed on September 20, 1967 revealed the presence of 0.27 μc of Iodine-131, or 1.95 times the permissible quantity, in the thyroid gland of an individual. The average of this value and others taken during the week resulted in a value of 1.59, or 0.22 μc , for the week ending September 23, 1967. The subsequent average weekly values of 1.21, 0.63, and 0.32 are the expected values as a result of totally restricting this individual from work in the production laboratory restricted areas. This individual was allowed to resume his normal duties on October 16, 1967 since his thyroid burden had averaged less than 50% during the week ending October 14, 1967.

A contamination survey using a Geiger-Mueller probe did not reveal any significant external contamination in the vicinity of the thyroid gland. Low level contamination was detected on the hands which later was identified as being Iodine-131. Air samples taken at stations 12, 13, and 14 in the Iodine-131 areas averaged 2.61×10^{-9} $\mu\text{c}/\text{ml}$ during the period September 5, 1967 to September 21, 1967, or 29% of permissible, with the highest reading being 3.22×10^{-9} $\mu\text{c}/\text{ml}$ (36%) at station 12. The air concentrations at these same stations averaged 5.97×10^{-9} $\mu\text{c}/\text{ml}$ (67%) on September 21, 1967, with the highest reading being 7.79×10^{-9} $\mu\text{c}/\text{ml}$ (86%) at station 14. Concentrations in these areas have ranged from 20% to 40% of permissible and were higher than normal on September 21, 1967. No specific cause could be found for the increased air concentration because of the many and varied activities in these areas involving Iodine-131. The high thyroid burden was probably due to a combination of external (hand) contamination and airborne radioactivity since low level contamination was found on the hands, and higher than normal air concentrations were observed.

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PDR FOIA
FLOYD 96-343

In accordance with the Freedom of Information Act, exemptions 6
FOIA- 96343

DECLASSIFIED
FOR DIV. OF COMMERCE

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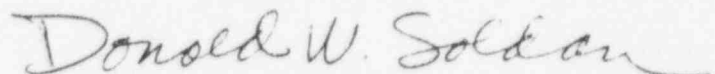
Several additional measures have been taken to determine the source of thyroid burdens of individuals working in the Iodine-131 areas and thereby reduce them.

1. All individuals scheduled for Iodine-131 production must report each morning for a thyroid burden measurement.
2. Any individual whose thyroid burden is in excess of 50% of permissible will be rechecked at intervals during the day to assure that no further increase is occurring.
3. Any individual whose thyroid burden is in excess of 50% of permissible will be thoroughly checked for external contamination each time a thyroid burden measurement is performed.
4. Any individual scheduled for production of particular Iodine-131 products which in the past has been associated with thyroid burdens will report at frequent intervals during the production run to assure that no increase is occurring.
5. Additional air sampling stations have been installed in the Iodine-131 areas to determine the source of airborne radioactivity.

The above measures should better enable us to associate thyroid burdens or external contamination with particular Iodine-131 product production and thereby institute corrective measures. These measures also will provide information as to the personal working habits of individuals as related to external contamination. The increased frequency of thyroid burden measurements will be continued for as long as is necessary to determine the causes for recent thyroid burdens and until permanent corrective measures can be instituted.

Sincerely yours,

Mallinckrodt/Nuclear



Donald W. Soldan, Manager
Health Physics Department

DWS:cd

encl.

cc: Manager, Region III
Division of Compliance
U. S. Atomic Energy Commission

Ex 6

The individual referred to in this report as Chemist No. 1 is [REDACTED]

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FAC

MALLINCKRODT/NUCLEAR

1967 FRACTIONAL PERMISSIBLE IODINE-131 THYROID BURDEN*

<u>NAME</u>	<u>SOCIAL SECURITY NUMBER</u>				<u>IDENTIFICATION NUMBER</u>	
Chemist No. 1	[REDACTED]					
<u>Period of Exposure</u> <u>Week Starting</u>	<u>1/2/67-4/3/67</u> <u>1 st. quarter</u>	<u>4/3/67-7/3/67</u> <u>W. S. 2nd quarter</u>	<u>7/3/67-10/2/67</u> <u>W. S. 3rd quarter</u>	<u>10/2/67-1/1/68</u> <u>W. S. 4th quarter</u>		
1/2		4/3 --	7/3 -	10/2	0.63	
1/9		4/10 .15	7/10 -	10/9	0.32	
1/16		4/17 .32	7/17 0.92	10/16		
1/23		4/24 .40	7/24 1.73*	10/23		
1/30		5/1 .22	7/31 1.48*	10/30		
2/6		5/8 .29	8/7 0.88	11/6		
2/13		5/15 .30	8/14 0.75	11/13		
2/20		5/22 .51	8/21 0.37 (Cal)	11/20		
2/27		5/29 ---	8/28 0.21	11/27		
3/6		6/5 ---	9/4 -	12/4		
3/13	.12	6/12 ---	9/11 0.41	12/11		
3/20	.53	6/19 .38	9/18 1.59*	12/18		
3/27	0	6/26 ---	9/25 1.21*	12/25		
Quarterly Average	.32	.32	0.95			

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