PEGGY RISINGER
Administratrix

Jackson County Memorial Hospital

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March 1, 1982

Ms. Patricia Vacca,
Material Licensing Branch
Division of Fuel Cycle and Material Safety
U.S., Nuclear Regulatory Commission
Washington, D.C. 20555

Re: Control No. 10064

Dear Ms. Vacca:

This is in reference to your February 10, 1982 letter asking for additional information for license No. 35-19227-01 amendment request.

Item	Response
1	Appendix K of Reg. Guide 10.8 (revision 1) dated October, 1980 will be followed for all patients hospitalized during radioisotope therapy.
2	No liquid Iodine I-131 therapy doses will be used at this facility. However, the enclosed I-131 bioassay procedures have been adopted.
3 a.	Maximum possession limit for Xenon-133 will be 300 mCi.
b.	Correct the Xe-133 information on page 3, first paragraph and second paragraph to read "7.0 minutes" rather than "3.5 minutes".

Thanks for your assistance in this matter and please let me know if additional information is needed.

Sincerely,

David Turnbo,
Associate Administrator

I-131 BIOASSAY

All workers who handle or process liquid radioactive iodine activities equal to or in excess of 10 mCi I-131 in a calendar quarter will participate in a routine bioassay program. Affected workers will give the following in-vitro assays:

1. An initial baseline assay will be made.

2. Routine assays will be made every 2 weeks if liquid radioactive iodine has been handled since the last assay.

3. An emergency assay will be required when a suspected incident has occurred that might cause a thyroid uptake in excess of 0.04 μCi I-131.

4. A termination assay will be required when a worker is terminating activities with liquid radioactive iodine.

5. A followup assay will be required within 2 weeks of a "positive" bioassay that assigns a thyroid uptake in excess of 0.04 μCi I-131.

I-131 BIOASSAY PROCEDURES

1. Set the Abbott well counter, model 831, #REO-233 to assay for I-131.

2. Take a 10 minute background count and record it in terms of counts per minute (CPM). (A typical background count rate is 30 CPM)

3. Take a 2 minute count of an Iodine-131 capsule that has decayed to less than 1uCi and record it in terms of CPM. (a typical count rate is 5300 CPM for a 0.17uCi capsule)

4. Determine the counter efficiency for I-131. (A typical efficiency is(5300-30)/0.17 = 31,000 Net CPM/uCi)

5. Count 3 milliliters (ml) of each worker's urine for 10 minutes and record in terms of CPM/ml. (example is 33 cpm/ml)

6. Calculate the minimum detectable activity (MDA) in net CPM by multiplying background CPM by 2, dividing by 10, taking the square root and then multipying by 3. (typical is 7.5 NCPM)

7. Convert the MDA to units of uCi/ml by dividing the MDA in NCPM (step 6) by counter efficiency and by 3 ml. (e.g. 7.5/31000/3= 0.00008uCi/ml)

8. Calculate each worker's urine assay activity in NCPM/ml by subtracting background CPM (step 2) from the urine assay CPM/ml (step 5). e.g. 33-30 = 3 NCPM/ml

9. If a worker's urine assay activity (step 8) is greater than the MDA (step 6), convert the urine assay activity to units of uCi/ml. This is done by first dividing NCPM/ml (step 8) by the counter efficiency (step 4). If it exceeds 10^{-4}uCi/ml of I-131, go to step 10. If it is less than the MDA (step 6), express the assay as less than the MDA as found in step 7.

10. If a worker's assay exceeds 10^{-4}uCi/ml of I-131, the radiation physicist should be contacted to estimate a thyroid burden. A thyroid burden in excess of 0.04 uCi I-131 requires implementing Action "A" below. A thyroid burden in excess of 0.5 uCi I-131 must implement action "B" below.

I-131 BIOASSAY PROCEDURES

ACTION "A"

Whenever the thyroid burden at the time of measurement exceeds 0.12 μCi of I-125 or 0.04 μCi of I-131, the following actions should be taken:

1. An investigation of the operations involved will be carried out to determine the causes of exposure and to evaluate the potential for further exposures.

2. If the investigation indicates that further work in the area might result in exposure of a worker to concentrations that would cause the limiting intakes extablished in 20.103 of 10 CFR Part 20 to be exceeded, the licensee should restrict the worker from further exposure until the source of exposure is discovered and corrected.

3. Corrective actions that will eliminate or lower the potential for further exposures should be implemented.

4. A repeat bioassay should be taken within 2 weeks of the previous measurement and should be evaluated within 24 hours after measurement in order to confirm the presence of internal radioiodine and to obtain an estimate of its effective half-life for use in estimating dose commitment.

5. Reports or notification must be provided as required by 20.405, 20.408 and 20.409 of 10 CFR Part 20 or as required by conditions of the license pursuant to 20.108 of 10 CFR Part 20.

ACTION "B"

If the thyroid burden at any time exceeds 0.5 μCi of I-125 or 0.14 μCi of I-131, the following actions will be taken:

1. Carry out all steps described in ACTION "A".

2. As soon as possible, refer the case to appropriate medical consultantion for recommendations regarding therapeutic procedures that may be carried out to accelerate removal of radioactive iodine from the body. This should be done within 2-3 hours after exposure when the time of exposure is known so that any prescribed thyroid blocking agent would be effective.

3. Carry out repeated measurements at approximately 1-week intervals at least until the thyroid burden is less than 0.12 Ci of I-125 or 0.04 μCi of I-131. If there is a possibility of longer term compartments containing I-125 or I-131 that require evaluation, continue measurements as long as necessary to ensure that appreciable exposures to these other compartments do not go undetected.