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July 25, 1985

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John E. Glenn, Ph.D.
Chief, Nuclear Materials Safety Section B
Division of Radiation Safety and Safeguards
Mail Control Number 03766
631 Park Avenue
King of Prussia, PA 19406

RE: License # 20-05766-02
Docket # 030-01879

Dear Dr. Glenn:

This letter responds to your letter dated June 24, 1985 regarding our application to amend license number 20-05766-02. In response to your letter we provide the following information:

1. We now request a possession limit of 20 mCi of Iodine 125.

2. We will maintain a concentration of Iodine 125 at the release point of the effluent stack of less than 8×10^{-11} microcuries per milliliter as specified in 10 CFR.20, Appendix B, Table II, Column 1. The concentration of Iodine 125 at the effluent stack is calculated for a full year based on one iodination per week. For this calculation we have assumed that the charcoal trap in the mini hood has a capture efficiency of 95-98% for iodine released within the hood--as specified in a telephone conversation with the hood designer, Francis Masse. To calculate the effluent concentration we assume a worst-case release of 10% of the Iodine 125 into the mini hood during the labeling process. Furthermore we assume that the labeling is done once a week during the year and the hood exhaust fan opeartes 5 days a week. As detailed in the revised submission "Procedures for the Use of Radioactive Gases" appended, the maximum concentration of Iodine 125 at the effluent stack will not exceed 4×10^{-11} microcuries per milliliter, less than the maximum permissible concentration 8×10^{-11} microcuries per milliliter.

3. We will remove the filter and measure the activity trapped by the sampling filter at least monthly.

4. We will monitor the air in the breathing zone of the operator with a separate sampling filter and pump placed on the outside of the fixed lab hood.

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5. The exhaust used for the laboratory hood in Room 3G-5 is on the roof of the building. This hood has a dedicated exhaust which does not recirculate the air into the building. The exhaust on the roof of the building is approximately 60 feet horizontally and 60 feet vertically from the nearest air intake.

6. At this time the only person who will do the labeling is Miss Patricia Leasure. Miss Leasure's experience includes 5 years handling Iodine 125 at Tufts New England Medical Center under the direction of Dr. Vincent Agnello, the authorized user. Her training includes several lectures in the handling of radioactive materials provided by the Radiation Safety Office at Tufts New England Medical Center.

Please direct any further inquiries about this license amendment to my attention; you are welcome to call me at (617)-273-8166.

Sincerely,

Robert S. Wenstrup

Robert S. Wenstrup, Ph.D.
Radiation Safety Officer

RSW/rmb
Enclosure
cc: Francis J. Scholz, M.D.

PROCEDURES FOR THE USE OF RADIOACTIVE GASES

A maximum of approximately 2 millicuries of Iodine 125 will be used for any week for labeling.

The labeling will be done in a fixed hood in Room 3G-5. The exhaust rate to a roof exhaust vent is 1250 cubic feet per minute. The iodination will be done in a mini hood within the permanent hood. The inner hood has an activated charcoal filter to absorb any iodine released during this study. Potential release of Iodine up the stack will be monitored with an air filter which samples the exhaust plume.

To calculate the worst case release of Iodine to an unrestricted area, that is the roof of the building, assume that 10% of the activity (200 micro-curies) is released into the mini hood. The mini hood has a capture efficiency of at least 95%.

Assuming that 2 mCi of I-125 are used for labeling every week of the year, we calculate the effluent concentration averaged over a 5 day, 24 hour/day operation of the exhaust fan.

Assuming 10% of 2 mCi of I-125 escapes from the source container within the mini hood, and assuming 95% capture efficiency for the mini hood charcoal trap, 2 mi Ci X 0.1 X (1-0.95) = 10 micro Ci I-125 enters the permanent hood exhaust stack. The I-125 concentration at the roof release point average over 5 days is then:

$$C = \frac{10 \text{ micro Ci}}{(1.25 \times 10^{3} \text{ CFM} \times 1.66 \times 10^{6} \text{ ml/hr-CFM} \times 24 \text{ hr/day} \times 5 \text{ day})}$$

$= 4 \times 10^{-11}$ micro Ci/ml.

This concentration is less than the maximum permissible concentration of soluble I-125 (8×10^{-11} micro Ci/ml).

21. Procedures and Precautions
for the Use of Radioactive
Gases
July, 1985