SARATOGA
COMMUNITY HOSPITAL

15000 Gratiot Avenue
Detroit, Michigan 48205-1999
(313) 245-1200



23 December 1985

U.S. Nuclear Regulatory Commission
Materials Licensing Branch, Region III
799 Roosevelt Road
Glen Ellyn, IL 60137

Gentleman: Lic. No. 21-16981-01

Please amend our NRC byproduct materials license to reflect the change to the new location of our nuclear medicine department.

Attached, please find the close-out survey of the old location and the facility diagram for the new location. Also, please find a check for $120.00 made payable to the U.S. Nuclear Regulatory Commission for the license amendment.

Thank you.

Sincerely,

Barbara L Sagaert

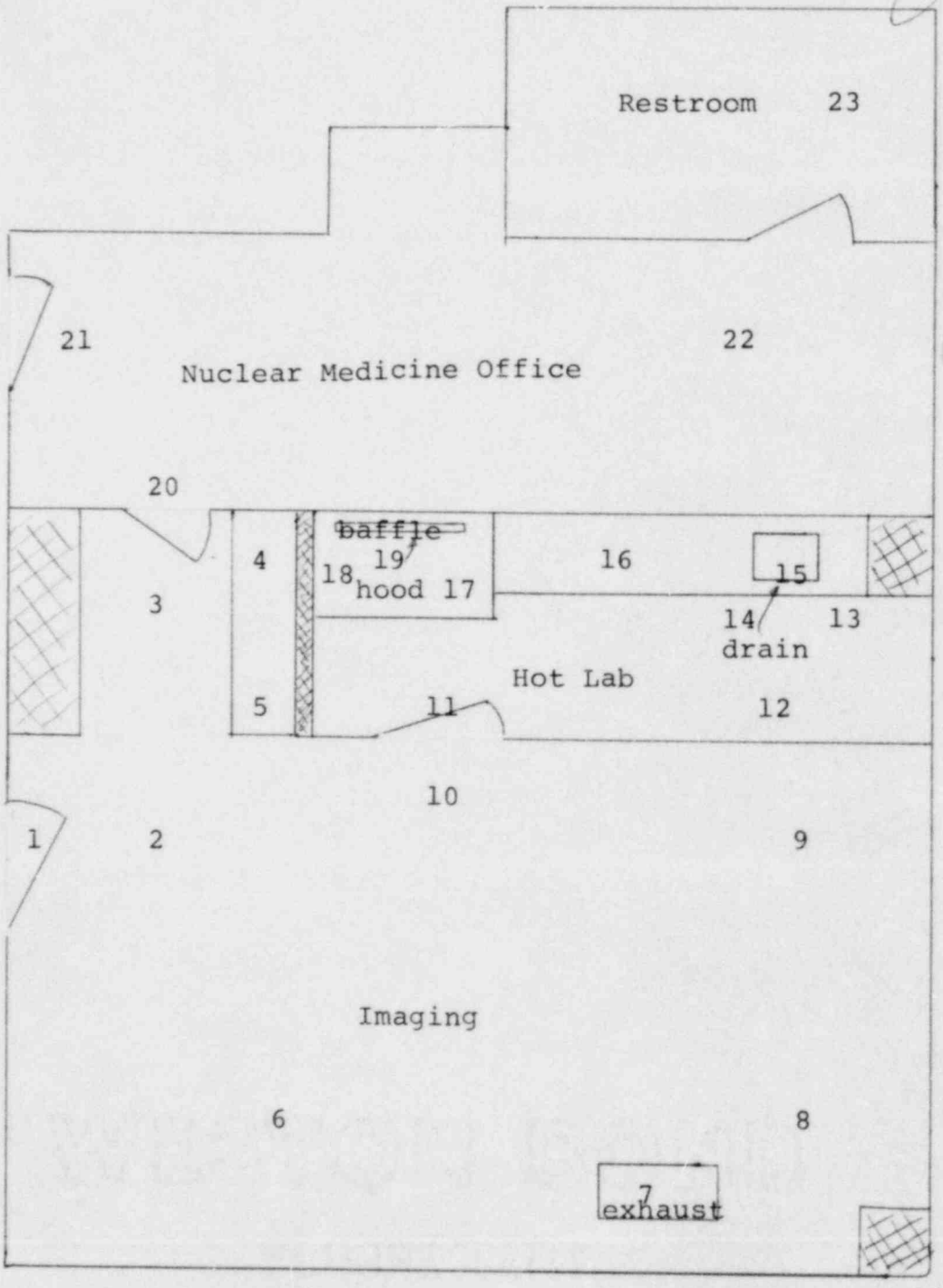
Barbara L. Sagaert
Assistant Administrator

**Medical Physics Consultants, Inc.**

Saratoga Community Hospital
Nuclear Medicine Department

Lic. No. 21-16981-01

CLOSE OUT SURVEY
5 NOV 85




## Survey Results

Area survey:

Bicron Surv.2000
cal. 29 APR 85
Bkg = 0.005 mR/h

All areas were not significantly above background contamination levels. JT

Wipe tests:

Picker Spectro II
LL = 50 keV
Window out (int)
Bkg = 185±13 cpm

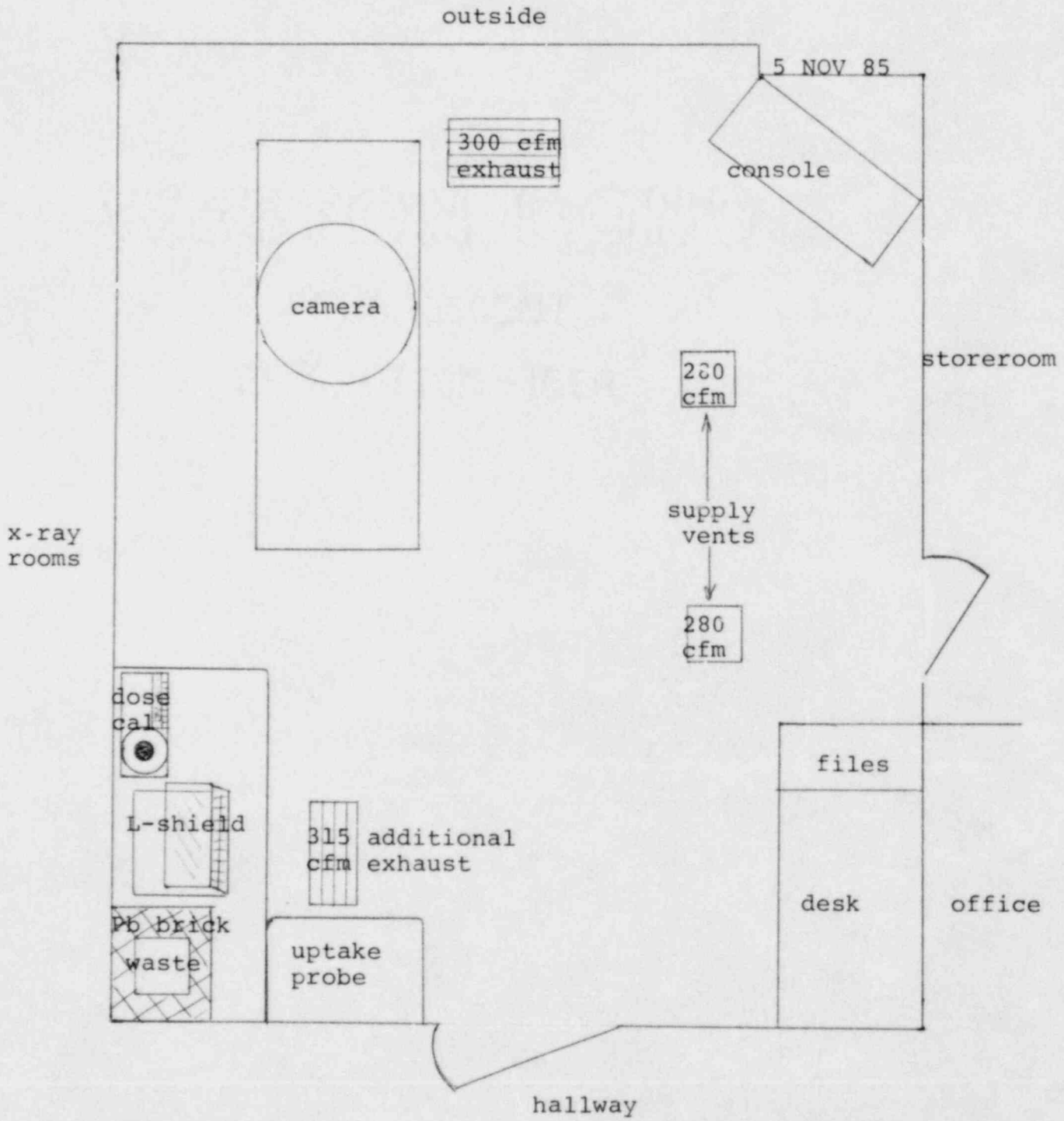
| Wipe | Net cpm |
|---|---|
| 1 | 2 |
| 2 | 10 |
| 3 | 0 |
| 4 | 5 |
| 5 | 0 |
| 6 | 0 |
| 7 | 7 |
| 8 | 0 |
| 9 | 0 |
| 10 | 0 |
| 11 | 11 |
| 12 | 5 |
| 13 | 0 |
| 14 | 12 |
| 15 | 9 |
| 16 | 0 |
| 17 | 8 |
| 18 | 0 |
| 19 | 3 |
| 20 | 0 |
| 21 | 0 |
| 22 | 0 |
| 23 | 2 |

NOTE: All sealed radioactive sources were removed.

CONTROL NO. 80477

SARATOGA COMMUNITY HOSPITAL

NUCLEAR MEDICINE DEPARTMENT



APPENDIX M

INFORMATION IN SUPPORT OF XE-133 USE

1. QUANTITIES TO BE USED

A. Patient information

(1). 10 studies per week
(2). 10 milliCuries (average) per study

B. 200 milliCuries possession limit

2. USE AND STORAGE AREAS

A. Xenon-133 will be stored in the Storage Area of the Hot Lab and used (i.e., administration, imaging, and trapping/exhaust) in the Imaging Area.

B. Ventilation: A 300 CFM exhaust fan delivers air directly to OUTSIDE air on the facility roof, carrying a major portion of any Xe-133 contamination, and is situated well away from any intake vents (30 feet minimum). Airflow will therefore come from the hallway via the door(s). No air is recirculated.

C. In the case of exhaust fan shutdown, Xe-133 studies will not be performed.

3. PROCEDURES FOR ROUTINE USE

A. When stored in the Hot Lab, Xe-133 is contained in unit dose ampules inside 1/8" lead shipping tubes behind lead bricks. Individual doses will be assayed in the dose calibrator and admininstered using the Pulmonex Gas Dispensing System. The seal will be broken only in the Imaging Area. Thus, no significant leakage is expected in the Hot Lab Area.

B. Xe-133 will be administered to the patient and collected using the Pulmonex Delivery/Trap System. For each patient study, the technologist will check the tubing of the xenon delivery system for defects and will familiarize the patient with the study.

C. Nose clamps will be used to reduce leakage.

4. EMERGENCY PROCEDURES

A. Notify persons in the room that a release has occurred.

B. All persons should vacate the room at once.

C. Close the room door(s) to prevent entry.

D. Notify the Radiation Safety Officer immediately.

E. Re-enter the room(s) after 30 minutes (5 turnovers of room air).

F. Perform an exposure rate survey with a GM survey meter.

5. AIR CONCENTRATIONS OF XE-133 IN RESTRICTED AREAS

A. Activity used (A) = 10 mCi x 10 exams/wk x 1E3 uCi/mCi
= 1 ES uCi/wk

B. Loss rate (f) = 0.20

C. Ventilation required (V) = (A x f) / (1E-5 uCi/ml)

$$= \frac{1 \text{ ES uCi/wk} \times 0.20}{1\text{E-}5 \text{ uCi/ml}}$$

$$= 2 \text{ E9 ml/wk}$$

Assuming a 40-hour week:

$$V = \frac{(2 \text{ E9 ml/wk}) / (40 \text{ h/wk})}{1.7\text{E6 ml/h-CFM}}$$

$$= 29 \text{ CFM}$$

Thus, the airflow in the area of interest, 300 CFM exhaust, is adequate.

6. AIR CONCENTRATIONS OF XE-133 IN UNRESTRICTED AREAS

A. Charcoal-trap adsorption (Reg. Guide 10.8, Appendix M, 6.5) via the Pulmonex Delivery/Trap System.

B. Ventilation required (V) = $\frac{(1 \text{ ES uCi/wk}) / 0.20}{3\text{E-}7 \text{ uCi/ml}}$

= 6.7E10 ml/wk

Assuming a 168-hour week:

$$V = \frac{(6.7E10\ ml/week)\ /\ (168\ h\text{-}wk)}{1.7E6 ml/h\text{-}CFM}$$

$$= 225\ CFM$$

Thus, 300 CFM is adequate. Duct(s) on-time will be approximated from the following equation and recorded:

$$\text{Duct(s) On-Time} = \frac{(n/10) \times 168h \times 225\ CFM}{300\ CFM}$$

where:
n = number of 10 mCi-equivalent patient studies

C. Trap monitoring

(1) Effluent from the trap exhaust will be collected in a test balloon weekly and counted on a Gamma Camera with the collimator removed and the PHA set for Xe-133. The procedure for xenon trap evaluation is included. Care will be taken to assure that no extraneous radiation sources interfere with the measurements. Given a 10 mCi dose and assuming a 95% trapping efficiency and no residual Xe-133, a 500 uCi action level for trap removal is deemed reasonable. However, experience dictates that effluent is significantly less than 500 uCi in properly operating systems. Thus, an action level of 200 uCi will be set, which is a small fraction of the assumed 20% leakage from all sources.

(2) Saturated filters will be sealed (per manufacturer's instructions) to prevent leakage. These will be then stored in the "Decay-to-Background" Radioactive Waste Storage Area or returned to the supplier.

(3) An optional method for checking effluent from the trap exhaust will be used if a XenAlert Xe-133 Room Air and Trap Monitor System is purchased. This device will be used weekly and will be calibrated annually as outlined in the manual provided with each unit. A similar action level (mentioned above) will be used.

(4) Velometer readings will be taken semi-annually to assure air flow through the 300 CFM exhaust fan(s) has remained stable.