

saint francis hospital 355 ridge avenue evanston, illinois 60202 312/492-2452

June 21, 1985

Licensing Section  
USNRC Region III  
799 Roosevelt Road  
Glen Ellyn, Illinois 60137

Re: 12-00963-02

Gentlemen:

We would like to amend our Material License in order to increase the unit dosage for Xenon-133 from 10 mCi to 20 mCi. The maximum possession limit will not be changed at this time. Enclosed is a check for \$120 for the amendment fee.

The attached additional information is indexed to our March 28, 1985 license renewal application. Xenon-133 is in item 21 from pages 42 through 49. If you need additional information, please contact Eric Zickgraf, MS, the radiation safety officer.

Sincerely,

*James C. Gizzi*  
James C. Gizzi  
Executive Vice President

pc

Encs.

cc: Eric Zickgraf

RECEIVED  
85 JUN 27 P3:01  
U.S. N.R.C.  
LIC. FEE MGMT. BRANCH

Applicant	June 23
Check No.	74262
Amount	\$120
Tax	7C and
Due Date	6/29/85
Received By	[Signature]

RECEIVED

JUN 24 1985

REGION III

JUN 24 1985

8507220318 850702  
REG3 LIC30  
12-00963-02 PDR

CONTROL NO. 79214

Item 21. page 42. Replace 1.a.2. with

The dose per study is to be 20 mCi, as a single dose.

Item 21. page 42. Replace 1.b. with

The desired possession limit is 400 mCi of Xenon-133, as single doses (a maximum of 20, 20 mCi doses).

Item 21. page 42. Replace 2.a. with

The single dose, 20 mCi Xe-133 doses will be stored in the designated hot lab, room N35A behind two inch lead bricks. See figure 1 for the location of the hot lab, room N35A, with respect to nearby unrestricted areas.

The Xe-133 studies will be performed in rooms N35F and N35G.

See figure 1 for the location of rooms N35F and N35G with respect to nearby unrestricted areas.

Item 21. page 45. Replace 5.d. with

According to 20.13 of 10CFR part 20, restricted areas are required to have a Xenon-133 concentration of less than or equal to  $1 \times 10^{-5}$   $\mu\text{Ci/ml}$ . Using the formula  $Af/V$  ( $\mu\text{Ci/ml}$ ) with

A ( $\mu\text{Ci/week}$ )  
f (dimensionless)  
V ( $\text{ml/week}$ )

the maximum average Xenon-133 concentration in the scan rooms and hot lab is:

N35F	$0.165 \times 10^{-5}$	$\mu\text{Ci/ml}$
N35G	$0.159 \times 10^{-5}$	$\mu\text{Ci/ml}$
Hot Lab	$0.099 \times 10^{-5}$	$\mu\text{Ci/ml}$

The above calculations show that there is no problem in meeting USNRC standards in any of the three rooms.

The maximum allowed Xenon-133 to be released per forty hour week in each of the rooms under maximum airflow is:

N35F	1080 mCi
N35G	1046 mCi
Hot Lab	445 mCi

The maximum losses for all rooms exceed the possession limits; therefore, no overexposure is possible in the controlled areas.

Item 21. page 46. Replace 6.a. with

Disposal of Xenon-133 through the exhaust system.

Loss to recirculated air: The losses in the scan room have been estimated to be less than 15% of the administered dose. Since the return exhaust vents are in the ceiling and the direct exhaust vents are near the floor, less than 10% of the losses should enter the recirculated air system. This loss is estimated to be less than 7.5 mCi/week. The recirculated air is mixed with a greater than 10,000 cfm system before it is returned to any room. The USNRC limit of  $3 \times 10^{-7}$   $\mu$ Ci/mi averaged over a year (20.106 10CFR Part 20) allows a disposal of 856 mCi/week which is greater than 100 times the estimated maximum amount of losses per week.

All airflow rates have been checked by a qualified engineer and meet or exceed all data supplied from the architectural plans submitted in the letters of May 13, 1981 and November 29, 1979 which are given above.