Canceled

Sinai Samaritan Medical Center
Aurora Health Care

January 16, 1994

U.S. Nuclear Regulatory Commission
Region III
801 Warrenville Road
Lisle, Illinois 60532-4351

License No. 48-03280-01
Docket No. 030-03439
ADDITIONAL INFORMATION REPLY

Dear Sirs,

Enclosed you will find information which has been requested by Mr. J. L. Cameron during a recent telephone conversation. Mr. Cameron has requested that additional information is required in reference to Sinai Samaritan's (SSMC) reply to a notice of violation, dated November 18, 1993.

Violation A

To be in compliance with 10 CFR Part 20, SSMC has established a plan for the Radiation Safety Officer (RSO) to perform independent confirmatory surveys. This plan will be audited for its effectiveness annually by the Radiation Safety Committee (RSC).

Independent confirmatory surveys will include the following:

1. Diagnostic areas will be surveyed on a monthly basis. This will include either ambient surveys of areas, review of logs, or wipe testing. One area will be surveyed monthly and selected on a random basis. A log (diary) of all surveys will be maintained and reviewed at quarterly RSC meetings.

2. Research areas will be surveyed on a quarterly basis. This will include either ambient surveys of areas, review of logs, or wipe testing. One area will be surveyed quarterly and selected on a random basis. A log (diary) of all surveys will be maintained and reviewed at quarterly RSC meetings.

ADDITIONAL INFORMATION

Violation B

Enclosed you will find a copy of the agenda and a copy of the attendance log for the inservice which was provided to the research staff.

RSO Training

Additional training for the RSO will be completed as soon as registration for the class can be confirmed by SSMC and by the training facility. The training which has been requested by the RSO is performed by Oklahoma State University and is a five day program which covers many aspects of radiation safety. Training programs are available in May, June, and August 1994.

If additional information is required, please contact me at (414) 283-6279.

Respectfully,

Fred Blizzard, RSO

Fred Blizzard
Radiation Safety Officer

Enclosures

1993.

Aurora Health Care
Milwaukee, WI
Organizational Development

INSERVICE ATTENDANCE RECORD

(ALL INFORMATION MUST BE COMPLETED)

Organization Codes

AHC - 05	AHC Credit Union - 25
Franklin - 06	Newtowne - 20
SLMC - 00	SSMC - 40
Sheboygan - 21	VN C - 15
VNA - 16	Valley View - ?
Ventures - 07	

DEPT. OFFERING CLASS: RADIATION SAFETY CLASS TIME: 1500

FACILITY: SSMC - EAST ROOM: CLASS ROOM

DP ONLY TRAN CODE 2505	ACTION CODE (A) ADD C - CHANGE D - Delete	Class Date mm dd yy	Class Code	Class Title
	A	11 16 93	RSM0901	RADIATION SAFETY

Instructor org code/number	Instructor Name Last Name	First	Contact Hrs
40009014	BLL122ARD	FRED	1.0

PARTICIPANTS

Department Number	Org. Code	Employee Number	LAST NAME (Please Print)	First	Depart. Phone Number
RESEARCH LAB	40		RIEDER	M	
			GAO	G	
			SILVERSTEIN	E	
			JOHNSON	P	
			SCHATTNER	J	
			KRYMKOWSKI	M	
			RANTANEN	E	

SINAI SAMARITAN MEDICAL CENTER
MILWAUKEE, WISCONSIN
DEPARTMENT OF RADIATION SAFETY

RADIATION SAFETY INSERVICE

I. General Information:

A. Sinai Samaritan medical Center utilizes many different forms of ionizing radiation for diagnosis and treatment of disease. This brief outline will provide you with information necessary to assure that you understand the sources of radiation and what you can do to assure that the risk to you from these sources is negligible.

B. Three Basic concepts of radiation protection to remember:

1. Maximize the distance between you and the source of radiation.
2. Minimize the time spent near a source of radiation.
3. Maximize the shielding present between you and the source of exposure.

C. The following specific cases will apply these concepts so your radiation exposure while working at the medical center will be as low as possible.

II. Units of Measure

A. RAD (Radiation Absorbed Dose) - measures the amount of energy absorbed by the target.

B. Roentgen - measures the number of ionization's produced in air by X or gamma radiation.

C. REM (Roentgen Equivalent Man) - measures the biological effect of radiation. This is the most useful measure for those interested in the effects of radiation on their body.

1 REM = 1 RAD = 1 Roentgen
1 millirem (mrem) = .001 rem

III. Radiation Badges

A. Radiation badges are assigned to all personnel that have the potential to receive 10% of the annual limit (5 REM).

B. All personnel in Cardiology / Electrophysiology receive a G1 and a G8 badge. the G1 badge is worn outside the lead apron and the G8 is worn on the inside of the lead apron.

C. SSMC ALARA Limits:

Level 1 Exposure = 125 mrem / quarter
Level 2 Exposure = 375 mrem / quarter
State Notification = 1,250 mrem/ quarter
Annual Limit = 5,000 mrem
Hands = 25 rem / quarter
Thyroid = 5 rem /quarter
Fetus = 500 mrem / entire gestation

D. Typical Exposures

Cosmic radiation in Milwaukee is 30 mrem / year. In Denver, 130 mrem / year.
Radon in homes (average) is 200 mrem / year.
Chest x-ray (to patient) is 50 mrem.
Nuclear blast (at 1 mile) is 75,000 mrem

III. Radiation Safety

A. It is important to keep your exposures as low as possible. SSMC uses the ALARA principle.

To keep exposures ALARA the following methods should be utilized.

1. Time - spend the least amount of time in the room.
2. Distance - if possible stand at least 6 feet from the tube.
   Inverse square law - dose decreases as the inverse square of distance.
   1 foot = 100 mrem / hr
   2 feet = 25 mrem / hr
   2 squared = 4, 1/4 of 100 = 25 mrem / hr
3. Shielding - always wear a leaded apron and use appropriate shielding equipment.

B. Primary Safety - Radiography / Fluoroscopy

1. Scatter radiation is the main source of radiation to the operator.
2. Cine scatter exposure accounts for 50% of the total scatter exposure to the primary operator.
3. Judicious use of fluoroscopy will protect both personnel and patient.

C. Protective Equipment

1. Lead protective clothing, 0.50 mm lead equivalent is required.

2. Thyroid shields are recommended. Exposure is 1.7 times that of collar readings.
3. Leaded eyeglasses absorb at least 70% of scatter exposure.
4. Lead shields: Facial shields (ceiling suspended) absorb about 95% of scatter to the head and neck. Leaves suspended from the intensifier absorb 25-70% of scatter exposure. Leaded curtains at the side of the table absorb 85% of scatter exposure to the legs of the operator.

D. Radiopharmaceuticals

1. Always use shielding when appropriate.
2. Perform surveys as appropriate.
3. Contamination Control
4. Dispose of waste in accordance with the Radiation Safety Manual.
    a. Decay
    b. Sink
    c. Long term waste.

E. Animal Care Taker

1. Contamination Control
    a. Monitor cages
    b. Measure animal excreta.
    c. Microspheres

2. Handling Radioactive Carcasses
    a. Decay in freezer.
    b. Proper disposal methods.

3. Animal Waste Disposal
    a. Decay
    b. Isotopes and half-lives
    c. Proper methods.

4. Cleaning of Contaminated Cages
    a. Measuring cages.
    b. Cleaning procedures.
    c. Self monitoring.
    d. Removal of contaminants.