Columbia University in the City of New York | New York, N.Y. 10027

HEALTH PHYSICS OFFICE

289 Engineering Terrace

June 30, 1992

Dr. Francis M. Costello, Chief
R & D and Decommissioning Services
Division of Radiation Safety and Safeguards
Nuclear Regulatory Commission, Region I
475 Allendale Road
King of Prussia, PA 19406

License No. SNM-870
Docket No. 070-03074
Control No. 115758

Dear Dr. Costello:

Your letter of 13 February 1992 addressed to Dr. Leon Lidofsky, Acting Radiation Safety Officer, has been referred to me for reply.

1. A letter signed by Paul D. Carter as the management representative is enclosed. In the future all correspondence including requests for amendment and renewal will be signed by Mr. Carter, the Senior Advisor to the President of the University.

2. Corrected pages 1, 2, 3 and 4 are enclosed. Item o. on page 2 was added in error in November 1991 by the former RSO. It was incorrectly assumed that because there are two fission detectors, the total mass was 4.74g, whereas in fact, 2.37g is the total mass of U-235 in this form. We have therefore deleted Item o., because it does not exist. Item m. is retained unchanged.

3. Area to be surveyed:

The areas where sealed sources of Pu-239-Be neutron sources are stored include:
Barnard College, Altschul Bldg. Room 606-B
Seeley W. Mudd Bldg. (Engineering Terrace) Rooms 069-A and 173
Pupin Bldg.Room 606-B
The sources are used only in these rooms or in the adjoining laboratories.

B-2

Frequency of Leak Test:

Sealed sources which are Alpha Emitting are swipe tested on a Quarterly basis.
Sealed sources other than those emitting Alpha Particles are swipe tested on a semi-annual basis.
Sealed sources in storage are visually inspected on a semi-annual and / or Quarterly basis.

Leak Testing Procedure:

1. A Source Rod is inserted into the paraffin drum until contact is made with the source. Then by turning the Rod clockwise , the tip of the screw is attached to the source until a snug fit is achieved.

2. Moisten a leak test swipe with 30% alcohol and mount it onto a table or bench.

3. Remove the Rod from the drum and rotate all accessible surface of the source onto the mounted swipe.

4. Place the sealed source back into the paraffin drum and turn the rod counter clockwise and remove the rod.

5. Leak test swipe is placed in a Plastic Envelope

6. Leak test samples will be analyzed using a liquid scintillation counter, a gamma scintillation spectrometer and / or a proportional counter (for alpha/beta), as appropriate.

The leak testing technique is capable or detecting 0.005 microcurie or more of removable radioactivity from all sealed sources.

4. The Radiation Safety Officer is Neil Wotherspoon, Ph.D. I was trained as a Physical Chemist at the Polytechnic Institute of Brooklyn (now Polytechnic University). My post doctoral appointment at New York University, Radiation and Solid State Laboratory was where I first used radioactive materials. My work with Prof. Hartmut P. Kallmann involved the use of Strontium-90 (500 microcuries) for an electron source. Later, I worked with Prof. Werner Brandt where I used Sodium-22 as a positron source and instructed graduate students in its use for a period of about six years. We utilized about 2 millicuries / year. I also designed and built radiation detectors and electronic instrumentation for radiation research.

My next appointment, as an Asst. Professor of Biophysics, was at Mt. Sinai School of Medicine in New York under Dr. Sol Berson, M.D.. I attended the didactic training sessions on Nuclear Medicine in the Post Graduate School of Medicine. I gave two of the lectures in the series:
a. Interaction of Radiation with Matter, including principles and practices of radiation protection, and b. Instrumentation for Detection of Radiation which included radioactivity measurements, standardization and monitoring techniques. c. Both of these lectures included mathematics and calculations basic to the use and measurement of radioactivity. d. I attended lectures on the biological effects of radiation by other members of the department. Each lecture was 2 hours and I participated in each annual series from 1968 to 1973.

In 1988, I was appointed Senior Physicist at the Bureau for Radiation Control in the Department of Health in the City of New York. My work was mainly concerned with maintaining the instruments and in training the field staff in proper use of radiation instruments. In 1990 I was assigned to the Radioactive Materials license unit under Robert R. Kulikowski, Ph.D. I received a week of training for this assignment at Region I offices.

In 1992, I joined the Columbia University Department of Environmental Health and Safety as the Radiation Safety Officer.

Very truly yours

Neil Wotherspoon, Ph.D.
Radiation Safety Officer

NW:sv

Apendix Item 3 - Specific Location of Use

A. Licensed material listed in Apendix item 5, C.b, C.c, C.e, C.f, C.g, C.h, C.i, C.j, C.k, C.p shall be used a licensed facilities located at:

Campus Laboratories - bound by 114th street and 120th street, between Broadway and Amsterdam Ave, New York, N.Y. 10027

B. Licensed material listed in Apendix Item 5, C.a shall be used at licensed facilities located at:

Barnard College - bounded by 116th street and 120th street, between Broadway and Riverside drive, New York, N.Y. 10027

C. Licensed material listed in Apendix Item 5, C.d, D.1 shall be used at licensed facilities located at:

Nevis Cyclotron Laboratory*

D. Licensed Material listed in Apendix Item 5, A.m, B.n, E.q will be stored at Columbia University, or in any areas secured and under the control of the Radiation Safety Office.

* Columbia University is incorporated in the State of New York. Its facilities are primarily in the city of New York, except for its outlying laboratories, such as, The Nevis Laboratory.

Item	ISOTOPE	CHEM. or PHYS. FORM	ACTIVITY	MASS	MFGR.	SERIAL #	LOCATION
A.m.	U-235	Fission Detectors	<.001 Ci	2.37 g			Rm. 209 Eng.Terr.
B.n.	U-235	Foils	<.001	286.			284C . Eng.Terr.
C.p.	Pu-239	Sealed Source	1.0	16.0			Eng. Terr. 069A
C.a.	Pu-239	Sealed Source	2.0	32.0	NUMEC	3B121	Altschul 8th Fl. Barnard College
C.b.	Pu-239	Sealed Source	5.0	80.0	NUMEC	800-P3	Pupin 606-B Columbia Univ.
C.c.	Pu-239	Sealed Source	0.5	9.84	Monsanto	M-10	Eng. Terr. 069A
C.d.	Pu-239	Sealed Source	0.125	2.0	NUMEC	2150	Nevis Laboratory Cyclotron Building
C.e	Pu-239	Sealed Source	1.0	16.0	Monsanto	M-211	Eng. Terr. 069A
C.f.	Pu-239	Sealed Source	1.0	16.0	Monsanto	M-212	Reactor Laboratory same 069A
C.g.	Pu-239	Sealed Source	1.0	16.0	Monsanto	M-213	same 069A
C.h.	Pu-239	Sealed Source	1.0	16.0	Monsanto	M-214	same 173
C.i.	Pu-239	Sealed Source	1.0	16.0	Monsanto	M-215	same 173
C.j.	Pu-239	Sealed Source	5.0	80.0			same 069A
C.k.	Pu-239	Sealed Source	4.0	64.0			same 069A
D.l.	Pu-239	Plated Electrodes	0.05	0.81			Nevis Laboratory
E.q.	U-233	Liquid (Soln. Uranyl Nitrate)		0.035			

Apendix Item 5 - Summary of licensed material to be possessed

Special Nuclear Material	Chemical and/or physical form	Possession limit
A. Uranium enriched in Uranium-235 isotope less than 99.99% Uranium-235	A. Plated electrodes in two fission counters	2.37g
B. Uranium enriched in Uranium-235 istope to less than 99.99% Uranium-235	B. Foils	286 grams of Uranium 235
C. Plutonium-239	C. Sealed sources	Not to exceed 80 grams per source and 363 grams total source
D. Plutonium-239	D. Plated detector souces	0.81 grams
E. Uranium-233	E. Liquid solution of Uranyl Nitrate	0.035 g

Apendix Item 6 - Purpose for use of Licensed Material

Purpose of Use:

A. Storage

B. Storage

C.p. Testing instruments

a. Teaching Chemistry students princ. of induced activity
b. Teaching Physics students princ. of induced activity
c. Calibration of Instruments
d. Storage
e. Calibration of Instruments
f. " "
g. " "
h. " "
i. " "
j. " "
k. " "

D. Storage

E. Storage