Slippery Rock, PA 16057 December 29, 1986/N-5 A10:10 U.S. Nuclear Regulatory Commission, Region I Nuclear Material Section B 631 Park Avenue King of Prussia, PA 19406

Department of Chemistry Slippery Rock University

To whom it may condern:

We wish to renew our materials license at Slippery Rock University.

In order to help restore use of our current license and to avoid temporary expiration, I am sending copies of the renewal application while the president of our University may have time to sign and return the application before our expiration date of January 31, 1987.

I hope you may allow us to use the current license while you process our application for renewal.

Respectfully yours

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April E. Sagan, Assoc. Professor Radiation Safety Officer

License Fee Information on appl

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(1 79) 10 CFH 30	U.S. NUCLEAR REGULATOR	Y COMMISSION	1. APPLICATION FOR: (Check and/or complete all appropriate)		
APPLICATION	FOR BYPRODUCT MATER INDUSTRIAL	RIAL LICENSE	. NEW LICENSE		
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l completed applications are file Office of Nuclear Material Safe Washington: DC 20555 or ave 1717 H Street, NW Washingto	ed in dunicate with the Division of etc. and Saleguards, U.S. Nuclear R deathing may be filed in person at 1 on, D.C. or 7915 Eastern Avenue 5	Firel Cycle and Maturial Safety, Regulatory Commission, the Commission's office at Silver Spring, Maryland,	c. RENEWAL OF LICENSF NUMBER 37-13251-02		
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Attachment Sheet # 1

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Line No.	А	В	С	D	
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6	Lead-210	"	"	0.1 Mil1	licurie
7	Cobalt-60		**	0.5	"
8	Cadmium-109	n ·	"	0.1	
9	Sulfur-35	"	"	0.1	••
10	Calcium-45		"	0.1	"
11	Zinc-65		"	0.1	"
12	Iron-59		**	0.1	"
13	Hydrogen-3	"	"	0.5	
14	Strontium-90	"	**	0.1	
15	Phosphorus-32		"	2	

## Continuation of Licensed Material

Attachment Sheet # 2

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## 10. Radiation Detection Instruments

line	No. Type of Instrument	Mfgr. Name	Model No.	Number Availabl	Radiat. eDetected	Sensit. Range
1	Scintill. Detector	Nuclear- Chicago	DS-200V	1	Beta Gamma	
2	Gas Flow Counter	Baird	912072	1	Alpha Beta	
3	Proport. Counter	Picker	2930	1	Alpha Beta	
4	Spectrometer	Baird	530	1	Beta Gamma	
5	Survey Meter	Picker	760	1	Beta Gamma	
6	Geiger-M. Detectors	Picker	610432	3	Beta Gamma	
7	Scintill. Detector	Nuclear- Chicago	DS-202V	1	Gamma	

 The survey meter is calibrated with a check source mounted on the side of the instrument. Measuring instruments are calibrated by inverse square geometry or commercially.

## 15. Radiation Protection Program

Every effort will be made to minimize dose absorption by users of by-product materials and will be supervised by the radiation safety officer.

The laboratory may not be used except with permission of the of the user named in item 6.

When in use, laboratory bench tops will be layered with heavy absorbent paper and heavy wrapping paper. Floors will be covered with heavy wrapping paper taped to the floor.

Special receptacles will be used for dirty glassware and instruments.

Containers for disposable waste will be lined with large plastic bags.

Radioactive waste solutions, liquids and solids will be stored in separate glass reservoir bottles.

Students must record dosimeter readings immediately before starting laboratory work and before leaving laboratory.

Students must wear special laboratory aprons and disposable gloves when handling radioactive materials. They must not leave the laboratory wearing these aprons or gloves.

Students are not permitted to eat or smoke while in the laboratory.

Only the rear laboratory bench is to be used for using radioactive materials.

Suspected spills are to be reported immediately to the safety officer and corrective measures employed where necessary.

Routine monitoring is made by the radiation safety officer.

Radioactive materials will be stored behind lead brick shielding in a specially reserved fume hood lined with absorbent paper and wrapping paper. -Attachment Sheet # 4

Diagram of room: reserved radioactive materials use.



Attachment s'eet # 5

16. Formal training in radiation safety.

On July 11, 1975 Dr. Cyril E. Sagan completed a program in Radiation Protection for Radiation Safety Officers conducted by the Special Training Division of Oak Ridge Associated Universities at Oak Ridge, Tennessee. Program chairman was Roger J. Cloutier.

Topics covered in training program included:

Special Training Division safety Classification of isotope toxicity Geiger-Muller counting Characteristics of beta radiation Gamma-ray spectroscopy Gas-flow proportional counting Statistical problems with detectors Standardization of survey meters Neutron survey instruments Thermal flux Radiation shielding Liquid scintillation counting Radioluminescent dosimetry Slow neutron activation analysis Air sampling

## 17. Experience

In 1974 Dr. Sagan received his Ph.D. in Physical Biology from Cornell University. The director of the Cornell program was Dr. C. Comar. Dr. Sagan's major advisor and instructor in radioisotope methodology was Dr. F. W. Lengemann.

From 1971 to 1974, Dr. Sagan's work experience with radiation included the use of cerium-141, calcium-45 and iodine-131. These isotopes had been used in gastrointestinal studies in adult rats and goats.

The range of activities used in Dr. Sagan's studies were 1-5 millicuries.