

# The University of Iowa

Iowa City, Iowa 52242

Radiation Protection Office  
311 Grand

(319) 353-3458

15 May 1985

RECEIVED BY LFMB	
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By	8
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Action Compl.	5/29/85



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U.S. Nuclear Regulatory Commission  
Regional Licensing Section  
Materials Licensing Branch  
Division of Fuel Cycle & Material Safety  
799 Roosevelt Road  
Glen Ellyn, Illinois 60137

Gentlemen:

Regarding: University of Iowa's NRC  
License Number SNM-204  
Renewal Request

We request renewal of our NRC license number SNM-204.

We have reviewed the guidance provided by your Washington, D.C. office in a reminder of notice of expiration, dated 4/1/85 which was received 5/2/85. We find only minor changes which are outlined below.

## THE ACTIVITY

The quantity and form of the special nuclear material on hand (two five curie plutonium-beryllium neutron sources, Source A and Source B) remains unchanged.

### SOURCE A

This is a five curie source used in conjunction with a Neutron Howitzer in the education and training of graduate and advanced undergraduate students.

### SOURCE B

This source is in the form of sealed sources of plutonium-beryllium. The source was manufactured by Mound Laboratory, Monsanto Research Corp., Dayton, Ohio and is currently in storage.

## PLACE OF USE

### SOURCE A

This source is located in Van Allen Hall (formerly known as the Physics Building) on the campus of the University of Iowa. This location and place of use (Room 556A of Van Allen Hall) is unchanged from the location and place of use on the current license.

### SOURCE B

Source B is in locked storage in the basement of the Radiation Protection Office on the campus of the University of Iowa. The current license lists the location of Source B as locked in storage in the Chemistry Building on the campus of the University of Iowa. Source B has been moved from that location to locked storage in the basement of the Radiation Protection Office.

**FEE EXEMPT**

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State

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**MAY 20 1985**

**REGION III**

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REG3 LIC70  
SNM-0204

PDR

**CONTROL NO. 78991**

**MAY 20 1985**

15 May 1985  
USNRC  
Glen Ellyn, Illinois  
Page Two

Re: Renewal Request License No. SNM-204

USE

SOURCE A

The use of Source A remains the same as follows:

Any one of the following activities may be conducted with Source A. Activities are conducted in accord with the manufacturer's protocol.

- . Production of radioactive isotopes by neutron bombardment
- . Determination of beta energy
- . Determination of half life
- . Activation analysis - determination of elements present by neutron activation and analysis of resultant radiation
- . Mapping of neutron flux
- . Segregation of fast and thermal neutrons
- . Scattering of fast neutrons
- . Quantitative measurement of neutrons
- . Capture cross-section determination
- . Total cross-section for thermal neutron determination.

SOURCE B

The use of Source B remains the same - storage.

Source B was formerly used in conjunction with the natural uranium water subcritical training assembly in the Chemistry Building on the campus of the University of Iowa. It was also used as a point source in neutron albedo studies in the same building. The source has been in storage for a number of years due to discontinuance of courses involving its use. Currently it is in locked storage in the basement of the Radiation Protection Office Building on the campus of the University of Iowa.

TECHNICAL QUALIFICATIONS OF INDIVIDUALS RESPONSIBLE FOR HANDLING THE SOURCES

SOURCE A

This is a change from the previous license request dated 2/25/80 in which we supplied the names of two specific faculty members as being responsible for conducting activities with Source A.

The restrictive specificity of limiting, to two individuals, the responsibility for use of a source used for instructional purposes for a period of five years (the term of the license) can severely limit The University's flexibility of faculty assignments. Therefore we request:

The activities involving Source A will be conducted by or under the supervision of individuals approved by the University of Iowa's Radiation Protection Committee and Radiation Protection Office Professional staff. The Radiation Protection Committee is established in accord with The University's Broad License #14-02938-07.

15 May 1985  
USNRC  
Glen Ellyn, Illinois  
Page Three

RE: Renewal Request License No. SNM-204

A copy of the current Radiation Protection Committee organization is attached.

SOURCE B

W. E. Twaler, Director of University of Iowa's Radiation Protection Office, is responsible for this source currently in storage. Mr. Twaler's credentials are on file with this license and with the University of Iowa's Broad License #14-02938-07.

DESCRIPTION OF CONTAINMENT

SOURCE A

Source A is contained in a neutron howitzer. A description is on file with current license. The howitzer is used in Room 556A in Van Allen Hall.

SOURCE B

Source B is contained in its original storage container obtained with the source and is maintained in locked storage in the basement of the Radiation Protection Office Building.

RADIATION DETECTION INSTRUMENTATION

The following radiation detection and survey devices are available at The University for monitoring activities with sources:

TYPE OF INSTRUMENTS	NUMBER AVAILABLE	RANGE
G-M(Portable) (E-520's)		
with HP 270& HP 190 Probes	4	0 -2R/hr
PRM-6 with SPA-2	1	Neutron
PAC-4G (Portable)	1	Alpha
PAC-3G (Portable)	1	Alpha
BAIRD ACCUCOUNT		
Alpha,Beta,GammaCounter	1	Alpha,Beta Gamma

Calibration and checks of Radiation Protection instrumentation in accord with Broad licenses requirements.

PERSONNEL MONITORING

SOURCE A

Film badges will be issued to the principal investigator who conducts the majority of activities with this source. He will be aware, as must other listed instructors, of the necessity for and availability of film badge assignment for periods when teaching assistants and technicians will be assisting with instructional activities involving source manipulation.

15 May 1985

USNRC

Glen Ellyn, Illinois

Page Four

RE: Renewal Request License No. SNM-204

Film badges, capable of detecting and measuring beta-gamma and neutron activities, are provided for short periods on a temporary and on call basis. The film badge service used is that of R. S. Landauer Jr. & Company. Badges are routinely exchanged and reports provided on a monthly basis.

SOURCE B

This source is in locked storage. Current plans call for it to remain in storage until it is disposed of either by transfer or return to the original vendor.

SECURITY

SOURCE A

- Source A is maintained in the padlocked "storage" position in the neutron howitzer when not in use.
- The keys to the neutron howitzer padlock are maintained in padlocked storage cabinet inside Room 556A - Van Allen Hall.
- Room 556A is normally locked when not in use and is a single access (one door - no windows) inner room as part of larger lab which is also locked when not in use.
- Security personnel routinely check the conditions of the locks during other than normal work hours.

SOURCE B

- Source B is maintained in its locked shipping container in the basement of the Radiation Protection Office Building on the University of Iowa campus.
- The basement area in which Source B is stored also houses The University's calibration range which contains approximately 130 curies of Cs-137 as authorized by The University's NRC Licenses #14-02938-09.
- This basement storage area is accessible from two internal doors which are normally locked when not in use. The external doors to the Radiation Protection Office are locked when the building is unoccupied (nights and weekends).

MANIPULATION & LEAK TESTING

SOURCE A

- The manipulation of the sources will be accomplished by or under the supervision of the approved applicants and Radiation Protection Office personnel. Due to design of the howitzer, leak testing of the source can be accomplished either by removal or through an access port. If and when the source is removed for leak testing it will be handled with at least a two foot long handling tool which is available.

CONTROL NO. 78991



15 May 1985  
USNRC  
Glen Ellyn, Illinois  
Page Five

- The neutron source will be leak tested quarterly. The test being a swipe test of the surface of the sealed source or surfaces of the device in which the sealed source is mounted or stored on which one could expect contamination to accumulate. The swipes will be counted in the Alpha, Beta, Gamma counter in the Radiation Protection office which is capable of detecting the presence of 0.005 microcuries of the activity on the wipe sample.
- Records of leak tests results are maintained in units of microcuries for inspection by the NRC. The NRC will be notified in event the 0.005 microcurie level of contamination is exceeded on the sealed source.
- The howitzer proper and the inner room in which it is stored is appropriately posted with Radioactive Material signs and general radiation protection operational procedures. Radiation emergency guidelines and specific information on the laboratory; e.g., names and phone numbers of cognizant individuals are available. The room containing the neutron howitzer is on a routine survey list.

SOURCE B

Source B is in storage and awaiting disposal. The room in which this source is stored is on a routine survey list.

The storage area and source are appropriately posted.

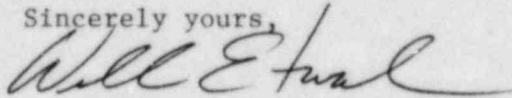
GENERAL

All radioactive material, NARM, by-product and SNM is under the purview of the University of Iowa's Radiation Protection Committee (see attachment).

ADDITIONAL INFORMATION CONTACT

If additional information is necessary to issue a renewal of the subject license please feel free to contact G. T. Lonergan of my staff, phone number 319/353-3458.

Sincerely yours,



William E. Twaler, Director  
Radiation Protection Office

Attachment:

University of Iowa Radiation Protection Committee

# The University of Iowa

Iowa City, Iowa 52242

OFFICE OF THE PRESIDENT  
James O. Freedman

EDUCATIONAL DEVELOPMENT & RESEARCH  
Duane C. Spriestersbach  
Vice President

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Dr. P. Tony Well	Biochemistry Department
Dr. Lewis Stegink	Pediatric Department
Mr. William Trease	Off. VP for Educational Develop. & Research
Gregg Cohen	Student Representative
Mr. William E. Twaler (ExOfficio)	Radiation Protection Office
Mr. Gerald T. Loneragan (ExOfficio)	Radiation Protection Office

RADIATION  
PROTECTION  
OFFICE  
(RPO)

William E. Twaler  
Director

Gerald T. Loneragan  
Assoc. Director

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Dr. Wei-Yeh Wang	Botany Dept.
Dr. J.H. Trummel	Materials Eng.
Dr. David R. Soll	Biology Dept.
Saad Laban	Student Rep.
Mr. W.E. Twaler (ExOfficio)	Rad. Protection
Mr. G.T. Loneragan (ExOfficio)	Rad. Protection

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Dr. Reggie Stevens	Rad. Research
Dr. Larry Oberley	Rad. Research
Michael McGurick	Student Rep.
Mr. W.E. Twaler (ExOfficio)	Rad. Protection
Mr. G.T. Loneragan (ExOfficio)	Rad. Protection

HUMAN USE SUBCOMMITTEE

DR. LEWIS STEGINK  
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Dr. Richard Peterson	VA Nuc. Med.
Dr. James Ehrhardt	Radiology
Dr. James Spratt	Pharmacology
Dr. Janet Schlechte	Int. Medicine
Bradley Cohen	Student Rep.
Mr. W.E. Twaler (ExOfficio)	Rad. Protection
Mr. G.T. Loneragan (ExOfficio)	Rad. Protection
Mr. William Trease (ExOfficio)	Off. VP for Education

As of May 15, 1985

CONTROL NO. 78991