

MATERIALS LICENSE

Amendment No. 40

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 36, 39, 40, and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations, and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

OFFICIAL RECORD COPY

Licensee		In accordance with the letter dated February 12, 1997,	
1. University of Massachusetts-Lowell		3. License Number 20-07446-01 is amended in its entirety to read as follows:	
2. One University Avenue Lowell, Massachusetts 01854		4. Expiration Date January 31, 2005	
		5. Docket or Reference No. 030-00787	
6. Byproduct, Source, and/or Special Nuclear Material	7. Chemical and/or Physical Form	8. Maximum Amount that Licensee May Possess at Any One Time Under This License	
A. Any byproduct material with atomic numbers 3 through 83	A. Any	A. Not to exceed 100 millicuries per radionuclide and 10 curies total	
B. Hydrogen 3	B. Any	B. 2 curies	
C. Polonium 210	C. Any	C. 1 millicurie	
D. Thorium 228	D. Any	D. 50 millicuries	
E. Plutonium 238	E. Any	E. 0.05 micrograms	
F. Plutonium 239	F. Any	F. 20 micrograms	
G. Plutonium 240	G. Any	G. 50 micrograms	
H. Plutonium 241	H. Any	H. 1 microgram	
I. Americium 241	I. Any	I. 0.5 microcuries	
J. Curium 242	J. Any	J. 1 microcurie	
K. Curium 243	K. Any	K. 1 microcurie	
L. Curium 244	L. Any	L. 1 microcurie	
M. Hydrogen 3	M. Tritiated Titanium Targets (ORNL Custom Design)	M. 20 curies	
N. Cobalt 60	N. Sealed sources	N. 5 curies	
O. Strontium 90	O. Sealed source (New England Nuclear Model NEN-NB-1)	O. 150 millicuries	
P. Cesium 137	P. Sealed sources	P. 5 curies	
Q. Cesium 137	Q. Sealed sources (U.S. Nuclear Type 371)	Q. 10 curies	
R. Cesium 137	R. Sealed source (ORNL)	R. 120 curies	
S. Neptunium 237	S. Foils	S. 4 microcuries	
T. Americium 241	T. Sealed or plated sources	T. 505 microcuries	
U. Americium 241	U. Sealed neutron source (Monsanto Research Model MRC-AMBE-1737)	U. 5 curies per source, not to exceed 15 curies total	

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V. Americium 241	V. Sealed source (New England Nuclear Model NER-476A)	V. 5 curies
W. Californium 252	W. Sealed source (Savannah River Models ALC or SALC)	W. 1 microgram
X. Californium 252	X. Sealed source (ORNL)	X. 1 microgram
Y. Californium 252	Y. Sealed source (ORNL Model SR-CF-1962)	Y. 4.7 micrograms

9. Authorized use

A. through Y. Research and development as defined in 10 CFR 30.4; animal studies.

CONDITIONS

10. Licensed material may be used only at the licensee's facilities located at the North and South Campuses of the University of Massachusetts Lowell, Lowell, Massachusetts. Sealed sources containing up to one microcurie of any radionuclide may be used at temporary job sites of the licensee anywhere in the United States where the U.S. Nuclear Regulatory Commission maintains jurisdiction for regulating the use of licensed material.
11. A. Licensed material shall be used by, or under the supervision of, individuals designated in writing by the Radiation Safety Committee, George E. Chabot Ph.D., Chairperson.
- B. The Radiation Safety Officer for this license is Warren W. Church.
12. Licensed material shall not be used in or on human beings.
13. A. Sealed sources and detector cells containing licensed material shall be tested for leakage and/or contamination at intervals not to exceed six months or at such other intervals as are specified by the certificate of registration referred to in 10 CFR 32.210, not to exceed three years.
- B. Notwithstanding Paragraph A of this Condition, sealed sources designed to emit alpha particles shall be tested for leakage and/or contamination at intervals not to exceed three months.
- C. In the absence of a certificate from a transferor indicating that a leak test has been made within six months prior to the transfer, a sealed source or detector cell received from another person shall not be put into use until tested.
- D. Each sealed source fabricated by the licensee shall be inspected and tested for construction defects, leakage, and contamination prior to any use or transfer as a sealed source.

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- E. Sealed sources and detector cells need not be leak tested if:
- (i) they contain only hydrogen-3; or
 - (ii) they contain only a radioactive gas; or
 - (iii) the half-life of the isotope is 30 days or less; or
 - (iv) they contain not more than 100 microcuries of beta and/or gamma emitting material or not more than 10 microcuries of alpha emitting material; or
 - (v) they are not designed to emit alpha particles, are in storage, and are not being used. However, when they are removed from storage for use or transfer to another person, and have not been tested within the required leak test interval, they shall be tested before use or transfer. No sealed source or detector cell shall be stored for a period of more than 10 years without being tested for leakage and/or contamination.
- F. The test shall be capable of detecting the presence of 0.005 microcurie of radioactive material on the test sample. If the test reveals the presence of 0.005 microcurie or more of removable contamination, a report shall be filed with the U.S. Nuclear Regulatory Commission and the source or detector cell shall be removed immediately from service and decontaminated, repaired, or disposed of in accordance with Commission regulations. The report shall be filed within five days of the date the leak test result is known with the U.S. Nuclear Regulatory Commission, Region I, ATIN: Chief, Nuclear Materials Safety Branch, 475 Allendale Road, King of Prussia, Pennsylvania 19406. The report shall specify the source or detector cell involved, the test results, and corrective action taken.
- G. The licensee is authorized to collect leak test samples for analysis by the licensee. Alternatively, tests for leakage and/or contamination may be performed by persons specifically licensed by the Commission or an Agreement State to perform such services.
14. Sealed sources or detector cells containing licensed material shall not be opened or sources removed from source holders by the licensee.
15. The licensee shall not acquire licensed material in a sealed source or device unless the source or device has been registered with the U.S. Nuclear Regulatory Commission pursuant to 10 CFR 32.210 or equivalent regulations of an Agreement State.
16. The licensee shall conduct a physical inventory every six months to account for all sealed sources and devices containing licensed material received and possessed under the license.
17. A. Detector cells containing a titanium tritide foil or a scandium tritide foil shall only be used in conjunction with a properly operating temperature control mechanism which prevents the foil temperatures from exceeding that specified in the certificate of registration referred to in 10 CFR 32.210.

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- B. When in use, detector cells containing a titanium tritide foil or a scandium tritide foil shall be vented to the outside.
18. The licensee shall not use licensed material in field applications where activity is released except as provided otherwise by specific condition of this license.
19. Experimental animals, or the products from experimental animals, that have been administered licensed materials shall not be used for human consumption.
20. The licensee is authorized to hold radioactive material with a physical half-life of less than 120 days for decay-in-storage before disposal in ordinary trash, provided:
- A. Waste to be disposed of in this manner shall be held for decay a minimum of ten half-lives.
 - B. Before disposal as ordinary trash, the waste shall be surveyed at the container surface with the appropriate survey instrument set on its most sensitive scale and with no interposed shielding to determine that its radioactivity cannot be distinguished from background. All radiation labels shall be removed or obliterated.
 - C. A record of each such disposal permitted under this License Condition shall be retained for three years. The record must include the date of disposal, the date on which the byproduct material was placed in storage, the radionuclides disposed, the survey instrument used, the background dose rate, the dose rate measured at the surface of each waste container, and the name of the individual who performed the disposal.
21. Radioactive waste generated shall be stored in accordance with the statements, representations, and procedures included with the waste storage plan described in the licensee's letter dated April 21, 1994.
22. The licensee is authorized to transport licensed material in accordance with the provisions of 10 CFR Part 71, "Packaging and Transportation of Radioactive Material."
23. Except as specifically provided otherwise in this license, the licensee shall conduct its program in accordance with the statements, representations, and procedures contained in the documents, including any enclosures, listed below. The Nuclear Regulatory Commission's regulations shall govern unless the statements, representations, and procedures in the licensee's application and correspondence are more restrictive than the regulations.
- A. Letter dated April 21, 1994 with attachments
 - B. Letter dated October 6, 1994
 - C. Letter received December 27, 1994

For the U.S. Nuclear Regulatory Commission

Original Signed By:
Pamela J. Henderson

By

Nuclear Materials Safety Branch
Region I
King of Prussia, Pennsylvania 19406

Date

MAR - 7 1997

MAR - 7 1997

William T. Hogan, Chancellor
University of Massachusetts - Lowell
One University Avenue
Lowell, Massachusetts 01854

Dear Mr. Hogan:

This refers to your license amendment request. Enclosed with this letter is the amended license. Please note that as part of this amendment, in accordance with 10 CFR 30.36, effective February 15, 1996, the expiration date of your license has been extended by a period of five years. Your new expiration date is stated in Item 4 of the license.

Please review the enclosed document carefully and be sure that you understand and fully implement all the conditions incorporated into the amended license. If there are any errors or questions, please notify the U.S. Nuclear Regulatory Commission, Region I Office, Licensing Assistance Team, (610) 337-5093 or 5239, so that we can provide appropriate corrections and answers.

Thank you for your cooperation.

Sincerely,

ORIGINAL SIGNED BY;

Pamela J. Henderson
Division of Nuclear Materials Safety

License No. 20-07446-01
Docket No. 030-00787
Control No. 124286

Enclosure:
Amendment No. 40

cc:
Warren W. Church
Radiation Safety Officer

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DOCUMENT NAME: R:\WPS\MLTR\L2007466.01

To receive a copy of this document, indicate in the box: "C" = Copy w/o attach/encl "E" = Copy w/ attach/encl "N" = No copy

OFFICE	DNMS/RI	<input checked="" type="checkbox"/> N	DNMS/RI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NAME	PHenderson						
DATE	02/27/97	02/ /97	02/ /97	02/ /97	02/ /97		

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UNIVERSITY OF MASSACHUSETTS LOWELL
RADIATION SAFETY OFFICE
1 UNIVERSITY AVENUE
LOWELL, MA 01854
(508) 934-3372

030-00787
20-07446-01

February 12, 1997

U.S. Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia, Pa 19406

Attn: Elizabeth Ullrich

Subject: UML Radiation Safety Committee

This is to inform you that Dr. George Chabot was appointed by
Chancellor Hogan as Chairman of the UML Radiation Safety
Committee on December 22, 1995. Attached is a copy of Dr. Chabot's
resume.

If you need further information regarding this matter, please feel
free to call me at (508) 934-3372.

Sincerely yours,

Warren Church
Warren Church, RSO

124286

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FEB 18 1997

George E. Chabot
Professor of Radiological Sciences, Department of Pure and Applied Physics
University of Massachusetts Lowell
1 University Avenue
Lowell, Massachusetts 01854

Education: B.A. Chemistry, Harvard University, 1961
M.S. Ind. Hygiene-Radiological Health, Harvard School of Pub. Health, 1968
Ph.D. Chemistry, University of Lowell, 1985

Employment:

1993-present	University of Massachusetts Lowell, Lowell, MA Professor of Radiological Sciences
1989-1993	University of Massachusetts Lowell, Lowell, MA Assoc. Professor of Radiological Sciences
1986-1989	University of Lowell, Lowell, MA Assist. Professor of Radiological Sciences
1975-1986	University of Lowell, Lowell, MA Radiation Safety Officer and Adjunct Professor
1970-1975	Lowell Technological Institute, Lowell, MA Radiation Safety Officer and Adjunct Professor
1969-1970	Lowell Technological Institute, Lowell, MA Coordinator of Continuing Education Programs in Radiological Health Technology
1963-1969	U.S. Public Health Service, Winchester, MA; Berkeley, CA Instructor in Radiological Health; Health Service Officer (Radiochemist)
1961-1963	Arnold, Hoffman & Co., Providence, R.I. Analytical Chemist

Professional Activities:

Member of AAAS, ACS, Σ Xi
Fellow of HPS and past member ('89-92) and chair of HPS Res. Comm. ('92)
ABHP certified 1970; recertified 1982, 1987, 1991, 1994
Board of Directors (1973-75) and past president (1976-77) New England
Chapter HPS
Chair TG4 of NCRP SC 46 (Report 112 of NCRP)
Consultant in health physics to various commercial, medical, industrial, and
government organizations.

Publications: Author or coauthor of more than 40 journal papers, three book chapters, and several technical reports and about 100 presentations at professional scientific meetings.

BETWEEN:

LICENSE FEE MANAGEMENT BRANCH, ARM
AND
REGIONAL LICENSING SECTIONS

(FOR LFMS USE)
INFORMATION FROM LTS

PROGRAM CODE: 01100
STATUS CODE: 0
FEE CATEGORY: EX 3L 1D 2C
EXP. DATE: 20050131
FEE COMMENTS: 170.11(A)(4) 3P DEL 1
DECOM FIN ASSUR REQD: Y

LICENSE FEE TRANSMITTAL

A. REGION *I*

1. APPLICATION ATTACHED

APPLICANT/LICENSEE: MASSACHUSETTS-LOWELL, UNIVERSITY OF
RECEIVED DATE: 970218
DOCKET NO: 3000787
CONTROL NO.: 124286
LICENSE NO.: 20-07446-01
ACTION TYPE: AMENDMENT

2. FEE ATTACHED

AMOUNT: -----
CHECK NO.: -----

3. COMMENTS

REF. 124287.

SIGNED
DATE

M. A. Larkin
2/21/97

B. LICENSE FEE MANAGEMENT BRANCH (CHECK WHEN FEE CATEGORY IS ENTERED)

1. FEE CATEGORY AND AMOUNT: *EX 3L 1D 2C*

FEE EXEMPT

170.11(A)(4)

2. CORRECT FEE PAID. APPLICATION MAY BE PROCESSED FOR:

AMENDMENT ☒
RENEWAL -----
LICENSE -----

3. OTHER -----

SIGNED
DATE

RECEIVED BY LFDCB	
Date	<i>3/3/97</i>
Log	<i>9 MAR 1</i>
By	<i>AB</i>
Date Completed	<i>3/2/97</i>

Absen
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