NRC Form 374
(5-84)

U.S. NUCLEAR REGULATORY COMMISSION

MATERIALS LICENSE

Amendment No. 42

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, 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.

Licensee	
1. Boston University Medical Center	In accordance with letter dated July 21, 1987,
2. 720 Harrison Avenue Boston, Massachusetts 02118	3. License number 20-02215-01 is amended in its entirety to read as follows:
	4. Expiration date April 30, 1988
	5. Docket or Reference No. 030-01845

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 listed in Groups I and II of Schedule A, Section 35.100 of 10 CFR 35	A. Any radiopharmaceutical listed in Groups I and II of Schedule A, Section 35.100 of 10 CFR 35	A. As necessary for uses authorized in Subitem 9.A.
B. Any byproduct material listed in Group III of Schedule A, Section 35.100 of 10 CFR 35	B. Any form listed in Group III of Schedule A, Section 35.100 of 10 CFR 35	B. 5 curies of each byproduct material authorized in Subitem 6.B.
C. Any byproduct material listed in Group IV of Schedule A, Section 35.100 of 10 CFR 35	C. Any radiopharmaceutical listed in Group IV of Schedule A, Section 35.100 of 10 CFR 35	C. As necessary for uses authorized in Subitem 9.C.
D. Any byproduct material listed in Group V of Schedule A, Section 35.100 of 10 CFR 35	D. Any radiopharmaceutical listed in Group V of Schedule A, Section 35.100 of 10 CFR 35	D. As necessary for uses authorized in Subitem 9.D.
E. Any byproduct material listed in Group VI of Schedule A, Section 35.100 of 10 CFR 35	E. Any sealed source listed in Group VI of Schedule A, Section 35.100 of 10 CFR 35	E. 6 curies total for sources authorized in Subitem 6.E.
F. Xenon 133	F. Gas or gas in solution that is the subject of an active (i.e., not withdrawn or terminated) "New Drug Application" (NDA) approved by FDA or an active (i.e., not withdrawn, terminated or on "clinical hold") "Notice of Claimed Investigational Exemption for a New Drug" (IND) that has been accepted by FDA	F. 400 millicuries

ML10

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(Items 6., 7. & 8. continued)

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
G. Any byproduct material between Atomic Nos. 1 and 83 inclusive	G. Any	G. 1 curie of each isotope with Atomic Nos. 1 through 83
H. Carbon 14	H. Any	H. 1.5 curies
I. Hydrogen 3	I. Any	I. 7 curies
J. Americium 241	J. Sealed source	J. 4 millicuries
K. Nickel 63	K. Sealed source	K. 45 millicuries
L. Cesium 137	L. Sealed source	L. 10 millicuries
M. Gadolinium 153	M. Sealed sources	M. Not to exceed 1.5 curies per source
N. Iodine 125	N. Sealed sources	N. Not to exceed 200 millicuries per source
O. Uranium (depleted in Uranium 235)	O. Cadmium plated metal	O. 136 kilograms
P. Iodine 125	P. Sealed sources	P. Not to exceed 500 millicuries per source
Q. Cesium 137	Q. Sealed sources (AECL Model C-16, Type 8)	Q. Two sources not to exceed 2000 curies per source
R. Strontium 90/Yttrium 90	R. Sealed source	R. 900 microcuries
S. Nickel 63	S. Foil contained in Varian Model 02-001972-00 detector cell	S. Not to exceed 15 millicuries per foil

9. Authorized use

A. Any diagnostic procedure listed in Groups I and II of Schedule A, Section 35.100, Title 10, Code of Federal Regulations.

B. Preparation and use of radiopharmaceuticals for any diagnostic procedure listed in Group III of Schedule A, Section 35.100 of Title 10, Code of Federal Regulations.

C. Any therapeutic procedure listed in Group IV of Schedule A, Section 35.100 of Title 10, Code of Federal Regulations.

D. Any therapeutic procedure listed in Group V of Schedule A, Section 35.100 of Title 10, Code of Federal Regulations.

E. Any procedure listed in Group VI of Schedule A, Section 35.100 of Title 10, Code of Federal Regulations.

F. Blood flow and pulmonary function studies.

G. through N. Medical diagnosis, therapy. Research and development as defined by 10 CFR 30.4(q); including medical research with humans; animal studies.

O. For use as shielding in a linear accelerator.

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(Item 9. continued)

P. For use in Lixi Inc. Model LS-80X, LS-82X, LSM-80X or LSM-82X portable fluoroscope for research and development as defined by 10 CFR 30.4(q); animal studies. Human use is excluded.
Q. For use in AECL Gammacell 40 irradiator.
R. For use as an ionization chamber check source.
S. For use in gas chromatographs for sample analysis.

CONDITIONS

10. Licensed material shall be used only at 720 and 732 Harrison Avenue, Boston, Massachusetts; 70, 75, 85, 88, and 100 East Newton Street, Boston, Massachusetts; 71, 80 and 82 East Concord Street, Boston, Massachusetts; 615, 677 and 801 Albany Street, Boston, Massachusetts; and 10 and 15 Stoughton Street, Boston, Massachusetts.

11. A. Licensed material shall be used by, or under the supervision of, individuals designated by the Radioisotopes Committee, William F. McNary, Ph.D., Chairman.

B. The use of licensed material in or on humans shall be by a physician as defined in 10 CFR 35.3(b).

C. Physicians designated to use licensed material in or on humans shall meet the training and experience criteria established in Appendix A of Regulatory Guide 10.8 (Revision 1), dated October 1980.

D. The Radiation Protection Officer for the activities authorized by this license is Victor N. Evdokimoff, M.S., CHP.

12. The licensee is authorized to hold radioactive material with a physical half-life of less than 65 days for decay-in-storage before disposal in ordinary trash provided:

A. Radioactive waste to be disposed of in this manner shall be held for decay a minimum of 10 half-lives.

B. Before disposal as normal waste, radioactive waste shall be surveyed to determine that its radioactivity cannot be distinguished from background. All radiation labels shall be removed or obliterated.

C. Generator columns shall be segregated so that they may be monitored separately to ensure decay to background levels prior to disposal.

13. Experimental animals administered licensed materials or their products shall not be used for human consumption.

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(Continued) CONDITIONS

14. In lieu of using the conventional radiation caution colors (magenta or purple on yellow background) as provided in Section 20.203(a)(1), of 10 CFR Part 20, the licensee is hereby authorized to label detector cells and cell baths, containing licensed material and used in gas chromatography devices, with conspicuously etched or stamped radiation caution symbols without a color requirement.

15. Detector cells containing titanium tritide foil shall only be used in conjunction with a properly operating temperature control mechanism which prevents foil temperatures from exceeding 225 degrees Centigrade.

16. Detector cells containing scandium tritide foil shall only be used in conjunction with a properly operating temperature control mechanism which prevents foil temperatures from exceeding 325 degrees Centigrade.

17. Patients containing Iodine-131 for the treatment of thyroid carcinoma (or patients containing therapeutic quantities of Gold 198) shall remain hospitalized until the residual activity is 30 millicuries or less.

18. The licensee shall conduct a physical inventory every 6 months to account for all sources and/or devices received and possessed under the license. Records of inventories shall be maintained for 2 years from the date of each inventory.

19. The licensee may transport licensed material in accordance with the provisions of 10 CFR Part 71, "Packaging and Transportation of Radioactive Material".

20. Pursuant to Sections 20.106(b) and 20.302 of 10 CFR Part 20, the licensee is authorized to dispose of licensed material by incineration provided the gaseous effluent from incineration does not exceed the limits specified for air in Appendix B, Table II, 10 CFR Part 20. Ash residues may be disposed of as ordinary waste provided appropriate surveys pursuant to Section 20.201 of 10 CFR Part 20 are made to determine that concentrations of licensed material appearing in the ash residues do not exceed the concentrations (in terms of microcuries per gram) specified for water in Appendix B, Table II, 10 CFR Part 20.

21. Sealed sources or detector cells containing licensed material shall not be opened or sources removed from source holders or detector cells by the licensee.

22. Licensed material in Items 6.A. through 6.E. shall be used in accordance with the provisions of Section 35.14(b)(c)(e) and (F) of Title 10, Code of Federal Regulations.

23. The licensee may use the Lineator device for doing linearity tests of its dose calibrator provided it follows the procedures in the Atomic Products Corporation Lineator Instructions Manual dated June 20, 1983.

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(Continued) CONDITIONS

24. 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. Application dated November 25, 1980
B. Letter dated June 22, 1982
C. Letter dated April 15, 1983 including ALARA Program
D. Letter dated May 4, 1984
E. Letter dated December 3, 1984
F. Letter dated June 7, 1985
G. Letter dated March 26, 1987
H. Letter dated July 21, 1987

For the U.S. Nuclear Regulatory Commission

Date 10 SEP 1987

By Original Signed By:
John S. Glenn
Nuclear Materials Safety and
Safeguards Branch, Region 1
King of Prussia, Pennsylvania 19406