MATERIALS LICENSE

Amendment No. 14

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, 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.

Licensee	
1. Beth Israel Hospital 2. 330 Brookline Avenue Boston, Massachusetts 02215	In accordance with letter dated April 13, 1990, 3. License number 20-00742-18 is amended in its entirety to read as follows: 4. Expiration date August 31, 1991 5. Docket or Reference No 030-09062

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. Uranium (Depleted in Uranium 235)	A. Cadmium plated metal	A. 204 kilograms
B. Any byproduct material with Atomic Nos. 3 to 83, inclusive	B. Any	B. 300 millicuries each
C. Hydrogen 3	C. Any	C. 10 curies
D. Krypton 85	D. Any	D. 5 curies
E. Molybdenum 99	E. Any	E. 2 curies
F. Technetium 99m	F. Any	F. 2 curies
G. Iodine 131	G. Any	G. 1 curie
H. Iodine 125	H. Any	H. 1 cuire
I. Xenon 133	I. Any	I. 5 curies
J. Carbon 14	J. Any	J. 1 curie
K. Iridium 192	K. Seeds encased in nylon ribbon	K. 2 curies
L. Osmium 191/Ir 191m	L. Any	L. 2 curies
M. Cesium 137	M. Any	M. 2 curies

9. Authorized use

A. As shielding in a linear accelerator.
B. through M. Medical research, diagnosis, and therapy. Laboratory research.

CONDITIONS

10. Licensed material shall be used only at Beth Israel Hospital, 330 Brookline Avenue, Boston, Massachusetts. Licensed material may also be used, only for in vitro research, at the Hebrew Rehabilitation Center for the Aged, 1200 Centre Street, (Roslindale) Boston, Massachusetts and for in vitro and in vivo animal research at Research East, 41 Avenue Louis Pasteur, Boston, Massachusetts.

11. A. Licensed material shall be used by, or under the supervision of, individuals designated by the licensee's Radiation Safety Committee, Gerald M. Kolodny, M.D., Chairman.

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(11. Continued) CONDITIONS

B. The use of licensed material in or on humans shall be by a physician as defined in Section 35.2 of 10 CFR Part 35.

C. Physicians designated to use licensed material in or on humans shall meet the training criteria established in 10 CFR 35, Subpart J and shall be designated by the Radiation Safety Committee. The licensee shall maintain records of individuals designated as users.

D. The Radiation Safety Officer for this license is M. Rosemary Kennedy.

12. A(1) Each sealed source or detector cell acquired from another person and containing licensed material, other than hydrogen 3, with a half-life greater than 30 days and in any form other than gas shall be tested for contamination and/or leakage before use. In the absence of a certificate from a transferor indicating that a test has been made within 6 months before the transfer, a sealed source or detector cell received from another person shall not be put into use until tested.

(2) Notwithstanding the periodic leak test required by this condition, any licensed sealed source or detector cell is exempt from such leak tests when the source or detector cell contains 100 microcuries or less of beta and/or gamma emitting materials or 10 microcuries or less of alpha emitting material.

(3) Except for alpha sources, the periodic leak test required by this condition does not apply to sealed sources that are stored and not being used. The sources excepted from this test shall be tested for leakage before any use or transfer to another person unless they have been leak tested within 6 months before the date of use or transfer.

B. Each sealed source or detector cell fabricated by the licensee shall be inspected and tested for construction defects, leakage, and contamination prior to use or transfer as a sealed source or detector cell. If the inspection or test reveals any construction defects or 0.005 microcurie or greater of contamination, the source shall not be used or transferred as a sealed source or detector cell until it has been repaired, decontaminated and retested.

C. Each sealed source containing licensed material, other than hydrogen 3, with a half-life greater than 30 days and in any form other than gas shall be tested for leakage and/or contamination at intervals not to exceed 6 months except that each source designed for the purpose of emitting alpha particles shall be tested at intervals not to exceed 3 months.

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(12. Continued) CONDITIONS

D. The test shall be capable of detecting the presence of 0.005 microcurie of radioactive material on the test sample. The test sample shall be taken from the sealed source or detector cell or from the surfaces of the device in which the sealed source or detector cell is permanently or semipermanently mounted or stored on which one might expect contamination to accumulate. Records of leak test results shall be kept in units of microcuries and maintained for inspection by the Commission. Records may be disposed of following Commission inspection.

E. If the test required by Subsection A. or C. of this condition reveals the presence of 0.005 microcurie or more of removable contamination, the licensee shall immediately withdraw the sealed source or detector cell from use and shall cause it to be decontaminated and repaired or to be disposed of in accordance with Commission regulations. A report shall be filed within 5 days of the date the leak test result is known with the U. S. Nuclear Regulatory Commission, Region 1, ATTN: Chief, Nuclear Materials Safety Branch, 475 Allendale Road, King of Prussia, Pennsylvania 19406, describing the equipment involved, the test results, and the corrective action taken.

13. A. 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.

B. 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 that specified by the manufacturer.

C. 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.

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

15. Radioactive gases as free gas or in solution to be administered to humans shall be procured from a supplier which distributes the product indicated for human use in accordance with the Federal Food, Drug, and Cosmetic Act.

16. The licensee may use the Calicheck device for doing linearity tests of its dose calibrator provided it follows the procedures in the Calcorp, Inc., Manual dated March 2, 1982.

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17. A. Patients containing cobalt-60, cesium-137 or iridium-192 implants shall remain hospitalized until a source count and surveys made with an appropriate radiation detection instrument indicate that all implants have been removed. The results of these surveys shall be recorded and maintained for inspection by the Commission for 5 years from the time the implants are removed.

    B. 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 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.

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

20. 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 3 years from the date of each inventory.

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

22. The licensee shall not use licensed material in field applications except as provided otherwise by specific condition of this license.

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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 3, 1981
B. Letter dated November 26, 1985
C. Letter dated June 23, 1986
D. Letter dated February 28, 1989
E. Letter dated April 13, 1990

For the U.S. Nuclear Regulatory Commission

Date AUG 2 6 1990

By Original Signed By:
Jenny Johansen
Nuclear Materials Safety Branch
Region I
King of Prussia, Pennsylvania 19406