

MATERIALS LICENSE

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. Lake Forest College Department of Physics		3. License number 12-11003-04	
2. Lake Forest, IL 60045		4. Expiration date	November 30, 1990
		5. Docket or Reference No.	030-28976, 12-11003-03
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. Cesium-137	A. Sealed sources (U.S. Nuclear Corp. Model Type 375)	A. 2 sources not to exceed 1 millicurie each	
B. Hydrogen-3	B. Foil source (Varian Instrument Detector Cell Model No. 02-000966-02)	B. 1 source not to exceed 250 millicuries	
9. Authorized Use			
A. To be used in student laboratory experiments.			
B. To be used in a gas chromatograph for sample analysis.			

CONDITIONS

10. Licensed material shall be used only at Johnson Science Center, Lake Forest College, Lake Forest, Illinois.
11. The licensee shall comply with the provisions of Title 10, Chapter 1, Code of Federal Regulations, Part 19, "Notices, Instructions and Reports to Workers; Inspections" and Part 20, "Standards for Protection Against Radiation."
12. Licensed material shall be used by, or under the supervision of, Tung Hon Jeong, Ph.D.
13. A. (1) Each sealed source containing licensed material, other than Hydrogen 3, with a half-life greater than thirty days and in any form other than gas shall be tested for leakage and/or contamination at intervals not to exceed six months. In the absence of a certificate from a transferor indicating that a test has been made within six months prior to the transfer, a sealed source received from another person shall not be put into use until tested.

8601210577 851122
REG LIC30
12-11003-04 PDR1/1 COPY 2
m30

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License number	12-11003-04
Docket or Reference number	030-28976

- (2) Notwithstanding the periodic leak test required by this condition, any licensed sealed source is exempt from such leak tests when the source contains 100 microcuries or less of beta and/or gamma emitting material or 10 microcuries or less of alpha emitting material.
- (3) 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 prior to any use or transfer to another person unless they have been leak tested within six months prior to the date of use or transfer.

- B. 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 from the surfaces of the device in which the sealed source is permanently 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.
- C. If the test reveals the presence of 0.005 microcurie or more of removable contamination, the licensee shall immediately withdraw the sealed source 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 five (5) days of the test with the U. S. Nuclear Regulatory Commission, Region III, 799 Roosevelt Road, Glen Ellyn, Illinois 60137, describing the equipment involved, the test results, and the corrective action taken.
- D. The licensee is authorized to collect leak test samples in accordance with the procedures described in the licensee's application dated October 17, 1985 for analysis by Health Physics Associates, Ltd. Alternatively, leak test samples may be collected and/or analyzed by other persons specifically authorized by the Commission or an Agreement State to perform such services.

14. Sealed sources containing licensed material shall not be opened.
15. In lieu of using the conventional radiation caution colors (magenta or purple on yellow background) as provided in Section 20.203(a)(1), Title 10, Code of Federal Regulations, 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.
16. Detector cells containing licensed material shall not be opened or the foil sources removed from the detector cell by the licensee.
17. Exhaust from detector cells containing licensed material shall be vented through a laboratory fume hood or other suitable means designed to reduce potential exposure to personnel to the lowest practicable level.

**MATERIALS LICENSE
SUPPLEMENTARY SHEET**

License number 12-11003-04
Docket or Reference number 030-28976

18. Maintenance, repair, cleaning, replacement and disposal of foils contained in detector cells shall be performed only by the device manufacturer or other persons specifically authorized by the Commission or an Agreement State to perform such services.
19. Except as otherwise specified in this license, the licensee shall have available and follow the instructions contained in the manufacturer's instruction manual for the chromatography device.
20. Except as specifically provided otherwise by this license, the licensee shall possess and use licensed material described in Items 6, 7, and 8 of this license in accordance with statements, representations, and procedures contained in . The Nuclear Regulatory Commission's regulations shall govern the licensee's statements in applications or letters, unless the statements are more restrictive than the regulations.



For the U.S. Nuclear Regulatory Commission

Date NOV 22 1985

Original Signed
By Evelyn R. Matson
Materials Licensing Section, Region III

COPY