U.S. NUCLEAR REGULATORY COMMISSION

Amendment No. 67

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, 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.

QC03620 577663

Licensee	In accordance with **application** dated **June 5, 2012,**
1. Michigan Technological University	3. License No. 21-00278-02 is **renewed** in its entirety to read as follows:
2. 1400 Townsend Drive Houghton, Michigan 49931	4. Expiration Date: **December 31, 2022**
	5. Docket No. 030-00810 Reference No.

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. Hydrogen-3	A. Any	A. 30 millicuries
B. Carbon-14	B. Any	B. 30 millicuries
C. Phosphorus-32	C. Any	C. 25 millicuries
D. Phosphorus-33	D. Any	D. 20 millicuries
E. Sulfur-35	E. Any	E. 15 millicuries
F. Cesium-137	F. Any	F. 0.1 millicurie
G. Cobalt-57	G. Foils or plated sources (WEB Research Co. Inc., Model No. MCo7 Series)	G. 1 source not to exceed 20 millicuries
H. Nickel-63	H. Foils or plated sources registered either with NRC under 10 CFR 32.210 or with an Agreement State and incorporated in a compatible gas chromatograph as specified in Item 9 of this license	H. No single source to exceed the maximum activity specified in the certificate of registration issued by the U. S. Nuclear Regulatory Commission or an Agreement State. Total possession limit of 150 millicuries.

9. Authorized Used:

A. through E. For research and development as defined in 10 CFR 30.4.

F. For use in analytical equipment as calibration and check sources.

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G. For storage only incident to disposal.

H. To be used for sample analysis in compatible gas chromatography devices that have been registered with NRC either under 10 CFR 32.210 or with an Agreement State and have been distributed in accordance with an NRC or Agreement State specific license authorizing distribution to persons specifically authorized by an NRC or Agreement State license to receive, possess, and use the device.

CONDITIONS

10. Licensed material shall be used only at the licensee's facilities located at Michigan Technological University, Houghton, Michigan.

11. The Radiation Safety Officer (RSO) for this license is Allen Niemi, Ph.D.

12. Licensed material listed in Item 6 above is only authorized for use by, or under the supervision of, the following individuals for the materials and uses indicated:

Authorized User	Material and Use
David L. Perram	Licensed material listed in Item 7.H. in gas chromatographs
Allen Niemi, Ph.D.	Hydrogen-3, Carbon-14 and Cesium-137
Noel R. Urban, Ph.D.	Phosphorus-32, Phosphorus-33, Hydrogen-3, Carbon-14, Sulfur-35 and Cesium-137
Martin T. Auer, Ph.D.	Hydrogen-3, Carbon-14, and Phosphorus-33 and Cesium-137
Chandrashekhar P. Joshi, Ph.D.	Carbon-14, Hydrogen-3, Phosphorus-32, Phosphorus-33, Sulfur-35 and Cesium-137
Chung-Jui Tsai, Ph.D.	Phosphorus-32, Phosphorus-33, Hydrogen-3, Carbon-14, Sulfur-35 and Cesium-137
Ramakrishna Wusirika, Ph.D.	Phosphorus-32, Phosphorus-33, Hydrogen-3, Carbon-14, Sulfur-35 and Cesium-137
Xiaoqing Tang, Ph.D.	Phosphorus-32, Hydrogen-3, Carbon-14 and Cesium-137

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Authorized User	Material and Use
Gary Fahnenstiel, Ph.D.	Phosphorus-33, Carbon-14 and Cesium-137
Guiliang Tang, Ph.D.	Phosphorus-32 and Cesium-137

13. Licensed material shall not be used in or on human beings.

14. Detector cells containing licensed material shall not be opened or the sources removed from the detector cell by the licensee.

15. 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.

16. Sealed sources containing licensed material shall not be opened.

17. A. Sealed sources shall be tested for leakage and/or contamination at intervals not to exceed the intervals specified in the certificate of registration issued by the U. S. Nuclear Regulatory Commission under 10 CFR 32.210 or under equivalent regulations of an Agreement State.

B. In the absence of a certificate from a transferor indicating that a leak test has been made, within the intervals specified in the certificate of registration issued by the U. S. Nuclear Regulatory Commission under 10 CFR 32.210 or under equivalent regulations of an Agreement state, prior to the transfer, a sealed source received from another person shall not be put into use until tested and the test results received.

C. Sealed sources need not be leak tested if they contain only hydrogen-3; or they contain only a radioactive gas; or the half-life of the isotope is 30 days or less; or they contain no more than 100 microcuries of beta and/or gamma emitting material or not more than 10 microcuries of alpha emitting material.

D. Sealed sources need not be tested if they are in storage, and are not being used. However, when they are removed from storage for use or transferred 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 shall be stored for a period of more than 10 years without being tested for leakage and/or contamination.

E. The leak test shall be capable of detecting the presence of 0.005 microcurie (185 becquerels) of radioactive material on the test sample. If the test reveals the presence of 0.005 microcurie (185 becquerels) or more of removable contamination, a report shall be filed with the U. S. Nuclear Regulatory Commission in accordance with 10 CFR 30.50(c)(2), and the source shall be removed immediately from service and decontaminated, repaired, or disposed of in accordance with Commission regulations.

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F. Tests for leakage and/or contamination, limited to leak test sample collection, shall be performed by the licensee or by other persons specifically licensed by the U. S. Nuclear Regulatory Commission or an Agreement State to perform such services.

G. Records of leak test results shall be kept in units of microcuries and shall be maintained for three years.

18. The licensee shall conduct a physical inventory every six months, or at other intervals approved by the U. S. Nuclear Regulatory Commission, to account for all sources and/or devices received and possessed under the license. Records of inventories shall be maintained for five years from the date of each inventory, and shall include the radionuclides, quantities, manufacturer's name and model numbers, and the date of the inventory.

19. The licensee is authorized to hold radioactive material with a physical half-life of less than or equal to 120 days for decay-in-storage before disposal in ordinary trash, provided:

A. 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.

B. 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.

20. The licensee is authorized to transport licensed material only in accordance with the provisions of 10 CFR Part 71, "Packaging and Transportation of Radioactive Material."

21. 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 U. S. 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 June 5, 2012

FOR THE U. S. NUCLEAR REGULATORY COMMISSION

Date DEC 04 2012

By _____

Bryan A. Parker
Materials Licensing Branch
Region III