

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, 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.

PCO 1100

318396

<p>Licensee</p> <p>1. The Curators of the University of Missouri The Chancellor</p> <p>2. University of Missouri-Kansas City Administrative Center 5115 Oak Street Kansas City, MO 64110</p>	<p>In accordance with letter dated July 27, 2009,</p> <p>3. License number 24-00513-37 is amended in its entirety to read as follows:</p> <hr/> <p>4. Expiration date: December 31, 2012</p> <hr/> <p>5. Docket No. 030-32693 Reference No.</p>
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<p>6. Byproduct, source, and/or special nuclear material</p> <p>A. Any byproduct material with Atomic Numbers between I-83, inclusive except as specified below:</p> <p>B. Hydrogen-3</p> <p>C. Cesium-137</p> <p>D. Americium-241</p> <p>E. Phosphorus-32</p> <p>F. Sulfur-35</p> <p>G. Californium-252</p>	<p>7. Chemical and/or physical form</p> <p>A. Any</p> <p>B. Any</p> <p>C. Sealed source (registered pursuant to Section 32.210 of 10 CFR Part 32 or an Agreement State)</p> <p>D. Any</p> <p>E. Any</p> <p>F. Any</p> <p>G. Solid</p>	<p>8. Maximum amount that licensee may possess at any one time under this license</p> <p>A. 750 millicuries of each radionuclide with a total possession limit of 10 curies</p> <p>B. 5 curies</p> <p>C. 65 millicuries</p> <p>D. 0.1 millicuries</p> <p>E. 750 millicuries</p> <p>F. 1.0 curie</p> <p>G. 75 microcuries</p>
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9. Authorized Use:

A. through G. Research and development as defined in Section 30.4 of 10 CFR Part 30, and student instruction. Instrument calibration.

CONDITIONS

10. Licensed material shall be used only at the licensee's facilities located at University of Missouri-Kansas City Campus.

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11. The Radiation Safety Officer for this license is Susan T. Masih.
12. Licensed material in SubitemNos. 6.A. through 6.G. shall be used by, or under the supervision of, individuals designated by the Radiation Safety Committee. The licensee shall maintain records of individuals designated as users.
13. In addition to the possession limits in Item 8, the licensee shall further restrict the possession of licensed material to quantities below the limits specified in 10 CFR 30.72 which require consideration of the need for an emergency plan for responding to a release of licensed material.
14. A. Sealed sources and detector cells shall be tested for leakage and/or contamination at intervals not to exceed 6 months or at such other intervals as specified by the certificate of registration, referred to in 10 CFR 32.210.
- 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 3 months.
- C. In the absence of a certificate from a transferor indicating that a test has been made, a sealed source or detector cell received from another person shall not be put into use until tested.
- D. Sealed sources 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 materials; 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 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 or detector cell 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.
- F. Tests for leakage and/or contamination shall be performed by the licensee or by other persons specifically licensed by the Commission or an Agreement State to perform such services.

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15. 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 5 years from the date of each inventory, and shall include the quantities and kinds of byproduct material, manufacturer's name and model numbers, location of the sources and/or devices, and the date of the inventory.
16. A. 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 and approved by NRC.
- B. When in use, detector cells containing a titanium tritide foil or a scandium tritide foil shall be vented to the outside.
17. Sealed sources or detector cells containing licensed material shall not be opened or sources removed from source holders or detector cells by the licensee.
18. 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, byproduct material shall be surveyed at the container surface with the appropriate meter 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. Generator columns shall be segregated so that they may be monitored separately to ensure decay to background levels prior to disposal.
- C. A record of each 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.
- D. Radioactive waste being held for decay shall not be stored for a period greater than 4 years.
19. Radioactive waste, other than that specified in Condition 18., shall not be stored for a period greater than two years.
20. Radioactive waste currently possessed, exceeding the storage provisions of Condition Nos. 18.D., and 19., shall be disposed of within one year of the issuance of this license.
21. Experimental animals, or the products from experimental animals, that have been administered licensed materials shall not be used for human consumption.

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22. This license does not authorize commercial distribution of licensed material.
23. The licensee shall not use licensed material in or on human beings except as provided otherwise by specific condition of this license.
24. The licensee shall not use licensed material in field applications where activity is released except as provided otherwise by specific condition of this license.
25. 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."
26. The licensee shall maintain records of information important to safe and effective decommissioning at the University of Missouri - Kansas City, 1110 East 48TH Street, Kansas City Missouri, per the provisions of 10 CFR 30.35(g.) until this license is terminated by the Commission.
27. In addition to the possession limits in Item 8, the licensee shall further restrict the possession of unsealed licensed material or readily dispersible source material to quantities less than 10^5 times the applicable limits in Appendix C of 10 CFR Part 20, as specified in 10 CFR 30.35.
28. 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. Applications dated February 25, 1992 and July 22, 2002; and
- B. Letters dated July 14, 1992, April 29, 2005, and **July 27, 2009**; and
- C. Facsimiles dated May 3, 2005, and August 16, 2005.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Date OCT 29 2009By Colleen Carol Casey
Colleen Carol Casey
Materials Licensing Branch
Region III