

**MATERIALS LICENSE**

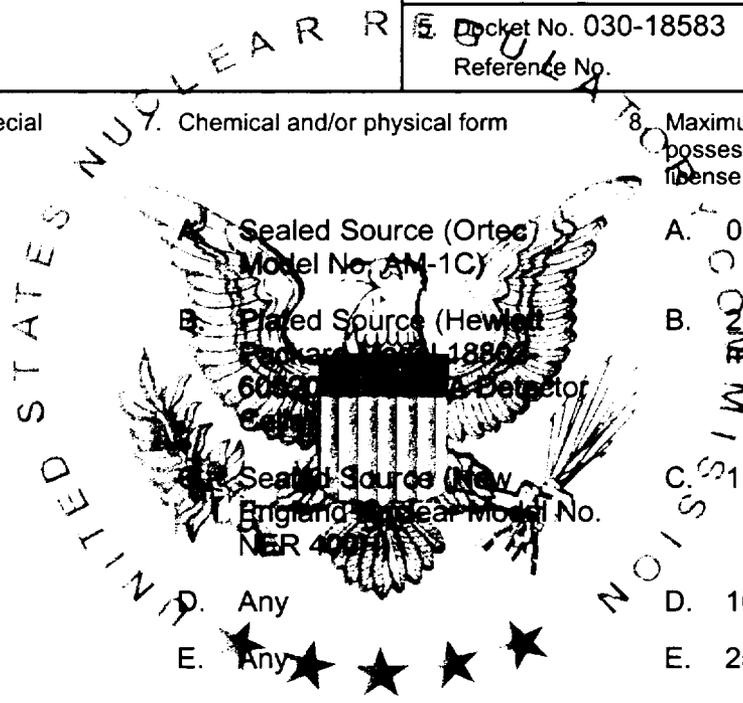
Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 36, 39, 40, and 70, and in reliance on statements and representations heretofore made by the licensee, 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.

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*316054*

<p>Licensee</p> <p>1. Missouri State University</p> <p>2. 901 South National Avenue Springfield, MO 65897</p>	<p>In accordance with <b>letter dated February 9, 2007,</b></p> <p>3. License number 24-11585-04 is <b>amended</b> in its entirety to read as follows:</p> <p>4. Expiration date June 30, 2016</p> <p>5. Docket No. 030-18583 Reference No.</p>
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<p>6. Byproduct, source, and/or special nuclear material</p> <p>A. Americium-241</p> <p>B. Nickel-63</p> <p>C. Cobalt-60</p> <p>D. Phosphorus-32</p> <p>E. Carbon-14</p> <p>F. Calcium-45</p> <p>G. Sulfur-35</p> <p>H. Iodine-129</p> <p>I. Iodine-125</p> <p>J. Phosphorus-33</p>	<p>7. Chemical and/or physical form</p> <p>A. Sealed Source (Ortec) Model No. AM-1C</p> <p>B. Plated Source (Hewlett Packard Model 1880) 60520 A Detector</p> <p>C. Sealed Source (New England Nuclear Model No. NER 4001)</p> <p>D. Any</p> <p>E. Any</p> <p>F. Any</p> <p>G. Any</p> <p>H. Any</p> <p>I. Any</p> <p>J. Liquid</p>	<p>8. Maximum amount that licensee may possess at any one time under this license</p> <p>A. 0.1 microcurie</p> <p>B. sources not to exceed 15 millicuries each</p> <p>C. 1 millicurie</p> <p>D. 10 millicuries</p> <p>E. 25 millicuries</p> <p>F. 2 millicuries</p> <p>G. 15 millicuries</p> <p>H. 100 microcuries</p> <p>I. 10 millicuries</p> <p>J. 1 millicurie</p>
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**MATERIALS LICENSE  
SUPPLEMENTARY SHEET**

License Number  
24-11585-04

Docket or Reference Number  
030-18583

Amendment No. 12

9. Authorized Use:

- A. Possession and storage only with intent to dispose.
- B. To be used in Hewlett Packard 5800 series gas chromatographs for sample analysis.
- C. and H. To be used for instrument calibration.
- C. through G. To be used for student instruction.
- D. and G. May also be used for research and development as defined in Section 30.4 of 10 CFR Part 30.
- I. To be used in in vitro laboratory testing and in vivo animal studies as described in application dated January 25, 2006, and letter dated June 20, 2006..
- J. To be used in DNA sequencing studies.

- STATE NUCLEAR REGULATORY COMMISSION
- CONDITIONS
- 10. A. Licensed material shall be stored and used only at the licensee's facilities located on the campus of Missouri State University, 901 S. National Ave., Springfield, Missouri, as described in application date January 25, 2006, and letter dated June 20, 2006.
  - B. Licensed material described in Items 6.D. and 6.G. may also be used at the licensee's facilities located at the Department of Fruit Science, Missouri State University Research Campus, 9740 Red Spring Road, Mountain Grove, Missouri.
  - 11. A. Licensed material listed in Item 6 above is authorized for use by, or under the supervision of, the following individual(s) for the materials and uses indicated:
    - 1. Albert Gordon, Ph.D. All
    - 2. Thomas E. Tomasi, Ph.D. Iodine-125
    - 3. Laszlo Kovacs, Ph.D. Phosphorus-32 and Sulfur-35
    - 4. Dennis Schmidt Iodine -125
    - 5. **Paul L. Durham, Ph.D. Iodine -125 and Phosphorus-32**
  - B. At least one individual named in Condition No. 11.A. shall be physically present at the authorized place of use whenever licensed material is being used.

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12. The Radiation Protection Officer for the activities authorized by this license is **Tracey L. Poston, Ph.D.**
13. A. Sealed sources 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. In the absence of a certificate from a transferor indicating that a leak test has been made within the interval specified in the certificate of registration issued by the U.S. Nuclear Regulatory Commission under 10 CFR 32.210 or by an Agreement State, prior to the transfer, a sealed source received from another person shall not be put into use until tested.
- C. 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.
- D. 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 32.502(c)(2), and the source shall be removed immediately from service and decontaminated, repaired or disposed of in accordance with Commission regulations.
- E. Tests for leakage and/or contamination, including leak test sample collection and analysis, shall be performed by the licensee or other persons specifically licensed by the U.S. Nuclear Regulatory Commission or an Agreement State to perform such services.
- F. Records of leak test results shall be kept in units of microcuries and shall be maintained for 3 years.
14. Sealed sources or detector cells containing licensed material shall not be opened or sources removed from source holders 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. The licensee shall conduct a physical inventory every 6 months, or at other intervals approved by the U.S. Nuclear Regulatory Commission, to account for all sealed 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 radionuclides, quantities, manufacturer's name and model numbers, and the date of the inventory.
17. 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.

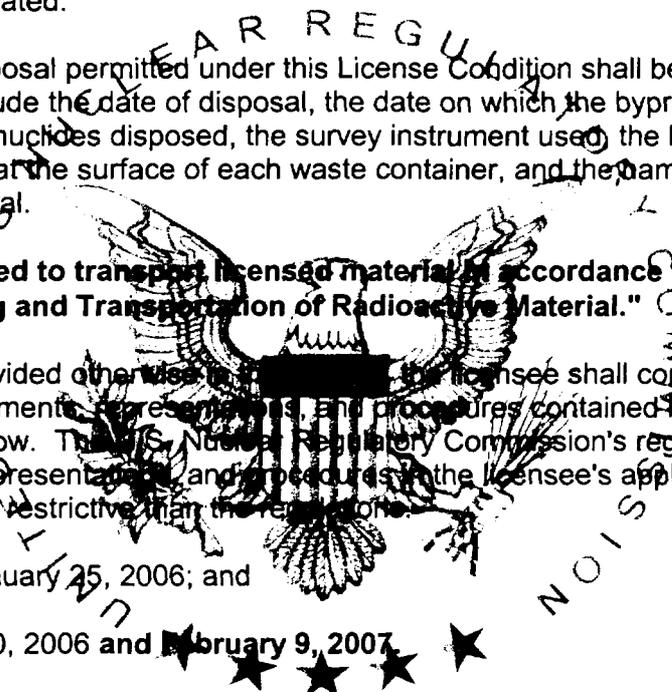
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- 18. Licensed material shall not be used in or on human beings.
- 19. The licensee is authorized to hold radioactive material with a physical half-life of less than 120 days for decay-in-storage before disposal in ordinary trash provided:
  - A. Before disposal as ordinary trash, byproduct material shall be surveyed at the container surface with the appropriate survey 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. 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 radio nuclides 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 in accordance with the provisions of 10 CFR Part 71, "Packaging and Transportation of Radioactive Material."
- 21. Except as specifically provided otherwise in [redacted], 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 January 25, 2006; and
  - B. Letters dated June 20, 2006 and February 9, 2007.



FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Date APR 04 2007

By Loren J. Hueter  
Loren J. Hueter  
Materials Licensing Branch  
Region III