



TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF RADIOLOGICAL HEALTH
Davy Crockett Tower 500 James Robertson Parkway, 9th Floor Nashville, Tennessee 37243

RADIOACTIVE MATERIAL LICENSE

Amendment 27

Pursuant to Tennessee Department of Environment and Conservation Regulations, 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 radioactive material listed below; and to use such radioactive material for the purpose(s) and at the place(s) designated below. This license is subject to all applicable rules and regulations of the Tennessee Department of Environment and Conservation and orders of the Division of Radiological Health, now or hereafter in effect and to any conditions specified below.

<p style="text-align: center;">LICENSEE</p> <p>1. Name Materials and Chemistry Laboratory, Inc.</p>	<p>3. License Number R-73025-K25</p>
<p>2. Address 161 Mitchell Road Oak Ridge, Tennessee 37830</p>	<p>4. Expiration Date November 30, 2025</p>
	<p>5. File No. R-73025</p>

<p>6. Radioactive Material (Element and Mass Number)</p>	<p>8. Chemical and/or physical form</p>	<p>9. Maximum Radioactivity and/or quantity of material which licensee may possess at any one time.</p>
<p>S E E S U P P L E M E N T A R Y S H E E T S</p>		

<p>10. Authorized Use</p>	<p>S E E S U P P L E M E N T A R Y S H E E T S</p>	
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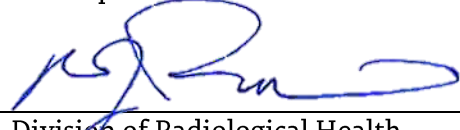
CONDITIONS

11. Unless otherwise specified, the authorized place of use is the licensee's address stated in Item 2 above.

For the Commissioner
Tennessee Department of Environment and Conservation

Date of Issuance: November 19, 2024

By: _____


 Division of Radiological Health
 Ronald Parsons, Radioactive Material Licensing Manager



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6. Radioactive Material (Element and <u>Mass Number</u>)	8. Chemical and/or <u>Physical Form</u>	9. Maximum Radioactivity and/or Quantity of Material Which Licensee May <u>Possess at Any One Time</u>
A. Any radioactive material with atomic numbers 3-92, inclusive, except for special nuclear material	A. Any	A. 625 millicuries
B. Any radioactive material with atomic numbers greater than 92, inclusive, except for special nuclear material	B. Any	B. 100 millicuries
C. Uranium enriched in the U-235 isotope*	C. Any	C. 350 grams of contained U-235
D. Plutonium*	D. Any	D. 1 gram and less than 2 curies
E. Uranium 233*	E. Any	E. 10 grams
F. Hydrogen 3	F. Any	F. 1 curie
G. Natural or depleted uranium	G. Any	G. 200 kilograms not to exceed 50 kilograms in any single container
H. Natural thorium	H. Any	H. 200 kilograms
I. Any radioactive material	I. Calibration sources	I. No single source to exceed 100 microcuries of beta and/or gamma emitting material. No single source to exceed 10 microcuries of



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		alpha emitting material.
J. Uranium 238	J. LMES HP 754 (plated metal disk on plastic base)	J. 1.5 mR/hr on contact
K. Nickel 63	K. Sealed source (Any source approved of distribution by the U.S. NRC or an Agreement State)	K. No single source to exceed the maximum activity authorized in the <u>Registry of Sealed Source and Devices</u> for that source.

* For each kind of special nuclear material determine the ratio between the quantity of that special nuclear material and the quantity specified here for the same kind of special nuclear material. The sums of such ratios for all kinds of special nuclear material in any combination shall not exceed "1" (i.e., unity).

10. Authorized Use

- A. through H. 1. Possession incident to receipt, materials characterization/evaluation, chemical testing, treatment, calibration, and sample storage of licensed radioactive material in accordance with statements, representations, and procedures contained in references in Condition 27 of this license.
2. Creation of representative subsamples to be utilized for any of those purposes currently defined in the "Description of the Process to Transfer Uranium Hexafluoride (UF₆) from Larger UF₆ Cylinder(s) to Multiple Smaller Tubes" in accordance with procedures referenced in letter dated March 27, 2024, with attachments, and email dated April 3, 2024, with attachments.
- I. and J. Calibration and standardization sources.
- K. As part of an electron capture detector that has been approved for distribution by the U.S. NRC or an Agreement State. These sources/detectors shall be used in compatible gas chromatography systems as registered in the Registry of Sealed Sources and Devices.

Conditions (continued)



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12. The licensee shall comply with applicable provisions of 0400-20-04, 0400-20-05, and 0400-20-10 of "State Regulations for Protection Against Radiation."
13. A. Radioactive material authorized by this license shall be used by, or under the supervision of the following individuals:
- | | | |
|--------------------|-------------------|---------------------|
| A. Blake Dunaway | Adam Haas | Michele W. Sanders |
| William D. Bostick | Robert J. Jarabek | David Smith |
| Chelsea Bradley | Thibaut Lecrivian | Kelly Steelman |
| Mark Colberg | Earl B. Munday | Barry A. Stephenson |
| Stefan Dohse | Emily Norton | Robert J. Stevenson |
| Sarah Greer | Douglas Parks | Kristal Tate |
| Jack R. Hall | Kristan Parson | Jared Turner |
| Mary Hall | Connor Pope | |
- B. The Radiation Safety Officer for this license is Adam L. Haas. The Assistant Radiation Safety Officer for this license is Thibaut Lecrivian.
14. Radioactive material authorized by this license may be used at 161 Mitchell Road, Oak Ridge, TN 37830 in accordance with letters dated August 15, 2018, with attachments, May 2, 2019, with attachments, and email dated August 22, 2018, with attachments.
15. The licensee shall demonstrate compliance with dose limits for individual members of the public in accordance with 0400-20-05-.61 of "State Regulations for Protection Against Radiation."
16. A. Sealed sources authorized by this license shall be tested for leakage and/or contamination at intervals not to exceed six (6) months. In the absence of a certificate from a transferor indicating that a test has been made within six (6) months prior to transfer, the sealed source shall not be put into use until tested.
- 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 surface of the device in which the sealed source is permanently mounted or stored on which one might expect contamination to accumulate. Records of leak tests shall be kept in units of microcuries and maintained for inspection by the Department.
- D. 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 Department regulations. A report shall be filed within five (5) days of the test with the Division of Radiological Health, Tennessee Department of Environment and



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Conservation, Davy Crockett Tower, 9th Floor, James Robertson Parkway, Nashville, Tennessee, 37243, describing the equipment involved, the test results, and the corrective action taken.

- E. Tests for leakage and/or contamination shall be performed by the licensee or other persons authorized by this Department, the U.S. Nuclear Regulatory Commission, or another Agreement state to perform such services.
17. Notwithstanding the periodic leak test required by Condition 16, 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.
 18. The licensee shall not open sealed sources containing radioactive material.
 19. Maintenance and repair of detector cells containing radioactive material shall be performed only by the manufacturer or by other persons specifically authorized by this Department, the U.S. NRC, or another Agreement State to perform such services.
 20. Detector cells containing Nickel 63 authorized by this license shall only be used in conjunction with a properly operating temperature control mechanism which prevents the temperature of the foil from exceeding the limit referenced in the Registry of Sealed Sources and Devices.
 21. Detector cells containing licensed material shall not be opened or the foil sources removed from the detector cell by the licensee.
 22. When not installed in a gas chromatograph, detector cells containing licensed material shall be stored in a properly labeled container under lock and key to prevent access by unauthorized individuals.
 23. In lieu of using the conventional radiation caution colors (magenta or purple or black on yellow background) as provided in 0400-20-05-.110 (1) of "State Regulations for Protection Against Radiation," 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.
 24. The licensee shall maintain complete and accurate records of receipt and disposal of radioactive material. The licensee shall, for radioactive material no longer useful for any purpose and for any equipment or supplies contaminated with such material for which further use and decontamination is not planned, define those materials as radioactive waste and treat them as such in accordance with the following provisions:



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- A. Radioactive waste material shall not be stored with non-radioactive waste.
- B. A written record of all radioactive waste material shall be maintained until it has been determined by a suitable survey or radioassay that it has decayed to background levels or until it has been shipped to an authorized recipient in accordance with all applicable regulations. Accountability of radioactive waste material prepared for shipment but not yet shipped from the licensee's premises shall be maintained by the licensee by an internal record system such that the licensee is constantly aware of the material's location and the proposed time of shipment. Individuals who are involved in the shipping of such material and/or the storage of such material prior to shipment, shall be trained in the precautions necessary for such handling and storage.
- C. For material which has decayed to background levels as determined by radioassay or external level as measured with appropriately calibrated instruments, records shall indicate that the material was determined to be no longer radioactive and will indicate the methods and results of the survey or analysis.
- D. Shipment records of radioactive waste material shall be maintained and the licensee shall require written confirmation from the authorized recipient of such material that this material has been received.
- E. All records and written confirmations required by this condition shall be maintained for inspection by the Department.

The requirements for this condition are in addition to any other requirements for the handling and/or disposal of radioactive material contained in this license and "State Regulations for Protection Against Radiation."

25. The licensee in making disposal of radioactive wastes to the sanitary sewer system shall do so in conformity with 0400-20-05-.122 of "State Regulations for Protection Against Radiation."
26. No provision of this license relieves the licensee from compliance with other Federal, State and local laws, ordinances, and regulations applicable to the licensee's activities.
27. Except as specifically provided otherwise by this license, the licensee shall possess and use radioactive material described in Items 6, 8, and 9 of this license in accordance with statements, representations, and procedures contained in the following:
 - Application dated September 22, 2015, with attachments
 - Letters dated October 30, 2015, with attachments, August 15, 2018, with attachments, May 2, 2019, with attachments, May 24, 2019, with attachments, August 4, 2021, with



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- attachments, May 11, 2023, with attachments, March 27, 2024, with attachments, and October 10, 2024 with attachments.
- Emails dated August 22, 2018, with attachments, June 27, 2023, April 3, 2024, with attachments, and November 12, 2024, with attachments.