

**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.

<p>Licensee</p>	<p>In accordance with application dated  <b>April 23, 2013,</b></p>
<p>1. Environmental Protection Agency                  National Health and Environmental Effect Research Laboratory</p> <p>2. Mid-Continent Ecology Division; NHEERL-MED-Duluth                  6201 Congdon Boulevard                  Duluth, MN 55804</p>	<p>3. License number 22-13390-01 is <b>renewed</b> in its entirety to read as follows:</p>
	<p>4. Expiration date <b>April 30, 2014</b></p>
	<p>5. Docket No. 030-05046                  Reference No.</p>

<p>6. Byproduct, source, and/or special nuclear material</p>	<p>7. Chemical and/or physical form</p>	<p>8. Maximum amount that licensee may possess at any one time under this license</p>
A. Hydrogen-3	A. Any	A. 100 millicuries
B. Carbon-14	B. Any	B. 80 millicuries
C. Cadmium-109	C. Any	C. One millicurie
D. Mercury-203	D. Any	D. One millicurie
E. Phosphorus-33	E. Any	E. Three millicuries
F. Iodine-125	F. Bound/non-volatile	F. Five millicuries
G. Nickel-63	G. Foil sources (which have been evaluated and approved by the NRC or an Agreement State)	G. No single source to exceed 15 millicuries. Total possession not to exceed 450 millicuries
H. Hydrogen-3	H. Foil sources (which have been evaluated and approved by the NRC or an Agreement State)	H. No single source to exceed 250 millicuries. Total possession not to exceed 500 millicuries

9. Authorized use:
- A. through F. To be used in laboratory studies.
  - G. through H. To be used in gas chromatographs for sample analysis.

CONDITIONS

- 10. Licensed material shall be used only at the licensee's facilities located at 6201 Congdon Blvd. Duluth, Minnesota.
- 11. The Radiation Safety Officer (RSO) for this license is Eric S. Mead, CIH, CHMM.

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SUPPLEMENTARY SHEET**

License Number

22-13390-01

Docket or Reference Number

030-05046

**Amendment No. 15**

12. Licensed material is authorized for use by, or under the supervision, of the individuals listed below, for materials and uses as noted:

Authorized UsersMaterial and Use

Joe Korte

Hydrogen-3, carbon-14, cadmium-109, mercury-203, nickel-63, iodine-125, and phosphorus-33.

Philip M. Cook

Hydrogen-3, carbon-14, and nickel-63.

Sigmund J. Degitz

Hydrogen-3, carbon-14, and nickel-63.

Jeffrey S. Denny

Hydrogen-3, carbon-14, and nickel-63.

Patrick Fitzsimmons

Hydrogen-3, carbon-14, and nickel-63.

Kathleen M. Jensen

Hydrogen-3, carbon-14, and nickel-63.

Rodney Johnson

Hydrogen-3, carbon-14, and nickel-63.

Douglas Lothenbach

Hydrogen-3, carbon-14, and nickel-63.

John Nichols

Hydrogen-3, carbon-14, and nickel-63.

Patricia K. Schmieder

Hydrogen-3, carbon-14, and nickel-63.

Mark A. Tapper

Hydrogen-3, carbon-14, and nickel-63.

Joseph E. Tietge

Hydrogen-3, carbon-14, and nickel-63.

Dean Hammermeister, M.S.

Nickel-63 and iodine-125.

Alex Hoffman

Nickel-63.

Brian Butterworth, M.S.

Iodine-125.

Michael W. Hornung, Ph.D.

Iodine-125.

Patricia A. Kosian, B.A.

Iodine-125.

13. The licensee shall not use licensed material in or on human beings.
14. The licensee shall not use licensed material in field applications where activity is released except as provided otherwise by specific condition of this license.
15. Sealed sources or detector cells containing licensed material shall not be opened or sources removed from source holders by the licensee.
16. 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 sealed 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, location of the sources and/or devices, and the date of the inventory.

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17. 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.
18. A. Detector cells containing a titanium tritide foil or a scandium tritide foil shall only be used in conjunction with a properly operating temperature control mechanism which prevents the foil temperature from exceeding that specified by the manufacturer and approved by the U.S. Nuclear Regulatory Commission.
- B. When in use, detector cells containing a titanium tritide foil or a scandium tritide foil shall be vented to the outside.
19. A. Sealed sources and detector cells shall be tested for leakage and/or contamination at intervals not to exceed six months or at such 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 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 or detector cell received from another person shall not be put into use until tested.
- D. 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 not more than 100 microcuries of beta and/or gamma emitting material or not more than 10 microcuries of alpha emitting material.
- E. 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.
- F. 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.
- G. 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.
- H. Records of leak test results shall be kept in units of microcuries and shall be maintained for 3 years.

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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. 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 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 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.
22. 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 February 25, 2003; and
  - B. Letter dated April 28, 2005.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Date OCT 22 2013By   
Kevin G. Null  
Materials Licensing Branch  
Region III