

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, 37, 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 style="text-align: center;">Licensee</p> <p>1. Wayne State University Health Physics Department</p> <p>2. 5425 Woodward Avenue, 3rd Floor Detroit, Michigan 48202</p>	<p>In accordance with letter dated January 23, 2015,</p> <p>3. License number 21-00741-08 is amended in its entirety to read as follows:</p> <hr/> <p>4. Expiration date March 31, 2022</p> <hr/> <p>5. Docket No. 030-01995 Reference No.</p>
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| 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. Any byproduct material with Atomic Nos. 3 - 83, inclusive | A. Any | A. Not to exceed 150 millicuries per radionuclide. Total possession not to exceed 6 curies, except as listed below: |
| | | Phosphorus-32, 1 curie
Iodine-125, 750 millicuries
Hydrogen-3, 5 curies
Sodium-22, 250 millicuries
Chromium-51, 300 millicuries
Sulfur-35, 600 millicuries
Carbon-14, 200 millicuries
Fluorine-18, 400 millicuries
Carbon-11, 300 millicuries |
| B. Thorium-232 | B. Any | B. 5 kilograms |
| C. Polonium-209 | C. Any | C. 5 microcuries |
| D. Plutonium-242 | D. Any | D. 5 microcuries |
| E. Thorium-229 | E. Any | E. 5 microcuries |
| F. Protactinium-233 | F. Any | F. 5 microcuries |
| G. Sodium-22 | G. Sealed sources | G. Three sources; total activity not to exceed 5.35 millicuries |
| H. Nickel-63 | H. Sealed source (Agilent Model 6890A series) | H. 15 millicuries |
| I. Radium-226 | I. Sealed glass ampoule | I. 5 microcuries |

9. Authorized use:
- A. For research and development as defined in Section 30.4, 10 CFR Part 30 including animal studies.

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- B. **through F.** For research and development as defined in **10 CFR 30.4.**
- G. For investigating scattering effects.
- H. For use in a gas chromatograph.
- I. For use as a calibration standard.

CONDITIONS

10. A. Licensed material shall be used at the licensee's facilities located at the campus of Wayne State University, Detroit, Michigan; Karmanos Cancer Foundation, 110 East Warren Avenue, Detroit, Michigan; and Kresge Eye Institute, 4717 St. Antoine Avenue, Detroit, Michigan.
- B. **Licensed material in Subitem 6.C. may also be used for temporary use protocols, occurring between June 1, 2015, and October 31, 2015, on the Research Vessel HEALY anywhere in the United States where the U.S. Nuclear Regulatory Commission maintains jurisdiction for regulating the use of licensed material in accordance with letters dated January 23, 2015, and April 15, 2015.**
11. A. Licensed material shall only be used by, or under the supervision of, individuals designated by the Radiation Safety Committee, Fusao Hirata, M.D., Ph.D., Chairperson.
- B. The Radiation Safety Officer (**RSO**) for this license is Maha Srinivasan, M.S.
12. A. Sealed sources and detector cells shall be tested for leakage and/or contamination at intervals not to exceed six months or at such other intervals as specified by 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. 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 six months prior to the transfer, or 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 or detector cell received from another person shall not be put into use until tested and the test results received.
- D. Each sealed source fabricated by the licensee shall be inspected and tested for construction defects, leakage, and contamination prior to any use or transfer as a sealed source.
- E. 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.

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- F. 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 or detector cell shall be stored for a period of more than ten years without being tested for leakage and/or contamination.
- G. 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.
- H. Tests for leakage and/or contamination 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.
- I. Records of leak test results shall be kept in units of microcuries and shall be maintained for three years.
13. Sealed sources and/or detector cells containing licensed material shall not be opened or sources removed from source holders by the licensee.
14. A. The licensee shall not use licensed material in or on human beings except as provided otherwise by specific condition of this license.
- B. 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. Experimental animals, or the products from experimental animals, that have been administered licensed materials shall not be used for human consumption.
16. 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 NRC.
- B. When in use, detector cells containing a titanium tritide foil or a scandium tritide foil shall be vented to the outside.
17. The licensee is authorized to transport licensed material in accordance with the provisions of 10 CFR Part 71, "Packaging and Transportation of Radioactive Material."
18. In addition to the possession limits in item 8, the licensee shall further restrict the possession of licensed material to quantities below the minimum limit specified in 10 CFR 30.35 (d) for establishing a decommissioning funding plan.

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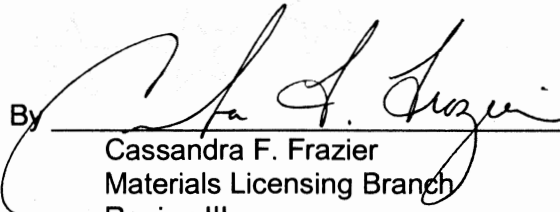
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19. The licensee is authorized to hold radioactive material with a physical half-life of less than or equal to 120 days for decay-in-storage before disposal in ordinary trash provided:
- A. Before disposal as ordinary trash, byproduct material shall 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.
20. 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 August 16, 2011; and
 - B. Letters dated August 5, 2013, August 28, 2013, November 21, 2014, **January 23, 2015**, February 10, 2015, and **April 15, 2015**.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Date APR 22 2015

By


Cassandra F. Frazier
Materials Licensing Branch
Region III