U.S. NUCLEAR REGULATORY COMMISSION

Amendment No. 27

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, 70 and 71, 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.

Licensee	In accordance with applications dated January 14, 2022, and March 14, 2022; email dated April 26, 2022, and letter dated May 20, 2022,	4. Expiration Date: June 30, 2037
1. South Dakota State University 2. SAV 143; P.O. Box 2202 Brookings, SD 57007	3. License No.: 40-02194-17 is renewed in its entirety to read as follows:	5. Docket No.: 030-13079 Reference No.:

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	9. Authorized use
A. Any byproduct material with Atomic Numbers 1 through 83	A. Any except sealed source	A. 50 millicuries per radionuclide and 500 millicuries total	A. For use in research and development as defined in 10 CFR 30.4, including small animal research, academic instruction, and calibration of licensee's instruments.
B. Carbon-14	B. Any Except Sealed Sources	B. 50 millicuries total	B. For use in research and development as defined in 10 CFR 30.4, including small animal research, academic instruction, and calibration of licensee's instruments.
C. Hydrogen-3	C. Any Except Sealed Sources	C. 50 millicuries total	C. For use in research and development as defined in 10 CFR 30.4, including small animal research, academic instruction, and calibration of licensee's instruments.

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D. Any byproduct material with Atomic Numbers 1 through 83	D. Sealed, Plated, or Foil Sources	D. 15 millicuries per radionuclide and 1 curie total	D. For use in research and development as defined in 10 CFR 30.4, including small animal research, academic instruction, and calibration of licensee's instruments.
E. Hydrogen-3	E. Sealed, Plated, or Foil Sources	E. 1 curie total	E. For use in research and development as defined in 10 CFR 30.4, including small animal research, academic instruction, and calibration of licensee's instruments.
F. Americium-241/ Beryllium	F. Sealed Neutron Source (CPN International Division of InstroTek, Inc., Model CPN-131)	F. 50 millicuries per source and 100 millicuries total	F. For use in CPN International Division of InstroTek, Inc., Model 503 portable gauging devices for measuring physical properties of materials, research and development as defined in 10 CFR 30.4, and academic instruction.
G. Curium-244	G. Sealed Sources (AEA Technology/QSA Inc., Model CLC.A1; Amersham, Model CLCL)	G. 30 millicuries per source and 30 millicuries total	G. For use in a Metorex Model HEPS X-Ray fluorescence analyzer for element analysis of material, research and development as defined in 10 CFR 30.4, and academic instruction.
H. Radium-226/ Beryllium	H. Sealed Sources (Amersham Corporation, Model RAN6004; Atomic Energy of Canada, Ltd., Model C112; C143)	H. 2.1 millicuries per source and 2.1 millicuries total	H. For storage only pending disposal of a Troxler Electronic Laboratories, Inc., Model 2401 portable gauging device.
I. Americium-241/ Beryllium	I. Sealed Neutron Source (Troxler Drawing, Model A-102700)	I. 10 millicuries per source and 20 millicuries total	I. For storage only pending disposal of Troxler Electronic Laboratories, Inc., Model 3221 portable gauging devices.

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J. Radium-226	J. Sealed, Plated, or Foil Sources	J. 56 microcuries per source and 112 microcuries total	J. For storage only pending disposal of two detector cells Barber-Coleman Company Model A-4149.

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CONDITIONS

10. A. Licensed material identified in Subitems Numbers 6.A. through 6.J. shall be used or stored at the licensee's facilities located at South Dakota State University Campus, Brookings, South Dakota, 57007.

B. Licensed material identified in Subitems Numbers 6.F. and 6.G. may be used or stored at temporary job sites of the licensee anywhere in the United States where the U.S. Nuclear Regulatory Commission maintains jurisdiction for regulating the use of licensed material, including areas of exclusive Federal jurisdiction within Agreement States. If the jurisdiction status of a Federal facility within an Agreement State is unknown, the licensee should contact the Federal agency controlling the job site in question to determine whether the proposed job site is an area of exclusive Federal jurisdiction. Authorization for use of radioactive materials at job sites in Agreement States not under exclusive Federal jurisdiction shall be obtained from the appropriate state regulatory agency.

11. Licensed material shall only be used by, or under the supervision of, individuals designated, in writing, by the South Dakota State University Radiation Safety Committee. The licensee shall maintain records of individuals designated as users for 3 years after the individual's last use of licensed material.

12. The Radiation Safety Officer (RSO) for this license is Kevin L. O'Kelley.

13. A. Sealed sources and detector cells shall be tested for leakage and/or contamination at intervals not to exceed the intervals specified in the certificate of registration issued by the U.S. Nuclear Regulatory Commission under 10 CFR 32.210 or by an Agreement State. In the absence of a registration certificate, sealed sources shall be tested for leakage and/or contamination at intervals not to exceed 6 months, or at such other intervals as specified.

B. Notwithstanding Paragraph A of this Condition, sealed sources designed to primarily emit alpha particles shall be tested for leakage and/or contamination at intervals not to exceed 3 months.

C. 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.

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D. In the absence of a certificate from a transferor indicating that a leak test has been made within the intervals 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 and the test results received.

E. Sealed sources need not be 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.

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 shall be stored for a period of more than 10 years without being tested for leakage and/or contamination.

G. The leak test shall be capable of detecting the presence of 185 becquerels (0.005 microcuries) of radioactive material on the test sample. If the test reveals the presence of 185 becquerels (0.005 microcuries) 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, 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.

I. Records of leak test results shall be kept in units of becquerels (microcuries) and shall be maintained for 3 years.

14. Sealed sources, source rods, foil sources, or detector cells containing licensed material shall not be opened or sources removed from source holders or detached from source rods, or foil sources removed from detector cells by the licensee, except as specifically authorized.

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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 U.S. Nuclear Regulatory Commission or an Agreement State to perform such services.

16. 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. Records of leak test results shall be kept in units of microcuries and shall be maintained for 3 years.

17. A. Detector cells containing a titanium tritide foil or scandium tritide foil shall only be used in conjunction with a properly operating temperature control mechanism that prevents the foil temperature from exceeding that specified in the certificate of registration issued by the U.S. Nuclear Regulatory Commission pursuant to 10 CFR 32.210 or equivalent regulations from an Agreement State.

    B. When in use, detector cells containing a titanium tritide foil or scandium tritide foil shall be vented to the outside.

18. The licensee shall not use licensed material in field applications where activity is released except as provided otherwise by specific condition of this license.

19. This license does not authorize commercial distribution of licensed material.

20. Experimental animals, or the products from experimental animals, that have been administered licensed material shall not be used for human or animal consumption.

21. The licensee shall not use the licensed material in or on humans.

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22. 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, the waste shall be surveyed at the container surface with the appropriate survey instrument 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, except for radiation labels on materials that are within containers and that will be managed as biomedical waste after they have been released from the licensee.

    B. A record of each such disposal permitted under this license condition shall be retained for 3 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.

23. Pursuant to 10 CFR 20.2002, the licensee is authorized to dispose of licensed material by incineration as described in application dated March 14, 2022, provided the gaseous effluent from incineration does not exceed the limits specified for air in Appendix B to 10 CFR Part 20, Table 2.

24. Pursuant to 10 CFR 20.2002, the licensee may dispose of incinerator ash containing radioactive materials with Atomic Nos. 1 through 83, except as identified below, as ordinary waste, provided that the concentration of radionuclides (in microcuries per gram of ash) at the time of disposal are no greater than the values in Appendix B of 10 CFR Part 20, Table 2, Column 2. For hydrogen-3, carbon-14, aluminum-26, chlorine-36, silver-108m, niobium-94, iodine-129, technetium-99, and thallium-204, the concentration can be no greater than one-tenth of the value in Appendix B of 10 CFR Part 20, Table 2, Column 2. If more than one radionuclide is present in the ash, the sum of fractions rule applies.

25. 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 3 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.

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26. Except for maintaining labeling as required by 10 CFR Part 20, or Part 71, the licensee shall obtain authorization from the U.S. Nuclear Regulatory Commission before making any changes in the sealed source, device, or source-device combination that would alter the description or specifications as indicated in the respective certificate of registration issued either by the U.S. Nuclear Regulatory Commission pursuant to 10 CFR 32.210 or by an Agreement State.

27. Each portable nuclear gauge shall have a lock or outer locked container designed to prevent unauthorized or accidental removal of the sealed source from its shielded position. The gauge or its container must be locked when in transport or storage, or when not under the direct surveillance of an authorized user.

28. Any cleaning, maintenance, or repair of the gauge(s) that requires detaching the source or source rod from the gauge shall be performed only by the manufacturer or by other persons specifically licensed by the U.S. Nuclear Regulatory Commission or an Agreement State to perform such services.

29. Radioactive waste possessed under this license shall be stored in accordance with the statements, representations, and procedures included with the licensee's waste storage plan described in the licensee's application dated March 14, 2022.

30. 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 in 10 CFR 30.35(d) for which decommissioning financial assurance is required.

31. In addition to the possession limits in Item 8, the licensee shall further restrict the possession of licensed material in the form of unsealed material and foil or plated sources 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.

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32. Notwithstanding the requirements of License Condition 33, the licensee is authorized to make program changes and changes to procedures specifically identified in the application dated March 14, 2022, and letter dated May 20, 2022, which were previously approved by the U.S. Nuclear Regulatory Commission and incorporated into the license without prior Commission approval as long as:

A. The proposed revision is documented, reviewed, and approved by the licensee's Radiation Safety Committee in accordance with established procedures prior to implementation;

B. The revised program is in accordance with regulatory requirements, will not change the license conditions, and will not decrease the effectiveness of the Radiation Safety Program;

C. The licensee's staff is trained in the revised procedures prior to implementation; and

D. The licensee's audit program evaluates the effectiveness of the change and its implementation.

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33. 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. This license condition applies only to those statements, representations, and procedures that are required to be submitted in accordance with the regulations. The U.S. Nuclear Regulatory Commission's regulations shall govern unless the statements, representations, and procedures in the licensee's application and correspondence impose on the licensee requirements that are more restrictive than or in addition to the regulations.

A. Email dated November 22, 2021 with enclosures (ML21327A205)
B. Application dated January 14, 2022 (ML22019A034) and application dated March 14, 2022 with enclosures (ML22074A261)
C. Letter dated May 20, 2022 with enclosure (ML22165A256)

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Date: June 22, 2022

By: Roberto J. Torres
Digitally signed by Roberto J. Torres
Date: 2022.06.22 16:02:19 -05'00'

Roberto J. Torres
Region IV