U.S. NUCLEAR REGULATORY COMMISSION

Amendment No. 41

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.

Licensee	In accordance with the application dated October 12, 2005,
1. Old Dominion University Environmental Health and Safety Office	3. License number 45-09599-03 is amended in its entirety to read as follows:
2. Hughes Hall, Room 2061 Norfolk, Virginia 23529	4. Expiration date October 31, 2018
	5. Docket No. 03016045 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
A. Any byproduct material with atomic numbers 3 through 83 and with a half-life of not more than 120 days	A. Any	A. Not to exceed 150 millicuries per radionuclide and 5 curies total
B. Calcium 45	B. Any	B. 4 millicuries
C. Carbon 14	C. Any	C. 500 millicuries
D. Chlorine 36	D. Any	D. 5 millicuries
E. Hydrogen 3	E. Any	E. 500 millicuries
F. Thorium 229	F. Any	F. 2 microcuries
G. Thorium 232	G. Any	G. 100 microcuries
H. Uranium 232	H. Any	H. 5 microcuries
I. Uranium 236	I. Solid	I. 15 microcuries

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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
J. Uranium 235	J. Any	J. 5 microcuries
K. Natural Uranium	K. Any	K. 100 microcuries
L. Manganese 54	L. Any	L. 5 millicuries
M. Plutonium 238	M. Any	M. 2 microcuries
N. Polonium 210	N. Any	N. 5 microcuries
O. Cadmium 109	O. Electroplated sources (IPL Model XFB Series 3204 and 3205)	O. 50 millicuries
P. Europium 155	P. Sealed source	P. 60 millicuries
Q. Cesium 137	Q. Sealed source (Beckman Coulter, Inc. Models 167760,595255 or 598860)	Q. 100 microcuries
R. Nickel 63	R. Foils or plated sources (Amersham Corporation Model NBC and NEN Model NER 004)	R. Not to exceed 10 millicuries per source and 50 millicuries total

9. Authorized use:

A. - R. Research and development as defined in 10 CFR 30.4; animal studies; teaching and training of students; and calibration and checking of the licensee's instruments

CONDITIONS

10. Licensed material may be used or stored only at the licensee's facilities located at Old Dominion University (ODU) in Norfolk, Virginia except that:

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A. Hydrogen 3, carbon 14 and iodine 125 may also be used aboard research vessels anywhere in the United States where the U. S. Nuclear Regulatory Commission maintains jurisdiction for regulating the use of licensed material; and

B. Nickel 63 foils or plated sources for research and development may also be used 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.

11. The Radiation Safety Officer (RSO) for this license is Sheri A. Vann.

12. Licensed material shall be used by, or under the supervision of, individuals designated by the Radiation Safety Committee.

13. Licensed material shall not be used 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. 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 six months, or at other intervals approved by the U.S. Nuclear Regulatory Commission, to account for all 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. Sealed sources or detector cells containing licensed material shall not be opened or sources removed from source holders by the licensee.

18. A. Sealed sources 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 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 primarily emit alpha particles shall be tested for leakage and/or contamination at intervals not to exceed three 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.

D. In the absence of a certificate from a transferor indicating that a leak test has been made within six months prior to the transfer, a sealed source or detector cell received from another person shall not be put into use until tested.

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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 not designed to emit alpha particles, 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 10 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. The report shall be filed within five days of the date the leak test result is known with the appropriate U. S. Nuclear Regulatory Commission, Regional Office referenced in Appendix D of 10 CFR Part 20. The report shall specify the source involved, the test results, and corrective action taken.

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 5 years.

19. The licensee is authorized to transport licensed material in accordance with the provisions of 10 CFR Part 71, "Packaging and Transportation of Radioactive Material."

20. The licensee is authorized to hold byproduct material with a physical half-life of less than or equal to 120 days for decay-in-storage before disposal without regard to its radioactivity if the licensee:

A. Monitors byproduct material at the surface before disposal and determines that its radioactivity cannot be distinguished from the background radiation level with an appropriate radiation detection survey meter set on its most sensitive scale and with no interposed shielding; and

B. Removes or obliterates all radiation labels, 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; and

C. Maintains records of the disposal of licensed materials for 3 years. The record must include the date of disposal, the survey instrument used, the background radiation level, the radiation level measured at the surface of each waste container, and the name of the individual who performed the disposal.

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21. In addition to the possession limits in Item 8, the licensee shall further restrict the possession of unsealed licensed material to quantities less than 10^4 times the applicable limits in Appendix C of 10 CFR Part 20 pursuant to 10 CFR 30.35(d).

22. A. Detector cells containing titanium tritide foil shall only be used in conjunction with a properly operating temperature control mechanism which prevents foil temperatures from exceeding 225 degrees Centigrade.

    B. Detector cells containing scandium tritide foil shall only be used in conjunction with a properly operating temperature control mechanism which prevents foil temperatures from exceeding 325 degrees Centigrade.

23. Experimental animals or the products from experimental animals that have been administered licensed materials shall not be used for human consumption.

24. Notwithstanding the requirements of License Condition **26**, the licensee is authorized to make program changes and changes to procedures specifically identified in the application dated October 12, 2005 , and letter dated December 13, 2005**,** 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.

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

25. Notwithstanding 10 CFR 30.32(g) the licensee is authorized to use byproduct material indicated in Subitem P. of this license, in the form of sealed sources, that are not identified by source or device manufacturer and model number as registered with the Commission under 10 CFR 32.210 or with an Agreement State or to provide the information identified in 10 CFR 32.210(c).

26. 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 October 12, 2005 (ML053000388)
    B. Letter dated December 13, 2005(ML053530318)
    C. Facsimile received May 12, 2006 (ML061320438)

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For the U.S. Nuclear Regulatory Commission

Date October 21, 2008

By ***Original signed by Thomas K. Thompson***

Thomas K. Thompson
Commercial and R&D Branch
Division of Nuclear Materials Safety
Region I
King of Prussia, Pennsylvania 19406