

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License number

07-01579-19

Docket or Reference number

030-10925

Amendment No. 14

University of Delaware
Newark, Delaware 19711

In accordance with letter dated April 5, 1984, License Number 07-01579-19 is amended as follows:

Items 6., 7., and 8. are amended to read:

- | | | |
|---|--|--|
| 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 between 3-83, inclusive | A. Any | A. No single radioisotope to exceed 250 millicuries each, except as noted below. Total not to exceed 20 curies |
| B. Hydrogen 3 | B. Any | B. 10 curies |
| C. Carbon 14 | C. Any | C. 5 curies |
| D. Americium 241 | D. Any | D. 5 millicuries |
| E. Plutonium 239 | E. Sealed sources, encapsulated as Pu-Be neutron sources | E. 96 grams |
| F. Polonium 210 | F. Any | F. 5 millicuries |
| G. Polonium 208 | G. Any | G. 5 millicuries |
| H. Americium 241 | H. Sealed sources | H. 20 millicuries |
| I. Americium 241 | I. Americium/Beryllium sealed sources | I. 110 millicuries |
| J. Cesium 137 | J. Sealed source | J. 125 millicuries |
| K. Cesium 137 | K. Sealed source | K. 100 millicuries |

Condition 21. is amended to read:

21. Except as specifically provided otherwise by this license, the licensee shall possess and use licensed material described in Items 6, 7, and 8 of this license in accordance with statements, representations, and procedures contained in application dated August 19, 1980, amended as Revision I enclosed with letter dated February 9, 1983, and Items 1., 2., and 3. of letter dated April 5, 1984. The Nuclear Regulatory Commission's regulations shall govern the licensee's statements in applications or letters, unless the statements are more restrictive than the regulations.

For the U.S. Nuclear Regulatory Commission

Date MAY 16 1984

Original Signed By:

By

John E. Glenn

Nuclear Materials and Safeguards Branch
Region I
King of Prussia, Pennsylvania 19406

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MATERIALS LICENSE

Amendment No. 13

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 1, Parts 30, 31, 32, 33, 34, 35, 36, 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); and to import such byproduct and source material. 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 application enclosed with letter dated February 9, 1983,	
1. University of Delaware	3. License number	07-01579-19 is amended
	in its entirety to read as follows:	
2. Newark, Delaware 19711	4. Expiration date	March 31, 1988
	5. Docket or Reference No.	030-10925
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 between 3-83, inclusive	A. Any	A. No single radioisotope to exceed 250 millicuries each, except as noted below. Total not to exceed 20 curies.
B. Hydrogen 3	B. Any	B. 10 curies
C. Carbon 14	C. Any	C. 5 curies
D. Americium 241	D. Any	D. 5 millicuries
E. Plutonium	E. Sealed sources, encapsulated as Pu-Be neutron sources	E. 96 grams
F. Polonium 210	F. Any	F. 5 millicuries
G. Polonium 208	G. Any	G. 5 millicuries
H. Americium 241	H. Sealed sources	H. 20 millicuries
I. Americium 241	I. Americium/Beryllium sealed sources	I. 110 millicuries
J. Cesium 137	J. Sealed source	J. 125 millicuries
K. Cesium 137	K. Sealed source	K. 100 millicuries
9. Authorized use	8410300314 4p ML12	
A. through H.	Research and development as defined in Section 30.4(q) of 10 CFR 30.	
I.	For use in Troxler moisture depth gauges.	
J.	For use in Heltronic Instrument Corporation Model DM source holder for rock density determination in well logging operations.	
K.	For use in J. L. Shepard and Associates Series 10 calibrator.	

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(continued)

CONDITIONS

10. Licensed material shall be used only at the Newark, Delaware Campus; at the regional campuses at Lewes, Georgetown, Wilmington, and Dover, Delaware; and at other properties owned or occupied by the University of Delaware. Licensed material listed in Subitems 6.A., 6.B., and 6.C. may also be used on-board ship at temporary job sites in U.S. coastal waters, at sea, and in inland waters of the State of Delaware. Licensed material listed in Subitem 6.J. may also be used at temporary job sites in the states of Delaware, New Jersey, and Pennsylvania.
11. The licensee shall comply with the provisions of Title 10, Chapter 1, Code of Federal Regulations, Part 19, "Notices, Instructions and Reports to Workers; Inspections" and Part 20, "Standards for Protection Against Radiation."
12. Licensed material shall be used by, or under the supervision of, individuals designated by the Radiation Safety Committee, Robert C. Hodson, Ph.D., Chairman. The Radiation Safety Officer for the activities authorized by this license is Stuart W. Kline, M.S.
13. The licensee shall not use licensed material in or on human beings or in field applications where activity is released except as provided otherwise by specific condition of this license.
14. Experimental animals administered licensed materials or their products shall not be used for human consumption.
15. A.
 - (1) Each sealed source acquired from another person and containing licensed material, other than Hydrogen 3, with a half-life greater than thirty days and in any form other than gas shall be tested for contamination and/or leakage prior to use. In the absence of a certificate from a transferor indicating that a test has been made within six months prior to the transfer, a sealed source received from another person shall not be put into use until tested.
 - (2) Notwithstanding the periodic leak test required by this condition, 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.
 - (3) Except for alpha sources, the periodic leak test required by this condition does not apply to sealed sources that are stored and not being used. The sources excepted from this test shall be tested for leakage prior to any use or transfer to another person unless they have been leak tested within six months prior to the date of use or transfer.
- B. Each sealed source fabricated by the licensee shall be inspected and tested for construction defects, leakage, and contamination prior to use or transfer as a sealed source. If the inspection or test reveals any construction defects or 0.005 microcurie or greater of contamination, the source shall not be used or transferred as a sealed source until it has been repaired, decontaminated and retested.

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(15. continued)

CONDITIONS

- C. Each sealed source containing licensed material, other than Hydrogen 3, with a half-life greater than thirty days and in any form other than gas shall be tested for leakage and/or contamination at intervals not to exceed six months except that each source designed for the purpose of emitting alpha particles shall be tested at intervals not to exceed three months.
- D. 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 surfaces of the device in which the sealed source is permanently or semipermanently mounted or stored on which one might expect contamination to accumulate. Records of leak test results shall be kept in units of microcuries and maintained for inspection by the Commission.
- E. If the test required by Subsection A. or C. of this condition 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 Commission regulations. A report shall be filed within 5 days of the test with the U.S. Nuclear Regulatory Commission, Region I, 631 Park Avenue, King of Prussia, Pennsylvania 19406, describing the equipment involved, the test results, and the corrective action taken.
16. Sealed sources containing licensed material shall not be opened.
17. 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.
18. In lieu of using the conventional radiation caution colors (magenta or purple on yellow background) as provided in Section 20.203(a)(1), Title 10, Code of Federal Regulations, Part 20, 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.
19. Except for plutonium contained in a medical device designed for individual human application, no plutonium, regardless of form, shall be delivered to a carrier for shipment by air transport or transported in an aircraft by the licensee except in packages the design of which the NRC has specifically approved for transport of plutonium by air.

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CONDITIONS

10. The licensee may transport licensed material or deliver licensed material to a carrier for transport in accordance with the provisions of Title 10, Code of Federal Regulations, Part 71, "Packaging of Radioactive Material for Transport and Transportation of Radioactive Material Under Certain Conditions."
21. Except as specifically provided otherwise by this license, the licensee shall possess and use licensed material described in Items 6, 7, and 8 of this license in accordance with statements, representations, and procedures contained in application dated August 19, 1980, amended as Revision I enclosed with letter dated February 9, 1983. The Nuclear Regulatory Commission's regulations shall govern the licensee's statements in applications or letters, unless the statements are more restrictive than the regulations.



For the U.S. Nuclear Regulatory Commission

Original Signed By:
Phillip C. Jerman

By

Nuclear Materials and Safeguards Branch
Region I
King of Prussia, Pennsylvania 19406

Date

MAR 3 1983

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