

MATERIALS LICENSE

Amendment No. 98

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, 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 letter dated
November 9, 1987,3. License number 19-00915-03 is amended in
its entirety to read as follows:

4. Expiration date March 31, 1984 (Extended)

5. Docket or
Reference No. 030-045306. Byproduct, source, and/or
special nuclear material7. Chemical and/or physical
form8. Maximum amount that licensee
may possess at any one time
under this licenseA. Any byproduct material
with Atomic Numbers
1-83 except as specified
in Subitems 6.K, 6.L, or
6.M.B. Hydrogen 3
C. Carbon 14
D. Phosphorus 32
E. Nickel 63
F. Krypton 85
G. Cesium 137
H. Americium 241
I. Promethium 247
J. Cobalt 60
K. Strontium 90
L. Polonium 210
M. Polonium 210N. Californium 252
O. Americium 241

A. Any

B. Any
C. Any
D. Any
E. Any
F. Any
G. Any
H. Any
I. Sealed sources
J. Sealed sources
K. Any
L. Any
M. Foils or
sealed sources
N. Sealed sources
O. Sealed neutron
sourceA. Not to exceed
1 curie per
radionuclide with a
total possession
limit of 10 curiesB. 200 curies
C. 10 curies
D. 5 curies
E. 5 curies
F. 10 curies
G. 20 curies
H. 80 curies
I. 8 curies
J. 6 curies
K. 250 millicuries
L. 40 millicuries
M. 500 millicuriesN. 37.8 millicuries
O. Not to exceed
2 curies per source

9. Authorized use

A. through N. For use in research and development as defined in Section 30.4(q),
10 CFR Part 30; in gauging and measuring devices; for use in insect and
field application studies; research studies in humans as approved by a
Radioactive Drug Research Committee (RDRC) that has been approved by the
Food and Drug Administration (FDA).

O. For use in well logging.

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10. Licensed material shall be used at locations and facilities of the U. S. Department of Agriculture and at temporary job sites of the licensee anywhere in the United States, as authorized by the licensee's Radiological Safety Committee, except that licensed material for research studies in humans shall not be used on the premises of a medical institution licensed pursuant to Section 35.11 of 10 CFR Part 35 or equivalent regulations of an Agreement State.
11.
 - A. Licensed material may be used by, or under the supervision of, individuals designated by the licensee's Radiological Safety Committee, M. T. Ouye, Chairman.
 - B. The use of licensed material in or on humans shall be by a physician as defined in 10 CFR 35.2.
 - C. Physicians designated to use licensed material in or on humans shall meet the training and experience criteria established in Subpart J - Training and Experience Requirements of 10 CFR 35.910.
12.
 - A(1) Each sealed source or detector cell acquired from another person and containing licensed material, other than hydrogen 3, with a half-life greater than 30 days and in any form other than gas shall be tested for contamination and/or leakage before use. In the absence of a certificate from a transferor indicating that a test has been made within 6 months before the transfer, a sealed source or detector cell 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 or detector cell is exempt from such leak tests when the source or detector cell contains 100 microcuries or less of beta and/or gamma emitting materials 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 before any use or transfer to another person unless they have been leak tested within 6 months before the date of use or transfer.
- B. Each sealed source or detector cell fabricated by the licensee shall be inspected and tested for construction defects, leakage, and contamination prior to use or transfer as a sealed source or detector cell. 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 or detector cell until it has been repaired, decontaminated and retested.

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- C. Each sealed source containing licensed material, other than hydrogen 3, with a half-life greater than 30 days and in any form other than gas shall be tested for leakage and/or contamination at intervals not to exceed 6 months except that each source designed for the purpose of emitting alpha particles shall be tested at intervals not to exceed 3 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 detector cell or from the surfaces of the device in which the sealed source or detector cell 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. Records may be disposed of following Commission inspection.
 - 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 or detector cell 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 date the leak test result is known with the U. S. Nuclear Regulatory Commission, Region I, ATTN: Chief, Nuclear Materials Safety and Safeguards Branch, 631 Park Avenue, King of Prussia, Pennsylvania 19406, describing the equipment involved, the test results, and the corrective action taken.
13. Experimental animals administered licensed materials or their products shall not be used for human consumption.
 14. In lieu of using the conventional radiation caution colors (magenta or purple on yellow background) as provided in Section 20.203(a)(1), of 10 CFR 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.
 15. The licensee shall conduct a physical inventory every 6 months to account for all sources and/or devices received and possessed under the license. Records of inventories shall be maintained for 2 years from the date of each inventory.
 16. The licensee may transport licensed material in accordance with the provisions of 10 CFR Part 71, "Packaging and Transportation of Radioactive Material".
 17. Sealed sources or detector cells containing licensed material shall not be opened or sources removed from detector cells by the licensee.

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18. The licensee is authorized to use licensed materials in field application studies as authorized by the licensee's Radiological Safety Committee pursuant to the procedure described in the licensee's application dated December 28, 1978.
19. Pursuant to Section 20.302, 10 CFR Part 20, the licensee is authorized to dispose of up to twelve (12) curies of hydrogen 3 foil and up to one (1) curie of other licensed materials by burial per year in accordance with the procedures described in licensee's application dated December 28, 1978.
20. Pursuant to Sections 20.106(b) and 20.302 of 10 CFR Part 20, the licensee is authorized to dispose of licensed material by incineration provided the gaseous effluent from incineration does not exceed the limits specified for air in Appendix B, Table II, 10 CFR Part 20. Ash residues may be disposed of as ordinary waste provided appropriate surveys pursuant to Section 20.201 of 10 CFR Part 20 are made to determine that concentrations of licensed material appearing in the ash residues do not exceed the concentrations (in terms of microcuries per gram) specified for water in Appendix B, Table II, 10 CFR Part 20. The licensee is authorized to utilize the incinerators at the locations specified in Enclosure 9 to the licensee's letter dated May 1, 1985, letter dated July 11, 1985, and letter dated December 5, 1986.
21. Pursuant to Section 20.302, 10 CFR Part 20, the licensee may dispose of cesium 134 by burial in the soil at its Bushland, Texas location in accordance with statements, representations, and procedures in application dated May 14, 1979.
22. The licensee shall maintain records for inspection of the list of radionuclides to be used in humans; the names of the authorized physician-users; the identity of the FDA-approved RDRC that reviewed and approved the study; and the anticipated length of the study.
23. 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 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.

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- A. Application dated December 28, 1978
- B. Letter dated March 19, 1979
- C. Letter dated June 11, 1979
- D. Letter dated August 9, 1979
- E. Letter dated August 31, 1979
- F. Application dated September 10, 1979
- G. Letter dated October 19, 1979
- H. Letter dated December 3, 1979
- I. Letter dated January 4, 1980
- J. Letter dated April 16, 1980
- K. Letter dated August 27, 1980
- L. Letter dated August 29, 1980
- M. Letter dated September 4, 1981
- N. Letter dated September 16, 1981
- O. Letter dated August 17, 1982
- P. Letter dated May 1, 1985
- Q. Letter dated June 11, 1985
- R. Letter dated July 11, 1985
- S. Letter dated September 4, 1986
- T. Letter dated October 6, 1986 except burials
- U. Letter dated December 5, 1986
- V. Letter dated April 14, 1987
- W. Letter dated July 16, 1987

For the U.S. Nuclear Regulatory Commission

Original Signed By

Jack Davis

Date

12 JAN 1988

By

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