

MATERIALS LICENSE

Amendment No. 03
CORRECTED COPY

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

1. The Curators of the University
of Missouri2. University of Missouri-Rolla
108 Campus Support Facility
1870 Miner Circle
Rolla, MO 65409-01106. Byproduct, Source, and/or
Special Nuclear Material7. Chemical and/or Physical
Form8. Maximum Amount that Licensee
May Possess at Any One Time
Under This License

In accordance with letter dated

June 13, 1996

3. License Number 24-00513-40 is amended in
its entirety to read as follows:

4. Expiration Date August 31, 2002

5. Docket or
Reference No. 030-32692A. Any byproduct
material with Atomic
Numbers between 1-
83, inclusive except
as specified below

A. Any

A. 0.5 curie of each
radionuclide with a
total possession
limit of 5 curies

B. Hydrogen-3

B. Any

B. 1 curie

C. Polonium-210

C. Any

C. 1 microcurie

D. Activation products
of natural uranium

D. Any

D. 10 millicuries

E. Americium-241

E. Sealed source

E. 0.1 millicuries

F. Cesium-137

F. Sealed source
(Ronan, Model
X90-SA1-C10)

F. 50 millicuries

G. Americium-241

G. Sealed source
(Troxler Model 3440)

G. 40 millicuries

9701090130 961212
PDR ADOCK 03032692
C PDR

COPY

230

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License Number

24-00513-40

Docket or Reference Number

030-32692

Amendment No. 03

CORRECTED COPY

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
H. Cesium-137	H. Sealed source (Troxler Model 3440)	H. 8 millicuries
I. Californium-252	I. Sealed source	I. 1 microgram (520 microcuries)
J. Plutonium-239	J. Sealed source (Mound No. M-169) Pu/Be	J. 76.3 grams
K. Plutonium-239	K. Sealed source (Mound No. 820S38-36B) Pu/Be	K. 85 grams
L. Uranium (Natural)	L. Sub-Critical Slugs in Aluminum Cans	L. 2,540.1 kilograms
M. Thorium	M. Any	M. 3 kilograms
N. Uranium (Natural)	N. Any	N. 3 kilograms
O. Neptunium-237	O. Any	O. 1 nanocurie
P. Uranium-239	P. Any	P. 1 nanocurie
Q. Uranium-235	Q. Any	Q. 1 nanocurie
R. Samarium-151	R. Sealed source	R. 0.5 curies
S. Cobalt-58	S. Any	S. 1.5 curies

COPY

**MATERIALS LICENSE
SUPPLEMENTARY SHEET**

License Number

24-00513-40

Docket or Reference Number

030-32692

Amendment No. 03

CORRECTED COPY

9. Authorized Use:

- A. through B. Research and development as defined in Section 30.4 of 10 CFR Part 30, and student instruction. Instrument calibration.
- C. through E. Research and development as defined in Section 30.4 of 10 CFR Part 30, (excluding animal studies) and student instruction. Instrument calibration.
- F. To be used in density monitor.
- G. and H. To be used in moisture/density gauge registered with the NRC pursuant to Section 32.210 of 10 CFR Part 32 or an Agreement State, for the measurement of moisture/density content of materials.
- I. through K. Research and development as defined in Section 30.4 of 10 CFR Part 30, (excluding animal studies) and student instruction. Instrument calibration.
- L. To be used in sub-critical light-water moderated assembly for student instruction and research.
- M. and N. Research and development as defined in Section 30.4 of 10 CFR Part 30, (excluding animal studies) and student instruction. Instrument calibration.
- O. through Q. Analytical studies and research on ORNL/DOE soil/water samples.
- R. To be used with Mossbauer spectroscopy experiments.
- S. To be used for research and development as defined in Section 30.4 of 10 CFR Part 30, in accordance with letter dated September 17, 1996.

CONDITIONS

- 10. Licensed material may be used at the licensee's facilities located at University of Missouri at Rolla facilities. Licensed material listed in Items 6.F. through 6.H. shall 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 for this license is Nick Tsoulfanidis.
- 12. Licensed material in Subitems 6.A. through 6.Q. shall be used by, or under the supervision of, individuals designated by the Radiation Safety Committee. The licensee shall maintain records of individuals designated as users.

COPY

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License Number

24-00513-40

Docket or Reference Number

030-32692

Amendment No. 03

CORRECTED COPY

13. In addition to the possession limits in Item 8, the licensee shall further restrict the possession of licensed material 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.
14. A. Sealed sources and detector cells shall be tested for leakage and/or contamination at intervals not to exceed 6 months or at such other intervals as specified by the certificate of registration, referred to in 10 CFR 32.210.
- 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 test has been made, a sealed source or detector cell received from another person shall not be put into use until tested.
- D. Sealed sources need not be leak tested if:
- (i) they contain only hydrogen 3; or
 - (ii) they contain only a radioactive gas; or
 - (iii) the half-life of the isotope is 30 days or less; or
 - (iv) they contain not more than 100 microcuries of beta and/or gamma emitting material or not more than 10 microcuries of alpha emitting materials; or
 - (v) 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.
- E. The leak test shall be capable of detecting the presence of 0.005 microcurie of radioactive material on the test sample. Records of leak test results shall be kept in units of microcuries and shall be maintained for inspection by the Commission. If the test reveals the presence of 0.005 microcurie or more of removable contamination, a report shall be filed with the U.S. Nuclear Regulatory Commission and the source shall be removed from service and decontaminated, repaired, or disposed of in accordance with Commission regulations. The report shall be filed within 5 days of the date the leak test result is known with the U.S. Nuclear Regulatory Commission, Region III, 801 Warrenville Road, Lisle, Illinois 60532-4351, ATTN: Chief, Nuclear Materials

COPY

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License Number

24-00513-40

Docket or Reference Number

030-32692

Amendment No. 03

CORRECTED COPY

14.E (Continued)

Safety Branch. The report shall specify the source involved, the test results, and corrective action taken. Records of leak test results shall be kept in units of microcuries and shall be maintained for inspection by the Commission. Records may be disposed of following Commission inspection.

- F. Tests for leakage and/or contamination shall be performed by the licensee or by other persons specifically licensed by the Commission or an Agreement State to perform such services.
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 5 years from the date of each inventory, and shall include the quantities and kinds of byproduct material, manufacturer's name and model numbers, location of the sources and/or devices, and the date of the inventory.
16. 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 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. In lieu of using the conventional radiation caution colors (magenta or purple on yellow background) as provided in 10 CFR 20.203(a)(1), the licensee is hereby authorized to label detector cells, containing licensed material and used in gas chromatography devices, with conspicuously etched or stamped radiation caution symbols.
18. Sealed sources or detector cells containing licensed material shall not be opened or sources removed from source holders or detector cells by the licensee.
19. The licensee is authorized to hold radioactive material with a physical half-life of less than 65 days and Sulphur-35 for decay-in-storage before disposal in ordinary trash provided:
- A. Radioactive waste to be disposed of in this manner shall be held for decay a minimum of 10 half-lives.

COPY

**MATERIALS LICENSE
SUPPLEMENTARY SHEET**

License Number

24-00513-40

Docket or Reference Number

030-32692

Amendment No. 03

CORRECTED COPY

- B. Before disposal as normal waste, radioactive waste shall be surveyed to determine that its radioactivity cannot be distinguished from background. All radiation labels shall be removed or obliterated.
- C. 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.
- D. Radioactive waste being held for decay shall not be stored for a period greater than 4 years.
- 20. Radioactive waste other than that specified in Condition 19. shall not be stored for a period greater than 2 years.
- 21. Radioactive waste currently possessed exceeding the storage provisions of Condition 19.D., and 20. shall be disposed of within one year of the issuance of this license.
- 22. Experimental animals, or the products from experimental animals, that have been administered licensed materials shall not be used for human consumption.
- 23. This license does not authorize commercial distribution of licensed material.
- 24. The licensee shall not use licensed material in or on human beings except as provided otherwise by specific condition of this license.
- 25. The licensee shall not use licensed material in field applications where activity is released except as provided otherwise by specific condition of this license.
- 26. The licensee is authorized to transport licensed material only in accordance with the provisions of 10 CFR Part 71, "Packaging and Transportation of Radioactive Material."
- 27. The licensee shall maintain records of information important to safe and effective decommissioning at 108 Campus Support Facility, 1807 Miner Circle, University of Missouri, Rolla Missouri per the provisions of 10 CFR 30.35(g) until this license is terminated by the Commission.
- 28. In addition to the possession limits in Item 8, the licensee shall further restrict the possession of unsealed licensed material or readily dispersible source material to quantities less than 10^5 times the applicable limits in Appendix C of 10 CFR Part 20, as specified in 10 CFR 30.35.

COPY

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License Number

24-00513-40

Docket or Reference Number

030-32692

Amendment No. 03

CORRECTED COPY

29. 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.
- A. Application dated February 10, 1992.
- B. Letters dated July 31, 1992, June 13, 1996 and September 17, 1996.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Date

December 12, 1996

By

Constance G. Lopez
Nuclear Materials Licensing Branch, Region III

COPY

DEC 18 1996

Nicholas Tsoulfanidis, Ph.D.
The Curators of the University
of Missouri
University of Missouri-Rolla
108 Campus Support Facility
1870 Miner Circle
Rolla, MO 65409-0110

Dear Dr. Tsoulfanidis:

It has come to our attention that Amendment Number 03 to License Number 24-00513-40 issued on October 8, 1996 contained an error.

Enclosed is a corrected copy reflecting the change in your expiration date noted to be in error. We apologize for any inconvenience this may have caused you.

Sincerely,

Original Signed By
Cassandra Frazier
Nuclear Materials Licensing Branch

License No. 24-00513-40
Docket No. 030-32692

Enclosure: Corrected Copy of
Amendment No. 03

DOCUMENT NAME: M:\03032692.CC6

To receive a copy of this document, indicate in the box: "C" = Copy without enclosures "E" = Copy with enclosures "N" = No copy

OFFICE	DNMS/RIII								
NAME	CFrazier:brt								
DATE	12/12/96								

OFFICIAL RECORD COPY