

U.S. NUCLEAR REGULATORY COMMISSION

Amendment No. 16

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, 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.

<p style="text-align: center;">Licensee</p> <p>1. Donald Danforth Plant Science Center</p> <p>2. 975 North Warson Road St. Louis, MO 63132</p>	<p>In accordance with letter dated June 29, 2015,</p> <p>3. License number 24-32339-01 is amended in its entirety to read as follows:</p> <hr/> <p>4. Expiration date March 31, 2022</p> <hr/> <p>5. Docket No. 030-35805 Reference No.</p>
--	--

<p>6. Byproduct, source, and/or special nuclear material</p> <p>A. Hydrogen-3</p> <p>B. Carbon-14</p> <p>C. Iodine-125</p> <p>D. Phosphorus-32</p> <p>E. Phosphorus-33</p> <p>F. Sulfur-35</p>	<p>7. Chemical and/or physical form</p> <p>A. Any Bound (non-volatile)</p> <p>B. Any</p> <p>C. Any Bound (non-volatile)</p> <p>D. Any</p> <p>E. Any</p> <p>F. Any</p>	<p>8. Maximum amount that licensee may possess at any one time under this license</p> <p>A. 1500 millicuries</p> <p>B. 500 millicuries</p> <p>C. 5 millicuries</p> <p>D. 250 millicuries</p> <p>E. 50 millicuries</p> <p>F. 60 millicuries</p>
--	---	--

9. Authorized Use:
- A. through F. Research and development, as defined in Section 30.4 of 10 CFR Part 30, excluding animal studies.

CONDITIONS

10. Licensed material shall be used only at the licensee's facilities located at 975 North Warson Road, St. Louis, Missouri.
11. **The Radiation Safety Officer (RSO) for this license is James J. Cox, M.S., CHP.**
12. Licensed material listed above is only authorized for use by, or under the supervision of, the following individuals for the materials and uses indicated:

<u>Authorized User</u>	<u>Material and Use</u>
Dilip M. Shah, Ph.D.	All.
Yong-qiang An, Ph.D.	Phosphorus-32 and sulfur-35.

**MATERIALS LICENSE
SUPPLEMENTARY SHEET**

License Number
24-32339-01

Docket or Reference Number
030-35805

Amendment No. 16

Authorized User

Material and Use

Ivan Baxter, Ph.D.

Phosphorus-32.

Xuemin Wang, Ph.D.

All.

Toni M. Kutchan, Ph.D.

All.

Sona Pandey, Ph.D.

All.

James C. Carrington, Ph.D.

All.

Douglas K. Allen, Ph.D.

All.

James G. Umen, Ph.D.

All.

Dmitri A. Nusinow, Ph.D.

Phosphorus-32 and sulfur-35.

Rebecca S. Bart, Ph.D.

Phosphorus-32.

13. 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, byproduct material shall be surveyed at the container surface with the appropriate meter 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.
 - B. A record of each 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.
14. This license does not authorize commercial distribution of licensed material.
15. The licensee shall not use licensed material in or on human beings except as provided otherwise by specific condition of this license.
16. The licensee shall not use licensed material in field applications where activity is released except as provided otherwise by specific condition of this license.
17. 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."

**MATERIALS LICENSE
SUPPLEMENTARY SHEET**License Number
24-32339-01Docket or Reference Number
030-35805


Amendment No. 16

18. 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 February 24, 2012; and
 - B. Letter dated **August 11, 2015**.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Date SEP 02 2015

By


Cassandra F. Frazier
Materials Licensing Branch
Region III