

U.S. NUCLEAR REGULATORY COMMISSION

Amendment No. 07

**MATERIALS LICENSE**

**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.

<p style="text-align: center;">Licensee</p> <p>1. Sigma-Aldrich Company</p> <p>2. P.O. Box 14508 St. Louis, MO 63178</p>	<p>In accordance with letter dated May 17, 2010,</p> <p>3. License number 24-16607-03 is amended in its entirety to read as follows:</p> <hr/> <p>4. Expiration date March 31, 2012</p> <hr/> <p>5. Docket No. 030-28992/030-11303 Reference No.</p>
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<p>6. Byproduct, source, and/or special nuclear material</p> <p><b>A. Hydrogen-3</b></p> <p><b>B. Carbon-14</b></p> <p><b>C. Phosphorous-32</b></p> <p><b>D. Phosphorous-33</b></p> <p><b>E. Cobalt-57</b></p> <p><b>F. Iodine-125</b></p> <p><b>G. Carbon-14</b></p>	<p>7. Chemical and/or physical form</p> <p><b>A. Any</b></p> <p><b>B. Any</b></p> <p><b>C. Any</b></p> <p><b>D. Any</b></p> <p><b>E. Any</b></p> <p><b>F. Any</b></p> <p><b>G. Decommissioning wastes</b></p>	<p>8. Maximum amount that licensee may possess at any one time under this license</p> <p><b>A. 5 millicuries</b></p> <p><b>B. 5 millicuries</b></p> <p><b>C. 5 millicuries</b></p> <p><b>D. 5 millicuries</b></p> <p><b>E. 5 millicuries</b></p> <p><b>F. 5 millicuries</b></p> <p><b>C. 100 millicuries</b></p>
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9. Authorized Use

- A. to F. To be used for laboratory research and development as defined in 10 CFR Part 30.4**
- G. Possession incident to waste disposal as described in letter dated May 17, 2010.**

CONDITIONS

- 10. Licensed materials in Subitems A. and B. shall be used only at the licensee's facilities located at 3300 South Second Street, St. Louis, Missouri. Licensed material in Subitem B shall be used only at the licensee's facilities located at 3500 DeKalb Street, St. Louis, Missouri, and 2909 Leclde Ave., St. Louis, Missouri.
- 11. **A.** Licensed material shall be used by, or under the supervision of, individuals designated by the Radiation Safety Committee, Thomas K. Spencer, Chairperson.
- B.** The Radiation Protection Officer for the activities authorized by this license is Thomas K. Spencer.

**MATERIALS LICENSE  
SUPPLEMENTARY SHEET**License Number  
24-16607-03Docket or Reference Number  
030-28992/030-11303

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12. A. Sealed sources 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. In the absence of a certificate from a transferor indicating that a leak test has been made within the interval specified in the certificate of registration issued by the U.S. Nuclear Regulatory Commission under 10 CFR 32.210 or by an Agreement State, prior to the transfer, a sealed source received from another person shall not be put into use until tested.
- C. Sealed sources need not be tested if they 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 shall be stored for a period of more than 10 years without being tested for leakage and/or contamination.
- D. The leak test shall be capable of detecting the presence of 0.005 microcuries (185 becquerels) of radioactive material on the test sample. If the test reveals the presence of 0.005 microcuries (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.
- E. Tests for leakage an/or contamination, including leak test sample collection and analysis, shall be performed by the licensee or other persons specifically licensed by the U.S. Nuclear Regulatory Commission or an Agreement State to perform such services.
- F. Records of leak test results shall be kept in units of microcuries and shall be maintained for 3 years.
13. Licensed material shall not be used in or on human beings or in field applications where activity is released except as provided otherwise by specific condition of this license.
14. The licensee shall establish a bioassay program for individuals handling millicurie amounts of iodine-125 and/or iodine-131 in accordance with frequencies and procedures contained in Regulatory Guide 8.20, "Applications of Bioassay for I-125 and I-131."
15. The licensee is authorized to hold radioactive material with a physical half-life of less than 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 survey 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.

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- B. 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.
16. This license does not authorize commercial distribution of licensed material.
17. 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 August 24, 2001 (with attachments);
- B. Letter received January 28, 2002 (with attachments); and
- C. Letter dated May 17, 2010.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Date JUN 28 2011

by

William P. Reichhold  
Materials Licensing Branch  
Region III