



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
612 EAST LAMAR BLVD, SUITE 400
ARLINGTON, TEXAS 76011-4125

April 14, 2010

South Dakota School of Mines and Technology
ATTN: Jerilyn Roberts
Radiation Safety Officer
501 East Saint Joseph Street
Rapid City, SD 57701

SUBJECT: LICENSE RENEWAL

Please find enclosed Amendment Number 01 to NRC License Number 40-27640-01, **authorizing your license renewal for 10 years. Please note that only a portion of your request was authorized. When Dr. Sundareshwar receives the training and experience for the other radionuclides as we discussed, then please submit a license amendment request with a copy of the supporting documentation of his training and experience for our review and approval. In addition, your request for sulphur-35 was authorized since it has one average beta energy of 48 keV and approximately 87 day half-life.**

An environmental assessment for this action is not required, since this action is categorically excluded under 10 CFR 51.22(c)(14)(v). You should review the enclosed document carefully and be sure that you understand all conditions. If there are any questions, please contact me at (817) 276-6552.

NRC expects licensees to conduct their programs with meticulous attention to detail and a high standard of compliance. Because of the serious consequences to employees and the public that can result from failure to comply with NRC requirements, you must conduct your radiation safety program according to the conditions of your NRC license, representations made in your license application, and NRC regulations. In particular, note that you must:

1. Operate by NRC regulations 10 CFR Part 19, "Notices, Instructions and Reports to Workers: Inspection and Investigations," 10 CFR Part 20, "Standards for Protection Against Radiation," and other applicable regulations.
2. Notify NRC in writing of any change in mailing address.
3. By 10 CFR 30.36(d) and/or license condition, notify NRC, promptly, in writing, and request termination of the license:
 - a. When you decide to terminate all activities involving materials authorized under the license whether at the entire site or any separate building or outdoor area;
 - b. If you decide not to acquire or possess and use authorized material; or
 - c. When no principal activities under the license have been conducted for a period of 24 months.
4. Request and obtain a license amendment before you:
 - a. Change Radiation Safety Officers;

- b. Order byproduct material in excess of the amount, radionuclide or form authorized on the license;
- c. Add or change the areas or address(es) of use identified in the license application or on the license; or
- d. Change the name or ownership of your organization.

In addition, please note that NRC Form 313 requires the applicant, by signature, to verify that the applicant understands that all statements contained in the application are true and correct to the best of the applicant's knowledge. The signatory for the application should be the licensee or certifying official rather than a consultant. Since the NRC also accepts a letter requesting amendment of an NRC license, the signatory for such a request should also be the licensee or certifying official rather than a consultant.

NRC will periodically inspect your radiation safety program. Failure to conduct your program according to NRC regulations, license conditions, and representations made in your license application and supplemental correspondence with NRC may result in enforcement action against you. This could include issuance of a notice of violation; imposition of a civil penalty; or an order suspending, modifying, or revoking your license as specified in the NRC Enforcement Policy. The NRC Enforcement Policy is available on the following internet address:
<http://www.nrc.gov/reading-rm/doc-collections/enforcement/>.

NRC no longer publishes the NRC Rules and Regulations loose leaf supplements. However, an electronic version of the NRC's regulations is available on the NRC Web site at www.nrc.gov. Additional information regarding use of radioactive materials may be obtained on the NRC Web site at <http://www.nrc.gov/materials/miau/mat-toolkits.html>. This site also provides the link to the toolbox for updated information on the revised regulations for naturally-occurring and accelerator-produced radioactive materials (NARM).

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

Thank you for your cooperation.

Sincerely,



Rachel S. Browder, Sr. Health Physicist
Nuclear Materials Safety Branch B

Docket: 030-35198
License: 40-27640-01
Control: 472221

Enclosure: As stated

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, 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>Licensee</p> <p>1. South Dakota School of Mines and Technology</p> <p>2. 501 East Saint Joseph Street Rapid City, South Dakota 57701</p>	<p>In accordance with application dated April 14, 2009 and letter dated April 6, 2010</p> <p>3. License number 40-27640-01 is amended in its entirety to read as follows:</p> <p>4. Expiration date April 30, 2020</p> <p>5. Docket No. 030-35198</p> <p>Reference No.</p>
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<p>6. Byproduct, source, and/or special nuclear material</p> <p>A. Nickel-63</p> <p>B. Hydrogen-3</p> <p>C. Sulphur-35</p>	<p>7. Chemical and/or physical form</p> <p>A. Sealed sources or foils in Eckert & Ziegler Isotope Products dba Isotope Products Laboratories Model NER-004</p> <p>B. Any</p> <p>C. Any</p>	<p>8. Maximum amount that licensee may possess at any one time under this license</p> <p>A. 20 millicuries</p> <p>B. 5 millicuries</p> <p>C. 5 millicuries</p>
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9. Authorized Use:

A. For storage only in a Sensor TOF 2000™ mass spectrometer.

B. and C. Research and development as defined in 10 CFR 30.4, teaching and training of students.

CONDITIONS

- 10. A. Licensed material listed in Item 6.A. shall be stored in the Chemistry and Chemical Engineering Building, South Dakota School of Mines and Technology, 501 East Saint Joseph Street, Rapid City, South Dakota.
- B. Licensed material listed in Items 6.B. and 6.C. shall be used and stored in the Mineral Industry Building, South Dakota School of Mines and Technology, 501 East Saint Joseph Street, Rapid City, South Dakota.
- 11. In accordance with the requirements set forth in 10 CFR 30.36(d), the licensee shall promptly notify the U.S. Nuclear Regulatory Commission, in writing, of a decision not to complete the facility, acquire equipment, or possess and use authorized material.
- 12. A. Licensed material shall be used by, or under the supervision of Pallaoor Sundareshwar, Ph.D.
- B. The Radiation Safety Officer for this license is Jerilyn Roberts.

**MATERIALS LICENSE
SUPPLEMENTARY SHEET**

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Amendment No. 01

13. The licensee shall conduct a physical inventory every 6 months, or at other intervals approved by the U.S. Nuclear Regulatory Commission, 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 radionuclides, quantities, manufacturer's name and model numbers, and the date of the inventory.
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 and detector cells designed to emit alpha particles shall be tested for leakage and/or contamination at intervals not to exceed 3 months.
- A. In the absence of a certificate from a transferor indicating that a leak test has been made within the intervals 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 and the test results received.
- B. Sealed sources need not be tested if they contain only hydrogen-3; or they contain only a radioactive gas; or the half-life of the isotope is 30 days or less; or they contain not more than 100 microcuries of beta and/or gamma emitting material or not more than 10 microcuries of alpha emitting material.
- 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 of radioactive material on the test sample. If the test reveals the presence of 0.005 microcuries 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. 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 IV, 612 E. Lamar Blvd., Suite 400, Arlington, Texas 76011, ATTN: Director, Division of Nuclear Materials Safety. 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.
- E. Tests for leakage and/or contamination shall be performed by persons specifically licensed by the U.S. Nuclear Regulatory Commission or an Agreement State to perform such services. In addition, the licensee is authorized to collect leak test samples but not perform the analysis; analysis of leak test samples must be performed by persons specifically licensed by the 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.

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15. Maintenance, repair, cleaning, replacement, and disposal of foils contained in detector cells shall be performed only by the device manufacturer or other persons specifically authorized by the Commission or an Agreement State to perform such services.
16. Sealed sources or detector cells containing licensed material shall not be opened or sources removed from source holders by the licensee.
17. The licensee shall not acquire licensed material in a sealed source or device unless the source or device has been registered with the U.S. Nuclear Regulatory Commission pursuant to 10 CFR 32.210 or equivalent regulations of an Agreement State.
18.
 - A. Detector cells containing a titanium tritide foil or a scandium tritide foil shall only be used in conjunction with a properly operating temperature control mechanism which prevents the foil temperature from exceeding that specified by the manufacturer and approved by U.S. Nuclear Regulatory Commission.
 - B. When in use, detector cells containing a titanium tritide foil or a scandium tritide foil shall be vented to the outside.
19. Radioactive waste generated shall be stored in accordance with the statements and representations described in the licensee's application dated April 14, 2009.
20. The licensee shall not use licensed material in or on human beings except as provided otherwise by specific condition of this license.
21. This license does not authorize commercial distribution of licensed material.
22. 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."
23. The licensee shall maintain records of information related to decommissioning as specified in 10 CFR 30.35(g) until this license is terminated by the Commission.
24. The licensee shall not use licensed material in field applications where activity is released except as provided otherwise by specific condition of this license.
25. The licensee is authorized to hold byproduct material with a physical half-life of less than or equal to 120 days for decay-in-storage before disposal without regard to its radioactivity if the licensee:
 - A. Monitors byproduct material at the surface before disposal and determines that its radioactivity cannot be distinguished from the background radiation level with an appropriate radiation detection survey meter set on its most sensitive scale and with no interposed shielding; and
 - B. Removes or obliterates all radiation labels, except for radiation labels on materials that are within containers and that will be managed as biomedical waste after they have been released from the licensee; and

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- C. Maintains records of the disposal of licensed materials for 3 years. The record must include the date of the disposal, the survey instrument used, the background radiation level, the radiation level measured at the surface of each waste container, and the name of the individual who performed the disposal.
26. 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 April 14, 2009 (ML081410562)
B. Letter dated April 6, 2010 (ML101040934)



FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Date: April 14, 2010By: *Rachel S. Browder*Rachel S. Browder, Sr. Health Physicist
Nuclear Materials Safety Branch B
Region IV
Arlington, Texas 76011-4125