



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION I  
475 ALLENDALE ROAD  
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

May 22, 2002

Docket No. 03020681  
Control No. 131176

License No. 07-13441-02

John Montovino  
Manager, Facilities  
E. I. duPont de Nemours and Co., Inc.  
Stine-Haskell Research Center  
P.O. Box 30, Elkton Road, (Rt. 2)  
Newark, DE 19714-0030

SUBJECT: E. I. DUPONT DE NEMOURS AND CO., INC., ISSUANCE OF LICENSE  
AMENDMENT, CONTROL NO. 131176

Dear Mr. Montovino:

This refers to your license amendment request. Enclosed with this letter is the amended license. This license amendment authorizes the use of carbon-14 in outdoor field applications as described in the revised application dated September 26, 2001, received with the letter dated November 16, 2001; the letter dated November 16, 2001; and the letter dated March 15, 2002.

Please review the enclosed document carefully and be sure that you understand and fully implement all the conditions incorporated into the amended license. If there are any errors or questions, please notify the U.S. Nuclear Regulatory Commission, Region I Office, Licensing Assistance Team, (610) 337-5239, so that we can provide appropriate corrections and answers.

In accordance with 10 CFR 2.790, a copy of this letter will be placed in the NRC Public Document Room and will be accessible from the NRC Web site at <http://www.nrc.gov/reading-rm.html>.

Thank you for your cooperation.

Sincerely,

***Original signed by Pamela J. Henderson***

Pamela J. Henderson  
Senior Health Physicist  
Nuclear Materials Safety Branch 2  
Division of Nuclear Materials Safety

Enclosure:  
Amendment No. 13

cc:  
Norman W. Henry, Radiation Safety Officer

J. Montovino  
E. I. duPont de Nemours and Co., Inc.

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| OFFICE | DNMS/RI         | N | DNMS/RI | DNMS/RI |  |  |
| NAME   | PHenderson/PJH1 |   |         |         |  |  |
| DATE   | 5/22/2002       |   |         |         |  |  |

OFFICIAL RECORD COPY

**MATERIALS LICENSE**

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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. E. I. du Pont de Nemours and Co., Inc.<br/>Stine-Haskell Research Center</p> <p>2. P.O. Box 30, Elkton Road (Rt. 2)<br/>Newark, Delaware 19714-0030</p> | <p>In accordance with the application dated<br/>September 26, 2001,</p> <p>3. License number 07-13441-02 is amended in its entirety to read as follows:</p> <hr/> <p>4. Expiration date March 31, 2012</p> <hr/> <p>5. Docket No. 030-20681<br/>Reference No.</p> |
|---|---|

|   |  |  |
|---|--|--|
| <p>6. Byproduct, source, and/or special nuclear material</p> <p>A. Any byproduct material with atomic numbers 3 through 83</p> <p>B. Hydrogen 3</p> <p>C. Carbon 14</p> <p>D. Phosphorus 32</p> <p>E. Phosphorus 33</p> <p>F. Sulfur 35</p> <p>G. Chlorine 36</p> <p>H. Chromium 51</p> <p>I. Iodine 125</p> <p>J. Iodine 131</p> <p>K. Nickel 63</p> | <p>7. Chemical and/or physical form</p> <p>A. Any</p> <p>B. Any</p> <p>C. Any</p> <p>D. Any</p> <p>E. Any</p> <p>F. Any</p> <p>G. Any</p> <p>H. Any</p> <p>I. Any</p> <p>J. Any</p> <p>K. Foil or plated sources registered either with the U.S. Nuclear Regulatory Commission under 10 CFR 32.210 or with an Agreement State.</p> | <p>8. Maximum amount that licensee may possess at any one time under this license</p> <p>A. 10 millicuries per radionuclide and 200 millicuries total</p> <p>B. 20 curies</p> <p>C. 20 curies</p> <p>D. 1 curie</p> <p>E. 1 curie</p> <p>F. 5 curies</p> <p>G. 200 millicuries</p> <p>H. 1 curie</p> <p>I. 1 curie</p> <p>J. 1 curie</p> <p>K. No single source to exceed the maximum activity specified in the certificate of registration issued by the U.S. Nuclear Regulatory Commission or an Agreement State</p> |
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**MATERIALS LICENSE  
SUPPLEMENTARY SHEET**

License Number  
07-13441-02

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030-20681

Amendment No. 13

- |   |                                  |  |
|---|----------------------------------|--|
| 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 |
| L. Americium 241                                      | L. Sealed Sources                | L. 1 microcurie per source and 2 microcuries total                             |

9. Authorized use:

- A. through J. Research and development as defined by 10 CFR 30.4; animal studies.
- K. To be used for sample analysis in compatible gas chromatography devices that have been registered either with the U.S. Nuclear Regulatory Commission under 10 CFR 32.210 or with an Agreement State and have been distributed in accordance with a Commission or Agreement State specific license authorizing distribution to persons specifically authorized by a Commission or Agreement State license to receive, possess, and use the devices.
- L. To be used as a check source in a Packard liquid scintillation counter.

**CONDITIONS**

10. Licensed material may be used at the licensee's facilities at the Stine-Haskell Research Center, Elkton Road (Route 2), Newark, Delaware; Glasgow Site Building 300, Glasgow, Delaware; and Delaware Technology Park, Newark, Delaware.
11. A. Licensed material shall only be used by, or under the supervision of, individuals designated, in writing, by the Radiation Safety Committee.
- B. The Radiation Safety Officer for this license is Norman W. Henry, III.
12. Licensed material shall not be used in or on human beings.
13. The licensee shall not use licensed material in field applications where activity is released except as provided otherwise by specific condition of this license.
14. The licensee may use carbon-14 in outdoor field applications as described in the revised application dated September 26, 2001, received with the letter dated November 16, 2001; the letter dated November 16, 2001; and the letter dated March 15, 2002.
15. Experimental animals, or the products from experimental animals, that have been administered licensed materials shall not be used for human consumption.

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16. A. Sealed sources shall be tested for leakage and/or contamination at intervals not to exceed the intervals specified in the certificate of registration issued by the U.S. Nuclear Regulatory Commission under 10 CFR 32.210 or under equivalent regulations of an Agreement State.
- B. Notwithstanding Paragraph A of this Condition, sealed sources designed to primarily emit alpha particles shall be tested for leakage and/or contamination at intervals not to exceed 3 months.
- C. Each sealed source fabricated by the licensee shall be inspected and tested for construction defects, leakage, and contamination prior to any use or transfer as a sealed source.
- D. 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 under equivalent regulations of 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.
- E. 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.
- F. 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.
- G. The leak test shall be capable of detecting the presence of 0.005 microcurie (185 becquerels) of radioactive material on the test sample. If the test reveals the presence of 0.005 microcurie (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.
- H. Tests for leakage and/or contamination, including leak test sample collection and analysis, shall be performed by the licensee or by other persons specifically licensed by the U.S. Nuclear Regulatory Commission or an Agreement State to perform such services.
17. Sealed sources or detector cells containing licensed material shall not be opened or sources removed from source holders by the licensee.

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18. The licensee shall conduct a physical inventory every six months, or at other interval approved by the U.S. Nuclear Regulatory Commission, to account for all sealed sources and/or devices received and possessed under the license.
19. 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 U.S. Nuclear Regulatory Commission or an Agreement State to perform such services.
20. 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 temperatures from exceeding that specified in the certificate of registration referred to in 10 CFR 32.210.
- B. When in use, detector cells containing a titanium tritide foil or a scandium tritide foil shall be vented to the outside.
21. 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. Waste to be disposed of in this manner shall be held for decay a minimum of 10 half-lives.
- B. Before disposal as ordinary trash, the waste shall be surveyed at the container surface with the appropriate survey instrument 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.
- C. A record of each such 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.
22. Notwithstanding 10 CFR 20.2001, the licensee may dispose of hydrogen-3 and carbon-14 in plant and soil material as normal waste, if the plant and soil material contain less than 0.002 microcurie per gram averaged over the weight of the plant and soil material, and the quantity per disposal does not exceed 100 microcuries for hydrogen-3 and 10 microcuries for carbon-14.
23. The licensee is authorized to transport licensed material in accordance with the provisions of 10 CFR Part 71, "Packaging and Transportation of Radioactive Material."



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24. Notwithstanding the requirements of the last condition of this license, the licensee is authorized to make program changes and changes to procedures specifically identified in the letter dated November 16, 2001, which were previously approved by the U.S. Nuclear Regulatory Commission and incorporated into the license without prior Commission approval as long as:
- A. The proposed revision is documented, reviewed, and approved by the licensee's Radiation Safety Committee in accordance with established procedures prior to implementation.
  - B. The revised program is in accordance with regulatory requirements, will not change the license conditions, and will not decrease the effectiveness of the Radiation Safety Program.
  - C. The licensee's staff is trained in the revised procedures prior to implementation.
  - D. The licensee's audit program evaluates the effectiveness of the change and its implementation.
25. 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. Revised application dated September 26, 2001,  
received with the letter dated November 16, 2001
  - B. Letter dated November 16, 2001
  - C. Letter dated March 15, 2002

For the U.S. Nuclear Regulatory Commission

***Original signed by Pamela J. Henderson***Date May 22, 2002

By \_\_\_\_\_

Pamela J. Henderson  
Nuclear Materials Safety Branch 2  
Division of Nuclear Materials Safety  
Region I  
King of Prussia, Pennsylvania 19406