

MATERIALS LICENSE

Amendment No. 04

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, 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. E. I. DuPont de Nemours & Co., Inc.
Medical Products Department
Boston Area

2. 549 Albany Street
Boston, Massachusetts 02118

6. Byproduct, source, and/or
special nuclear material

A. Any byproduct material
with atomic numbers 1-83

B. Krypton 85
C. Molybdenum 99
D. Americium 241
E. Xenon 133
F. Nickel 63
G. Sulfur 35
H. Carbon 14
I. Cesium 137
J. Phosphorus
K. Strontium 90
L. Hydrogen 3

M. Any byproduct material
with atomic nos. 84-94

N. Any byproduct material
listed in Schedule B
10 CFR 30.71

7. Chemical and/or physical
form

A. Any

B. Any
C. Any
D. Sealed sources
E. Any
F. Any
G. Any
H. Any
I. Any
J. Any
K. Any
L. Any
M. Any

N. Any

In accordance with letter received
February 5, 1987,

3. License number 20-00320-21 is amended in
its entirety to read as follows:

4. Expiration date November 30, 1990

5. Docket or
Reference No. 030-28902

8. Maximum amount that licensee
may possess at any one time
under this license

A. 200 curies of each
radionuclide with atomic
numbers 1 to 83, with a
total possession limit
of 5,000 curies
B. 10,000 curies
C. 3,000 curies
D. 350 curies
E. 1,500 curies
F. 1,000 curies
G. 1,000 curies
H. 1,500 curies
I. 500 curies
J. 550 curies
K. 500 curies
L. 150,000 curies
M. 60 millicuries each
radionuclide with atomic
nos. 84-94
N. Not to exceed limits
specified in Schedule B.
10 CFR 30.71

9. Authorized use

- A. through M. (1) Research and Development as defined in Section 30.4(q) of 10 CFR 30.
(2) For possession, use, and processing incident to manufacture of radiochemicals, radiopharmaceuticals and sealed sources.
(3) For storage prior to distribution of manufactured radiochemicals, radiopharmaceuticals and sealed sources.
(4) For packaging and distribution of manufactured radiochemicals, radiopharmaceuticals, and sealed sources to persons authorized to receive the licensed material pursuant to the terms and conditions of specific licenses issued by the Nuclear Regulatory Commission or Agreement States.

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- (5) For use in calibration of E. I. DuPont NEN Products instruments.
(6) For storage as radioactive wastes.
- A. Licensed material possessed at the Boston Site will not exceed 10 Curies per nuclide and 100 Curies total of nuclides with atomic number 3 through 83.
- G. Licensed material possessed at the Boston Site will not exceed 200 Curies, S-35. Licensed material possessed at the Westwood Site shall not exceed 400 millicuries, S-35.
- H. Licensed material possessed at the Boston Site will not exceed 500 Curies, C-14. Licensed material possessed at the Westwood site shall not exceed 100 millicuries, C-14.
- J. Licensed material possessed at the Boston Site will not exceed 90 Curies, P-32. Licensed material possessed at the Westwood Site shall not exceed 150 millicuries, P-32.
- L. Licensed material possessed at the Boston Site will not exceed 100,000 Curies, H-3. Licensed material possessed at the Westwood Site shall not exceed 500 millicuries, H-3.
- M. Licensed material possessed at the Boston Site will not exceed 50 millicuries per nuclide with atomic numbers 84 through 94.
- N. For demonstration by sales persons at customers facilities, anywhere in the United States where the Nuclear Regulatory Commission has jurisdiction.
- A. through M. Licensed material possessed at the Billerica Site will not exceed the limits specified after the Boston Site limits are subtracted from the maximum amount.
- A. through M. Sealed sources can be returned to the NEN Products, Billerica Site for the purpose of refurbishment or disposal. All such return shipments will be handled in compliance with the conditions of the NEN Products USNRC By-product Materials License, as well as applicable DOT regulations.

CONDITIONS

10. A. Licensed material may be used at the Boston Facility; Building locations at 549, 575, and 609 Albany Street; 100 E. Canton Street; and 108, 120, and 123 E. Dedham Street, Boston, Massachusetts.
- B. Licensed material may be used at the Billerica Facility; 331 Treble Cove Road, N. Billerica, Massachusetts. Buildings designated as Nos. 100, 150, 200, 250, 300, 325, 350, 375, 400, 500 and 600.
- C. Licensed material in Item 6.N. may be used at and 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.
- D. Licensed material as authorized by Items 9.G., 9.H., 9.J. and 9.L. for the Westwood Site may be use at licensee's facilities, 240 University Avenue, Westwood, Massachusetts.
11. A. Licensed material shall be used by, or under the supervision of, individuals designated by the respective Boston or Billerica Site Radioisotope Committee.

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CONDITIONS

- B. The Radiation Protection Officer for the activities authorized by this license is Dennis O. Dumas.
12. This license does not authorize commercial distribution to persons exempt from licensing, to persons generally licensed or for medical use pursuant to Sections 35.14 and 35.31, of 10 Part 35.
13. A(1) Each sealed source or detector cell acquired from another person and containing licensed material, other than hydrogen 3, with a half-life greater than 30 days and in any form other than gas shall be tested for contamination and/or leakage before use. In the absence of a certificate from a transferor indicating that a test has been made within 6 months before the transfer, a sealed source or detector cell received from another person shall not be put into use until tested.
- (2) Notwithstanding the periodic leak test required by this condition, any licensed sealed source or detector cell is exempt from such leak tests when the source or detector cell contains 100 microcuries or less of beta and/or gamma emitting materials or 10 microcuries or less of alpha emitting material.
- (3) Except for alpha sources, the periodic leak test required by this condition does not apply to sealed sources that are stored and not being used. The sources excepted from this test shall be tested for leakage before any use or transfer to another person unless they have been leak tested within 6 months before the date of use or transfer.
- B. Each sealed source or detector cell fabricated by the licensee shall be inspected and tested for construction defects, leakage, and contamination prior to use or transfer as a sealed source or detector cell. If the inspection or test reveals any construction defects or 0.005 microcurie or greater of contamination, the source shall not be used or transferred as a sealed source or detector cell until it has been repaired, decontaminated and retested.
- C. Each sealed source containing licensed material, other than hydrogen 3, with a half-life greater than 30 days and in any form other than gas shall be tested for leakage and/or contamination at intervals not to exceed 6 months except that each source designed for the purpose of emitting alpha particles shall be tested at intervals not to exceed 3 months.
- D. The test shall be capable of detecting the presence of 0.005 microcurie of radioactive material on the test sample. The test sample shall be taken from the sealed source or detector cell or from the surfaces of the device in which the sealed source or detector cell is permanently or semipermanently mounted or stored on which one might expect contamination to accumulate. Records of leak test results shall be kept in units of microcuries and maintained for inspection by the Commission. Records may be disposed of following Commission inspection.

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- E. If the test required by Subsection A. or C. of this condition reveals the presence of 0.005 microcurie or more of removable contamination, the licensee shall immediately withdraw the sealed source or detector cell from use and shall cause it to be decontaminated and repaired or to be disposed of in accordance with Commission regulations. A report shall be filed within 5 days of the date the leak test result is known with the U. S. Nuclear Regulatory Commission, Region I, ATTN: Chief, Nuclear Materials Safety and Safeguards Branch, 631 Park Avenue, King of Prussia, Pennsylvania 19406, describing the equipment involved, the test results, and the corrective action taken.
14. The licensee shall not use licensed material in or on humans beings or in field applications where activity is released except as provided otherwise by specific conditions of this license.
15. Experimental animals administered licensed materials or their products shall not be used for human consumption.
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 225 degrees Centigrade.
- B. Detector cells containing scandium tritide foil shall only be used in conjunction with a properly operating temperature control mechanism which prevents foil temperatures from exceeding 325 degrees Centigrade.
17. In lieu of using the conventional radiation caution colors (magenta or purple on yellow background) as provided in Section 20.203(a)(1), of 10 CFR Part 20, the licensee is hereby authorized to label detector cells and cell baths, containing licensed material and used in gas chromatography devices, with conspicuously etched or stamped radiation caution symbols without a color requirement.
18. The licensee may transport licensed material in accordance with the provisions of 10 CFR Part, "Packaging and Transportation of Radioactive Material".
19. Pursuant to Section 20.302, 10 CFR Part 20, the licensee is authorized to exceed the 1 curie limit in Section 20.303(d), 10 CFR Part 20, provided that for the Boston site:
- A. Not more than 12 curies total of hydrogen 3 and 1 curie total of all other byproduct material shall be released during any 12 consecutive months, and;
- B. All releases to the sewerage system shall be in accordance with the procedures described in the licensee's application dated July 17, 1985, excluding item 15.J.5. paragraphs 2. and 3.

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CONDITIONS

20. The licensee shall maintain and execute the response measures of his Radiological Contingency Plan for the Boston Site as revised in its entirety dated June, 1985 and attached to letter dated July 26, 1985 and Addendum Item 8 described in letter dated October 16, 1985. The licensee shall also maintain implementing procedures for his Radiological Contingency Plan as necessary to implement the plan. The licensee shall make no change in his Radiological Contingency Plan that would decrease the response effectiveness of the plan without prior Commission approval as evidenced by license amendment. The licensee may make changes to his Radiological Contingency Plan without prior Commission approval if the changes do not decrease the response effectiveness of the plan. The licensee shall maintain records of changes that are made to the Plan without prior approval for a period of two years from the date of the change and shall furnish the Chief, Nuclear Materials Safety and Safeguards Branch, Division of Radiation Safety and Safeguards, U.S. Nuclear Regulatory Commission, Region I, 631 Park Avenue, King of Prussia, Pennsylvania 19406, a report, in duplicate, containing a description of each change with six months after the change is made.
21. A. At the licensee's Boston Site no more than 15 curies of phosphorus-32 shall be used or stored in any building unless radiation detection systems and alarms to continuously monitor possible effluent releases are installed and operated.
- B. Notwithstanding the requirements of Condition A above; the licensee is not required to comply with Condition 21.A. with respect to phosphorus-32 wastes stored in non-combustible drums when the drums are provided with sprinkler protection.
22. The licensee shall maintain and execute the response measures of his Radiological Contingency Plan for the Billerica Site as revised in its entirety dated June, 1985, and attached to letter dated July 26, 1985. The licensee shall also maintain implementing procedures for his Radiological Contingency Plan as necessary to implement the Plan. The licensee shall make no change in his Radiological Contingency Plan that would decrease the response effectiveness of the plan without prior Commission approval as evidenced by license amendment. The licensee may make changes to his Radiological Contingency Plan without prior Commission approval if the changes do not decrease the response effectiveness of the plan. The licensee shall maintain records of changes that are made to the Plan without approval for a period of two years from the date of the change and shall furnish the Chief, Nuclear Materials Safety and Safeguards Branch, Division of Radiation Safety and Safeguards, U.S. Nuclear Regulatory Commission, Region I, 631 Park Avenue, King of Prussia, Pennsylvania 19406, a report, in duplicate, containing a description of each change within six months after the change is made.

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CONDITIONS

23. The licensee may possess up to 10 curies of Iodine-125 waste in any building at the Billerica Site without installation of radiation detection systems and alarms to continuously monitor possible effluent releases from associated ventilation systems, provided, the material is stored as waste in non-combustible drums and the drums are provided with sprinkler protection.
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 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. Letter dated December 17, 1984
 - B. Application dated July 17, 1985
 - C. Letter dated October 16, 1985
 - D. Letter dated January 21, 1986
 - E. Letter dated September 12, 1986
 - F. Letter received February 5, 1987
 - G. Letter dated June 29, 1987

Date

12 AUG 1987

For the U.S. Nuclear Regulatory Commission

Original Signed By:

By

Josephine M. Piaccone

Nuclear Materials Safety and
Safeguards Branch, Region I
King of Prussia, Pennsylvania 19406