

BYPRODUCT MATERIAL LICENSE NO. 47-260-6 Amendment No. 8  
(C61)

Pursuant to the Atomic Energy Act of 1954 and Title 10, Code of Federal Regulations, Chapter 1, Part 30, Licensing of Byproduct Material, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, own, possess, transfer and import byproduct material listed below; and to use such byproduct material for the purpose(s) and at the place(s) designated below. This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, and is subject to all applicable rules, regulations, and orders of the Atomic Energy Commission now or hereafter in effect and to any conditions specified below.

<b>Licensee</b>		<b>In accordance with letter dated August 3, 1960</b>	
1. Name	Union Carbide Corporation Union Carbide Chemicals Company	3. License number	47-260-6 is amended in its entirety to read as follows:
2. Address	Union Carbide Olefins Company 437 MacCorkle Avenue South Charleston 3, West Virginia	4. Expiration date	March 31, 1961
		5. Reference No.	
6. Byproduct material (element and mass number)	7. Chemical and/or physical form	8. Maximum amount of radioactivity which licensee may possess at any one time	
A. Hydrogen-3	A. Any	A. 25 curies	
B. Carbon-14	B. Any	B. 250 millicuries	
(See page 2)	(See page 2)	(See page 2)	
9. Authorized use			

A. - H. Research and development as defined in Section 30.4(k), Title 10, Code of Federal Regulations, Part 30, "Licensing of Byproduct Material".

(See page 2)

**CONDITIONS**

10. Unless otherwise specified, the authorized place of use is the licensee's address stated in Item 2 above.
11. Byproduct material may also be used at other laboratories of the Union Carbide Corporation within the state of West Virginia as designated by the Radioactive Materials Committee. Byproduct material may also be used in other states at laboratories of the Union Carbide Corporation designated by the Radioactive Materials Committee, providing the Atomic Energy Commission is notified of the location(s) of such use not later than four (4) days after the first day of such use.
12. The licensee shall comply with the provisions of Title 10, Part 20, Code of Federal Regulations, Chapter 1, "Standards For Protection Against Radiation".
13. Byproduct material shall be used by, or under the direct supervision of, individuals approved by the local isotope committee, W. J. Skraba, Chairman.
14. Byproduct material as sealed sources shall not be opened by the licensee.

(See page 3)

A-171

U. S. ATOMIC ENERGY COMMISSION  
/PRODUCT MATERIAL LICENSEPage 2 of 4 Pages

Supplementary Sheet

Continued from page 1

License Number 47-260-6  
(C61)

Amendment No. 8

6. Byproduct material (element and mass number)	7. Chemical and/or physical form	8. Maximum amount of radioactivity which licensee may possess at any one time
C. Phosphorus-32	C. Any	C. 100 millicuries
D. Sulfur-35	D. Any	D. 150 millicuries
E. Chlorine-36	E. Any	E. 100 millicuries
F. Calcium-45	F. Any	F. 100 millicuries
G. Iodine-131	G. Any	G. 25 millicuries
H. Any byproduct material between Atomic Nos. 3 and 83, inclusive	H. Irradiated Palladium samples	H. 100 microcuries
I. Strontium-90	I. Sealed sources (Radiochemical Centre Model No. SIC-9)	I. 3 sources of 10 millicuries each. Total 30 millicuries
J. Cesium-137	J. Any	J. 10 millicuries
K. Strontium-90	K. Sealed sources (U. S. Radium Corporation Model LAB-369)	K. 2 sources of 20 millicuries each. Total 40 millicuries
L. Strontium-90	L. Sealed source (Industrial Nucleonics Corp. Model BE-0019-3)	L. 1 source of 20 millicuries
M. Strontium-90	M. Sealed source (Industrial Nucleonics Corporation Model BE-S- 10072)	M. 1 source of 500 millicuries

## 9. Authorized Use

- I. To be used as the ionization sources in Research Specialties Company, Model 600-2 Gas Chromatographic Detector Cells.
- J. To be used with Tracerlab, Inc. "Gamma Milker" for laboratory studies.
- K. To be used as ionization sources in Barber-Colman Company ionization detector cells for gas chromatography.
- L. Detection of variations in mass flow rate of textile fibers.
- M. To be used in an Industrial Nucleonics Corporation Model DH-3 device for detection of variations in mass flow rate of textile fibers.

(See page 3)

U. S. ATOMIC ENERGY COMMISSION  
PRODUCT MATERIAL LICENSE

Page 3 of 4 Pages

Continued from page 2

Supplementary Sheet

License Number 47-260-6  
(C61)

Amendment No. 8

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CONDITIONS

15. Sealed sources shall be tested for leakage and/or contamination in accordance with the following:

A. Leak tests shall be performed by N. H. Ketcham, as described in letter dated September 2, 1959, or by other persons specifically licensed by the Commission to perform such tests.

B. Each sealed source containing byproduct material with a half-life greater than thirty (30) days and in any form other than gas, shall be tested for leakage and/or contamination as follows:

(1) An appropriate test for leakage and/or contamination shall be performed on the sealed source surface, or on the accessible surfaces of the device in which such a sealed source is permanently or semipermanently mounted. The test shall be performed upon receipt of a source from another person, unless the licensee receives certification from the person making the transfer that the sealed source had been tested within thirty (30) days prior to transfer and found free of any removable radioactive material.

(2) Following completion of the test prescribed in B(1), each sealed source, except sources designed as alpha emitting sources, shall be tested for leakage and/or contamination at intervals not to exceed six (6) months. Each sealed source which is designed as an alpha emitting source shall be tested at intervals not to exceed three (3) months.

C. The test performed pursuant to B shall be sufficiently sensitive to detect 0.05 microcurie of removable beta and/or gamma emitting radioactive material and 0.005 microcurie of removable alpha emitting radioactive material. Records of leak test results shall be maintained by the licensee.

D. If the test performed pursuant to B(1) or B(2) reveals removable radioactive material, the licensee shall take immediate action to prevent spread of contamination and shall notify the Isotopes Branch, Division of Licensing and Regulation, U. S. Atomic Energy Commission, Washington 25, D. C., within thirty (30) days after completion of the test.

(See page 4) *9/11/59*

U. S. ATOMIC ENERGY COMMISSION  
BYPRODUCT MATERIAL LICENSEPage 4 of 4 Pages

Continued from page 3

Supplementary Sheet

License Number 47-260-6  
(C61)

Amendment No. 8

## CONDITIONS

## 15. (continued)

- E. Repair of sources shall be performed by the manufacturers of the sources or by persons specifically licensed by the Commission to perform such repairs.
16. Byproduct material shall not be used in or on human beings, in products distributed to the public nor in field applications where such activity is released.
17. Except as specifically provided otherwise by this license, the licensee shall possess and use byproduct material described in Items 6, 7 and 8 of this license in accordance with statements, representations, and procedures contained in his applications dated January 29, 1959; July 20, 1959 and August 3, 1959, and in related documents and amendments as follows:
- A. Administrative instructions entitled "Manual for the Use of Radioactive Materials" dated March 31, 1960, as revised by enclosures to H. H. Ketcham's letter dated August 3, 1960.
  - B. Letter dated January 27, 1959 from L. J. Rogers.
  - C. Letter dated September 2, 1959 from H. T. Sessions.
  - D. Letter dated January 4, 1960 from K. D. Williamson.
18. Written administrative instructions referenced in Condition 17A. shall be followed and a copy of these instructions shall be supplied to each individual using or having responsibility for use of byproduct material. Any changes in these administrative instructions shall have the prior approval of the Isotopes Branch, Division of Licensing and Regulation.
19. Pursuant to Section 20.302 of Title 10, Code of Federal Regulations, Part 20; disposal of waste materials containing Carbon 14 by incineration, as described in letter dated November 10, 1958, from F. G. Young, is hereby authorized.
20. In lieu of using the conventional radiation caution colors (magenta or purple on yellow background) as provided in Section 20.203(a)(1), Title 10, Code of Federal Regulations, Part 20, the licensee is hereby authorized to label detector cells and cell baths containing byproduct material and used in gas chromatography devices, with conspicuous etched or stamped radiation caution symbols without a color requirement.

DUPLICATE  
FOR DIV. OF INSP.For the U. S. Atomic Energy Commission  
Original Signed By  
James R. Mason  
by Chief, Isotopes Branch  
Division of Licensing and Regulation  
Washington 25, D. C.Date AUG 15 1960

JMS/ Cooper

REN 8/15/60