

U. S. ATOMIC ENERGY COMMISSION
BYPRODUCT MATERIAL LICENSE

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.

Licensee 1. Name Carlisle Wright Corporation Research Division 2. Address Nuclear Power Department Oak Ridge, Tennessee		3. License number ST-2116-1
		4. Expiration date May 31, 1959
		5. Reference No.
6. Byproduct material (element and mass number) • Iridium 192 Europium 243 Transurans 1b7 (See Page 2)	7. Chemical and/or physical form Sealed source any any (See Page 2)	8. Maximum amount of radioactivity which licensee may possess at any one time 7 curies 25 millicuries 25 millicuries (See Page 2)

9. Authorized use

Laboratory research involving radiation damage studies, instrument calibration and standardization, activation studies and material development.

CONDITIONS

- Unless otherwise specified, the authorized place of use is the licensee's address stated in Item 2 above.
- Byproduct material to be used by, or under the supervision of: **C. J. Roberts; E. J. Volkwitz; G. E. Smith; R. F. Sjoberg; R. N. Little.**
- Except as hereinafter provided the licensee shall comply with provisions of the Atomic Energy Commission's Standards for Protection Against Radiation as published in the Federal Register, January 29, 1957 (10-CFR-20).
- Sealed sources licensed above shall not be opened or confined.
- Leak testing of the sources licensed above shall be carried out at intervals of six months and records of the leak test results shall be furnished the Atomic Energy Commission upon request.
- Written administrative instructions covering appropriate radiological protection phases of operational procedures and establishing responsibility for radiological protection, control, and security of the byproduct material shall be supplied individuals with or having responsibility for use of such material.

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For the U. S. Atomic Energy Commission

Date May 15, 1957

by _____

Director, Isotopes Extension
Division of Civilian Application
Oak Ridge, Tennessee

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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
Silver 110	Any	10 millicuries
Cobalt 60	Any	0.1 millicurie
Phosphorus 32	Any	10 millicuries
Calcium 45	Any	0.1 millicurie
Carbon 14	Any	10 millicuries
Thallium 204	Any	10 millicuries
Cesium 137	Any	10 millicuries
Cesium 137-Cesium 137	Any	10 millicuries
Iodine 131	Any	10 millicuries
Selenium 75	Any	10 millicuries
Cesium 137-Strontium 90	Any	10 millicuries
Barium 137, 138	Any	10 millicuries
Iron 59	Any	10 millicuries
Nickel 63	Any	1 millicurie
Antimony 124-Indium 115	Any	10 millicuries
Tantalum 182	Any	10 millicuries
Tungsten 187	Any	10 millicuries
Zinc 65	Any	10 millicuries
Mercuric 197-Platinum 195	Any	10 millicuries
Plutonium products	Any	10 millicuries
Cobalt 60	Any	10 millicuries
Strontium 90-Strontium 90	Tracerlab sealed source Co. Inc., U.S. Sales Corp. sealed source.	300 millicuries
Yttrium 90	sealed source.	0.5 millicurie
Cesium 137-Strontium 90	sealed source.	2 millicuries
Silver 110	sealed source.	0.1 millicurie
Strontium 90	metallic wire.	100 millicuries
	Co. Sales Corp. also common.	Three sources Total 18 millicuries
Strontium 90	Isotope Specialists sealed source metal Co. 19-2010.	2 microcuries
Any byproduct material between Atomic No. 3-10, inclusive.	Irradiated compounds.	a total of 3.5 millicurie of byproduct material between Atomic No. 3-10, inclusive.

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For the U. S. Atomic Energy Commission

Date May 13, 1971

by _____
Director, Isotopes Extension
Division of Civilian Application
Oak Ridge, Tennessee

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- 16. Licensee shall report to the Commission immediately upon discovery thereof any incident which has resulted or could have resulted in an exposure to any individual in excess of a dose of 5 rads within a 24 hour period of any incident involving loss of the licensed material.
- 17. Each sealed source container (capsule) of licensed material to be used outside of a shielded exposure device shall have permanently attached to its surface, legible and visible tag. The tag shall be attached directly to the container (capsule), or by the use of a flexible chain or leader. The tag shall be at least one inch square and shall bear a radiation warning symbol in conventional colors, legends or purple on a yellow background, and a listing of the following instructions: "DANGER - Radioactive Material - Do Not Handle - Notify Civil Authorities If Found".
- 18. A curie of Radium 226 is defined as that quantity of activity which produces a radiation intensity of 0.47 röntgens per hour at a distance of one meter.
- 19. Leak testing of sealed sources containing beta and/or gamma emitting byproduct material (except those containing Radium 226, Radium 228, Cobalt 60, and Plutonium 238 in solid metallic form) shall be carried out at intervals of not more than six months and records of leak test results shall be furnished the Atomic Energy Commission upon request.
- 20. Leak testing of sealed sources containing alpha-emitting byproduct material shall be carried out at intervals of three months and records of leak test results shall be furnished the Atomic Energy Commission upon request.

For the U. S. Atomic Energy Commission

May 13, 1957

Date _____

by _____

Director, Isotopes Extension
Division of Civilian Application
Oak Ridge, Tennessee