

U. S. ATOMIC ENERGY COMMISSION
BYPRODUCT MATERIAL LICENSE

License No. 05-00046-13
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Amendment No. 06

Pursuant to the Atomic Energy Act of 1954 and Title 10, Code of Federal Regulations, Chapter 1, Parts 30, 32, 33, 34, and 35, 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		In accordance with application dated June 21, 1966	
1. Name	Department of the Army	3. License number	05-00046-13 is amended
2. Address	Fitzsimons General Hospital and U.S. Army Medical Research and Nutrition Laboratory Denver, Colorado 80240	in its entirety to read as follows:	
		4. Expiration date	July 31, 1968
		5. Reference No.	
6. Byproduct material (element and mass number)	7. Chemical and/or physical form	8. Maximum amount of radioac- tivity which licensee may pos- sess at any one time	
A. Iodine 131	A. Iodide	A. 250 millicuries	
B. Iodine 131	B. Iodinated Human Serum Albumin	B. 5 millicuries	
C. Iodine 131	C. Labeled Renal Function Compounds	C. 2 millicuries	
D. Iodine 131	D. Rose Bengal	D. 2 millicuries	
E. Iodine 131	E. Labeled Fats and Fatty Acids	E. 2 millicuries	
F. Iodine 131	F. Cholografin	F. 2 millicuries	
G. Iodine 131	G. Thyroxine	G. 2 millicuries	
H. Iodine 125	H. Iodide	H. 1 millicurie	
I. Iodine 125	I. Iodinated Human Serum Albumin	I. 1 millicurie	
J. Iodine 125	J. Labeled Renal Function Compounds	J. 1 millicurie	
K. Iodine 125	K. Rose Bengal	K. 1 millicurie	
L. Iodine 125	L. Labeled Fats and Fatty Acids	L. 1 millicurie	
M. Iodine 125	M. Cholografin	M. 1 millicurie	
N. Iodine 125	N. Thyroxine	N. 1 millicurie	
O. Phosphorus 32	O. Soluble Phosphate	O. 25 millicuries	
P. Phosphorus 32	P. Colloidal Chromic Phosphate	P. 25 millicuries	

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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
Q. Gold 198	Q. Colloidal	Q. 250 millicuries
R. Chromium 51	R. Sodium Chromate and Chromic Chloride	R. 4 millicuries
S. Cobalt 58 and Cobalt 60	S. Vitamin B 12	S. 10 microcuries
T. Iron 59	T. Ferric Chloride and Ferrous Citrate	T. 1 millicurie
U. Mercury 197 and Mercury 203	U. Chlormerodrin	U. 10 millicuries
V. Hydrogen 3	V. Water	V. 25 millicuries
W. Sodium 24	W. Sodium Chloride	W. 1 millicurie
X. Xenon 133	X. Gas	X. 2 curies
Y. Strontium 85	Y. Nitrate and Chloride	Y. 1 millicurie
Z. Strontium 90	Z. Tracerlab Model RA-1 Sealed Medical Applicator	Z. 25 millicuries
AA. Any byproduct material with Atomic Nos. 1-83, inclusive	AA. Any	AA. 500 millicuries of each except Hydrogen 3 5 curies. Total not to exceed 10 curies

9. Authorized use

- Diagnosis of thyroid function and thyroid scanning. Treatment of hyperthyroidism, cardiac conditions, and thyroid carcinoma.
- Determination of plasma volume and cardiac output. Cardiac scanning. Localization of brain tumors. Placenta localization.
- Determination of renal function.
- Determination of liver function and liver scanning.
- Determination of fat absorption.
- Determination of liver and gallbladder function.
- Determination of thyroxine turnover.
- Diagnosis of thyroid function and thyroid scanning.
- Determination of plasma volume.

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9. Authorized use (Continued)

- J. Determination of renal function.
- K. Determination of liver function.
- L. Determination of fat absorption.
- M. Determination of liver and gallbladder function.
- N. Determination of thyroxine turnover.
- O. Treatment of polycythemia vera, leukemia, and bone metastases.
- P. Intracavitary treatment of malignant effusions.
- Q. Intracavitary treatment of malignant effusions. Interstitial treatment of prostatic carcinoma. Liver scanning.
- R. Determination of red cell mass, red cell survival time, and gastrointestinal bleeding. Spleen scanning.
- S. Diagnosis of pernicious anemia.
- T. Determination of iron turnover.
- U. Kidney and brain scanning.
- V. Determination of total body water.
- W. Determination of total exchangeable sodium.
- X. Determination of pulmonary function.
- Y. Bone scans in patients with diagnosed cancer.
- Z. Treatment of superficial eye conditions.
- AA. Laboratory research in vitro and in lower animals.

CONDITIONS

- 10. Byproduct material may only be used at the licensee's address stated in Item 2 above.
- 11. 1 millicurie of Carbon 14, 1 millicurie of Iodine 131, 1 millicurie of Iodine 125, 1 millicurie of Chromium 51, 5 millicuries of Hydrogen 3, 5 millicuries of Sulfur 35, and 5 millicuries of Bromine 82 may be used at the summit of Pikes Peak, Colorado, for metabolic studies in lower animals.
- 12. The licensee shall comply with the provisions of Title 10, Part 20, Code of Federal Regulations, Chapter 1, "Standards for Protection Against Radiation."

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13. A. Byproduct material shall be used by, or under the supervision of, individuals designated by the Fitzsimons General Hospital and U. S. Army Medical Research and Nutrition Laboratory Radioisotope Committee.
- B. The use of byproduct material in or on humans shall be by a physician.
14. Sealed sources containing byproduct material shall not be opened.
15. A. Each sealed source containing byproduct material, other than Hydrogen 3, with a half-life greater than thirty days and in any form other than gas shall be tested for leakage and/or contamination at intervals not to exceed six months. In the absence of a certificate from a transferor indicating that a test has been made within six months prior to the transfer, the sealed source shall not be put into use until tested.
- B. 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 from the surfaces of the device in which the sealed source is permanently 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.
- C. If the test reveals the presence of 0.005 microcurie or more of removable contamination, the licensee shall immediately withdraw the sealed source 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 test with the Director, Division of Materials Licensing, U. S. Atomic Energy Commission, Washington, D. C., 20545, describing the equipment involved, the test results, and the corrective action taken. A copy of such report shall also be sent to the Director, Region IV, Division of Compliance, USAEC, 10395 West Colfax Avenue, Denver, Colorado, 80215.

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16. Byproduct material shall not be used in humans until its pharmaceutical quality and assay have been established.
17. Patients containing Iodine 131 for the treatment of thyroid carcinoma or patients containing therapeutic quantities of Gold 198 shall remain hospitalized until the residual activity is 30 millicuries or less.
18. 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 application dated June 21, 1966.

AUG 4 1966

For the U. S. Atomic Energy Commission

Original Signed By
Nathan Bassin

by Isotopes Branch

Division of Materials Licensing
Washington, D. C. 20545

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