

APPLICATION FOR BYPRODUCT MATERIAL LICENSE

INSTRUCTIONS.—Complete Items 1 through 16 if this is an initial application. If application is for renewal of a license, complete only Items 1 through 7 and indicate new information or changes in the program as requested in Items 8 through 15. Use supplemental sheets where necessary. Item 16 must be completed on all applications. Mail three copies to: U. S. Atomic Energy Commission, Washington 25, D. C. Attention: Isotopes Branch, Division of Licensing and Regulation. Upon approval of this application, the applicant will receive an AEC Byproduct Material License. An AEC Byproduct Material License is issued in accordance with the general requirements contained in Title 10, Code of Federal Regulations, Part 30 and the Licensee is subject to Title 10, Code of Federal Regulations, Part 20.

38-4927
38-3929

1. (a) NAME AND STREET ADDRESS OF APPLICANT. (Institution, firm, hospital, person, etc.)

Diamond Ordnance Fuze Laboratories
Connecticut Ave. & Van Ness St., N.W.
Washington 25, D. C.

(b) STREET ADDRESS(ES) AT WHICH BYPRODUCT MATERIAL WILL BE USED. (If different from 1 (a).)

Diamond Ordnance Radiation Facility
Forest Glen Station
Walter Reed Army Medical Center
Forest Glen, Maryland

2. DEPARTMENT TO USE BYPRODUCT MATERIAL

Nuclear Vulnerability Branch

3. PREVIOUS LICENSE NUMBER(S). (If this is an application for renewal of a license, please indicate and give number.)

8-2534-1 through 8-2534-8

4. INDIVIDUAL USER(S). (Name and title of individual(s) who will use or directly supervise use of byproduct material. Give training and experience in Items 8 and 9.)

Jerome D. Rosenberg
Diamond Ordnance Radiation Facility
Administrator

5. RADIATION PROTECTION OFFICER (Name of person designated as radiation protection officer if other than individual user. Attach resume of his training and experience as in Items 8 and 9.)

Robert E. McCoskey

6. (a) BYPRODUCT MATERIAL. (Elements and mass number of each.)

Polonium 210

(b) CHEMICAL AND/OR PHYSICAL FORM AND MAXIMUM NUMBER OF MILLICURIES OF EACH CHEMICAL AND/OR PHYSICAL FORM THAT YOU WILL POSSESS AT ANY ONE TIME. (If sealed source(s), also state name of manufacturer, model number, number of sources and maximum activity per source.)

Polonium-Beryllium neutron source (sealed), 20 curies.
Vendor: U. S. Nuclear Corporation, drawing number B-0010.
Quantity: one (1)

7. DESCRIBE PURPOSE FOR WHICH BYPRODUCT MATERIAL WILL BE USED. (If byproduct material is for "human use," supplement A (Form AEC-313a) must be completed in lieu of this item. If byproduct material is in the form of a sealed source, include the make and model number of the storage container and/or device in which the source will be stored and/or used.)

Start-up source for Triga Mark F reactor at the Diamond Ordnance Radiation Facility. The source will be encased in a standard Mark F dummy fuel rod for insertion into the reactor.

33700

QUERIED
FOR DIV. OF COMPLIANCE

TRAINING AND EXPERIENCE OF EACH INDIVIDUAL NAMED IN ITEM 4 (Use supplemental sheets if necessary)

B. TYPE OF TRAINING	WHERE TRAINED	DURATION OF TRAINING	ON THE JOB (Circle answer)	FORMAL COURSE (Circle answer)
a. Principles and practices of radiation protection	DOFL (on-the-job) Brookhaven (course - 80 hours)	2 years	(Yes) No	(Yes) No
b. Radioactivity measurement standardization and monitoring techniques and instruments	DOFL	2 years	(Yes) No	Yes No
c. Mathematics and calculations basic to the use and measurement of radioactivity	City College of New York School	4 years	Yes No	(Yes) No
d. Biological effects of radiation	National Bu. Standards Grad	1/2 yr.	Yes No	(Yes) No

9. EXPERIENCE WITH RADIATION. (Actual use of radioisotopes or equivalent experience.)

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
3-83	100 mc	General Atomic, Triga Facility, Activated Electronics	two years	laboratory

10. RADIATION DETECTION INSTRUMENTS. (Use supplemental sheets if necessary.)

TYPE OF INSTRUMENTS (include make and model number of each)	NUMBER AVAILABLE	RADIATION DETECTED	SENSITIVITY RANGE (mr/hr)	WINDOW THICKNESS (mg/cm ²)	USE (Monitoring, surveying, measuring)
See supplemental sheet					

11. METHOD, FREQUENCY, AND STANDARDS USED IN CALIBRATING INSTRUMENTS LISTED ABOVE.

Instruments calibrated quarterly with sources calibrated at National Bu. of Standards

12. FILM BADGES, DOSIMETERS, AND BIO-ASSAY PROCEDURES USED. (For film badges, specify method of calibrating and processing, or name of supplier.)

- a. Film badges (beta, gamma, and neutron) supplied by Lexington Signal Depot, Lexington, Ky.
- b. Dosimeters, 7 Victoreen, and 6 Bendix model 862.

INFORMATION TO BE SUBMITTED ON ADDITIONAL SHEETS

13. FACILITIES AND EQUIPMENT. Describe laboratory facilities and remote handling equipment, storage containers, shielding, fume hoods, etc. Explanatory sketch of facility is attached. (Circle answer) Yes (No) See supplemental sheet

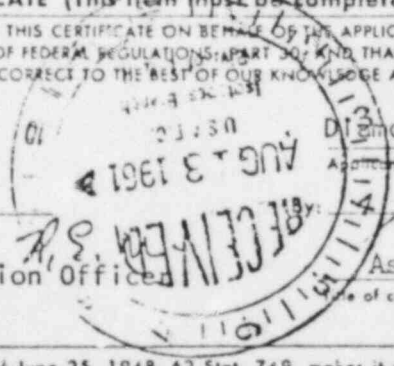
14. RADIATION PROTECTION PROGRAM. Describe the radiation protection program including control measures. If application covers sealed sources, submit leak testing procedures where applicable, name, training, and experience of person to perform leak tests, and arrangement for performing initial radiation survey, servicing, maintenance and repair of the source. See supplemental sheet

15. WASTE DISPOSAL. If a commercial waste disposal service is employed, specify name of company. Otherwise, submit detailed description of methods which will be used for disposing of radioactive wastes and estimates of the type and amount of activity involved. Waste disposal conducted by Health Physics Unit at National Bureau of Standards

CERTIFICATE (This item must be completed by applicant)

16. THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATE ON BEHALF OF THE APPLICANT NAMED IN ITEM 1, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PART 307 AND THAT ALL INFORMATION CONTAINED HEREIN, INCLUDING ANY SUPPLEMENTS ATTACHED HERETO, IS TRUE AND CORRECT TO THE BEST OF OUR KNOWLEDGE AND BELIEF.

Date 16 Aug 61
 Approved: R. E. McCoskey
 Radiation Protection Officer
 Diamond Ordnance Fuze Laboratories
 Applicant named in item 1
[Signature]
 Associate Director
 of certifying official



WARNING.—18 U. S. C., Section 1001, Act of June 25, 1948, 62 Stat. 749, makes it a criminal offense to make a willfully false statement or representation to any department or agency of the United States as to any matter within its jurisdiction.

Supplemental Sheet

16 August 1961

Item 5. See item 8.

Item 8. Training of Radiation Protection Officer

Type of Training	Where Trained	Duration of Training	On the Job	Formal Courses
a. Principles	DOFL	5 years	yes	no
b. Measurement	DOFL	5 years	yes	no
c. Mathematics	Geo. Wash. Univ.	5 years	no	yes
d. Biological	DOFL	3 years	yes	no

Item 9. Experience with Radiation for Radiation Protection Officer:

Isotope	Max. Amount	Where Experience was Gained	Duration of Experience	Type of Use
Cobalt 60	75 mc	DOFL	3 years	Lab, Field
Cesium-137	15 mc	DOFL	2 years	Lab, Field
Misc (3-83) *	100 mc	Nevada Test Site	1 year	Lab, Field
Misc (3-83) *	20 mc	DOFL/Gen. Atomic	1 year	Laboratory

* The maximum amounts of radioactivity and the identification of all isotopes handled are extremely difficult to determine. The amounts can only be given as maximum estimates. Some of the isotopes handled were: Al28, Mn 56, Co60, Cu64, Zn65, W185, and Ta 182.

Item 10:

Instrument	Number Available	Radiation Detected	Sens. Range mr/hr	Window Thickness Mg/cm ²	Use
a. Nuc Chi 2112/DN3	1	neutron	15,000 cpm	-	survey
b. Anton CDV 700	12	beta gamma	0.1 to 50	30	survey
c. Tracerlab SU 14	3	beta gamma	0.1 to 25	30	survey

38700

d.	Chatham 700	1	beta gamma	0.1 to 50	30	survey
e.	Tracerlab SU-1H	1	beta gamma	1 to 1500	2	survey
f.	Nuc. Chi 2586	1	beta gamma	2 to 2500	1.	survey
g.	Radac AN/PDR-39	1	gamma	1 to 50,000	-	survey
h.	Tracerlab Scin. det. P-20 prob w/SC-34 Ratemeter	1	gamma	10^6 cpm	-	measure
i.	Prop Counter NMC-PC3A	1	alpha beta gamma	10^6 cpm	0	smear test evaluation
j.	Labatron 1619A	1	alpha beta gamma	20,000 cpm	1.4	survey monitor
k.	Jordan Minirad M-50	2	gamma	0.05 to 50,000	-	survey

Item 13: Facilities and Equipment.

a. General: The desired neutron source will be used in the Triga Mark F reactor at the Diamond Ordnance Radiation Facility (DORF) and will be supplied by the prime contractor, General Atomic Division of General Dynamics Corporation. Initial installation of the source into the reactor will be performed by contractor personnel under the supervision of the reactor administrator and a health physicist. Thenceforth, the source will remain in the reactor except for leakage inspections and eventual replacement. In the case of unforeseen events requiring removal of the source from the reactor it will be stored in an appropriate paraffin shielded storage container and placed in the hot storage room (at DORF) which is provided with a combination lock.

b. Handling: Personnel handling the source will be equipped with neutron film badges and dosimeters and will be required to use tongs when necessary in order to keep exposure to a minimum.

c. Shielding: During reactor operation the source will be shielded by 17 feet of water. No other use of this source is anticipated.

d. Storage: Normal storage will be in the reactor pool. External to the pool, the source in its container will be stored in the hot storage area at DORF.

Item 14. Radiation Protection Program:

a. The DOFL Radiation Protection Program is covered in DOFL Administrative Circular No. 6, "Procedures for Maintaining Radiological Safety", a copy of which has been supplied to your commission with license application for isotopes 3-83, dated 20 January 1959.

b. All incoming radioactive shipments are placed in an isolated area in the shipping department and held until cleared by the Radiation Protection Officer or his assistant. Radioactive items are tagged with approved labels and released to responsible users.

c. The neutron source will be examined for leakage by Dr. Abraham Schwebel, Chief Health Physicist for the National Bureau of Standards. Source repairs will not be performed at DOFL; a leaky source will be returned to the manufacturer.

d. The reactor pool will be continuously monitored for evidence of radioactivity.

38700