21-35C-8

Form AEC-313 (2-57)

ATOMIC ENERGY COMMISSION

APPLICATION FOR BYPRODUCT MATERIAL LICENSE

Form approved. Budget Bureau No. 38-R027.3.

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 two copies to: U. S. Atomic Energy Commission, P. O. Box E, Oak Ridge, Tenn. Attention: Isotopes Extension, Division of Civilian Application. 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.

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

Nuclear Development Corporation of America
5 New Street
White Plains, New York

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

NDA Experimental Station
Route 55
Pawling, New York

2. DEPARTMENT TO USE BYPRODUCT MATERIAL

Development Engineering Dept.

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

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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.)*

Jack J. Gabay

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.)*

Aristides Miliotes

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

Co^{60}

(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.)*

119 sealed sourced manufactured and calibrated by Isotopes Specialties Company, Burbank, California; 140 millicuries -- maximum activity per source.

These sources were manufactured for the Army Chemical Warfare Services, to be used for . . calibration of geiger counters.

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.)*

he 119 sealed sources are being prepared at the request of, and nder contract to the Army Chemical Warfare Services. They are to e used in the calibration of geiger counters. See attachment.

DUPLICATED FOR DIV. OF INSP. A/53 16851

(Continued on reverse side)

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

8. TYPE OF TRAINING	WHERE TRAINED	DURATION OF TRAINING	ON THE JOB (Circle answer)	FORMAL COURSE (Circle answer)
a. Principles and practices of radiation protection	See attachments.		Yes No	Yes No
b. Radioactivity measurement standardization and monitoring techniques and instruments			Yes No	Yes No
c. Mathematics and calculations basic to the use and measurement of radioactivity			Yes No	Yes No
d. Biological effects of radiation			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
		See attachments.		

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/cm²)	USE (Monitoring, surveying, measuring)
Nuclear Chicago 2612	5		0-20	30 mg	Monitoring and surveying.
Juno SRJ-3	3		0-5000		

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

Instrument calibration at 2 month intervals with Co^{60} standard source.

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

R. S. Landauer, Jr. and Company

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 Attachment.

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 arrangements for performing initial radiation survey, servicing, maintenance and repair of the source. See Attachment.

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. See Attachment.

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 30, AND THAT ALL INFORMATION CONTAINED HEREIN, INCLUDING ANY SUPPLEMENTS ATTACHED HERETO, IS TRUE AND CORRECT TO THE BEST OF OUR KNOWLEDGE AND BELIEF.

Nuclear Development Corporation of America
Applicant named in item 1

Date May 21, 1959

By: Peter C. Murphy
Peter C. Murphy, Manager, Security & General Services Dept
Title of certifying official

RECEIVED MAY 25 1959

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.

U. S. GOVERNMENT PRINTING OFFICE : 1957-O-F—424006

Supplement to Question No. 7

Work to be Performed by NDA

Under this license, involving the materials described above, NDA would do the following:

NDA would receive at its Pawling Laboratories, from Kenneth Lynch and Sons, Wilton, Connecticut, prime contractor to the Army Chemical Warfare Services, a bulk shipment (contained in an ICC approved shipping container, type "LS21 Shield, Isotopes Specialties Company Drawing 1001"), containing 119 sealed sources which will vary in amount of activity from 75 to 130 millicuries.

NDA's task, which will be performed at the Pawling Hot Lab, will be to remove each of the 119 sealed sources from the bulk container and transfer each into an individual pig in an individual container. This process will be performed in the following manner:

1. The bulk shipping container will be placed behind two concrete block shields which are five feet wide, four feet high and three feet thick.

Using mirrors for observation, an individual sealed source will be removed from the bulk shipping container by means of a small magnet suspended on the end of a nine foot pole. The magnet is so designed that it can only remove one sealed source each time. The sealed source will be lifted out and deposited on a bench in such a manner that a cadmium plated tag attached to the sealed source by means of a silver chain will be visible with the aid of a telescope and mirror arrangement. The cadmium plated tag will have been stamped by the Isotopes Specialties Company to show the specific activity of that sealed source, and this activity figure will be copied onto a paper record which will be sent along in the shipment for purposes of identifying the sealed source and reporting its activity. The sealed source will than be moved, by means of the magnet on the nine foot pole, into a small pig contained in a single sealed source shipping container (ICC approved container, "Army Chemical Corpos M-1").

This process will be repeated until all of the 119 sealed sources have been individually packaged.

All of the 119 packages will be picked up at the Pawling Laboratories by Kenneth Lynch and Sons of Wilton, Connecticut, the prime contractor to the Army Chemical Warfare Services.

The above operations will be monitored by the NDA Radiological Safety Officer.

Supplement to Questions No. 8 and 9

Re: Jack J. Gabay

No. 8 -- Training and Experience

	Where Trained	Duration of Training	On the Job	Formal Course
a.	Bklyn. Polytechnic Institute, USAEC, NYOO, HASL	2 years	yes	yes
b.	Bklyn. Polytechnic Institute, USAEC, NYOO, HASL	2 years	yes	yes
c.	Bklyn. Polytechnic Institute, USAEC, NYOO, HASL	2 years	yes	yes
d.	Bklyn. Polytechnic Institute, USAEC, NYOO, HASL	2 years	yes	yes

No. 9 -- Experience with Radiation

Isotope	Maximum Amount	Where Experience Gained	Duration of Experience	Type of Use
Ra_{226}	500 C	Canadian Radium & Uranium Corp.	1 year	Neutron Sources and Medical
Po_{210}	500 C	Canadian Radium & Uranium Corp.	1 year	Neutron Sources and Medical
Pb_{210}	500 C	Canadian Radium & Uranium Corp.	1 year	Neutron Sources and Medical
Fission Products	1000 C	NYAEC, NDA, Bklyn. Polytechnic Inst.	9 years	Chemical analysis, Hot Lab work
Be_{10}	10 mC	NYAEC, HASL	6 months	Analytical Development
Na_{22}	20 mC	NDA	2 months	Hot Lab work
K_{40}	5 mC	NYAEC, NDA	2 years	Chemical analysis
Fe_{59}	1 mC	Bklyn. Polytechnic Institute	1½ years	Thesis
Co_{60}	1 C	NYAEC, NDA	5 years	Chemical analysis, Hot Lab work

Various isotopes used in neutron activation analytical work at the Brooklyn Polytechnic Institute and the New York Operations Office of the U. S. Atomic Energy Commission.

Supplement to Questions No. 8 and 9

Re: Aristides Miliotes

No. 8 Training and Experience

	Where Trained	Duration of Training	On the Job	Formal Course
a.	Chemical Corps School, US Army, NDA	4 years	yes	yes
b.	Chemical Corps School, US Army,	2 years	yes	yes
c.	Chemical Corps School, US Army, NDA	21 weeks	yes	yes
d.	Chemical Corps School, US Army,	21 weeks	yes	yes

No. 9 Experience with Radiation

Isotope	Maximum Amount	Where Experience Gained	Duration of Experience	Type of Use
Co_{60}	600 C	Ft. McClellan, Alabama	3 months	Encapsulation, then used to train radiation monitors
Pu	Indeterminable	Los Alamos, New Mexico	5 months	Health physics training for handling same.
Fission	Indeterminable	Eniwetok Test Nevada Test Site	8 months	Detection, monitoring decontamination in conjunction with weapon tests.

Supplement to Questions No. 14 and 15

14. Radiation Protection Program

All personnel who work with radioactive material are instructed in safe handling methods and radiological safety before they are allowed to commence work. In addition, they are briefed on the standard operating procedures at the Hot Lab. All work is closely supervised by the Hot Lab supervisor and the Health Physicist. Inexperienced personnel work under the supervision of experienced personnel at all times.

Access to radiation work areas is controlled by a security guard. Only authorized personnel can enter the area upon approval of the laboratory supervisor.

Personnel wear film badges and dosimeters. Dosimeters are read and recorded daily. Wrist badges and finger dosimeters are available for use where appropriate. In addition, personnel wear protective clothing when appropriate. Booties are always worn in the laboratory and no one is allowed to leave the laboratory unless he is monitored first.

Internal feasibility reports must be written and approved prior to the beginning of any work with radioactive materials. Approval is granted jointly by the Director of Health and Safety and the Operations Manager.

Air sampling and area monitoring are done routinely. Work areas are monitored immediately upon completion of work. These areas are usually lined with absorbent Kimpak paper to help contain any contamination due to a spill.

The radiation protection program is supervised by a full time Health Physicist whose qualifications are shown on this application.

15. Waste Disposal

There is no waste disposal involved in this project.