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Form AEC-313 8-64 10 CFR 30	D STATES ATOMIC ENERGY COMMISSION **APPLICATION FOR BYPRODUCT MATERIAL LICENSE**	Form approved. Budget Bureau No. 38-R027

INSTRUCTIONS. – Complete Items 1 through 16 if this is an initial application or an application for renewal of a license. Information contained in previous applications filed with the Commisson with respect to Items 8 through 15 may be incorporated by reference provided *references are clear and specific.* Use supplemental sheets where necessary. Item 16 must be completed on all applications. Mail two copies to: U.S. Atomic Energy Commission, Washington, D.C., 20545, Attention: Isotopes Branch, Division of Materials Licensing. 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. Include ZIP Code.)*

The Beryllium Corporation
Beryllium Division
P.O. Box 429
Hazleton, Pa 18201

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

The Beryllium Corporation
Alloy Division
P.O. Box 1462
Reading, Pa 19603

2. DEPARTMENT TO USE BYPRODUCT MATERIAL

Analytical Laboratory

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

Present license 37-07676-01

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.)*

Kenneth J. Betz
Supervisor, Spectrographic Lab
Alloy Division

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.)*

Paul C. Kempchinsky
Spvr, Analytical & Testing Labs
Beryllium Division

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

Antimony 124

(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.)*

Sealed Source - 2 sealed sources - 250 millicuries each. U.S.Nuclear Type 3130 or 3200, Atomic Energy of Canada Ltd. Type RC-3, RC-5, RC-8, SRC-3, or C-129m.

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.)*

To be used in a Boulder Scientific Co. Model 200 Beryllium Analyzer for the analysis of beryllium bearing samples.

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(Continued on reverse side)

TRAINING AND E... OF EACH INDIVIDUAL NAMED IN ITEM ... *(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 attached sheets.		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 attached sheets.		

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)
Victoreen Model 592B Gamma Dose Ratemeter	One	Gamma	0-1000 mc		Surveying

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

Calibrate every 6 months with standards supplied with the instrument according to the manufacturer's instructions.

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

Personnel monitoring will be by use of film badges supplied by Tracerlab. Badges changed monthly

INFORMATION TO BE SUBMITTED ON ADDITIONAL SHEETS IN DUPLICATE

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 attached sheets

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 attached sheets

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 attached sheets

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.

Date July 19, 1968

Beryllium Corporation
Applicant named in item 1

By: E. M. Velten
E.M. Velten
Vice President
Title of certifying official

AUG 5 1968

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 : 1964 O—745-381

THE BERYLLIUM CORPORATION

HAZLETON, PENNSYLVANIA

Addition to Form AEC-313 July 19, 1968

Item 8:

Paul C. Kempchinsky
- Bachelor of Arts in Chemistry University of Pennsylvania 1954
- Radiological Safety Training Course T-1 conducted by Boulder Scientific Co., Boulder, Colorado
- Radiation Physics and Radiological Safety Course. Engineer's Club of Philadelphia, Pennsylvania. December 1965 (12 hours)

Kenneth J. Betz
- Bachelor of Science in Chemistry Albright College, Reading, Pa., 1939
- Will receive on-the-job training in radiation safety and safe application of the Model 200 Beryllium Analyzer under the supervision of Paul C. Kempchinsky

Item 9:

Paul C. Kempchinsky
- 5 years experience with Sb 124 (250 mc) as used in the Model 200 Beryllium Analyzer at the Beryllium Corporation.

Kenneth J. Betz
- 6 years experience witha Phillips X-ray Diffraction unit at the Beryllium Corp.

Item 13:

Reference Beryllium Corp. Dwg. No. 6232-E dated 7/11/68 filed with this application.

Item 14:

Reference Administrative instructions to personnel for Radiation Protection Program filed with this application. Leak testing will be performed by Boulder Scientific Company.

Item 15:

Spent Antimony 124 sources will be returned to Boulder Scientific Company for disposal.

Administrative Instructions for the Model 200 Beryllium Analyzer(Reading Plant)

A. Supervisor of use of sealed Antimony 124 source:

Kenneth J. Betz

B. Radiation Protection Officer:

Paul C. Kempchinsky

C. Training requirements for individual users of Model 200 Beryllium Analyzer:

A formal course and/or on-the-job training in radiation safety and safe application of the Model 200 Beryllium Analyzer, manufactured by the Boulder Scientific Company, and a thorough knowledge of all present and future A.E.C. rules and regulations pertaining to the use of by-product materials.

D. Characteristics of the Model 200 Beryllium Analyzer:

This instrument is designed to detect beryllium in various types of solids and liquids using Antimony 124 as a source of gamma radiation and measuring neutrons with suitable electronic circuitry.

The Beryllium Analyzer contains a sealed Antimony 124 source equal to or less than 250 millicuries. The principle radiation is a 1.71 Mev gamma ray and it has a half life of 60 days.

E. Operational instructions for the Model 200 Beryllium Analyzer:

1. The areas of potentially dangerous radiation are directly above the source unit and in front of the slide ports. Therefore these areas must be covered at all times with the lead discs and either the sample or blank slide.

2. When converting the source unit from the shipping or storage condition to the use condition, care must be taken to perform this operation as rapidly as possible. The lead plug can be removed and the detector unit inserted into the device in less than 10 seconds.

3. When changing slides, one slide must be used to displace the other slide.

4. When converting the device from the use condition to the storage condition, the slide must be in the RADIATION OFF position to accept the 3/8 inch rod attached to the removeable lead plug.

5. Whenever the source unit is in the storage of shipping condition, the padlock must be attached to the device in the proper place and locked.

6. Whenever the analyzer is not being used for an extended period of time (i.e. two (2) hours or more) or overnight, the detector unit will be removed, the lead plug set in place and source unit locked into the storage condition.

7. If during operation of the analyzer it is necessary for the operator to leave the room for a short period of time (one hour or less) the door to the room will be locked so that unauthorized personnel cannot enter.

8. Personnel will work at an optimum distance from the instrument for efficient working conditions and minimum radiation exposure. When changing samples, the operator will not stand over the source unit, but will operate at arms length. During the counting cycle, the operator will not stand within three feet of the source unit un-necessarily.

9. Before operating the analyzer, the operator will make sure that the radiation survey instrument is present and in operable condition. This includes checking the last calibration date which is posted on the instrument. The instrument must be recalibrated at least every six months.

10. The room containing the instrument is designated a restricted area in accordance with the rules set froth in Title 10, Code of Federal Regulations, Sections 20.101 and 20.102.

11. Posting of the area will conform to the rules set forth in Title 10, Code of Federal Regulations, Section 20.203 where applicable.

12. Access to the restricted area will be in accordance to the rules set forth in Title 10, Code of Federal Regulations.

13. A monthly survey will be made of the restricted area by the Radiation Protection Officer.

14. The survey meter will be used to survey a new shield containing the sealed source upon receipt to detect any unusual conditions.

15. The survey instrument will be used to survey a used shield containing the sealed source prior to shipment to assure that the shipping container meets shipping regulations for radioactive material.

16. A shield containing a spent sealed source will be decontaminated for beryllium contamination prior to shipment. Swipe samples will be taken to assure complete beryllium decontamination.

17. The counting equipment will be removed from the restricted area for any maintenance work.

18. The receiving department will arrange to have all shields containing the sealed source delivered immediately to the laboratory following its receipt on plant site. Shields containing sealed sources will not be stored by the receiving department.

19. The shipping department will arrange to have shields containing spent sealed sources picked up from the laboratory and delivered to the shipping department just prior to the pick up by the common carrier. Shields containing sealed sources will not be stored by the shipping department.

20. The Radiation Protection Officer will be notified at once in case of a fire either in the restricted area or in the vicinity of the restricted area.

F. Personnel Monitoring and records:

1. The film badge must be worn at all times when operating the Beryllium Analyzer Model 200. The film badge will be attached to the uniform at chest or neck height.

2. Records will be kept on the monthly dosage to operating personnel as reported by the film badge service. These records will be retained by the Radiation Officer.

3. Records will be kept of the date of receipt of a new source, its strength in mc, the type of source, and the date of last wipe test. Wipe test information will be supplied by Boulder Scientific Company.

4. Records will be kept of surveys performed as outlined in paragraphs E-13, E-14, E-15, G-2 and G-5f of these instructions.

G. The following procedure must be followed in the event of an accident involving the shield containing the sealed radioactive source:

1. Check immediately the condition of the shield containing the sealed source without excessive exposure to radiation.

2. Post a man outside the restricted area to keep unauthorized personnel at a safe distance until the radiation can be checked with the surveying instrument.

3. In the event the shield is damaged, the area around the restricted area will be marked in such a way as to restrict the passage of unauthorized personnel to the area until the extent of damage and/or the location of the sealed source is ascertained.

4. In the event the sealed source is freed from the lead shield, the area will be roped off and the source will be found and replaced in the shield or another suitable container by use of a long handled device and shipped back to Boulder Scientific for disposal.

5. In the event that the sealed source is damaged along with the lead shield, the following steps must be taken:

(a) Follow steps G-1 and G-2 above.

(b) Using the surveying device, outline the area of radiation levels above 2 mr/hr and mark the area.

(c) Using the surveying device, locate the by-product material.

(d) Collect by-product material using equipment such as long handled shovels, etc., to reduce the radiation hazard to personnel collecting material.

(e) Place collected by-product material in a suitable container for disposing of the radioactive materials by Boulder Scientific Co., 250 Pearl St., Boulder, Colorado.

(f) Resurvey the area to make sure no radioactive material remains.

6. In the event of an emergency, the following must be notified immediately:

Radiation Protection Officer, Paul C. Kempshinsky

and the Manager Atomic Energy Commission, New York Operations Office
376 Hudson Street, New York 14, New York
(Phone: Area Code 212, Yukon 9-1000) will be contacted in accordance with the rules and regulations set forth in Title 10, CFR, Sections 20.402 and 20.403.

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