NRC Form 313 I (12-81) 10 CFR 30

U.S. NUCLEAR REGULATORY COMMISSION

APPLICATION FOR BYPRODUCT MATERIAL LICENSE
INDUSTRIAL

See attached instructions for details.

Completed applications are filed in duplicate with the Division of Fuel Cycle and Material Safety, Office of Nuclear Material Safety, and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555 or applications may be filed in person at the Commission's office at 1717 H Street, NW, Washington, D. C. or 7915 Eastern Avenue, Silver Spring, Maryland.

1. APPLICATION FOR: *(Check and/or complete as appropriate)*

	a. NEW LICENSE
	b. AMENDMENT TO: LICENSE NUMBER
X	c. RENEWAL OF: LICENSE NUMBER 37-07676-02

2. APPLICANT'S NAME *(Institution, firm, person, etc.)*
Cabot Corporation,
Wrought Products Division
TELEPHONE NUMBER: AREA CODE – NUMBER EXTENSION
(215) 921-5000

3. NAME AND TITLE OF PERSON TO BE CONTACTED REGARDING THIS APPLICATION
Paul C. Kempchinsky
Supervisor, Spectrographic Laboratory
TELEPHONE NUMBER: AREA CODE – NUMBER EXTENSION
(215) 921-5000, Ext. 5334

4. APPLICANT'S MAILING ADDRESS *(Include Zip Code)*
(Address to which NRC correspondence, notices, bulletins, etc., should be sent.)
Post Office Box 1296
Reading, Pennsylvania 19603

5. STREET ADDRESS WHERE LICENSED MATERIAL WILL BE USED *(Include Zip Code)*
Tuckerton Road, Muhlenberg Township,
Berks County, Pennsylvania 19605

(IF MORE SPACE IS NEEDED FOR ANY ITEM, USE ADDITIONAL PROPERLY KEYED PAGES.)

6. INDIVIDUAL(S) WHO WILL USE OR DIRECTLY SUPERVISE THE USE OF LICENSED MATERIAL
(See Items 16 and 17 for required training and experience of each individual named below)

	FULL NAME	TITLE
a.	Paul C. Kempchinsky	Supervisor, Spectrographic Laboratory
b.		
c.		

RECEIVED BY LFMB Date 12/5/83 Log Dec 31 By Brown Orig To Action Coord. 12/6/83

7. RADIATION PROTECTION OFFICER
Paul C. Kempchinsky

Attach a resume of person's training and experience as outlined in Items 16 and 17 and describe his responsibilities under Item 15.
Supervisor, Spectrographic Laboratory

8. LICENSED MATERIAL

LINE NO.	A ELEMENT AND MASS NUMBER	B CHEMICAL AND/OR PHYSICAL FORM	C NAME OF MANUFACTURER AND MODEL NUMBER *(If Sealed Source)*	D MAXIMUM NUMBER OF MILLICURIES AND/OR SEALED SOURCES AND MAXIMUM ACTIVITY PER SOURCE WHICH WILL BE POSSESSED AT ANY ONE TIME
(1)	Antimony 124	Sealed Source	AECL Model RC-3, RC-5, RC-8, SRC-3 or	(4) each - 250 millicurie/ source
(2)			C129M	
(3)				
(4)				

Applicant... 534107
Check No... $150.00
Amount/Fee Category...
Type of Fee Renewal
Date Check Rec'd. 12/1/83
Received By... Brown

LINE NO.	E DESCRIBE USE OF LICENSED MATERIAL
(1)	For use in Boulder Scientific Model 200 Beryllium Analyzers for sample analysis.
(2)	
(3)	
(4)	

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9. STORAGE OF SEALED SOURCES

LINE NO.	CONTAINER AND/OR DEVICE IN WHICH EACH SEALED SOURCE WILL BE STORED OR USED. A.	NAME OF MANUFACTURER B.	MODEL NUMBER C.
(1)	Boulder Scientific Beryllium Analyzer (2 each)	Boulder Scientific, Mead, Colorado	Model 200
(2)			
(3)			
(4)			

10. RADIATION DETECTION INSTRUMENTS

LINE NO.	TYPE OF INSTRUMENT A	MANUFACTURER'S NAME B	MODEL NUMBER C	NUMBER AVAILABLE D	RADIATION DETECTED (alpha, beta, gamma, neutron) E	SENSITIVITY RANGE (milliroentgens/hour or counts/minute) F
(1)	Survey	Victoreen	Model 490 w/a Model 489-35 Probe	2	Alpha-Beta Gamma	Gamma sensitivity 800 CPM in a 2mR/hr gamma field.
(2)						
(3)						
(4)						

11. CALIBRATION OF INSTRUMENTS LISTED IN ITEM 10

☒ a. CALIBRATED BY SERVICE COMPANY

NAME, ADDRESS, AND FREQUENCY

See attached sheet

☐ b. CALIBRATED BY APPLICANT

Attach a separate sheet describing method, frequency and standards used for calibrating instruments.

12. PERSONNEL MONITORING DEVICES

TYPE (Check and/or complete as appropriate.) A	SUPPLIER (Service Company) B	EXCHANGE FREQUENCY C
☒ (1) FILM BADGE	R. S. Landauer, Jr. & Company Glenwood Science Park Glenwood, Illinois 60425	☒ MONTHLY
☐ (2) THERMOLUMINESCENCE DOSIMETER *(TLD)*		☐ QUARTERLY
☐ (3) OTHER *(Specify)*: _____		☐ OTHER *(Specify)*:
_____		_____
_____		_____

13. FACILITIES AND EQUIPMENT (Check were appropriate and attach annotated sketch(es) and description(s).

☐ a. LABORATORY FACILITIES, PLANT FACILITIES, FUME HOODS *(Include filtration, if any)*, ETC.
☐ b. STORAGE FACILITIES, CONTAINERS, SPECIAL SHIELDING *(fixed and/or temporary)*, ETC.
☐ c. REMOTE HANDLING TOOLS OR EQUIPMENT, ETC.
☐ d. RESPIRATORY PROTECTIVE EQUIPMENT, ETC.

14. WASTE DISPOSAL

a. NAME OF COMMERCIAL WASTE DISPOSAL SERVICE EMPLOYED

N.A.

b. IF COMMERCIAL WASTE DISPOSAL SERVICE IS NOT EMPLOYED, SUBMIT A DETAILED DESCRIPTION OF METHODS WHICH WILL BE USED FOR DISPOSING OF RADIOACTIVE WASTES AND ESTIMATES OF THE TYPE AND AMOUNT OF ACTIVITY INVOLVED. IF THE APPLICATION IS FOR SEALED SOURCES AND DEVICES AND THEY WILL BE RETURNED TO THE MANUFACTURER, SO STATE.

Sealed sources are returned to Boulder Scientific, Mead, Colorado

INFORMATION REQUIRED FOR ITEMS 15, 16 AND 17

Describe in detail the information required for Items 15, 16 and 17. Begin each item on a separate page and key to the application as follows:

15. RADIATION PROTECTION PROGRAM. Describe the radiation protection program as appropriate for the material to be used including the duties and responsibilities of the Radiation Protection Officer, control measures, bioassay procedures *(if needed)*, day-to-day general safety instruction to be followed, etc. If the application is for sealed source's also submit leak testing procedures, or if leak testing will be performed using a leak test kit, specify manufacturer and model number of the leak test kit.

16. FORMAL TRAINING IN RADIATION SAFETY. Attach a resume for each individual named in Items 6 and 7. Describe individual's formal training in the following areas where applicable. Include the name of person or institution providing the training, duration of training, when training was received, etc.

    a. Principles and practices of radiation protection.

    b. Radioactivity measurement standardization and monitoring techniques and instruments.

    c. Mathematics and calculations basic to the use and measurement of radioactivity.

    d. Biological effects of radiation.

17. EXPERIENCE. Attach a resume for each individual named in Items 6 and 7. Describe individual's work experience with radiation, including where experience was obtained. Work experience or on-the-job training should be commensurate with the proposed use. Include list of radioisotopes and maximum activity of each used.

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18. CERTIFICATE

(This item must be completed by applicant)

The applicant and any official executing this certificate on behalf of the applicant named in Item 2, 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.

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.

a. LICENSE FEE REQUIRED *(See Section 170.31, 10 CFR 170)*	b. CERTIFYING OFFICIAL *(Signature)*
	c. NAME *(Type or print)* T. J. Concannon
(1) LICENSE FEE CATEGORY: 10 CFR170.31 3E	d. TITLE Mgr. Industrial Hygiene/Compliance
(2) LICENSE FEE ENCLOSED: $ 150.00	e. DATE 29 November 1983

ATTACHMENT TO APPLICATION FOR BYPRODUCT MATERIAL LICENSE

Item 11: Survey meters will be calibrated every six months by either:

Applied Health Physics, Incorporated
Bethel Park, Pennsylvania

or

Triangle Resource Industries
Laurel, Maryland

Item 15: Reference - "Administrative Instructions" to personnel for radiation protection filed with this application.

All leak testing on the sealed sources are performed by Boulder Scientific at their facility. To maintain suitable analytical statistics, a source is used for no more than three months. The sources are returned to Boulder Scientific within the six month swipe test interval requirements and Boulder Scientific assumes responsibility for the required tests and for the disposal of spent sources.

Item 16: Paul C. Kempchinsky -

Bachelor of Arts in Chemistry
University of Pennsylvania - 1954

Radiological Safety Course T-1
Conducted by Boulder Scientific Co.
Boulder, Colorado - 1963

Radiation Physics and Radiological
Safety Course (12 Hours)
Engineer's Club of Philadelphia
December - 1965

Item 17: Paul C. Kempchinsky -

Four years experience CE 137, 25mc sealed source in an Industrial Nucleonics Model LS-10 source unit.

Twenty years experience, Sb 124, 250mc sealed source in a Boulder Scientific Model 200 Beryllium Analyzer

ADMINISTRATIVE INSTRUCTIONS FOR THE MODEL 200 BERYLLIUM ANALYZER

A. Supervisor of use of sealed Antimony 124 source:

Paul C. Kempchinsky

B. Radiation Protection Officer:

Paul C. Kempchinsky

C. Training Requirements for Individual Users of Model 200 Beryllium Analyzer:

On-the-job training in radiation safety and safe application of the Model 200 Beryllium Analyzer, manufactured by the Boulder Scientific Company, and a knowledge of all N.R.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 shield 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 shield unit from the shipping or storage condition to use condition, care must be taken to perform this operation as rapidly as possible.

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 removable lead plug.

5. Whenever the shield unit is in the storage or 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, the detector unit will be removed, the lead plug set in place and shield unit locked into the storage condition.

7. If, during the operation of the analyzer it is necessary for the operator to leave the room for a short period of time, 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 (3ft.) of the source unit unnecessarily.

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 forth 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 Retulations, 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 survey device, outline the area of radiation levels above 2 mr/hr and mark the area.

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

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

e) Place collected byproduct material in a suitable container for disposing of the radioactive materials by Boulder Scientific Company.

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. Kempchinsky

AND -

Region 1, USNRC
Office of Inspection and Enforcement
631 Park Avenue
King of Prussia, Pennsylvania 19406

Phone:

(215) 337-5000 Days

(215) 337-5000 Nights and Holidays

- will be contacted in accordance with the rules and regulations set forth in Title 10, CFR, Sections 20.402 and 20.403.

PCK/jb

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