

29-209-1

INSTRUCTIONS: Complete Items 1 through 19 if this is a new application. If renewal is requested, complete only Items 1 through 11 provided that with respect to the other items there has been no change in the information previously submitted. Mail two copies to: U. S. Atomic Energy Commission, P. O. Box E, Oak Ridge, Tennessee, Attention: Isotopes Extension, Division of Civilian Application. Upon approval of this application, the applicant will receive an AEC Byproduct Material License. General requirements for issuance of an AEC Byproduct Material License are contained in Title 10, Code of Federal Regulations, Part 30.

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| 1. (a) NAME AND SHIPPING ADDRESS OF APPLICANT <i>(Institution, firm, hospital, person, etc.)</i> American Cyanamid Company Bound Brook, New Jersey | (b) ADDRESS(ES) AT WHICH BYPRODUCT MATERIAL WILL BE USED <i>(If different from shipping address)</i> Same as shipping address |
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2. DEPARTMENT TO USE BYPRODUCT MATERIAL
Research Division

3. INDIVIDUAL USER *(Name and title of individual(s) who will use or directly supervise use of byproduct material)*
William Seaman, Ph.D., Head of Analytical Research

4. RADIOLOGICAL SAFETY OFFICER *(Name of person qualified in radiological safety, if other than individual user)*
Individual user

5. PREVIOUS LICENSE OR AUTHORIZATION NUMBER *(If this is an application for renewal of a license for byproduct material obtained under a prior license or authorization for radioisotope procurement)*
Not applicable

BYPRODUCT MATERIAL OR IRRADIATION SERVICE DESIRED

| | | |
|--|---|---|
| 6. BYPRODUCT MATERIAL <i>(Element and mass number)</i> Phosphorus 32 | 7. CHEMICAL AND/OR PHYSICAL FORM <i>(Or catalog number)</i> Tricresyl Phosphate Tracerlab T17-x-2 | 8. MAXIMUM AMOUNT OF RADIOACTIVITY IN MILLICURIES THAT YOU WILL POSSESS AT ANY ONE TIME 5 millicuries |
|--|---|---|

9. IF IRRADIATION SERVICE IS DESIRED, STATE PERTINENT DETAILS SUCH AS: CHEMICAL COMPOSITION AND WEIGHT IN GRAMS OF TARGET MATERIAL, RADIOACTIVITY, IRRADIATION TIME IN DAYS, AND NEUTRON FLUX

STATEMENT OF USE

10. (a) DESCRIBE PURPOSE FOR WHICH BYPRODUCT MATERIAL WILL BE USED. *(If material is for "human use" complete Supplement A in lieu of this item. If material is to be used in or manufactured as a "sealed source" complete Supplement B in addition to this item.)*

The tricresyl phosphate will be dissolved in the liquid entering a continuous reactor. Samples will be taken at the exit of the reactor in order to determine the retention time and degree of mixing in the reactor.

(b) DESCRIBE PROCEDURES WHICH WILL BE OBSERVED TO MINIMIZE HAZARD FROM HANDLING, STORAGE, AND DISPOSAL OF THE BYPRODUCT MATERIAL

Handling will be done with sufficient shielding and distance to minimize radiation hazard (and will be followed by appropriate surveying and monitoring instruments) and with precautions (gloves, laboratory coats, etc.) to prevent contamination of skin or clothing or ingestion. Storage will be in special area and material will be disposed of only after sufficient time to allow decay to a safe point.

CERTIFICATE

11. 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 do solemnly swear (or affirm) that all information contained herein, including any supplements attached hereto, is true and correct to the best of our knowledge and belief.

| | |
|--|---|
| State of <u>NEW JERSEY</u> | American Cyanamid Company |
| County of <u>SOMERSET</u> | Applicant named in Item 1 |
| Subscribed and sworn to before me this <u>28th</u> | By <u>Joseph H. Paden</u> |
| day of <u>March, 1956</u> | Director of Laboratories, Research Div. |
| <u>Joseph K. Burwell</u> | Title of Certifying Official |
| Notary Public | Date <u>March 28, 1956</u> |

NOTARY PUBLIC OF NEW JERSEY

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.

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INSTRUCTIONS: Complete Items 12 through 19 if this is a new application. This information may be omitted from subsequent applications provided there is no change in the information previously submitted, and reference is made in Item 5 to the application on which this information appears.

TRAINING AND EXPERIENCE WITH RADIOACTIVITY OF INDIVIDUAL USER NAMED IN ITEM 3

| 12. TYPE OF TRAINING | WHERE TRAINED | DURATION OF TRAINING | ON THE JOB (Circle answer) | FORMAL COURSE (Circle answer) |
|--|---|----------------------------------|---|---|
| 1. Principles and practices of radiological health safety. | Oak Ridge Institute of Nuclear Studies | 4 weeks - July 1952 | <input checked="" type="radio"/> Yes No | <input checked="" type="radio"/> Yes No |
| 2. Radioactivity measurement standardization and monitoring techniques and instruments | " | " | <input checked="" type="radio"/> Yes No | <input checked="" type="radio"/> Yes No |
| 3. Mathematics and calculations basic to the use and measurement of radioactivity. | " | " | <input checked="" type="radio"/> Yes No | <input checked="" type="radio"/> Yes No |
| 4. Biological effects of radiation. | " | " | Yes <input checked="" type="radio"/> No | <input checked="" type="radio"/> Yes No |
| 5. Actual use of radioisotopes in the types and quantities for which application is being made, or equivalent experience | Above plus experience at American Cyanamid Co., Bound Brook, N.J. | Above plus experience since 1952 | <input checked="" type="radio"/> Yes No | <input checked="" type="radio"/> Yes No |

| 13. ISOTOPE HANDLING EXPERIENCE | | | | |
|---------------------------------|----------------|--------------------------------------|------------------------------|--------------|
| ISOTOPE | MAXIMUM AMOUNT | WHERE EXPERIENCE WAS GAINED | DURATION OF EXPERIENCE | TYPE OF USE |
| Potassium-42 | about 520 mc. | Amer. Cyanamid Co. Bound Brook, N.J. | March & May 1953 & Jan. 1954 | Tracer |
| Carbon-14 | 0.1 mc. | | April 1953 - Mar. 1956 | Tracer |
| Iron-55 | 4 mc. | | April 1955 - Jan. 1956 | X-ray Source |

14. If Radiological Safety Officer named in Item 4 is different from individual user named in Item 3, use supplementary sheet to provide equivalent information on "Training and Experience With Radioactivity of Radiological Safety Officer." Supplementary sheet is attached (Circle answer) Yes No

PHYSICAL FACILITIES, EQUIPMENT, AND RADIATION INSTRUMENTATION

15. RADIATION DETECTION INSTRUMENTS (Use separate sheet if necessary) *See attached sheet*

| 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) |
|--|------------------|--------------------|------------------------------|---|--|
| | | | | | |

16. FILM BADGES, DOSIMETERS, AND OTHER PERSONNEL MONITORING DEVICES INCLUDING BIO-ASSAY PROCEDURES
 Two pocket dosimeters, Keleket K-111 and K-112, and charger K-135. Film badges ordered from supplier when type of work requires them. Medical Department available for blood counts, etc.

17. METHOD, FREQUENCY, AND STANDARDS USED IN CALIBRATING INSTRUMENTS LISTED ABOVE (For film badges specify method of calibration and processing, or name supplier)
 Film badges have been ordered when needed from Tracerlab. Geiger tube survey meter calibrated occasionally against manufacturer's reference standard. Tracerlab SU-3C calibrated by means of self contained calibrator according to manufacturer's instructions. Cutie Pie calibrated against appropriate beta reference sources when used for beta measurement; factory calibration used for gammas.

18. (a) DESCRIBE BRIEFLY REMOTE HANDLING EQUIPMENT, STORAGE CONTAINERS, SHIELDING, AND LABORATORY FACILITIES (Working areas, fume hoods, etc.)
 (a) Lead tongs and holders, forceps, plastic beta shield, lead bricks, Tracerlab L-12 B lead storage container, rubber gloves, pipetors, etc. available. Fume hood and other laboratory facilities available.
 (b) Sketch of laboratory deposited with Advisory Field Service July 21, 1952
 (b) SKETCHES OF SUCH FACILITIES ARE ATTACHED (Circle answer) *(See above.)* Yes No

19. DESCRIBE BRIEFLY RADIATION SURVEYING PROCEDURES AND METHODS OF DISPOSING OF RADIOACTIVE WASTES
 Area, clothes and person surveyed regularly with instruments described, during and at end of working day. Wastes collected with proper shielding and allowed to decay (for short lived activity) or burned in plant furnace (for microcurie level carbon-14 residues). Arrangements will be made with commercial disposal service for long-lived activity other than carbon-14.