

Form AEC-313
(5-58)

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 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.

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

Melpar, Inc.
3000 Arlington Blvd.
Falls Church, (Fairfax County) Va.

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

2. DEPARTMENT TO USE BYPRODUCT MATERIAL

Research Division

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

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.)

Dr. John F. Ambrose, Supervisor
Physical Chemistry Branch
Mr. Gerald Halpert, Physical Chemist
Mr. Bruno M. Vasta, Biochemist

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.)

Mr. Louis Glekas
Research Division Safety Officer

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

Carbon 14

(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.)

Unsymmetrical dimethyl hydrazine
(one methyl group tagged)

total to be
200 millicuries

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 study the fate of metabolism of tagged unsymmetrical dimethyl hydrazine
on rats and mice.

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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 application for byproduct material license, dated 8 June 1961 for Carbon 14 and attached sheet. | | 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 Item 8 above | | |

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 Item 8 above | | | |

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

See Item 8 above

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

See Item 8 above

INFORMATION TO BE SUBMITTED ON ADDITIONAL SHEETS

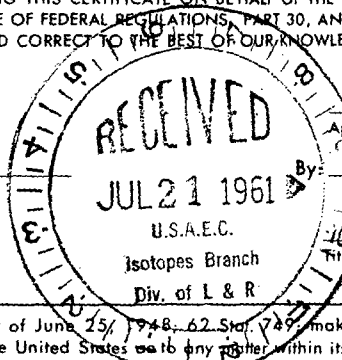
| | |
|---|------------------|
| 13. FACILITIES AND EQUIPMENT. Describe laboratory facilities and remote handling equipment, storage containers, shielding, fume hoods, etc. Explanatory sketch of facility is attached. (Circle answer) Yes No | See Item 8 above |
| 14. RADIATION PROTECTION PROGRAM. Describe 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 Item 8 above |
| 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 Item 8 above |

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

7/18/61



Melpar, Inc.

Applicant named in item 1

P. E. Ritt

Director of Research
Title 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 or to any officer within its jurisdiction.

8) Type of Training

Bruno M. Vasta - Biochemist.

B. S. Chemistry, Georgetown University

M. S. Biochemistry, George Washington University

presently enrolled for Ph. D. program in Biochemistry
at George Washington University.

Mr. Vasta has worked for the U. S. Department of Agriculture's ARS Minerals Nutrition Laboratory. While at this laboratory he conducted experiments on the absorption of various ions by roots, using excised root techniques and radioactive isotopes of rubidium, potassium, strontium, phosphorous, and sulfur.

Other programs at the ARS Mineral Nutritional Laboratory included investigations of the mechanism of formation of high energy bonds during the uptake and utilization of PO_4^{3-} ; the mechanism of absorption of ions into living cells; isolation of the functional units (reactions of the cells); and characterizing of the role of PO_4^{3-} uptake in energy metabolism (cytochrome chain). These investigations necessitated the use of radioisotope techniques both as tracers and in isotopic dilution procedures.

In addition to the above experience Mr. Vasta has had a 6 month formal course on radiation techniques at George Washington University and a 6 week formal course at Oak Ridge, Tenn.

SUMMARY:

| | <u>Type of Training</u> | <u>Where Trained</u> | <u>Duration</u> | <u>on the job</u> | <u>formal course</u> |
|-------|--|---|--|-------------------|----------------------|
| 8 (a) | Principles and practices of radiation | U.S. Dept. of Agriculture George Wash. University Oak Ridge, Tenn. | $3\frac{1}{2}$ yrs. 6 months 6 weeks | X | X X |
| 8 (b) | Radioactivity measurement standardization and monitoring tech. and instruments | U.S. Dept. of Agriculture George Wash. University Oak Ridge, Tenn. | $3\frac{1}{2}$ yrs. 6 months 6 weeks | X | X X |
| 8 (c) | Mathematics and calculation basic to the use and measurement of radioactivity | U.S. Dept. Of Agriculture George Wash. University Oak Ridge, Tenn. | $3\frac{1}{2}$ yrs. 6 months 6 weeks | X | X X |
| 8 (d) | Biological effects of radiation | U. S. Dept. of Agriculture George Wash. University Oak Ridge, Tenn. | $3\frac{1}{2}$ yrs. 6 months 6 weeks | X | X X |

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9) Experience with Radiation

| <u>Summary</u> | <u>Isotope</u> | <u>Max Amt.</u> | where experience | <u>Duration</u> | <u>Type of use</u> |
|----------------|----------------|-----------------|---------------------|-----------------|--------------------|
| Bruno M. Vasta | Rb86 | Millicuries | U. S. Dept. | 3½ yrs. | Experimental |
| | P32 | Millicuries | Agriculture | " | tracer & |
| | Sr89 | Microcuries | " | " | isotopic |
| | K42 | Microcuries | " | " | dilution |
| | S35 | Microcuries | " | " | proceedures. |