

Form AEC-312
8-64
10 CFR 30

UNITED STATES ATOMIC ENERGY COMMISSION
APPLICATION FOR BYPRODUCT MATERIAL LICENSE

Form approved
Budget Bureau No. 38-R0027

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 Commission 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.)		(b) STREET ADDRESS(ES) AT WHICH BYPRODUCT MATERIAL WILL BE USED (If different from 1 (a). Include ZIP Code.)	
The Dow Chemical Company Building 1701 Midland, Michigan 48640		Locations in United States	
2 DEPARTMENT TO USE BYPRODUCT MATERIAL		3 PREVIOUS LICENSE NUMBER(S) (If this is an application for renewal of a license, please indicate and give number.)	
Dow Industrial Service		Renewal of AEC license #21-00265-07	
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.)		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.)	
Individuals approved by Radiation Safety Committee		J. B. Charm L. G. Silverstein C. L. Lagerquist	
6 (a) BYPRODUCT MATERIAL (Elements and mass number of each)		(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 sources, also state name of manufacturer, model number, number of sources and maximum activity per source.)	
a) 50,000 curies, other than H ³ or C ¹⁴		any chemical or physical form	
b) Hydrogen-3 and Carbon-14; 25,000 curies		The sum of ratios of each quantity	
c) Source material 50,000 lbs		$\frac{\text{wt of A}}{\text{limit of A}} + \frac{\text{wt of B}}{\text{limit of B}} + \dots = \text{as } < 1$	
d) 350 g of U-235 or 200 g of U- 233 or Pu-239		See Radiation Safety Manual, Appendix G.	

7 DESCRIBE PURPOSE FOR WHICH BYPRODUCT MATERIAL WILL BE USED (If byproduct material is for human use, supplement A (Form AEC-312a) 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.)

Materials in item 6(a) may be possessed by Dow Industrial Service Division of The Dow Chemical Company during decontamination and clean-up procedures of equipment in nuclear power plants or other nuclear installations at various plant locations of various corporations or governmental agencies.

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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 Attachment III and Appendix D, Radiation Safety Manual of prior license application dated 9/16/70, and Attachment I of this application		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 Attachment III of prior license application dated 9/16/70 and Attachment I of this application.				

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 (μ r/hr)	WINDOW THICKNESS (mg/cm ²)	USE (Monitoring, surveying, measuring)
See Attachment III of prior license application dated 9/16/70.					

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

See Attachment III of prior license application dated 9/16/70.

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

See Attachment IV of prior license application dated 9/16/70.

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. If facility is attached, (Circle answer) Yes No	Explanatory sketch
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 II, Radiation Safety Manual, of prior license application dated 8/8/68 with amendment of Section 4.16*	
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 II of prior license application dated 8/8/68.	

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
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Date July 25, 1972

The Dow Chemical Company
 Approved in Item 1
 By J. B. Charm for H. R. Hoyle
 Chairman, Radiation Safety
 Title of certifying official: Committee

*as listed in Attachment I of prior license application dated 9/16/70 and as amended in Attachment II of this application.

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.

RESUME

J. B. Charm

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~~XXXXXXXXXXXXXXXXXXXX~~~~XXXXXXXXXXXXXXXXXXXX~~ - Home Phone
(517)-636-0641 - Work Phone

Born ~~XXXXXXXXXXXXXXXXXXXX~~ Education - B.A. in Chemistry, University of Massachusetts, Amherst, Massachusetts, June, 1965. M.S. in Radiation Biology - Radiation Health, University of Michigan, Ann Arbor, Michigan, December, 1967 (N.I.H. Fellowship).

Organizations - Health Physics Society; American Industrial Hygiene Association; Michigan Industrial Hygiene Society.

Employment Record - Employed by The Dow Chemical Company since February, 1968, as Environmental Health Engineer. Promoted in February, 1970 to Research Environmental Health Engineer; Radiation Safety Officer for the Corporate Dow Chemical Company; Recipient of several Company awards for excellence in technical competence and accomplishments.

Work experience includes health physics surveys for: radioisotope laboratories; environmental contamination levels; X-ray generators; neutron generators; linear accelerators; TRIGA research reactor; several hundred radiation sealed sources (process measuring devices); kilocurie cobalt - 60 and cesium - 137 sources; medical radiation facilities; decontamination efforts; radiographers and radiographic installations; X-ray analytical spectrophotometers including diffraction, fluorescence, and electron microscopy.

Served as Chief, Decontamination Team to clean up kilocurie Cobalt - 60 spill at outside company. In addition, has served as Radiological Health Consultant to outside companies in assisting them to develop a radiation safety program and to solve technically complicated radiological problems.

Member of: Company Ecology Council Task Force to develop standards for air, water, soil and food with regard to chemicals, metals and radioisotopes as pollution control guidelines (these guidelines are now in effect world wide); Nuclear Power Task Force to evaluate the impact of the Consumers Power Company Midland nuclear units on the Company's Midland Division Plant, its employees and the public with regard to the use of process steam from the proposed nuclear units in the manufacture of chemicals, as well as with regard to radioactive effluents; Radiation Safety Committee which oversees the safe use of radioisotopes for the Company.

In addition to serving as Radiation Safety Officer for the Company, has served as Industrial Hygienist conducting industrial health studies on air pollution, chemical, ventilation, metallurgical, heat, noise and non-ionizing radiation problems, evaluating the degree of exposure and recommending the appropriate controls, if necessary.