

# INSPECTION AND ENFORCEMENT

40-17

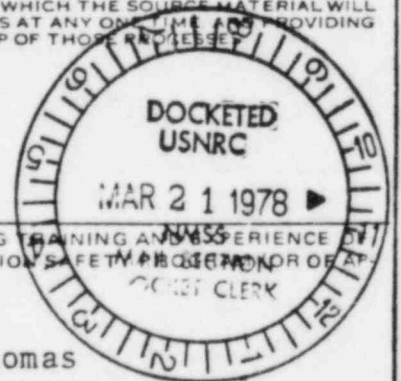
FORM NRC-2  
(7-77)  
10 CFR 40

Approved by GAO  
R0203

## RECEIVED U.S. NUCLEAR REGULATORY COMMISSION APPLICATION FOR SOURCE MATERIAL LICENSE

Pursuant to the regulations in Title 10, Code of Federal Regulations, Chapter 1, Part 40, application is hereby made for a license to receive, possess, use, transfer, deliver or import into the United States, source material for the activity or activities described.

1. (Check one) <input type="checkbox"/> (a) New license <input type="checkbox"/> (b) Amendment to License No. _____ <input checked="" type="checkbox"/> (c) Renewal of License No. <u>STB-527</u> <input type="checkbox"/> (d) Previous License No. _____		2. NAME OF APPLICANT <u>The Dow Chemical Company</u> 3. PRINCIPAL BUSINESS ADDRESS <u>Midland, MI 48640</u>	
4. STATE THE ADDRESS(ES) AT WHICH SOURCE MATERIAL WILL BE POSSESSED OR USED <u>The Dow Chemical Company, Bay City, MI</u>			
5. NAME OF PERSON TO BE CONTACTED CONCERNING THIS APPLICATION <u>D. L. Barsten</u>		6. TELEPHONE NO. OF INDIVIDUAL NAMED IN ITEM 5 <u>517/636-3677</u>	
7. DESCRIBE PURPOSE FOR WHICH SOURCE MATERIAL WILL BE USED <u>This material is sludge accumulated as a byproduct of the alloy casting operations originally carried on by Dow and Wellman Dynamics, Incorporated, from 1955 to 1970.</u>			
8. STATE THE TYPE OR TYPES, CHEMICAL FORM OR FORMS, AND QUANTITIES OF SOURCE MATERIAL YOU PROPOSE TO RECEIVE, POSSESS, USE, OR TRANSFER UNDER THE LICENSE			
(a) TYPE	(b) CHEMICAL FORM	(c) PHYSICAL FORM (Including % U or Th.)	(d) MAXIMUM AMOUNT AT ANY ONE TIME (kilograms)
NATURAL URANIUM			
URANIUM DEPLETED IN THE U-235 ISOTOPE			
THORIUM (ISOTOPE)	Th-232	Magnesium sludge 1-3% thorium	2,110,000 Kgs
(e) MAXIMUM TOTAL QUANTITY OF SOURCE MATERIAL YOU WILL HAVE ON HAND AT ANY TIME (kilograms) <u>Approximately 30,000 Kgs estimated</u>			
9. DESCRIBE THE CHEMICAL, PHYSICAL, METALLURGICAL, OR NUCLEAR PROCESS OR PROCESSES IN WHICH THE SOURCE MATERIAL WILL BE USED, INDICATING THE MAXIMUM AMOUNT OF SOURCE MATERIAL INVOLVED IN EACH PROCESS AT ANY ONE TIME, AND PROVIDING A THOROUGH EVALUATION OF THE POTENTIAL RADIATION HAZARDS ASSOCIATED WITH EACH STEP OF THOSE PROCESSES. <u>No further processing--storage only</u>			
10. LIST THE NAMES AND ATTACH A RESUME OF THE TECHNICAL QUALIFICATIONS INCLUDING TRAINING AND EXPERIENCE OF APPLICANT'S SUPERVISORY PERSONNEL AND THE PERSON RESPONSIBLE FOR THE RADIATION SAFETY PROGRAM OR DEPARTMENT (IF AN INDIVIDUAL). <u>Supervisory personnel: E. O. Gooding</u> <u>Radiation Safety Program:</u> <u>Dennis L. Barsten, Samuel K. Norwood, Billy R. Thomas</u>			
11. DESCRIBE THE EQUIPMENT AND FACILITIES WHICH WILL BE USED TO PROTECT HEALTH AND MINIMIZE DANGER TO LIFE OR PROPERTY AND RELATE THE USE OF THE EQUIPMENT AND FACILITIES TO THE OPERATIONS LISTED IN ITEM 9. INCLUDE: (a) RADIATION DETECTION AND RELATED INSTRUMENTS (including film badges, dosimeters, counters, air sampling, and other survey equipment as appropriate. The description of radiation detection instruments should include the instrument characteristics such as type of radiation detected, window thickness, and the range(s) of each instrument). <div style="text-align: right;">02728</div>			
(b) METHOD, FREQUENCY, AND STANDARDS USED IN CALIBRATING INSTRUMENTS LISTED IN (a) ABOVE, INCLUDING AIR SAMPLING EQUIPMENT (for film badges, specify method of calibrating and processing, or name supplier). <div style="display: flex; justify-content: space-between; align-items: flex-end;"> <div>           APR 4 1978            Form NRC-2 (7-77)         </div> <div>           8508290088 850712            PDR FOIA            KOHN85-256 PDR         </div> <div>           I-10         </div> </div>			



11(c). VENTILATION EQUIPMENT WHICH WILL BE USED IN OPERATIONS WHICH PRODUCE DUST, FUMES, MISTS, OR GASES, INCLUDING PLAN VIEW SHOWING TYPE AND LOCATION OF HOOD AND FILTERS, MINIMUM VELOCITIES MAINTAINED AT HOOD OPENINGS AND PROCEDURES FOR TESTING SUCH EQUIPMENT

Not applicable

12. DESCRIBE PROPOSED PROCEDURES TO PROTECT HEALTH AND MINIMIZE DANGER TO LIFE AND PROPERTY AND RELATE THESE PROCEDURES TO THE OPERATIONS LISTED IN ITEM 9. INCLUDE (a) SAFETY FEATURES AND PROCEDURES TO AVOID NONNUCLEAR ACCIDENTS, SUCH AS FIRE, EXPLOSION, ETC., IN SOURCE MATERIAL STORAGE AND PROCESSING AREAS.

Not applicable

(b) EMERGENCY PROCEDURES IN THE EVENT OF ACCIDENTS WHICH MIGHT INVOLVE SOURCE MATERIAL.

Not applicable

(c) DETAILED DESCRIPTION OF RADIATION SURVEY PROGRAM AND PROCEDURES.

Not applicable

13. WASTE PRODUCTS: If none will be generated, state "None" opposite (a), below. If waste products will be generated, check here ☐ and explain on a supplemental sheet:

(a) Quantity and type of radioactive waste that will be generated.

None

(b) Detailed procedures for waste disposal.

14. IF PRODUCTS FOR DISTRIBUTION TO THE GENERAL PUBLIC UNDER AN EXEMPTION CONTAINED IN 10 CFR 40 ARE TO BE MANUFACTURED, USE A SUPPLEMENTAL SHEET TO FURNISH A DETAILED DESCRIPTION OF THE PRODUCT, INCLUDING:

(a) PERCENT SOURCE MATERIAL IN THE PRODUCT AND ITS LOCATION IN THE PRODUCT.

(b) PHYSICAL DESCRIPTION OF THE PRODUCT INCLUDING CHARACTERISTICS, IF ANY, THAT WILL PREVENT INHALATION OR INGESTION OF SOURCE MATERIAL THAT MIGHT BE SEPARATED FROM THE PRODUCT.

(c) BETA AND BETA PLUS GAMMA RADIATION LEVELS (Specify instrument used, date of calibration and calibration technique used) AT THE SURFACE OF THE PRODUCT AND AT 12 INCHES.

(d) METHOD OF ASSURING THAT SOURCE MATERIAL CANNOT BE DISASSOCIATED FROM THE MANUFACTURED PRODUCT.

### CERTIFICATE

(This item must be completed by applicant)

15. 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 40, and that all information contained herein, including any supplements attached hereto, is true and correct to the best of our knowledge and belief.

BY:

Dennis L. Barsten 2/22/78  
(Signature)

Dated February 22, 1978

Dennis L. Barsten

(Print or type name)

Radiation Safety Supervisor

(Title of certifying official authorized to act on behalf of the applicant)

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.

11. (a) Radiation detection instruments used are the: Eberline RO2 ion chamber with 7 mg/cm<sup>2</sup> window thickness with a range from zero to 5000 mR or a Victoreen 470A, 17 mg/cm<sup>2</sup> window 0-1000 R range. Both instruments are capable of detecting beta and gamma radiation.
11. (b) Instrument calibration is carried out quarterly using an Eberline multiple source gamma calibrator. Model 1000 (see attachment). Each scale on the instrument is calibrated at approximately 1/3 and 2/3 full scale deflection within  $\pm 20\%$  full scale deflection. Film badging is carried out through the R. S. Landauer Company. There is no need for air sampling since this is a waste pile with limited access in an outdoor setting.

E. O. GOODING  
MAJOR MANAGER  
BAY CITY AND FREELAND PLANTS

WORK HISTORY AT DOW (INCLUDE TRANSFERS, PROMOTIONS, ETC.  
GIVING DATES WHERE POSSIBLE)

10-10-57	Chemical Engr.	Benzene Production Department
6-19-61	Process Engr.	Eng. & Construction Department
7-30-62	Chemical Engr.	Eng. & Construction Department
6-3-63	Chemical Engr.	Process Engineering
2-15-65	Superintendent	Unifiner-Benzene Plant
3-21-66	Process Engr. Supr.	Petrochemical
8-1-66	Manufacturing Rep.	Transferred to Dow International -- No. 1 Benzene and Butadiene Plants in Terneuzen, The Netherlands
6-15-70	Project Manager	No. 2 Benzene & Butadiene Plants in Terneuzen
7-22-71	General Superintendent	No. 1 Light Hydrocarbons Plants (Ethylene, Benzene, & Butadiene) Terneuzen 1.
9-18-72	Section Manager	Transferred back to USA. Michigan Division Styrene Section
11-4-74	Manager	Freeland Plant
3-22-76	Major Manager	Bay City & Freeland Plants

DENNIS LEWIS BARSTEN

PERSONAL

Address:

Phone #:

Birthdate:

Marital Status:

EDUCATION

Masters of Science, June, 1973  
Department of Environmental Health  
United States Public Health Traineeship in Radiological  
Health

Nine week training course, July, 1971  
Oak Ridge Associated Universities  
Oak Ridge, Tennessee 37830  
Nuclear Science

Bachelors of Science, June, 1969  
University of North Dakota  
Grand Forks, North Dakota  
Major: Science, Education  
Minor: Math

PROFESSIONAL ACTIVITIES

Health Physics Society

BILLY R. THOMAS

PERSONAL

Address: /

Phone #:

Birthdate:

Social Security Number:

Marital Status:

EDUCATION

B.S., Radiation-Nuclear Technology, May, 1976  
Oklahoma State University  
Stillwater, Oklahoma

EXPERIENCE

May, 1976 to Present - Industrial Hygienist, US Area  
Industrial Hygiene Laboratory, The Dow Chemical Company,  
1803 Building, Midland, Michigan

May, 1975 to August, 1975 - Oak Ridge National Laboratory,  
Oak Ridge, Tennessee. Health physics research concerning  
application of ALARA and ALAP philosophies to power product.

May, 1973 to August, 1973 - Oak Ridge National Laboratory,  
Oak Ridge, Tennessee. Assigned to several Oak Ridge National  
Laboratory departments conducting day-to-day health physics  
activities.

September, 1972 to May, 1976 - College of Engineering,  
Oklahoma State University

PROFESSIONAL ACTIVITIES

Health Physics Society

SAMUEL KENT NORWOOD

PERSONAL

Address:

Phone #:

Birthdate:

Social Security Number:

Marital Status:

EDUCATION

B.S., Radiation and Nuclear Technology, May, 1974  
Oklahoma State University  
Stillwater, Oklahoma

M.S., Environmental Health Sciences, Radiological Health  
and Industrial Hygiene, May, 1976,  
University of Michigan  
Ann Arbor, Michigan

EXPERIENCE

June, 1976 to Present - Industrial Hygienist, US Area  
Industrial Hygiene Laboratory, The Dow Chemical Company,  
1803 Building, Midland, Michigan

May, 1975 to August, 1975 - Environmental Evaluation  
Section, Battelle-Northwest Laboratories, Richland, Washington

May, 1974 to August, 1974 - Health Physics, Industrial  
Hygiene, Kerr-McGee Cimarron Facility, Crescent, Oklahoma

May, 1971 to August, 1971 - Health Physics, Industrial  
Hygiene, Kerr-McGee Cimarron Facility, Crescent, Oklahoma

PROFESSIONAL CERTIFICATION

May, 1977, Core Examination, American Board of Industrial  
Hygiene