

UNITED STATES ATOMIC ENERGY COMMISSION
APPLICATION FOR BYPRODUCT MATERIAL LICENSE

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.) Monsanto Company 800 N. Lindbergh Blvd. St. Louis 66, Missouri 63166		(b) STREET ADDRESS(ES) AT WHICH BYPRODUCT MATERIAL WILL BE USED (If different from 1 (a). Include ZIP Code.) Monsanto Company, Carondelet Plant 8201 Idaho Avenue St. Louis, Missouri 63111	
2 DEPARTMENT TO USE BYPRODUCT MATERIAL Control laboratory		3 PREVIOUS LICENSE NUMBER(S). (If this is an application for renewal of a license, please indicate and give number.) 24113-7 (F67) (application for renewal)	
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. K. J. Shaver M. F. Fuller		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.) Individual users	
6 (a) BYPRODUCT MATERIAL (Elements and mass number of each.) A. Calcium 45 - Phosphorus 32 B. Calcium 45 - Phosphorus 32 C. Bismuth 210		(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.) A. Any, 30 millicuries B. Any, 10 millicuries C. Sealed source, 15.2 microcuries	
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.) A. Determination of dentin abrasion B. Laboratory studies of materials C. Instrument calibration			

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(Continued on reverse side)

TRAINING AND EXPERIENCE OF EACH INDIVIDUAL NAMED IN ITEM 4 Use supplemental sheets if necessary

B. TYPE OF TRAINING	WHERE TRAINED	DURATION OF TRAINING	ON THE JOB (Circle answer)	FORMAL COURSE (Circle answer)
M. F. Fuller:				
a. Principles and practices of radiation protection	Monsanto Co., Carondelet Pl.	3 years	(Yes) No	Yes (No)
b. Radioactivity measurement standardization and monitoring techniques and instruments	II II II II II		(Yes) No	Yes (No)
c. Mathematics and calculations basic to the use and measurement of radioactivity	II II II II II		(Yes) No	Yes (No)
d. Biological effects of radiation	II II II II II		(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
P ³² Ca ⁴⁵	30 milli-curies	Monsanto Company, Carondelet Plant	3 years	Measurement of Dentin Abrasion

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)

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

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

INFORMATION TO BE SUBMITTED ON ADDITIONAL SHEETS IN DUPLICATE

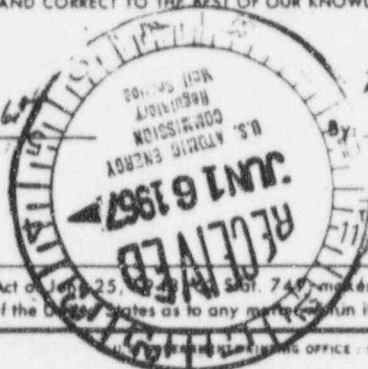
13. FACILITIES AND EQUIPMENT Describe laboratory facilities and remote handling equipment, storage containers, shielding, fume hoods, etc. Explanatory sketch of facility is attached. (Circle answer) Yes No
14. RADIATION PROTECTION PROGRAM Describe the radiation protection program including control measures. 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.
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.

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

June 14, 1967



Applicant named in item 1

Title of certifying official

WARNING.—18 U. S. C., Section 1001; Act of June 25, 1948 (56 Stat. 748) 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.

Supplemental information to application dated June 14, 1967

Sections 8, 9 of Form AEC 313:

M. F. Fuller replaces Donald Widdows. By product material
will be used under the supervision of Dr. K. J. Shaver
or M. F. Fuller.

Dr. K. J. Shaver - refer to application dated May 27, 1965.
Sections 10 to 15 - refer to applications dated May 27, 1965; May 8, 1963;
June 7, 1961

It should be noted that human teeth irradiated under this license will be
used to determine dentin abrasion at Missouri Analytical Labs,
Incorporated; 2209 Delmar Blvd., St. Louis, Missouri. The Director,
Mr. J. Marcus, has applied for a separate license for this purpose.

Kenneth J. Shaver



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LICENSE CONTROL FORM

APPLICANT Monsanto Company Inorganic Research 300 N. Lindbergh Boulevard St. Louis, Missouri 63166	LICENSE NUMBER 24-01113-07	Amnd. No. 5	EXPIRATION DATE June 7 - 72	CONTROL NUMBER 95086 95086
	DATE REC'D 06/16/67	DATE ISSUED	PMUS 614	

() LETTER () APPLICATION DATED: _____

BYPRODUCT	CHEMICAL OR PHYSICAL FORM	POSS. LIMIT
A Calcium 45 - Phosphorus 32	A any	A 36 million
B Phosphorus 32	B any	B 10 million
C Barium 210	C radioactive	C 152 million
A, B, & C: Determination of denium abrasion laboratory studies, and instrument calibration		

(15) 800 N. Lindbergh Blvd. St. Louis, Missouri and
 Carondelet Place, 8201 Idaho Ave,
 St. Louis, Missouri

(15) K. J. Shaver or M. F. Fuller

(16) ~~June 7, 1967~~
 June 7, 1961 and
 June 14, 1967

A/TS

MAIL TO: Shaver	DATE MAILED: 3-67	REVIEWER: AGB	DATE COMPLETED: 7/5/67
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