Form AEC-313 (5-58)	ATOMIC ENERGY COMMISSION **APPLICATION FOR BYPRODUCT MATERIAL LICENSE**	Form approved. Budget Bureau No. 38-R027.4

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, D.C., 20545. 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.)*

McDonnell Company
P. O. Box 516
St. Louis, Missouri 63166

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

Same as 1.(a)

2. DEPARTMENT TO USE BYPRODUCT MATERIAL

Manufacturing, Quality control, advanced electronics, Research, General engineering

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

24-2261-03

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.)*

D. L. Holt
W. L. Kester
N. A. Lamb
C. J. Wolf
T. C. Linck
F. C. McCallister ~~(Radiography)~~

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.)*

T. C. Linck
D. L. Holt*

*Attachment 8 & 9 enclosed

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

See Attachment

(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.)*

See Attachment

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.)*

See Attachment

(Continued on reverse side)

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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			Yes No	Yes No
b. Radioactivity measurement standardization and monitoring techniques and instruments	See Attachment		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		

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

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 10 June 1968

JUN 13 1968

McDonnell Company
Applicant named in item 1

By W. L. Kester
William L. Kester
Chairman, Isotope Committee
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 as to any matter within its jurisdiction.

GPO 885-815

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6.(a)

A. Any byproduct material with atomic numbers 3 to 89, inclusive.

B. Any byproduct material with atomic numbers 3 to 83, inclusive.

C. Americium 241

D. Americium 241

E. Cobalt 60

F. Cesium 137

G. Hydrogen 3

H. Hydrogen 3

I. Strontium 90

J. Nickel 63

K. Promethium 147

6.(b)

A. Any chemical form; 25 millicuries each nuclide.

B. Irradiated parts and components; 1 curie total.

C. Any chemical form; 1 millicurie

D. Sealed sources; Foil manufactured by Radiation Research Corp;, and contained in Lion Research Corp. carbon dioxide detector; 20 millicuries, not to exceed 1 millicurie per detector.

. Sealed sources (wire), not to exceed 200 millicuries

F. Sealed sources, (custom, Nuclear Consultants or Mallinckrodt); 250 millicuries, no single source to exceed 8 microcuries.

G. Foil in Jarrell-Ash Model 28-750 or 28-751 Detector cells; not to exceed 100 millicuries per cell.

H. Foil in F&M Model 2-2837 detector cells; not exceed 200 millicuries per cell.

I. Foil in Jarrell-Ash Model 28-752 or 28-755 detector cells; not to exceed 20 millicuries per cell.

J. Sealed source in F&M Model 2-6195 detector cells; not to exceed 2 millicuries per cell.

K. Sealed sources (3M Model 1E2J); 3 sources not to exceed 1 curie per source.

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7. A,B&C. Research and Development as described in Section 30.4 (q), 10 CFR 30.

D. Testing and calibration of carbon dioxide sensors.

E. Instrument calibration

F. Tagging bucking bars and seat ejection safety pins for detection after manufacture.

G & I. To be used in Jarrell-Ash Company gas chromatograph for sample detection.

H & J. To be used with F & M Scientific Company gas chromatograph for sample detection.

K. To be used on self-luminous markers.

TRAINING AND EXPERIENCE WITH RADIOACTIVITY

DENVER L. HOLT

8. Type of Training	Where Trained	Duration of Training	On The Job	Formal Course
a. Principles and practice of radiation protection.	(Re: 8-a, b, c, d) Mallinckrodt Chemical, Uranium Division, Health Department (MCW).	9 years	yes	no
b. Radioactivity measurement, standardization and monitoring techniques and instruments.	(Re: 8-a, c) AEC personnel at MCW; course on criticality safety.	1 week	yes	yes
c. Mathematics and Calculations basic to the use and measurement of radioactivity.	(Re: 8-a, b) AEC, Nevada Test Site; Radiological Assistance Team Training Course.	1 week	yes	yes
d. Biological effects of radiation.				

9. Experience With Radiation

Isotopes	Maximum Amount	Where Experience Was Gained	Duration of Experience	Type of Use
anium-Natural	Tons in process	MCW	Nine years	Radiation protection for refining and metal fabrication.
anium-1.5% Enriched	Tons in process	MCW	One year	Radiation protection for refining and metal fabrication.
orium-Natural	Tons in process	MCW	Two years	Radiation protection for refining operations.
226 and various small sources	10 mc ≤ 10 mc	MCW	Nine years	Alpha, beta, gamma sources for monitoring and counting equipment calibration.