

## APPLICATION FOR BYPRODUCT MATERIAL LICENSE

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.

*License No. 34-6558-2(G63)  
Amendment No. 1*

1. (a) NAME AND STREET ADDRESS OF APPLICANT. (Institution, firm, hospital, person, etc.) Joseph Harpster Harshaw Chemical Company Solid State Research Laboratory 2240 Prospect Avenue Cleveland 15, Ohio		(b) STREET ADDRESS(ES) AT WHICH BYPRODUCT MATERIAL WILL BE USED. (If different from 1 (a).)  SAME
2. DEPARTMENT TO USE BYPRODUCT MATERIAL:  Solid State Research & Electronics Division		3. PREVIOUS LICENSE NUMBER(S). (If this is an application for renewal of a license, please indicate and give number.)  Extension of 34-6558-2(G63)
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.)  Joseph W. Harpster Research Physicist		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.)  Joseph Harpster
6. (a) BYPRODUCT MATERIAL. (Elements and mass number of each.)  Cobalt 60   Strontium 90	(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.)  Cobalt 60 1 sealed source, 10 mc; 2 sealed sources, 5 mc each. 20 millicuries total. U.S. Nuclear, Capsule Type 338  Strontium 90 1 sealed source, 10 mc; 10 millicurie total. Salt U.S. Nuclear, type 320.	

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.)

These isotopes will be used for low level radiation studies on various semiconductor and scintillation crystals concerning conductivity change, luminescence yield and emission spectra.

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SUPPLEMENTAL SHEET

11. The Solid State Detector will need no calibration since it is an absolute counter. The Scintillation crystal and Geiger Muller will be calibrated every six months with a 5 mg radium source. A multichannel analyzer will be used in conjunction with the Scintillation counter.

13. A lead shield for source storage will be constructed having a wall thickness of 4 inches on sides exposed to personnel and 2 inches on all other sides. This will provide adequate protection with radiation dose far below permissible levels.

14. The sources for which this license application applies are sealed. Film badges will be used as a check on personnel exposure. The sources and storage container will be wiped quarterly to determine if leakage has occurred. The gamma emitter wipes will be checked with a NaI scintillation crystal. The beta emitter will be checked with a solid state radiation detector. Both detection units will be lead shielded for low level activity measurements. These tests will be performed by J.W. Harpster, who has had 1½ years experience in low level counting and instrument calibration.

15. No disposal is anticipated. If it occurs, arrangements for it will be made with Oak Ridge.

RECEIVED  
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use same license & address as on license

Form VLR-2  
(12-61)

Date Received JAN 29 1962	Expiration Date	Issue Date	Tech. Reviewer WJC
Control No. 40533	Reference No.	License No. 34-6558-2 (863)	Amendment No. 1
Isotope	Form	Possession Limit	
A. <i>as per with app dated 1-18-62 license No. is hereby amended to read:</i>	<i>1-18-62</i>	A. <i>1 source of 10 mc. 2 sources of 5</i>	
B.	<i>1-18-62</i>	B. <i>each. Total 20 mc.</i>	
C. Cobalt 60	C. <i>Lead source (U.S. Nuclear Corp. Type 380)</i>	C. <i>1 source of 10 mc.</i>	
D. Strontium 90	D. <i>Lead source (U.S. Nuclear Corp. Type 380)</i>	D. <i>1 source of 10 mc.</i>	
E.	E.	E.	
F.	F.	F.	
G.	G.	G.	
H.	H.	H.	

#### Authorized Use

Low level radiation studies on various semiconductor and activation control.

REMARKS: Letters, Phone calls, Visits, Exemptions, Etc. (Use reverse side if necessary)

*Co 60 & 90  
to maintain  
by the license holder...*

*application  
July 7, 1961  
Jan 18, 1962*

Conditions			
1. A B C	6.	11.	16.
2. A B C	7.	12.	17.
3. A B C D	8. A B C	13.	18.
4. A B	9. A B C	14. A B C	19.
5.	10.	15.	20.
			21. <i>B/24</i>

Mail to: <i>275 Joseph P. Carpenter</i>		Date Mailed	Approve <input checked="" type="checkbox"/> Void <input type="checkbox"/>
		Tech. Reviewer <i>WJC</i>	Date <i>2/19/62</i>
		Chief <i>R 57</i>	Date <i>2/20/62</i>