				23/05/79		
			teres :	-		
FOR (6-7) 10 (M NRC-313 I U.S 8) FR 30	COMMISSION	1. APPLICATION FOR: (Check and/or complete as appropriate)			
	APPLICATION FOR	INDUSTRIAL	IAL LICENSE	a. NEW LICENSE		
See	ttached instructions for details.		and the second second second	6. AMENDMENT TO		
Comp Office Washi 1717	leted applications are filed in du of Nuclear Material Safety, and ngton, DC 20555 or applications H Street, NW, Washington, D. C.	plicate with the Division of F Safeguards, U.S. Nuclear Reg may be filed in person at th or 7915 Eastern Avenue, Sil	uel Cycle and Material Safety, gulatory Commission, e Commission's office at Iver Spring, Maryland.	C. RENEWAL OF LICENSE NUMBER 21-08362-09		
DO	PLICANT'S NAME (Institution, fin w Corning Corpor	m, person, etc.) ation	3. NAME OF PERSON TO BE APPLICATION John T. Higgin	CONTACTED REGARDING THIS		
TEL	EPHONE NUMBER : AREA CODI	- NUMBER EXTENSION	TELEPHONE NUMBER AN	REA CODE - NUMBER EXTENSION		
. ар З М	901 South Sagina idland, MI 4864	(Include Zip Code) W Road O	5. STREET ADDRESS WHER (Include Zip Code) Same	E LICENSED MATERIAL WILL BE USEI		
	(IF MORE SPACE IS	NEEDED FOR ANY ITEM	USE ADDITIONAL PROPE	RLY KEYED PAGES.)		
I. IN	DIVIDUAL(S) WHO WILL US ee Items 16 and 17 for required tra	E OR DIRECTLY SUPER	VISE THE USE OF LICENSE	DMATERIAL		
	FULL NA	ME		TITLE		
. D	onald N. Ingerbr	igtson	Senior Group Le	eader		
5. L	arry T. Hanneman		Analytical Rese	earch Chemist		
. R	onald H. Baney		Associate Research Scientist Attach a resume of person's training and experience as outlined in Items 16 and 17 and describe his responsibilities under Item 15. Manager Safety and Security			
7. RA	John T. Higgins	R				
		8. LICENSE	DMATERIAL			
L I N E	ELEMENT AND MASS NUMBER	CHEMICAL AND/OR PHYSICAL FORM	NAME OF MANUFACTURE AND MODEL NUMBER (11 Sealed Source)	R MAXIMUM NUMBER OF MILLICURIES AND/OR SEALED SOURCES AND MAXIMUM ACTI- VITY PER SOURCE WHICH WILL BE POSSESSED AT ANY ONE TIME		
NO.	A	B	c	D		
(1)	See Attachment 1	No.1	12 m			
(2)						
(3)						
(4)						
		DESCRIBE USE OF	LICENSED MATERIAL			
(1)						
(2)		VI 11 80	S Unit base			
(3)						
	and the second se	1.17	1.24.20	and the second		

8504300315 850411 REG3 LIC30 21-08362-09 PDR

Control No. 0 1 4 2 6

	CONTAINER AND	OR DEVICE IN WOH E	ACH SEALED NAME OF MANUFA		MANUFA	MODEL NUMBER	
ENO.		A.		в.		с.	
(1)	See. Attacl	hment No. 2					
(2)		and the second					
(3)							
(4)							
		10. RA	DIATION DET	ECTION INSTRUM	MENTS		
1-2w0.	TYPE OF INSTRUMENT	MANUFACTURER'S NAME	MODEL NUMBER	NUMBER	RADIATION DETECTED (elphe, bete, gemme, neutron)	SENSITIVITY RANGE (milliroentgens/hour or counts/minute)	
	A	B Thenline	<u> </u>	0	E	F	
(1)	Meter	Instrument	RU-2	1	beta gamma	0-5000 mr/h	
(2)	Survey Meter	Victoreen	490	1	beta gamma	0-800,000 mr/	
(3)	Survey Meter	Victoreen	489	1	beta gamma	0-800,000 mr/	
(4)							
-		11. CALIBR	ATION OF INST	TRUMENTS LIST	ED IN ITEM 10		
	NAME, ADDRESS,	AND FREQUENCY		Attach a separ used for calibri Please se	ete sheet describing meth ating instruments. Be attachmen	od, frequency and standards	
	700	12. PE	RSONNEL MON	ITORING DEVIC	ES		
	(Check end/or comple	ete es appropriate.)		(Service Company) B		EXCHANGE FREQUENCY	
0(1) FILM BADGE		Not Re	quired		- MONTHLY	
	2) THERMOLUMINES DOSIMETER (TLD	CENCE				QUARTERLY	
-	3) OTHER (Specify):					OTHER (Specify):	
	13. FACILITIES	AND EQUIPMENT (C	heck were appro	priate and attach a	annotated sketch(es) a	nd description(s).	
0000	LABORATORY FA STORAGE FACILI REMOTE HANDLI RESPIRATORY PF	ACILITIES, PLANT FACIL ITIES, CONTAINERS, SPE ING TOOLS OR EQUIPME ROTECTIVE EQUIPMENT,	ITIES, FUME HO CIAL SHIELDING NT, ETC. Se ETC.	CODS (Include filtret G (fixed end/or tempo aled Source	nion, if eny), ETC. prery), ETC. ces Only		
e. N	AME OF COMMERCI	AL WASTE DISPOSAL SE	RVICE EMPLOYI	ED			
b. II E T S	F COMMERCIAL WAS THE USED FOR DISPOS THE APPLICATION IS ealed sour isposal.	STE DISPOSAL SERVICE SING OF RADIOACTIVE FOR SEALED SOURCES Ces only, the	NATES AND ES AND DEVICES A BY WILL D	ED.SUBMIT A DET TIMATES OF THE T ND THEY WILL BE E returned	AILED DESCRIPTION O YPE AND AMOUNT OF RETURNED TO THE M 1 to the man	F METHODS WHICH WILL ACTIVITY INVOLVED. IF ANUFACTURER, SO STATI	
d							
d	M NRC-313 (6-78)						

4.1. Mar. 1.

7.

	INFORMATION REQUIRED	D FOR ITEMS 15 16 AND 17
Describe separate	in detail the information required for Items 1 page and key to the application as follows:	5, 16 and 17. Begin each item on a
15.	RADIATION PROTECTION PROGRAM. Des the material to be used including the duties a control measures, bioassay procedures <i>(if neede</i> etc. If the application is for sealed source's also performed using a leak test kit, specify manufact Please refer to attachment	scribe the radiation protection program as appropriate for and responsibilities of the Radiation Protection Officer, w/, day-to-day general safety instruction to be followed, submit leak testing procedures, or if leak testing will be turer and model number of the leak test kit. No. $4a$, $4b$
10.	Items 6 and 7. Describe individual's formal tra the name of person or institution providing the received, etc.	aining in the following areas where applicable. Include the training, duration of training, when training was
	a. Principles and practices of radiation protect	tion.
	 Badioactivity measurement standardization a techniques and instruments. 	and monitoring
	c. Mathematics and calculations basic to the radioactivity.	use and measurement of
	d. Biological effects of radiation.	
17.	EXPERIENCE. Attach a resume for each ind work experience with radiation, including whe	dividual named in Items 6 and 7. Describe individual's
	the-job training should be commensurate with maximum activity of each used. For #16 and #17 please refe	the proposed use. Include list of radioisotopes and er to attachments 5a, 5b, 5c, 5d.
	the-job training should be commensurate with maximum activity of each used. For #16 and #17 please refe 18. CEF	the proposed use. Include list of radioisotopes and er to attachments 5a, 5b, 5c, 5d.
	the-job training should be commensurate with maximum activity of each used. For #16 and #17 please refe 18. CEF (This item must be	the proposed use. Include list of radioisotopes and er to attachments 5a, 5b, 5c, 5d. RTIFICATE completed by applicant
WARNING	the-job training should be commensurate with maximum activity of each used. For #16 and #17 please refe 18. CEF (This item must be The applicant and any official executing this ce certify that this application is prepared in confe Part 30, and that all information contained here and correct to the best of our knowledge and to S18 U.S.C., Section 1001; Act of June 25, 1948; 62 Si	the proposed use. Include list of radioisotopes and er to attachments 5a, 5b, 5c, 5d. RTIFICATE completed by applicant] rtificate on behalf of the applicant named in Item 2, printy with Title 10, Code of Federal Regulations, ein, including any supplements attached hereto, is true belief. tat. 749; makes it a criminal offense to make a willfully false statement
WARNING	the-job training should be commensurate with maximum activity of each used. For #16 and #17 please reference 18. CEF (This item must be The applicant and any official executing this cent ortify that this application is prepared in confor Part 30, and that all information contained here and correct to the best of our knowledge and the S18 U.S.C., Section 1001; Act of June 25, 1948; 62 Sition to any department or agency of the United States are	the proposed use. Include list of radioisotopes and er to attachments 5a, 5b, 5c, 5d. RTIFICATE completed by applicant! reflicate on behalf of the applicant named in Item 2, primity with Title 10, Code of Federal Regulations, ein, including any supplements attached hereto, is true belief. tat. 749; makes it a criminal offense to make a willfully false statement is to any matter within its jurisdiction.
WARNING representation	the-job training should be commensurate with maximum activity of each used. For #16 and #17 please reference 18. CEF (This item must be The applicant and any official executing this cen- certify that this application is prepared in confer- Part 30, and that all information contained here and correct to the best of our knowledge and to S18 U.S.C., Section 1001; Act of June 25, 1948; 62 Si tion to any department or agency of the United States and FEE REQUIRED tion 170,31, 10 CFR 170)	And the proposed use. Include list of radioisotopes and the proposed use. Include list of radioisotopes and er to attachments 5a, 5b, 5c, 5d. RTIFICATE completed by applicant] rtificate on behalf of the applicant named in Item 2, commity with Title 10, Code of Federal Regulations, ein, including any supplements attached hereto, is true belief. tat. 749; makes it a criminal offense to make a willfully false statement is to any matter within its jurisdiction. M. CERTIFYING OFFICIAL (Signature)
WARNING representation LICENSE (See Sector)	the-job training should be commensurate with maximum activity of each used. For #16 and #17 please reference 18. CEF (This item must be The applicant and any official executing this cent certify that this application is prepared in confer- Part 30, and that all information contained here and correct to the best of our knowledge and to S18 U.S.C., Section 1001; Act of June 25, 1948; 62 Si tion to any department or agency of the United States and FFEE REQUIRED tion 170,31, 10 CFR 170) \$150.00	The experience was obtained. Work experience of on- the proposed use. Include list of radioisotopes and er to attachments 5a, 5b, 5c, 5d. RTIFICATE completed by applicant completed by applicant named in Item 2, printy with Title 10, Code of Federal Regulations, ein, including any supplements attached hereto, is true belief. tat. 749 ; makes it a criminal offense to make a willfully false statement of s to any matter within its jurisdiction. The Actual The State Statement of Constitution C. NAME (Type or print) Dr. L. J. Tyler, PhD
WARNING representation LICENSE (See Section) LICENS	the-job training should be commensurate with maximum activity of each used. For #16 and #17 please reference 18. CEF (This item must be The applicant and any official executing this cent certify that this application is prepared in confer Part 30, and that all information contained here and correct to the best of our knowledge and the S18 U.S.C., Section 1001: Act of June 25, 1948; 62 Sition to any department or agency of the United States at FEE REQUIRED tion 170,31, 10 CFR 170) \$150.00 SE FEE CATEGORY: Byproduct Materi 170.31 Sec. 3E	<pre>the experience was obtained. Work experience of on- the proposed use. Include list of radioisotopes and er to attachments 5a, 5b, 5c, 5d. RTIFICATE completed by applicent) rtificate on behalf of the applicant named in Item 2, formity with Title 10, Code of Federal Regulations, ein, including any supplements attached hereto, is true belief. tat. 749; makes it a criminal offense to make a willfully felse statement is s to any matter within its jurisdiction.</pre>

12192

ATTACHMENT NO. 1

APPLICATION FOR BYPRODUCT MATERIAL LICENSE - INDUSTRIAL

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8. LICENSED MATERIAL

No.	A	В	С	D
(1)	Nickel 63	Foils in detector cells	HewLett-Packard 2-6195	2 cells containing 2 millicuries each
(2)	Hydrogen 3	Titanium Tritide Foils in detector cells	Loenco, Inc.	250 millicuries
(3)	Nickel 63	Foils in detector cells	HewLett-Packard 18731-A	Not to exceed 15 milli curies per cell

E (Describe use of Licensed Material)

- (1) To be used in a gas chromatograph unit for sample analysis
- (2) To be used in Loenco, Inc 2400 series gas chromatograph for chemical analysis
- (3) To be used in HewLett-Packard gas chromatograph unit for sample analysis

9. STORAGE OF SEALED SOURCES

No.	A	В	С	
(1)	High Temperature Electron Capture Detector	HewLett-Packard	2-6195	
(2)	Gas Chromatograph	Loenco, Inc	2400 Series	
(3)	Gas Chromatograph	HewLett-Packard	5713A	

METER CALIBRATION AND USE

Meter calibration is a basic function of good health physics practice. In addition, the Nuclear Regulatory Commission lipenses issued to Dow Corning, require surveying the sources in the Midland location with a calibrated meter. It has been decided to use a periodic (6 month) calibration rotation. The individual responsible for meter calibration for the 6 month period should be certain that there is an "adequate" supply of batteries at all times. "Adequate" meaning never less than four batteries of each type in reserve over and above those necessary to ensure replacement of battreies in each meter if need be. A change in batteries will be located with the intrument.

Each instrument should be calibrated for gamma radiation in the Eberline 1000 calibration device (see attached calibration procedure). Each scale should be checked at 2 points, approximately 25% and 75% of full scale. If the instrument does not read within + 10% of the full scale deflection (Regulatory Guide 10.5) it should be calibrated by adjusting the potentiometer or potentiometers within the instrument. It is then necessary to obtain a beta correction factor using the depleted uranium source which gives a constant reading of 220 mr/hr at the surface. This factor should be noted on the side of the instrument so that personnel in the field may use it appropriately. A sticker indicating the calibration date, battery condition, and who calibrated the instrument should also be attached to the side of the instrument.

Upon returning from a survey the instrument should be returned to its proper location in the cabinet. If the extra batteries were used, replace them immediately with a fresh supply upon returning.

If the instrument has a malfunction give it to the individual in charge of calibration along with a written explanation of the malfunction. This written explanation is used to explain the instrument malfunction to the manufacturer. It is the responsibility of the individual in charge of calibration to see that the instrument is repaired expeditiously. This may mean returning the meter to the manufacturer; however, the instrument manual should be consulted before doing so.

DOW INDUSTRIAL HYGIENE CALIBRATION PROCEDURE

FOR RADIATION SURVEY INSTRUMENTS

Survey instruments are calibrated using the Eberline Model Number 1000 gamma calibrator. The Model 1000 calibrator is designed to provide a beam of ionizing radiation internal to a self-contained source shield. The calibrator (Serial Number 112) contains eight individual sources totaling 143.0998 Ci of Cs-137. The source quantity breakdown is as follows.

Position Number	Source Serial Number	Test Date	Isotop	e Quar	ntity
1	422	12/12/74	Cs-137	88	"Ci
2	407	12/12/74	C .137	8.2	mCi
3	393	12/12/74	Cs-137	322	mCi
4	254	12/12/74	Cs-137	7.5	Ci
5	410	12/12/74	Cs-137	3.5	mCi
6	399	12/12/74	Cs-137	166	mCi
7	386	12/12/74	Cs-137	3.1	Ci
8	253	12/12/74	Cs-137	132	Ci
			TOTAL	143.0998	Ci

The exposure rate (mR/hr) for each source versus height (inches) in the calibration chamber is given in Table 1. The actual calibration curves for each source and positions may be found in the back portion of the technical manual for the Model 1000 (Serial Number 112) provided by Industrial Reactor Laboratories, Incorporated, of Plainsboro, New Jersey, the manufacturer. A description of the initial calibration procedure performed by Industrial Reactor Laboratories may also be found in the the technical manual.

During calibration the instrument is placed in a jig in the calibration chamber with the center of the detector at the desired exposure height. The jigs consist of 1/8 inch aluminum sheeting. A hole is cut in the aluminum sheet in the area above the source exposure well such that the instrument detector is supported above the well at a known height. The aluminum hole is large enough so there is no additional shielding effects due to the aluminum sheet. On a semiannual basis the exposure rates for the various sources at a set height (as given in Table 1) will be checked using the Victoreen condenser r-meter Model 570 (Serial Number 259); a secondary standard, as part of the quality control for the calibration program. The r-meter will be used in conjunction with the Model 621 chamber which has a range of 0-100 r, with ±5% accuracy for energies 400-1300 KeV (eff.). The

results of all quality control checks and meter calibrations will be kept on file at the Industrial Hygiene Laboratory in 1803 Building, Midland, Michigan.

The calibration will be performed by the health physics staff personnel.

The calculations pertinent to the calibration procedure are very limited because Table 1 gives appropriate exposure rates at known detector heights. Table 1 should be updated annually (2.284% change per year).

The calibration procedure for the radiographers' meter is enclosed as Appendix I. The results are recorded on the Industrial Hygiene Radiation Instrument Calibration Sheet and filed in the Industrial Hygiene Instrument File in the health physics office. The calibration sheet includes checks for batteries and identification of instrument model number, serial number, date of calibration and person performing the calibration.

If during calibration any meter cannot be adjusted to measure within ±20% of the full scale deflection on one or more scales the meter should be taken out of service. This requirement may be difficult to meet for low dose rate scales, i.e. less than one mR/hr. It is necessary that the instrument meet this limitation for a reading of 5 mR/hr due to radiation area restrictions. Judgment will have to be used to determine if it is necessary to take the instrument out of service. However, all deviations or correction factors should be noted on the instrument in an obvious location such as just below the readout. Faulty instruments will be returned to the manufacturer for repair or discarded depending on the situation.

D. L. Barsten 1/5/77

Revised 10-04-77 S. K. Norwood

CALIBRATION RECORD SHEET

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USING EBERLINE 1000 MULTIPLE GAMMA SOURCE CALIBRATOR

INSTRUMENT	DEPT.
MODEL NUMBER	MAN RESPONSIBLE
SERIAL NUMBER	

HEIGHT	SOURCE POSITION	ACTUAL EXPOSURE (MR/HR)	OBSERVED EXPOSURE (NR/HR)						
						Τ			
			•					j de	
			_						
							_		
		DATE							
	BA	TTERIES	_						
	II	NITIALS							

COMMENTS

EBERLINE MODEL 1000 MULTIPLE GAMMA SOURCE CALIBRATOR CS-137

SOURCE≓ MR/HR

	83 ±C1 88 ±C1	7.7 MCI 8.2 MCI	302 мСі 322 мСі	7.0 CI 7.5 CI	3.3 MCI 3.5 MCI	155.9 мСі 166. мСі	2.9 CI 3.1 CI	· 124 CI 132 CI
INCHES	1	2	3	<u>L1</u>	5	<u>6</u>	Z	<u>8</u>
1	12.7	98,6	2,254	51,651	18.3	610	11,269	450,769
2	9.4	73.2	1,784	41,320	15.0	498	9,203	375,640
3	7.5	56.3	1,503	33,808	12.7	413	7,795	319,294
4	6.1	44.1	1,221	28,173	10.8	357	6,574	272,339
5	4.7	35.7	1,080	23,478	9.4	305	5,541	225,384
6	3.9	30.1	892	19,721	7,9	263	4,789	197,211
7	3.1	25.4	779	16,904	6.9	225	4,226	169,508
8	2.6	20.7	676	15,026	6.1	197	3,756	150,726
9	2.2	17.8	592	13,147	5.4	178	3,287	131,944
10	1.9	16.0	517	12,208	4.8	160	3,005	122,083
11	1.7	14.1	460	10,800	4.3	141	2,723	107,997
12	1.5	13.1	413	9,391	4.0	127	2,442	98,606
13	1.4	12.2	376	8,828	3.6	122	2,254	92,032
14		11.3	338	8,170	3.2	113	2,066	84,519
15		10.3	310	7,512	3.1	103	1,878	78,885
16		9,4	201	7,043	2.9	94	1,784	73,250

RKL 1277/77