			PAGE	OFPAGES
U.	S. NUCLEAR REGULAT	ORY COMMISSION		Amendment No. 21
	MATERIALS L	ICENSE		
Pursuant to the Atomic Energy Act of 1954, as a Federal Regulations, Chapter I, Parts 30, 31, 32 made by the licensee, a license is hereby issued special nuclear material designated below; to us such material to persons authorized to receive it contain the conditions specified in Section 183 regulations, and orders of the Nuclear Regulato	amended, the Energy R 4, 33, 34, 35, 36, 39, 40, d authorizing the licens se such material for the c in accordance with the 3 of the Atomic Energ pry Commission now or	eorganization Act of 19 and 70, and in reliance ee to receive, acquire, purpose(s) and at the p regulations of the appl y Act of 1954, as among hereafter in effect and	974 (Public Law on statements a possess, and tr place(s) designa licable Part(s). T ended, and is s d to any conditio	93-438), and Title 10, Code of and representations heretofore ransfer byproduct, source, and ted below; to deliver or transfer This license shall be deemed to subject to all applicable rules, ons specified below.
Licensee		In accordance wi	ith the letter of	dated
		May 16, 2014,		
1. E.I. du Pont de Nemours and Comp	bany, Inc.	3. License numb	er 07-13441	-02 is amended in
Stine-Haskell Research Center		its entirety to rea	d as follows:	
	EARF	REG		
2. P.O. Box 30	CLL.	4. Expiration date	e August 31,	2022
Newark, Delaware 19714-0030 🕥	<u> </u>	5. Docket No. 03	30-20681	
4		Reference No	. 07-00455-0	02, 07-00455-27, and
9		07-00455-41	, 2,	
	Concession of the second		-	
<ol> <li>Byproduct, source, and/or special nuclear material</li> </ol>	7. Chemical and/or	physical form	8. Maximum possess license	n amount that licensee may at any one time under this
A. Any byproduct material with atomic numbers 1 through 83	A. Any		A. 10 millio and 200	curies per radionuclide ) millicuries total
B. Hydrogen 3	B. Any	11/1/	B. 20 curie	S
C. Carbon 14 🛛 👋 🏷	C. Any	All all	C. 20 curie	S
D. Phosphorus 32	D. Any		D. 1 curie	
E. Phosphorus 33	E. Any		E. 1 curie	
F. Sulfur 35	F. Any		F. 5 curies	i de la construcción de la constru
G. Krypton 85	G. Any		G. 50 millic	curies
H. lodine 125	H. Any		H. 1 curie	
I. lodine 131	I. Any		I. 1 curie	
J. Nickel 63	J. Plated Foils (Is Laboratories M Plated Source; Technology (fo Amersham Co custom plated Merck Model o source; or Rad Centre Amersh NBC)	sotope Products lodel Custom ; AEA prmerly rp.) Model source; DuPont sustom plated liochemical nam Model	J. 1 curie t source t activity s certificat by the U Commis State	total and no single to exceed the maximum specified in the te of registration issued J.S. Nuclear Regulatory ssion or an Agreement
	K. Sealed Source	es (Isotope	K. 200 milli	icuries total and no

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6.	Byproduct, source, and/or special 7. nuclear material	Chemical and/or physica	Il form 8.	Maximum possess a license	amou t any (	nt that one tim	license ie unde	ee may er this
K.	Krypton 85	Products Laboratorie NER-8295, NER-828 NER8275; or 3M Mo	es Models 35, and del 3B4G)	single so maximun the certif issued by Regulato Agreeme	urce n acti icate / the ry Co ent St	to exe ivity s of reg U.S. I ommis ate	ceed pecific gistrat Nucle ssion	the ed in tion ear or an
L.	Iron 55	Sealed Sources (Tex Nuclear Model 696-6 696-696803, and 690 DuPont Model NER- Amersham/Searle M 696782, IEC, IEC.A1 IEC.D1; Isotope Proo XFB; or QSA Global IEC.A1)	750 millicuries total and no single source to exceed the maximum activity specified in the certificate of registration issued by the U.S. Nuclear Regulatory Commission or an Agreement State				no the ed in tion ear or an	
M.	Cadmium 109	. Sealed Sources (Amersham/Searle M CUC; Texas Nuclear 696782, 570-057371 57242B, 696-696782 696-696803; DuPont NER-465; QSA Glob CUC.D1 and CUC.P Isotope Products Lat Model XFB-3)	Nodel 696- B, 570- 2, and t Model bal Model 1; or boratories	I. 200 millio single so maximun the certif issued by Regulato Agreeme	curies urce n acti icate / the ry Co ent St	s total to exc ivity s of reg U.S. I ommis ate	and i ceed t pecific sistrat Nucle ssion	no the ed in tion ear or an
N.	Americium 241 N	Sealed Sources (Amersham/Searle M AMC and AMC.D1; T Nuclear 696-696782 696280, and 696-699 QSA Global Model A AMM1001, and AMC Isotope Products Lal Model XFB-4, GFS, Nuclear Radiation Developments (NRD A-001; or DuPont Me Model NER-478)	N Nodel Fexas , 696- 6803; MCL, 2.P4; boratory and XFB; Model erck	. 500 millio single so maximun the certif issued by Regulato Agreeme	curies urce n acti icate / the ry Co nt St	s total to exc ivity s of rec U.S. I ommis ate	and i ceed t pecific jistrat Nucle ssion	no the ed in tion ear or an

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6.	Byproduct, source, and/or special	7.	Chemical and/or physica	l form	8.	Maximum possess a license	amo t any	unt that one tim	license 1e unde	e may er this
0.	Curium 244	о.	Sealed Sources (Am Model CLCL or Isoto Products Model XFB	ersham pe )	0.	200 millic single so maximum the certifi issued by Regulato Agreeme	curie urce n ac cate cate ry C nt S	es total e to ex tivity s e of req e U.S. Commis State	and r ceed f pecific gistrat Nucle ssion	no the ed in ion ar or an
Ρ.	Cesium 137	P.	Sealed Sources (Amersham/Searle Model CDC.701; Isotope Products Laboratory Model GFS-3, 225, and A-3402; 3M Model 4D6P, 4F6S, 4FST, and 4F6P; Gamma Industries Model VDHP; or Amersham Model CDC.711M, CDC.700, CDC.PE2, CDC.93, CDC.800, CKC.P1, and CKC.P4)			es total e to ex- tivity s e of req e U.S. Commis State	and r ceed t pecific gistrat Nucle ssion	no the ed in ion ar or an		
Q.	Cesium 137	Q.	Sealed Source (Amersham/Searle M CDC.701 or Isotope Laboratory Model GF	1odel Products ⁼S-3)	Q.	50 millicu single so maximum the certifi issued by Regulato Agreeme	iries urce cate cate the ry C nt S	total a to exitivity s of req U.S. Commis State	and no ceed t pecific gistrat Nucle ssion	o the ed in ion ar or an
9.	Authorized use:									
A. 1 J.	<ul> <li>Authorized use.</li> <li>Authorized use.</li> <li>A. through I. Research and development as defined in 10 CFR 30.4; animal studies.</li> <li>J. To be used for sample analysis in gas chromatography devices that have been registered either with the U.S. Nuclear Regulatory Commission under 10 CFR 32.210 or with an Agreement State and have been distributed in accordance with a Commission or Agreement State specific license authorizing distribution to persons specifically authorized by a Commission or Agreement State license to receive, possess, and use the devices.</li> </ul>									
1.	To be used for static charge elimination in devices that have been registered either with the U.S. Nuclear Regulatory Commission under 10 CFR 32.210 or with an Agreement State and have been distributed in accordance with a Commission or Agreement State specific license authorizing distribution to persons specifically authorized by a Commission or Agreement State license to receive, possess, and use the devices.									

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			Amenument No. 21			
L. th	rough	O. To be used for calibration of and/or sample and or x-ray fluorescence devices that have been re Commission under 10 CFR 32.210 or with an A accordance with a Commission or Agreement S persons specifically authorized by a Commission possess, and use the devices.	alysis in x-ray analyzer, x-ray spectrophotometric, egistered either with the U.S. Nuclear Regulatory Agreement State and have been distributed in State specific license authorizing distribution to on or Agreement State license to receive,			
P. Q.	In Ror In Luc	nan Model No. CS200 and SA1 fixed gauging devic llum Model No. 299 series portable gauging devices	es for controlling industrial processes. s for measuring physical properties of materials.			
		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				
			s			
10.	A.	Licensed material may be used or stored at the lid Research Center 1090 Elkton Road, Newark, Del Mill Road, Wilmington, Delaware; and Chestnut R Delaware.	c <mark>ensee's f</mark> acilities located at Stine-Haskell aware; Experimental Station 700-779 Powder Run Plaza, 4417 Lancaster Pike, Wilmington,			
	B. Licensed material in Items 6.L. through 6.N. may be used at temporary job sites of the licensee anywhere in the United States where the U.S. Nuclear Regulatory Commission maintains jurisdiction for regulating the use of licensed material, including areas of exclusive Federal jurisdiction within Agreement States.					
		If the jurisdiction status of a Federal facility within should contact the Federal agency controlling the proposed job site is an area of exclusive Federal materials at job sites in Agreement States not und obtained from the appropriate state regulatory ag	an Agreement State is unknown, the licensee job site in question to determine whether the jurisdiction. Authorization for use of radioactive der exclusive Federal jurisdiction shall be ency.			
11.	A.	Licensed material shall only be used by, or under writing, by the Radiation Safety Committee. The designated as users for 3 years following the last	the supervision of, individuals designated, in licensee shall maintain records of individuals use of licensed material by the individual.			
	B.	Licensed material in Items 6.J. through 6.O may a the physical presence of individuals who have red dated April 21, 2012, Revision 2 (July 26, 2012), a Officer.	also be used by, or under the supervision and in ceived the training described in the application and designated in writing by the Radiation Safety			
12.	The	Radiation Safety Officer for this license is John M.	Brisbin.			
13.	The	licensee shall not use licensed material in or on hu	man beings.			

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1/	The	licensee shall not use licensed material in field ann	lications where it is released excent as provided		
17.	othe	rwise by specific condition of this license.	ications where it is released except as provided		
15.	The 2002	licensee may use carbon-14 in outdoor field applica 2, and the application dated April 17, 2012, Revision	itions as described in the letter dated March 15, 2 (July 26, 2012).		
16.	Expe licen	erimental animals, or the products from experimentanes is a shall not be used for human consump	I animals, that have been administered otion.		
17.	A.	Sealed sources shall be tested for leakage and/or months or at the intervals specified in the certifica Regulatory Commission under 10 CFR 32.210 or State.	contamination at intervals not to exceed six te of registration issued by the U.S. Nuclear under equivalent regulations of an Agreement		
	В.	Notwithstanding Paragraph A of this Condition, se particles shall be tested for leakage and/or contan	aled sources designed to primarily emit alpha nination at intervals not to exceed 3 months.		
	C. Each sealed source fabricated by the licensee shall be inspected and tested for construction defects, leakage, and contamination prior to any use or transfer as a sealed source.				
	D.	In the absence of a certificate from a transferor inc the intervals specified in the certificate of registration Commission under 10 CFR 32.210 or under equiva the transfer, a sealed source received from another and the test results received.	dicating that a leak test has been made within ion issued by the U.S. Nuclear Regulatory ralent regulations of an Agreement State, prior to er person shall not be put into use until tested		
	E.	Sealed sources need not be tested if they contain radioactive gas; or the half-life of the isotope is 30 100 microcuries of beta- and/or gamma-emitting n alpha-emitting material.	only hydrogen-3; or they contain only a days or less; or they contain not more than naterial or not more than 10 microcuries of		
	F.	Sealed sources need not be tested if they are in s they are removed from storage for use or transferr within the required leak test interval, they shall be shall be stored for a period of more than 10 years contamination.	torage and are not being used; however, when red to another person and have not been tested tested before use or transfer. No sealed source without being tested for leakage and/or		
	G.	The leak test shall be capable of detecting the pre radioactive material on the test sample. If the test (185 becquerels) or more of removable contamina Regulatory Commission in accordance with 10 CF immediately from service and decontaminated, rep Commission regulations.	sence of 0.005 microcurie (185 becquerels) of t reveals the presence of 0.005 microcurie ation, a report shall be filed with the U.S. Nuclear R 30.50(c)(2), and the source shall be removed paired, or disposed of in accordance with		

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	H.	Tests for leakage and/or contamination, including performed by the licensee or by other persons spectrum commission or an Agreement State to perform su	leak test sample o ecifically licensed ch services.	collection by the U	n and I.S. N	d anal luclea	ysis, ar Re	shall be gulatory
	I.	Records of leak test results shall be kept in units of years.	of microcuries and	shall be	e mai	ntaine	ed for	
18.	Seal from	ed sources or detector cells containing licensed mains source holders by the licensee.	terial shall not be	opened	or so	ources	s rem	oved
19.	. The licensee shall conduct a physical inventory every six months, or at other intervals approved by the U.S. Nuclear Regulatory Commission, to account for all sources and/or devices received and possessed under the license. Records of inventories shall be maintained for 5 years from the date of each inventory and shall include the radionuclides, quantities, manufacturer's name and model numbers, and the date of the inventory.						rs,	
20.	Mair shall by th	tenance, repair, cleaning, replacement, and dispose be performed only by the device manufacturer or o le U.S. Nuclear Regulatory Commission or an Agree	al of foils containe ther persons spec ement State to pe	ed in dete cifically a rform su	ector iutho ch se	cells rized ervice	S.	
21.	A. Detector cells containing a titanium tritide foil or a scandium tritide foil shall only be used in conjunction with a properly operating temperature control mechanism which prevents the foil temperatures from exceeding that specified in the certificate of registration referred to in 10 CFR 32.210.				bil			
	B. When in use, detector cells containing a titanium tritide foil or a scandium tritide foil shall be vented to the outside.					vented		
22.	A.	Each gauge shall be tested for the proper operation indicator, if any, at intervals not to exceed 6 month certificate of registration issued by the U.S. Nuclea 10 CFR 32.210 or the equivalent regulations of an	on of the on-off me ns or at such long ar Regulatory Cor Agreement State	echanisn er interva nmissior e.	n (sh als a 1 pur	utter) s spe suant	and cified to	in the
	В.	Notwithstanding the periodic on-off mechanism (sl not apply to gauges that are stored, not being use locked position. The gauges exempted from this p	hutter) and indicat d, and have the s periodic test shall	tor test, t hutter lo be teste	the re ck m d bet	equire echar fore u	ement nism i se.	: does n a
23.	The following services shall not be performed by the licensee: installation, initial radiation surveys, relocation, removal from service, dismantling, alignment, replacement, disposal of the sealed source and non-routine maintenance or repair of components related to the radiological safety of the gauge (i.e., the sealed source, the source holder, source drive mechanism, on-off mechanism (shutter), shutter control, shielding). These services shall be performed only by persons specifically licensed by the U.S. Nuclear Regulatory Commission or an Agreement State to perform such services.							

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24.	The	licensee may initially mount a gauge if permitted by	the certificate of registration issued by the			
	U.S.	Nuclear Regulatory Commission or an Agreement	State and under the following conditions:			
	Α.	The gauge must be mounted in accordance with	written instructions provided by the manufacturer;			
	В.	The gauge must be mounted in a location compa "Limitations and/or Other Considerations of Use" U.S. Nuclear Regulatory Commission or an Agree	tible with the "Conditions of Normal Use" and in the certificate of registration issued by the ement State;			
	C.	The on-off mechanism (shutter) must be locked in be otherwise fully shielded;	the off position, if applicable, or the source must			
	D.	The gauge must be received in good condition (i.	e <mark>., packa</mark> ge was not damaged); and			
	E.	The gauge must not require any modification to fi	t in the proposed location.			
	Mou rema pers perfe	inting does not include electrical connection, activat ain fully shielded and the gauge may not be used un son specifically licensed by the U.S. Nuclear Regula orm such operations.	ion or operation of the gauge. The source must ntil it is installed and made operational by a tory Commission or an Agreement State to			
25.	A.	The licensee may maintain, repair, or replace deverse radiological safety of the device and that do not reto come into contact with the primary beam or in it	rice components that are not related to the esult in the potential for any portion of the body ncreased radiation levels in accessible areas.			
	В.	The licensee may not maintain, repair, or replace sealed source, the source holder, source drive me control, or shielding, or any other component rela except as provided otherwise by specific condition	any of the following device components: the echanism, on-off mechanism (shutter), shutter ted to the radiological safety of the device, n of this license.			
26.	Prio invo is pe with serv	r to initial use and after installation, relocation, dism lving the source or removal of the shielding, the lice erformed to determine radiation levels in accessible the shutter open. This survey shall be performed or rices by the U.S. Nuclear Regulatory Commission or	antling, alignment, or any other activity nsee shall assure that a radiological survey areas around, above, and below the gauge only by persons authorized to perform such an Agreement State.			
27.	The tem hold are	licensee shall operate each device containing licen perature and environmental limits such that the shie ler not compromised.	sed material within the manufacturer's specified Iding and shutter mechanism of the source			
28.	The licensee shall assure that the shutter mechanism, for each device containing licensed material,					

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	is lo to th proc reco	cked in the closed position during periods when a pole direct radiation beam. The licensee shall review a sedures whenever a new device is obtained to incorpormendations.	ortion of an individual's body may be subject and modify, as appropriate, its "lock-out" porate the device manufacturer's					
29.	Sea or de	led sources or source rods containing licensed mate etached from source rods or gauges by the licensee	erial shall not be opened or sources removed e, except as specifically authorized.					
30.	Each portable nuclear gauge shall have a lock or outer locked container designed to prevent unauthorized or accidental removal of the sealed source from its shielded position. The gauge or its container must be locked when in transport or storage, or when not under the direct surveillance of an authorized user.							
31.	Any cleaning, maintenance, or repair of the gauges that requires detaching the source or source rod from the gauge shall be performed only by the manufacturer or by other persons specifically licensed by the U.S. Nuclear Regulatory Commission or an Agreement State to perform such services.							
32.	The 120	licensee is authorized to hold byproduct material widays for decay-in-storage before disposal without re	th a physical half-life of less than or equal to egard to its radioactivity if the licensee:					
	A.	Monitors byproduct material at the surface before cannot be distinguished from the background radi detection survey meter set on its most sensitive s	disposal and determines that its radioactivity ation level with an appropriate radiation cale and with no interposed shielding; and					
	В.	Removes or obliterates all radiation labels, excep containers and that will be managed as biomedica licensee; and	t for radiation labels on materials that are within al waste after they have been released from the					
	C.	Maintains records of the disposal of licensed mate date of disposal, the survey instrument used, the measured at the surface of each waste container, the disposal.	erials for 3 years. The record must include the background radiation level, the radiation level and the name of the individual who performed					
33.	Pursuant to 10 CFR 20.1302(c) and 10 CFR 20.2002, the licensee is authorized to dispose of licensed material by incineration, provided the gaseous effluent from incineration does not exceed the limits specified for air in Appendix B, Table II, 10 CFR Part 20.							
34.	specified for air in Appendix B, Table II, 10 CFR Part 20. Pursuant to 10 CFR 20.2002, the licensee may dispose of incinerator ash containing radioactive materials with atomic numbers 1 through 83, except as identified below, as ordinary waste in a landfill provided that the concentration of radionuclides (in microcuries per gram of ash) at the time of disposal are no greater than the values of Table II, Column 2, 10 CFR Part 20, Appendix B. For hydrogen-3, carbon-14, aluminum-26, chlorine-36, silver-108m, niobium-94, iodine-129, technetium-99, and thallium-204, the concentration can be no greater than one-tenth of the value in Table II, Column 2, 10 CFR Part 20, Appendix B.							

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	fue et			
	Iracu	ons rule applies.		
35	Notw	vithstanding 10 CER 20 2001 the licens	ee mav	dispose of hydrogen-3 and carbon-14 in plant and
00.	soil r	naterial as normal waste, if the plant an	d soil m	aterial contains less than 0.002 microcurie per gram
	aver	aged over the weight of the plant and so	oil mater	ial, and the quantity per disposal does not exceed
	100	microcuries for hydrogen-3 and 10 micro	ocuries	for carbon-14.
36.	The	licensee is authorized to transport licens	sed mate	erial in accordance with the provisions of
	10 C	FR Part 71, "Packaging and Transporta	tion of F	Radioactive Material."
37	Notw	vithstanding the requirements of License	Condit	ion 38 the licensee is authorized to make program
07.	chan	ges and changes to procedures specific	cally ide	ntified in the condition, which were previously
	appr	oved by the U.S. Nuclear Reg <mark>ulatory C</mark> o	ommissi	on and incorporated into the license without prior
	Com	mission approval as long as:	Malus	13. S
	A.	The proposed revision is documented Committee in accordance with establis	, reviewo shed pro	ed, and approved by the licensee's Radiation Safety ocedures prior to implementation.
	в	The revised program is in accordance	with rec	ulatory requirements will not change the license
	υ.	conditions, and will not decrease the e	effective	ness of the Radiation Safety Program.
	0		- CENO	
	C.	The licensee's staff is trained in the re	vised pr	ocedures prior to implementation.
	D.	The licensee's audit program evaluate	s the ef	fectiveness of the change and its implementation.
38.	Exce	pt as specifically provided otherwise in	this lice	nse, the licensee shall conduct its program in
	acco	rdance with the statements, representation	tions, ar	nd procedures contained in the documents,
	INClu	ding any enclosures, listed below. The	U.S. Nu	clear Regulatory Commission's regulations
	and	correspondence are more restrictive that	in the re	gulations.
			00040	-
	A. R	Letter dated March 15, 2002 (ML0208	00049) ation dat	ed April 27, 2012, Revision 2 ( July 26, 2012)
	D.	(ML12223A045)		
		. ,		
			⊢or the	e U.S. Nuclear Regulatory Commission
				Original signed by Dennis R. Lawyer
Date		August 13, 2014	Ву	
				Dennis R. Lawyer

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