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U.S.				Amendment No. 55				
Pursuant to the Atomic Energy Act of 1954, as Code of Federal Regulations, Chapter I, Parts representations heretofore made by the licensee transfer byproduct, source, and special nuclear n designated below; to deliver or transfer such m applicable Part(s). This license shall be deemed amended, and is subject to all applicable rules, re and to any conditions specified below.	amended, the Energi 30, 31, 32, 33, 34, , a license is hereby naterial designated aterial to persons a to contain the condi egulations, and orde	gy Reorganization Act of 35, 36, 37, 39, 40, and issued authorizing the libelow; to use such mate authorized to receive it in tions specified in Section rs of the Nuclear Regulat	1974 (Public d 70, and in r censee to record rial for the pur n accordance 183 of the Ato ory Commission	Law 93-438), and Title 10, eliance on statements and eive, acquire, possess, and pose(s) and at the place(s) with the regulations of the omic Energy Act of 1954, as on now or hereafter in effect				
Licensee		In accordance with	letter dated	August 1, 2014,				
1. American Radiolabeled Chemicals3. License number 24-21362-01 is amended in entirety to read as follows:			amended in its					
2. 101 ARC Drive		4. Expiration date Sep	tember 30,	ember 30, 2018				
St. Louis, MO 63146 5. Docket No. 030-20567 Reference No.								
6. Byproduct, source, and/or special 7. nuclear material	Chemical and/or ph	ysical form 8.	Maximum amo possess at ar license	ount that licensee may ay one time under this				
A. Carbon-14	A. Any		A. 400 cu	ries				
B. Calcium-45	B. Any		B. 1 curie					
C. Chlorine-36	C. Any		C. 300 mi	llicuries				
D. Chromium-51	D. Any		D. 100 mi	llicuries				
E. Hydrogen-3	E. Any		E. 12,000	curies				
F. lodine-125	F. Any		F. 1.5 cur	ies				
G. Phosphorus-32	G. Any		G. 1 curie					
H. Phosphorus-33	H. Any		H. 1 curie					
I. Sulfur-35	I. Any	문문문	I. 10 curi	es				
J. Iron-59	J. Prepackage	ed units	J. 100 mi	llicurie s				
K. Strontium-85	K. Prepackage	ed units	K. 100 mi	llicuries				
L. Cobalt-60	L. Prepackage	ed units	L. 100 mi	llicuries				
M. Iron-55	M. Prepackage	ed units	M. 100 mi	llicuries				
N. Iron-55	N. Any		N. 10 milli	curies				
O. Iron-59	O. Any		O. 10 milli	curies				

9. Authorized Use:

A. through I., N. and O. For possession, use, and processing incident to manufacture and synthesis of radiolabeled chemicals for distribution to persons authorized to receive the licensed

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		material under the terms of a specific Agreement State.	license issued by the Commission or an					
J. tł	nrough M.	For redistribution to persons authorized to receiv specific license issued by the Commission or an	ve the licensed material under the terms of a Agreement State.					
A. t	hrough I.	Possession incident to outdoor site construction movement of site soils, radiological site character soil samples containing residual contamination.	and site beautification activities involving erization, collection and analysis of water and					
А. а	and E.	Possession incident to distribution of labeled co Number 24-21362-02E.	mpounds in accordance with NRC License					
		CONDITIONS						
10.	Licensed Drive, St.	material shall be used only at the licensee's facil Louis, Missouri.	ities located at 100 ARC Drive and 104 ARC					
11.	A. Licen Surendra	sed material listed In Items 6.A. through 6.O. sha K. Gupta, Ph.D., Kamal Das, Ph.D., or Janardha	ll be used by, or under the supervision of, nam Selvasekaran, Ph.D.					
	B. Licens of, Rober	sed material list <mark>ed</mark> in Items 6.F., and 6.J. through t C. Speth, Ph.D.	6.M. shall be used by, or under the supervision					
12.	The Radi	ation Safety Officer for this license is Donald Lite	Щ.					
13.	This licer pursuant	nse does not authorize commercial distribution of to 10 CFR Part 31 or to persons exempt from lice	licensed material to persons generally licensed ensing pursuant to 10 CFR 30.18.					
14.	Licensed condition	material shall not be used in or on human beings of this license.	s except as provided otherwise by specific					
15.	The licen provided	see shall not use licensed material in field applica otherwise by specific condition of this license.	ations where activity is released except as					
16.	The licen received the date of manufact inventory	see shall conduct a physical inventory every 6 mo and possessed under the license. Records of inv of each inventory, and shall include the quantities urer's name and model numbers, location of the s	onths to account for all sources and/or devices ventories shall be maintained for 5 years from and kinds of byproduct material, sources and/or devices, and the date of the					
17.	A. Se months Regulate	aled sources shall be tested for leakage and/or co or at such other intervals as specified in the certif ory Commission under 10 CFR 32.210 or under e	ontamination at intervals not to exceed 6 icate of registration issued by the U.S. Nuclear quivalent regulations of an Agreement State.					
	B. No pai	twithstanding Paragraph A of this Condition, seal rticles shall be tested for leakage and/or contamir	ed sources designed to primarily emit alpha nation at intervals not to exceed 3 months.					

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- C. In the absence of a certificate from a transferor indicating that a leak test has been made within the intervals specified in the certificate of registration issued by the U.S. Nuclear Regulatory Commission under 10 CFR 32.210 or under equivalent regulations of an Agreement State, prior to the transfer, a sealed source or detector cell received from another person shall not be put into use until tested and the test results received.
- D. Sealed sources need not be leak tested if they contain only hydrogen-3; or they contain only a radioactive gas; or the half-life of the isotope is 30 days or less; or they contain not more than 100 microcuries of beta- and/or gamma-emitting material or not more than 10 microcuries of alpha-emitting material.
- E. Sealed sources need not be tested if they are in storage and are not being used; however, when they are removed from storage for use or transferred to another person, and have not been tested within the required leak test interval, they shall be tested before use or transfer. No sealed source or detector cell shall be stored for a period of more than 10 years without being tested for leakage and/or contamination.
- F. The leak test shall be capable of detecting the presence of 0.005 microcurie (185 becquerels) of radioactive material on the test sample. If the test reveals the presence of 0.005 microcurie (185 becquerels) or more of removable contamination, a report shall be filed with the U.S. Nuclear Regulatory Commission in accordance with 10 CFR 30.50(c)(2), and the source shall be removed immediately from service and decontaminated, repaired, or disposed of in accordance with Commission regulations.
- G. Tests for leakage and/or contamination, including leak test sample collection and analysis, shall be performed by the licensee or by other persons specifically licensed by the U. S. Nuclear Regulatory Commission or an Agreement State to perform such services.
- H. Records of leak test results shall be kept in units of microcuries and shall be maintained for 3 years.
- 18. Sealed sources containing licensed material shall not be opened or sources removed from source holders by the licensee.
- 19. The licensee is authorized to hold radioactive material with a physical half-life of less than 120 days for decay-in-storage before disposal in ordinary trash provided:
 - A. Before disposal as ordinary trash, byproduct material shall be surveyed at the container surface with the appropriate meter set on its most sensitive scale and with no interposed shielding to determine that its radioactivity cannot be distinguished from background. All radiation labels shall be removed or obliterated.
 - B. A record of each disposal permitted under this License Condition shall be retained for three years. The record must include the date of disposal, the date on which the byproduct material was placed in the storage, the radionuclides disposed, the survey instrument used, the background dose rate, the dose rate measured at the surface of east waste container, and the name of the individual who performed the disposal.

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- 20. The Radiation Safety Officer shall have the authority to stop any operation which he deems to constitute a threat to health and safety or violates the license or NRC regulations.
- 21. The licensee is authorized to transport licensed material only in accordance with the provisions of 10 CFR Part 71, "Packaging and Transportation of Radioactive Material."
- 22. Except as specifically provided otherwise in this license, the licensee shall conduct its program in accordance with the statements, representations, and procedures contained in the documents, including any enclosures, listed below. The U.S. Nuclear Regulatory Commission's regulations shall govern unless the statements, representations, and procedures in the licensee's application and correspondence are more restrictive than the regulations.
 - A. Application dated August 31, 2011;
 - B. Letters dated June 29, 2012, August 2, 2013, August 23, 2013, August 27, 2013, October 30, 2013 (excluding items 1, 2, and 3), and December 31, 2013 (including attached e-mail dated December 10, 2013, with regard to the effective radius of the nozzle exit velocity for the effluent stack in building 300), December 23, 2013, February 3, 2014, February 7, 2014, July 11, 2014, September 30, 2014, August 1, 2014, November 14, 2014, and January 15, 2015; and

C. Revised Item 3.3.4.12 of the Radiation Protection Program received August 27, 2013.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Date JAN 20 2015

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Kevin G. Null Materials Licensing Branch Region III