

Memorial

Hospital of South Bend

14 March 2008

**Materials Licensing Branch
US NRC Region III
2443 Warrenville Road, Suite 210
Lisle, IL 60532-4352**

RE: Changes to NRC Material License No. 13-18881-01

Dear Sir or Madam:

Memorial is notifying the NRC that Edward Abraham, MD, is permitted to practice as an authorized user with materials listed in 10 CFR 35.400 and Iridium-192 in remote afterloading brachytherapy. Dr. Abraham is listed as an Authorized User for these applications on the Massachusetts's broad scope medical license 60-0160, issued to Tufts-New England Medical Center. I have attached copies of the pertinent license and documentation of Dr. Abraham's status on this broad scope license. This notification is in accordance with the guidelines found in 10 CFR 35.14a. Please add this gentleman to our Authorized Users list.

Please change our Radiation Safety Officer to Daniel J. Archambeault, MS, DABMP, effective 19 March 2008. Mr. Archambeault is listed as an Authorized Medical Physicist on our license and served recently as the Radiation Safety Officer for Opelousas Community Cancer Center, Opelousas, Louisiana. The enclosed copy of Louisiana Department of Environmental Quality, Emergency and Radiological Services Division, Radioactive Material License LA-7482-L01, documents Mr. Archambeault's role as the RSO.

RECEIVED MAR 25 2008

Also, please delete the Sr-90 source referenced in 9.D.(2). We no longer possess this source. I have enclosed documentation of the appropriate disposal of this source.

If you have any questions regarding these changes, please contact me at 574-647-7589, or Mr. Archambeault at 574-47-7956. Thank you for your prompt attention to this request.

Sincerely,

A handwritten signature in black ink that reads "Jennifer Hann Fisher". The signature is written in a cursive style with a large, looping 'J' and 'F'.

**Jennifer Hann Fisher, MS, DABR
Radiation Safety Officer**

Memorial
Hospital of South Bend*
RSO / EXECUTIVE MANAGEMENT
LETTER OF UNDERSTANDING

19 March 2008

Daniel J. Archambeault, MS, DABMP
Radiation Safety Officer
Memorial Hospital of South Bend
615 N. Michigan Street
South Bend, IN 46601

Dear Dan:

You have been appointed the Radiation Safety Officer (RSO) of this facility for our United States Nuclear Regulatory Commission Materials License. This "Letter of Understanding" is prepared to comply with Title 10 Code of Federal Regulations (CFR) Part 35.24(b). This section of the regulations requires that you agree in writing to the following:

- **Assume responsibility for implementing the Radiation Protection Program**
- **Ensure that radiation safety activities are being performed in accordance with our own approved procedures and all regulatory requirements.**

In compliance with 10 CFR 35.24(e),(g), the executive management of this facility agrees to provide you as RSO:

- **Specific written notation of your authority, duties and responsibilities, see attached.**
- **Sufficient authority, organizational freedom, time, resources and management prerogative to:**
 - 1. Identify radiation safety problems;**
 - 2. Initiate, recommend, or provide corrective actions;**
 - 3. Stop unsafe operations; and,**
 - 4. Verify implementation of corrective actions.**

Our signatures noted below will attest to the issues noted above. Please make a copy of this document for your files and return the original to my attention.

Sincerely,


Executive Management


Radiation Safety Officer

**Tufts-New England Medical Center**

The principal teaching hospital for
Tufts University School of Medicine

F. K. Massé, CHP, CMP
Radiation Safety Officer

Thomas McMahon
Health Physics Section Head
Associate Radiation Safety Officer

Tel: 617-636-6168
Fax: 617-636-7777

To Whom it May Concern,

2/25/2008

This is to certify that Dr. Edward Abraham, formerly of the Radiation Oncology Department, had been approved by the Tufts-NEMC Radiation Committee as an "authorized user" for external beam therapy and the human use of radioactive materials [specifically: LDR brachytherapy, HDR brachytherapy, intravascular brachytherapy, & radiopharmaceutical therapy (including 153-Sm)]. This approval was granted by the Committee on 4/27/2004 based on his meeting the educational and training requirements of 105 CMR 120.569 (B) & 120.570 (B).

The use of radioactive materials in humans is covered under the terms and conditions outlined in broad-scope medical license # 60 - 0160 which has been issued to Tufts-New England Medical Center by the Department of Public Health Radiation Control Program. Since this is a broad-scope license, physicians who are "authorized users" are not specifically named on the license.

If you have any questions concerning this authorization, I can be reached at 617-636-1682. Thank you.

Sincerely,

Thomas McMahon
Associate Radiation Safety Officer

Tufts-New England Medical Center
Established 1796

750 Washington Street
Tufts-NEMC #787
Boston, Massachusetts 02111

TOTAL P.02

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THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC HEALTH
RADIATION CONTROL PROGRAM
MATERIALS LICENSE

CORRECTED COPY

Pursuant to Massachusetts General Laws Chapter 111, Sections 3, 5M, 5N, 5O and 5P and Massachusetts Regulations for the Control of Radiation, Section 120.100, Licensing of Radioactive Material, and in reliance on statements and representation heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer radioactive materials designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations 105 CMR 120.000. This license shall be deemed to contain the conditions specified in 105,CMR 120.000 and is subjected to all applicable rules, regulations of the Department of Public Health, Commonwealth of Massachusetts, now or hereafter in effect and to any conditions specified below.

Licensee		3. License Number: 60-0160 is renewed in its entirety, in accordance with letter dated October 30, 2007, to read as follows:
1. Tufts-New England Medical Center		Amendment No: <u>15</u>
2. 800 Washington Street, Box 787 Boston, Massachusetts 02111		4. Expiration Date: November 30, 2012
		5. Docket No: 08-0105
6. Radioactive Material	7. Chemical/Physical Form	8. Maximum Possession Limit
A. Any radioactive material listed in 105 CMR 120.544	A. Any radiopharmaceutical included in 105 CMR 120.544	A. As needed
B. Any radioactive material listed in 105 CMR 120.547	B. Any radiopharmaceutical included in 105 CMR 120.547	B. As needed
C. Any radioactive material listed in 105 CMR 120.552	C. Any radiopharmaceutical included in 105 CMR 120.552	C. As needed
D. Any radioactive material listed in 105 CMR 120.568	D. Any diagnostic source included in 105 CMR 120.568	D. 5 curies
E. Any radioactive material listed in 105 CMR 120.559	E. Any brachytherapy source identified in 105 CMR 120.559	E. 3 curies
F. Uranium depleted in Uranium-235	F. Cadmium plated metal	F. 300 kilograms

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COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH RADIATION CONTROL PROGRAM MATERIALS LICENSE SUPPLEMENTARY SHEET	LICENSE NUMBER: 60-0160
	CORRECTED COPY
	DOCKET NUMBER: 08-0105
	AMENDMENT NUMBER: <u>15</u>

6. Radioactive Material	7. Chemical/Physical Form	8. Maximum Possession Limit
G. Any radioactive material with Atomic Numbers 3 through 83 and half-life of less than or equal to 120 days	G. Any	G. Not to exceed 500 mCi per radionuclide; 20 curies total
H. Hydrogen-3	H. Any	H. 1,200 millicuries
I. Carbon-14	I. Any	I. 250 millicuries
J. Xenon-133	J. Any	J. 3 curies
K. Chlorine-36	K. Any	K. 5 millicuries
L. Calcium-45	L. Any	L. 45 millicuries
M. Nickel-63	M. Any	M. 3 millicuries
N. Zinc-65	N. Any	N. 5 millicuries
O. Cadmium-109	O. Any	O. 2 millicuries
P. Gadolinium-153	P. Any	P. 2 millicuries
Q. Any radioactive material with Atomic Numbers 3 through 83	Q. Sealed Sources	Q. Not to exceed 1 curie per source; 20 curies total
R. Iridium-192	R. Sealed Sources (Nucletron Corp. Model 105.002 or Alpha-Omega Services Inc. Model CSNOO10-192)	R. Not to exceed 12 curies per source; 21.9 curies total
S. Hydrogen-3	S. Neutron tubes	S. Not to exceed 14 curies per tube; 42 curies total

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6. Radioactive Material	7. Chemical/Physical Form	8. Maximum Possession Limit
T. Californium-252	T. Sealed Sources	T. Not to exceed 1 curie per source; 2 curies total

9. Authorized use:

- A. Any uptake, dilution and excretion procedure approved in 105 CMR 120.544.
- B. Any imaging and localization procedure approved in 105 CMR 120.547.
- C. Any radiopharmaceutical therapy procedure approved in 105 CMR 120.552.
- D. Any diagnostic procedure approved in 105 CMR 120.568.
- E. Any brachytherapy procedure approved in 105 CMR 120.559.
- F. Shielding in a linear accelerator.
- G. through Q. Medical diagnosis, therapy and research in humans in accordance with any applicable Food and Drug Administration (FDA) requirements. Research and development, in-vitro research, or in-vivo animal research as defined in 105 CMR 120.005 and instrument calibration.
- R. One source to be used in a Nucletron Corporation Model MicroSelectron HDR Model 105.999 remote afterloading brachytherapy device for interstitial, intracavitary, or bronchial treatment. One source in its shipping container to be in the possession of the licensee as necessary for replacement of the source in the irradiation device. The source activity may not exceed 10 curies at the time of installation.
- S. Sealed D-T neutron generator tubes to measure body fat in humans.
- T. For medical use in research and development as defined in letter dated October 30, 2007, or non-medical use in research and development as defined in 105 CMR 120.005.

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COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC HEALTH
RADIATION CONTROL PROGRAM

LICENSE NUMBER: 60-0160

CORRECTED COPY

MATERIALS LICENSE
SUPPLEMENTARY SHEET

DOCKET NUMBER: 08-0105

AMENDMENT NUMBER: 15**CONDITIONS**

10. A. Radioactive material listed in Items 6.A. through 6.Q. and Item 6.S. shall be only used or stored at the licensee's facilities located at 800 Washington Street; 25 Harvard Street; Lemuel Shattuck Hospital, 170 Morton Street; the USDA Northeastern Regional Human Nutrition Research Center on Aging, 711 Washington Street; 75 Kneeland Street, all located in Boston, Massachusetts, and at 340 Wood Road, Braintree, Massachusetts.
- B. Radioactive material listed in Items 6.R. and 6.T. shall be only used or stored at the licensee's facilities located at 800 Washington Street, Boston, Massachusetts, and for possession only at 25 Harvard Street, Boston, Massachusetts.
11. This license is subject to an annual fee as determined by the Executive Office for Administration and Finance.
12. The Radiation Safety Officer for this license is F.X. Masse.
13. A. The use of licensed material in or on humans shall be by a physician as defined in 105 CMR 120.005.
- B. Physicians designated to use licensed material in or on humans shall meet the training criteria established in 105 CMR 120.500 and shall be designated by the Radiation Safety Committee. The licensee shall maintain records of individuals designated as users.
- C. Medical Physicists designated to perform licensed activities in conjunction with the licensee's program for the High Dose Rate Remote Afterloading Brachytherapy Device shall meet the training criteria established in 105 CMR 120.525 and/or 120.528 and shall be designated by the Radiation Safety Committee. The licensee shall maintain records of individuals designated as users.
- D. Licensed material for other than human use shall be used by, or under the supervision of, individuals designated by the Radiation Safety Committee. The licensee shall maintain records of individuals designated as users.

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COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH RADIATION CONTROL PROGRAM MATERIALS LICENSE SUPPLEMENTARY SHEET	LICENSE NUMBER: 60-0160
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14. Sealed sources or detector cells containing licensed material shall not be opened or sources removed from the source holder by the licensee.
15. The licensee shall conduct a physical inventory every 6 months, or at other intervals approved by the Agency, to account for all sources and/or devices received and possessed under the license. Records of inventories shall include the radionuclides, quantities, manufacturer's name and model numbers, and the date of inventory.
16.
 - A. Sealed sources shall be tested for leakage and/or contamination at intervals not to exceed six (6) months or at such other intervals as are specified by the certificate of registration referred to in 105 CMR 120.128(N). In the absence of a certificate from a transferor indicating that a leak test has been made within six (6) months prior to the transfer, a sealed source received from another person shall not be put into use until tested.
 - B. 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 shall be stored for a period of more than 10 years without being tested for leakage and/or contamination.
 - C. The leak test shall be capable of detecting the presence of 185 becquerel (0.005 microcurie) of radioactive material on the test sample. Records of leak test results shall be kept in units of becquerel or microcurie and shall be maintained for inspection by the Agency. If the test reveals the presence of 185 becquerel (0.005 microcurie) or more of removable contamination, a report shall be filed with the Agency and the source shall be removed from service and decontaminated, repaired, or disposed of in accordance with Agency regulations. The report shall be filed within 5 days of the date the leak test result is known with the Massachusetts Department of Public Health, ATTN: Director, Radiation Control Program. The report shall specify the source involved, the test results, and the corrective action taken.
 - D. The licensee is authorized to collect leak test samples for analysis. Alternatively, tests for leakage and/or contamination may be performed by persons specifically licensed by the Agency, the U.S. Nuclear Regulatory Commission, an Agreement State, or Licensing State to perform such services.

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- E. Sealed sources and detector cells need not be leak tested if:
- (i) they contain only hydrogen-3; or
 - (ii) they contain only a radioactive gas; or
 - (iii) the half-life of the isotope is 30 days or less; or
 - (iv) they contain not more than 100 microcuries of beta and/or gamma emitting material or not more than 10 microcuries of alpha emitting material; or
 - (v) they are not designed to emit alpha particles, are in storage, and are not being used. However, when they are removed from storage for use or transfer 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.
17. The licensee shall not acquire licensed material in a sealed source or in a device that contains a sealed source unless the source or device has been registered pursuant to 105 CMR 120.128(N), or equivalent regulations of the U.S. Nuclear Regulatory Commission, an Agreement State or Licensing state. The licensee may possess and use sealed sources which were in the licensee's possession as of the date of this license.
18. Maintenance, repair, cleaning, replacement, and disposal of foils contained in detector cells shall be performed only by the device manufacturer or other persons specifically authorized by the U.S. Nuclear Regulatory Commission or an Agreement State to perform such services.
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, the waste shall be surveyed at the container surface with the appropriate survey instrument 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.

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- B. A record of each such 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 radioactive material was placed in storage, the radionuclides disposed, the survey instrument used, the background dose rate, the dose rate measured at the surface of each waste container, and the name of the individual who performed the disposal.
- C. Generator columns shall be segregated so that they may be monitored separately to ensure decay to background levels prior to disposal.
20. Experimental animals administered licensed materials or their products shall not be used for human consumption.
21. The licensee shall only transport radioactive material or deliver radioactive material to a carrier for transport in accordance with the provisions of 49 CFR Parts 170 through 189, 10 CFR Part 71, and 105 CMR 120.770, "Transportation of Radioactive Material."
22. Except as specifically provided otherwise by this license, the licensee shall conduct its program in accordance with statements, representations and procedures contained in the documents, including any enclosures, listed below. The Massachusetts Regulations for the Control of Radiation (105 CMR 120.000) shall govern, unless statements, representations and procedures in the licensee's application and correspondence are more restrictive than the regulations.
- A. Renewal application dated October 30, 2007

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COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC HEALTH
RADIATION CONTROL PROGRAM

LICENSE NUMBER: 60-0160

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MATERIALS LICENSE
SUPPLEMENTARY SHEET

DOCKET NUMBER: 08-0105

AMENDMENT NUMBER: 15

FOR THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC HEALTH
RADIATION CONTROL PROGRAM

Date

11/29/07

By

Robert Walker

Robert Walker, Director





**LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY
EMERGENCY AND RADIOLOGICAL SERVICES DIVISION**

**P.O. BOX 4313
BATON ROUGE, LOUISIANA 70821-4313**

RADIOACTIVE MATERIAL LICENSE

Pursuant to the Louisiana Environmental Quality Act (Louisiana Revised Statutes 30:2101 et seq.) and the Louisiana Radiation Regulations, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, own, possess and transfer radioactive material for the purpose(s) and at the place(s) designated below. This license shall be deemed to contain the conditions specified in the Louisiana Revised Statutes 30:2105 of the Louisiana Nuclear Energy and Radiation Control Law, and is subject to all applicable rules, regulations, and orders of the Department now or hereinafter in effect, including the Louisiana Radiation Regulations (LAC 33:XXV) and to any condition specified in the license.

LICENSEE Opelousas Community Cancer Center 627 Prudhomme Lane Opelousas, Louisiana 70570 Attention: Daniel J. Archambeault Radiation Safety Officer	LICENSE NUMBER LA-7482-L01	EXPIRATION DATE June 30, 2010
	PREVIOUS AMENDMENTS ARE VOID AMENDMENT NUMBER 11	AI NUMBER 36014
	THIS LICENSE ISSUED PURSUANT TO AND IN ACCORDANCE WITH Application SIGNED BY: Daniel J. Archambeault DATE: April 12, 2005	

RADIOISOTOPE		MAXIMUM NUMBER OF SOURCES	MAXIMUM ACTIVITY OR QUANTITY PER SOURCE*	SEALED SOURCE IDENTIFICATION	STORAGE CONTAINER OR EXPOSURE DEVICE	AUTHORIZED USE
ELEMENT	MASS NO.			CHEMICAL FORM—PHYSICAL STATE		
Co	57	Any	20 mCi	Any Approved Commercially Available Calibration or Reference Source		Calibration or Reference Standard
Co	60	Any	200 µCi	Any Approved Commercially Available Calibration or Reference Source		Calibration or Reference Standard
Cs	137	Any	200 µCi	Any Approved Commercially Available Calibration or Reference Source		Calibration or Reference Standard
Cs	137	Total	800 mCi	3M 6500 Series		Interstitial and Intracavitary Treatment of Cancer
Ir	192	2	10 Ci	Nucletron Model 096.001*	Nucletron Model Micro Selectron-HDR Classic	Interstitial and Intracavitary Treatment of Cancer
Au	198	Total	500 mCi	Seeds (Approved Sealed Sources)*		Interstitial Treatment of Cancer
U Depleted		Total	999 Kg	Solid		Shielding

*pCi-picocurie, µCi-Microcurie, mCi-Millicurie, Ci-Curie

Chuck Carr Brown, Ph.D. Assistant Secretary	DATE 5/12/05	Page 1 of 3 Page(s)
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LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY
RADIOACTIVE MATERIAL LICENSE

LICENSEE

LICENSE NUMBER

AMENDMENT NUMBER

AI NUMBER

Opelousas Community Cancer Center

LA-7482-L01

11

36014

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*Sealed sources which have been evaluated and approved for licensing purposes and authorized for use in accordance with the Sealed Sources and Devices Registry Safety Evaluation of the Device.

1. A. Radioactive material shall be used only at:

Opelousas Community Cancer Center
627 Prudhomme Lane
Opelousas, Louisiana. 70570

AI No. 36014

- B. Radioactive material, with the exception of Ir-192 in the Nucletron High Dose Afterloader, shall be used at:

Opelousas General Hospital
539 E. Prudhomme Lane
Opelousas, Louisiana. 70570

AI No. 7186

2. Radioactive material listed in the schedule shall be used by, or under the supervision of, Baham A. Daneshfar, M.D.
3. The Radiation Safety Officer and Therapeutic Radiologic Physicist for this license is Daniel J. Archambeault, M.S.
4. Sealed sources containing radioactive material shall not be opened by the licensee.
5. A high dose rate afterloading brachytherapy unit shall be used in accordance with the following conditions:
 - A. The unit may only be used in a permanently shielded treatment room.
 - B. The licensee shall immediately, after implanting the source, visually check the permanently installed room radiation monitor to verify that it indicates an exposed radiation source.
 - C. The licensee shall permit no visitors in the treatment room.
6. In lieu of the source inventory described in LAC 33:XV.744, the licensee shall:
 - A. Immediately after retracting the source from the patient into its shielded position in the remote afterloading device, perform a radiation survey of the patient and the remote afterloading device with a portable radiation detection survey instrument to confirm that the source has been removed from the patient.
 - B. Make a record of the survey including survey instrument used, dose rate, time, date and name of the individual making the survey.
 - C. Records of the survey results shall be maintained for inspection by the Department.

LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY
RADIOACTIVE MATERIAL LICENSE

LICENSEE	LICENSE NUMBER	AMENDMENT NUMBER	AT NUMBER	
Opelousas Community Cancer Center	LA-7482-L01	11	36014	Page 3 of 3 Page(s)

7. Except as specifically provided otherwise by the license, the licensee shall possess and use radioactive material described in all schedules of this license in accordance with LAC 33:XV and statements, representations, and procedures contained in the licensee's application (complete submission) dated June 7, 2002, and in all subsequent correspondence.

CCB:MJH

FORM 540 UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST SHIPPING PAPER		ADCO SERVICES, INC.		5. SHIPPER - NAME AND FACILITY MEMORIAL HOSPITAL OF SOUTH BEND FOR THE ACCT OF ADCO SERVICES, 615 N. MICHIGAN STREET SOUTH BEND, IN 46801		SHIPMENT I.D. NUMBER 81114		7. FORM 540 AND 540A FORM 541 AND 541A FORM 542 AND 542A ADDITIONAL INFORMATION	
1. EMERGENCY TELEPHONE NUMBER (Include Area Code) 874-647-7589 574-647-4000 6972		SC PERMIT NA		SHIPMENT NUMBER 05-0400 8		<input checked="" type="checkbox"/> COLLECTOR <input type="checkbox"/> PROCESSOR		9. CONSIGNEE - Name and Facility ADCO SERVICES, INC. 17680 DUVAN DRIVE TINLEY PARK, IL 60477	
2. IS THIS AN "EXCLUSIVE USE" SHIPMENT? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		3. TOTAL NUMBER OF PACKAGES IDENTIFIED ON THIS MANIFEST 2		CONTACT JENNIFER FISHER		TELEPHONE NUMBER (Include Area Code) 874-647-7589		SIGNATURE - Authorized consignee 	
4. DOES EPA REGULATED WASTE REQUIRING A MANIFEST ACCOMPANY THIS SHIPMENT? If "Yes," provide Manifest Number		EPA MANIFEST NUMBER NONE REQUIRED		6. CARRIER - Name and Address ADCO EXPRESS, INC. 17680 DUVAN DRIVE TINLEY PARK, IL 60477		EPA I.D. NUMBER ILD 847267384		10. DATE 10/24/05	
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		CONTACT BOB BAGGETT		TELEPHONE NUMBER (Include Area Code) 708-423-3913		DATE 10/24/05	
11. U.S. DEPARTMENT OF TRANSPORTATION DESCRIPTION (including proper shipping name, hazard class, UN ID number, and any additional information)		12. DOT LABEL "RADIOACTIVE"		13. TRANSPORT INDEX		14. PHYSICAL AND CHEMICAL FORM		15. INDIVIDUAL RADIONUCLIDES	
Radioactive material, Type A Package, 7., UN 2915		YELLOW II		.4		Solid SEALED SOURCES		Cs-137	
Radioactive material, Type A Package, 7., UN 2915		YELLOW II		.1		Solid SEALED SOURCES		Ba-133 Co-57 Eu-152 Gd-153 Ge-68 57-60	
								Yc-90 Th-230	
FOR CONSIGNEE USE ONLY						20. Check appropriate items: <input checked="" type="checkbox"/> Customer represents and warrants that all data set forth in this Uniform Low-Level Radioactive Manifest Packages listed as "Limited Quantity of Radioactive Material" on this manifest conform to the conditions excepted package-limited quantity of material UN2910 Packages listed as "NON-REGULATED MATERIAL" on this manifest are classified in accordance with 49 CFR 173.40 and will be disposed of at a licensed facility			

CONTAINER AND WASTE DESCRIPTION

NUMBER OF PACKAGES/ DISPOSAL CONTAINERS	NET WASTE VOLUME	NET WASTE WEIGHT	ACTIVITY		
			U-235	U-238	Pu
2	0.0782 kg	88.0368	NP	NP	NP
	2.8000 lb	180.0000			
	ALL NUCLIDES	TRITIUM	C-14	Tc-99	I-129
MBq	2.1834E-04	NP	NP	1.8500E-04	NP
(MCi)	5.8825E-02	NP	NP	5.0000E-06	NP

[illegible]

1. Wooden Box or Crate	9. Desintegrator
2. Metal Box	10. Bulk Cylinder
3. Plastic Drum or Pail	11. Gas, Unpackaged Waste
4. Metal Drum or Pail	12. Unpackaged Components
5. Metal Tank or Liner	13. High Integrity Container
6. Concrete Tank or Liner	19. Other. Describe in Item 6, or additional page.
7. Polyethylene Tank or Liner	
8. Fiberglass Tank or Liner	

- A High Integrity Container - Poly
- B High Integrity Container - Poly with Steel Shell
- C High Integrity Drum Overpack - Poly
- D High Integrity Container - Stainless Steel
- E High Integrity Container - Fiberglass
- F Lateral - Steel

20. Charcoal	29. Denaturation Rubble	38. Suspensor (Stomach/Stomach/Sludge)
21. Incinerator Ash	30. Carbon Ion-exchange Media	39. Concentrate
22. Soil	31. Anion Ion-exchange Media	40. Compatible Trash
23. Gas	32. Mixed Bed Ion-exchange Media	41. Noncompatible Trash
24. Oil	33. Contaminated Equipment	41. Animal Carcass
25. Aqueous Liquid	34. Organic Liquid (except oil)	42. Biological Material (except animal carcass)
26. Filter Media	35. Glassware or Labware	43. Activated Material
27. Mechanical Filter	36. Sealed Source/Device	09. Other. Describe in item 11, or additional space
28. EPA or State Hazardous	37. Paint or Plating	

G	Dewatered
H	Solid
I	Combustible
J	Non-combustible
K	Air Filtration Filters
L	Asbestos

LOW-LEVEL RADIOACTIVE WASTE MANIFEST

CONTAINER AND WASTE DESCRIPTION (CONTINUATION)

DEPOSITOR CONTAINER DESCRIPTION					WASTE DESCRIPTION FOR EACH WASTE TYPE IN CONTAINER							
5. CONTAINER IDENTIFICATION NUMBER / SC PERMIT	6. CONTAINER DESCRIPTION (See Note 1 & Note 1A)	7. VOLUME (GAL) (L)	8. WASTE AND CONTAINER WEIGHT (LBS) (KG)	9. SURFACE RADIATION LEVEL (mR/hr) (μSv/hr)	10. SURFACE CONTAMINATION (dpm/100 cm²) (Bq/100 cm²)		11. WASTE DESCRIPTOR (See Note 2 & Note 2A)	12. APPROXIMATE WASTE VOLUME(S) IN CONTAINER (GAL) (L)		13. SOLIDIFICATION OR STABILIZATION MEDIA (See Note 3 & Note 3A)	14. CHEMICAL DESCRIPTION	
					ALPHA	BETA-GAMMA					CHEMICAL FORM / CHELATING AGENT	WEIGHT % CHELATING AGENT IF > 0.1%
Shipment Totals		0.0782	98.0388									
		2.8000	188.8000									

MEMORIAL HOSPITAL R.O.C.
615 NORTH MICHIGAN STREET
SOUTH BEND, IN 46601-1033

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Materials Licensing Branch
US NRC Region III
2443 Warrenville Rd. Ste 210
Lisle, IL 60532-4352