Eastern Connecticut State University
83 Windham Street
Willimantic, CT 06226-2211

TERMINATION OF MATERIALS LICENSE 06-20971-01

Docket #03022168
NRC Mail Control #590762

SUPPLEMENTAL INFORMATION
Submitted June 30, 2016

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EASTERN CONNECTICUT STATE UNIVERSITY
83 WINDHAM STREET • WILLIMANTIC, CONNECTICUT 06226 • 860-465-5000

June 30, 2016

Licensing Assistance Team
Division of Nuclear Materials Safety
U.S. Nuclear Regulatory Commission, Region I
2100 Renaissance Boulevard
King of Prussia, PA 19406-2713

Dennis Lawyer: **Mail Control #590762**

On April 19, 2016, I notified the NRC that Eastern Connecticut State University had decided to terminate its **Materials License 06-20971-01**. A compilation of our decommissioning data was then submitted with NRC Form 314 dated May 12, 2016. Following your initial review, additional information was requested.

I have made every effort to gather the additional information. The resulting documents are enclosed in this report for further review. I am hopeful that this submission will allow our license termination to continue moving forward.

Respectfully,

Gloria J. Colurso

Gloria J. Colurso, Ph.D.
Professor and RSO, Biology Department
colurso@easternct.edu
phone 860-465-5259

Subject: Eastern Connecticut State University, Request for Additional Information Concerning Application for a License Amendment, Control 590762

Date: Wednesday, June 8, 2016 10:40:15 AM Eastern Daylight Time

From: Lawyer, Dennis <Dennis.Lawyer@nrc.gov>

To: Colurso, Gloria J. (Biology) <COLURSO@easternct.edu>

Dear Dr. Colurso,

This is in reference to your letter dated April 19 and NRC 314 form dated May 12, 2016, requesting for termination of Nuclear Regulatory Commission License No. 06-20971-01, Docket No. 03022168. In order to continue our review, we need the following additional information:

1. Contained with your NRC 314 form dated May 12, 2016, you provided disposal records as required by 10 CFR 20.2003 (disposals to the sanitary sewerage system) and 20.2005 (disposal of specific wastes including liquid scintillation cocktail and animal tissue). Please confirm that you have sent a copy of all the records as required by these regulations for all operations since the license was issued in March 18, 1986, or send in the remaining records.

2. Prior to termination of a license,10 CFR 30.35(g), 30.36(k)(4) and 30.51 require that you submit to the NRC certain records. Please submit the following records, or explain why such records are not applicable

    a. for unsealed materials with half-lives greater than 120 days, records for disposal made pursuant to 10 CFR 20.2002 (alternate disposal procedures, including burial authorized prior to January 28, 1981), , 20.2004 (incineration of wastes),), and 20.2103(b)(4), evaluations of effluent releases

    b. records important for decommissioning as described in 30.35(g). Examples of such records include but are not limited to: records of contamination, identifying the radionuclides, quantities and concentrations; as-built drawings and modifications of structures and equipment in restricted areas and locations of inaccessible contamination such as buried pipes; a single list, updated at least every 2 years, of areas to which access is limited for the purpose of radiation protection (restricted areas); and records related to the provision of financial assurance.

3. The disposal records to the sanitary sewerage system did not contain the information as required by 10 CFR 20.2003(a)(3). Please provide the average monthly volume of water released into the sewer and calculate the fraction and compare to the limit in table 3 of Appendix B to part 20 represented by discharges into sanitary sewerage.

4. NUREG-1757, Volume 1, Revision 2, "Consolidated Decommissioning Guidance Decommissioning Process for Materials Licensees," states for in Figure 8.1 for simplified survey procedures, "One hundred percent scanning of all surfaces in the area of the facility where licensed material was used or stored, using an appropriate radiation detection instrument (including scan sensitivity)." Please state the percentage of all surfaces were scanned for the surveys performed and the rate of survey speed that was performed.

5. In your May 15, 2012, renewal letter, you stated that you could use materials in Room 316, 332, 342, and 434 in which no survey data was submitted. Please submit survey data or state that radioactive materials were not used in these rooms.

6. You submitted surveys for specific isotopes in rooms 306, 306A, 315, 334, 335, 337, and a cold room. Please confirm that only these isotopes were used.

7. You have been licensed for I-125, in which no surveys were submitted. Please submit surveys where I-125 was used or confirm that there was no use of I-125 in the Science Building.

8. You performed surveys in a cold room, please confirm that this is room 337A or provide surveys of room 337A.

We will continue our review upon receipt of this information. Please reply to my attention at the Region 1 Office (Address below) and refer to Mail Control No. 590762. If you have technical questions regarding this letter, please call me at (610) 337-5366.

Your reply must be an originally signed and dated letter. The letter may be scanned and submitted as a pdf document attached to an email; or it may be transmitted by facsimile to (610) 337-5269; or it may be sent by regular mail. If we do not receive a reply from you within 30 calendar days from the date of this e-mail, we will assume that you do not wish to pursue your application OR amendment request.

Please respond by e-mail to acknowledge that you have received the e-mail request for additional information.

Region 1 Office Mailing Address: Licensing Assistance Team, US Nuclear Regulatory Commission Region I, 2100 Renaissance Boulevard, Suite 100, King of Prussia, PA 19406-2713.

Dennis Lawyer
U.S. NRC Region 1
Health Physicist
610-337-5366

1. Contained with your NRC 314 form dated May 12, 2016, you provided disposal records as required by 10 CFR 20.2003 (disposals to the sanitary sewerage system) and 20.2005 (disposal of specific wastes including liquid scintillation cocktail and animal tissue). Please confirm that you have sent a copy of all the records as required by these regulations for all operations since the license was issued in March 18, 1986, or send in the remaining records.

Eastern Connecticut State University
Radiation Records

Radionuclide	10 CRF Part 20, Appendix B, Table 3 Releases to Sewers μCi/ml Monthly Average Concentration	Conversion from μCi/ml to μCi/gallon
C-14	3 E-4	1.135
H-3	1 E-2	37.854
I-125	2 E-5	0.757
S-35	1 E-3	3.785

When more than one radionuclide is discharged, the total is less than unity.

Gross quantity does not exceed C-14 0.5 Curie/yr, H-3 1 Curie/yr, All others 0.5 Curie/yr.

Average monthly volume of water released on campus 400,000 gallons.
This is a **very conservative** estimate based on information provided by the University Facilities Department.

Radionuclide	Eastern CT State University Disposal Limits to Sewers μCi per month	Based on 400,000 gallons of water released per month on campus equals μCi/gallon
C-14	500	0.00125
H-3	2,500	0.00625
I-125	50	0.000125
S-35	2,500	0.00625

It is evident that the sewerage disposal limits set by the University are much lower than those permitted by 10 CFR Part 20. Furthermore, the amount of radionuclides that we actually release is typically below our University limits.

Depending on the year of our license, sewerage disposal limits have varied somewhat, but they have always been markedly below those permitted by 10 CRF Part 20.
See attachments.

EASTERN CONNECTICUT STATE UNIVERSITY

SUMMARY OF SEWERAGE LIMITS

LICENSE RENEWAL May 15, 2012 – August 31, 2022

MAXIMUM ALLOWED		SEWERAGE DISPOSAL PERMITTED/MONTH *(page 30)*	
H-3	10 milliCi	2,500 microCi	400,000 gallons/month
C-14	10 milliCi	500 microCi	
S-35	100 milliCi	2,500 microCi	
I-125	500 microCi	50 microCi	

LICENSE AMENDMENT May 18, 2009 – June 30, 2012

MAXIMUM ALLOWED		SEWERAGE DISPOSAL PERMITTED/MONTH *(page 30)*	
H-3	5 milliCi	2,500 microCi	400,000 gallons/month
C-14	5 milliCi	500 microCi	
S-35	100 milliCi	2,500 microCi	
I-125	500 microCi	50 microCi	

LICENSE RENEWAL May 23, 2002 – June 30, 2012

MAXIMUM ALLOWED		SEWERAGE DISPOSAL PERMITTED/MONTH *(page 37)*	
H-3	5 milliCi	2,500 microCi	325,000 gallons/month
C-14	5 milliCi	500 microCi	
S-35	75 milliCi	2,500 microCi	
I-125	500 microCi	50 microCi	

LICENSE AMENDMENT August 1, 1998 – June 30, 2002

MAXIMUM ALLOWED		SEWERAGE DISPOSAL PERMITTED/MONTH *(page 35)*	
H-3	5 milliCi	1,000 microCi	3,900,000 gallons/month
C-14	5 milliCi	500 microCi	
S-35	25 milliCi	750 microCi	
I-125	250 microCi	25 microCi	

LICENSE AMENDMENT July 10, 1992 – June 30, 1997 – June 30, 2002

Change in NRC Ruling extended same license to June 30, 2002

MAXIMUM ALLOWED	SEWERAGE DISPOSAL PERMITTED/MONTH
Same as 1991-97	Same as 1991-97

LICENSE RENEWAL February 5, 1991 – June 30, 1997

Still under review, NRC asked for more information December 3, 1991.

We responded March 23, 1992, which included sewerage limits below.

MAXIMUM ALLOWED		SEWERAGE DISPOSAL PERMITTED/DAY *(page 31)*	
H-3	5 milliCi	1,000 microCi	2,500,000 gallons/month
C-14	6 milliCi	100 microCi	
S-35	25 milliCi	100 microCi	
Cl-36	500 microCi	10 microCi	
I-125	200 microCi	5 microCi	

LICENSE AMENDMENT June 1, 1989 – March 31, 1991

MAXIMUM ALLOWED		SEWERAGE DISPOSAL PERMITTED/DAY
H-3	5 milliCi	Same as 1986-91
C-14	6 milliCi	
S-35	25 milliCi	
Cl-36	500 microCi	

LICENSE AMENDMENT June 19, 1986 – March 31, 1991

MAXIMUM ALLOWED		SEWERAGE DISPOSAL PERMITTED/DAY
H-3	5 milliCi	Same as 1986-91
C-14	6 milliCi	
S-35	25 milliCi	
Cl-36	500 microCi	

"FIRST" LICENSE March 18, 1986 – March 31, 1991

MAXIMUM ALLOWED		SEWERAGE DISPOSAL PERMITTED/DAY *(page 22)*
H-3	3 milliCi	No specific amounts listed. Just said
C-14	4 milliCi	as designated in 10 CFR Part 20.303.
Cl-36	500 microCi	

Carbon-14

Sewerage Disposal
and
Disposal of Scintillation Vials
in compliance with
10 CFR Part 20.2005

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

SUMMARY OF SEWERAGE DISPOSAL
FOR CARBON-14

DISPOSAL DATE	CHEMICAL FORM C-14	Reference	SEWERAGE (microCuries)	Remarks
2001 January	D-Glucose	66070421	16.5	Aqueous waste
2001 January	D-Glucose	66070421	1	From scint vials
2003 February	D-Glucose	66070421	18.6	Aqueous waste
2003 February	D-Glucose	66070421	1	From scint vials
2004 February	D-Glucose	66070421	2.3	Aqueous waste
2004 February	D-Glucose	66070421	2.5	From scint vials
2005 February	D-Glucose	66070421	2.3	Aqueous waste
2005 February	D-Glucose	66070421	2.5	From scint vials
2015 December	D-Glucose	66070421	202	Remainder of source
2015 January	Na Bicarbonate	2962-388	500	From original source
2015 February	Na Bicarbonate	2962-388	500	From original source
2015 March	Na Bicarbonate	2962-388	500	From original source
2015 April	Na Bicarbonate	2962-388	500	From original source
2015 May	Na Bicarbonate	2962-388	500	From original source
2015 July	Na Bicarbonate	2962-388	500	From original source
2015 August	Na Bicarbonate	2962-388	500	From original source
2015 September	Na Bicarbonate	2962-388	500	From original source
2015 October	Na Bicarbonate	2962-388	500	From original source
2015 November	Na Bicarbonate	2962-388	500	Remainder of source
2016 January	L-Arginine	3285-293	250	Entire original source

C-14 sewerage @ 500 microCuries per month under NRC licenses 1998-2002; 2002-2012; 2012-2022.

Gross quantity does not exceed C-14 at 0.5 Curie/yr.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 15 June 2000
Isotope/Chemical form: C-14 D-Glucose Lot 66070421
Total Amt: 250 microCuries in 0.25 ml ethanol:water

	USAGE (microCi)			**DISPOSAL (microCi)**				
DATE	NAME	USED	LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
Jan 30, 2001	EC+S	18	232	16.5	0	0.5	1.0	AQ+V
Feb 04, 2003	EC+S	20	212	18.6	0	0.4	1.0	AQ+V
Feb 03, 2004	EC+S	5	207	2.3	0	0.2	2.5	AQ+V
Feb 01, 2005	EC+S	5	202	2.3	0	0.2	2.5	AQ+V
Dec 15, 2015	Colurso	202	NONE	0	0	0	0	202

Elizabeth Cowles + Student experiment.
Each vial (5 grams cocktail) contains C-14 in amounts less than 10 CFR 20.2005.
Aqueous and vial contents into sewerage (biodegradable cocktail).
Permissible C-14 sewerage disposal 500 microCi per month (1998-2002; 2002-2012; 2012-2022).
Emptied scintillation vials discarded into regular trash.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 20-SEPTEMBER-2002
Isotope/Chemical form: C-14 SODIUM BICARBONATE Lot 2962-388
Total Amt: 5.0 milliCuries in 5.0 ml aqueous solution pH 9.5

USAGE (MicroCuries)				**DISPOSAL (MicroCuries)**				
DATE	**NAME**	**USED**	**LEFT**	**AQUEOUS**	**ORGANIC**	**DRY**	**VIALS**	**SEWER**
09-Jan-2015	Colurso	500	4500	0	0	0	0	500
06-Feb-2015	Colurso	500	4000	0	0	0	0	500
10-Mar-2015	Colurso	500	3500	0	0	0	0	500
09-Apr-2015	Colurso	500	3000	0	0	0	0	500
07-May-2015	Colurso	500	2500	0	0	0	0	500
14-July-2015	Colurso	500	2000	0	0	0	0	500
14-Aug-2015	Colurso	500	1500	0	0	0	0	500
11-Sep-2015	Colurso	500	1000	0	0	0	0	500
08-Oct-2015	Colurso	500	500	0	0	0	0	500
12-Nov-2015	Colurso	500	NONE	0	0	0	0	500

Free sample. Never used.

Began disposal in anticipation of G.J. Colurso retirement.

C-14 sewerage @500 microCuries per month under NRC license May 15, 2012 – August 31, 2022.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 20-SEPTEMBER-2002
Isotope/Chemical form: C-14 L-ARGININE Lot 3285-293
Total Amt: 0.25 milliCuries in 2.5 ml ethanol:water

USAGE (MicroCuries)				**DISPOSAL (MicroCuries)**				
DATE	**NAME**	**USED**	**LEFT**	**AQUEOUS**	**ORGANIC**	**DRY**	**VIALS**	**SEWER**
12-Jan-2016	Colurso	250	NONE	0	0	0	0	250

Free sample. Never used.
C-14 sewerage @ 500 microCuries per month under NRC license May 15, 2012 – August 31, 2022.

Hydrogen-3

Sewerage Disposal
and
Disposal of Scintillation Vials
in compliance with
10 CFR Part 20.2005

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

SUMMARY OF SEWERAGE DISPOSAL
FOR HYDROGEN-3

DISPOSAL DATE	CHEMICAL FORM H-3	SEWERAGE (microCuries)	REMARKS
08-14-1986	Corticosterone 86	0.35	Emptied scint vials
08-21-1986	Corticosterone 86	0.11	Emptied scint vials
01-05-1987	Corticosterone 86	0.37	Emptied scint vials
01-06-1987	Corticosterone 86	0.36	Emptied scint vials
04-23-1987	Corticosterone 86	0.21	Emptied scint vials
09-22-1987	Corticosterone 86	18.9	Remainder of stock dilution
09-29-1987	Corticosterone 86	0.22	Emptied scint vials
11-25-1987	Corticosterone 86	0.14	Emptied scint vials
01-07-1988	Testosterone kit 87	0.13	Emptied scint vials
01-07-1988	Aldosterone kit 87	0.07	Emptied scint vials
01-10-1989	Corticosterone 86	0.63	Emptied scint vials
03-21-1989	Corticosterone 86	0.40	Emptied scint vials
08-07-1989	Corticosterone 86	0.15	Emptied scint vials
10-10-1989	Corticosterone 86	0.63	Emptied scint vials
10-10-1989	Corticosterone 86	6.40	Remainder of stock dilution
10-31-1989	Corticosterone 86	0.28	Emptied scint vials
01-02-1990	Testosterone kit 87	0.19	Emptied scint vials
02-07-1990	Corticosterone 86	0.27	Emptied scint vials
05-03-1990	Corticosterone 86	0.30	Emptied scint vials
01-29-1991	Corticosterone 86	0.20	Emptied scint vials
02-06-1991	Corticosterone 86	0.20	Emptied scint vials
04-10-1991	Aldosterone kit 87	1.45	Remainder Sept 1987 source
04-10-1991	Testosterone kit 87	0.16	Remainder April 1987 source
04-22-1991	Corticosterone 86	14.1	Remainder of stock dilution
04-23-1991	Corticosterone 86	0.40	Emptied scint vials
05-03-1991	Corticosterone 86	0.30	Emptied scint vials
12-02-1991	Corticosterone 86	1.60	Remainder of stock dilution
12-03-1991	Corticosterone 86	0.48	Emptied scint vials

Permissible sewerage discharge: See individual inventory sheets (attached).
Gross quantity does not exceed H-3 at 1 Curie/yr.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

SUMMARY OF SEWERAGE DISPOSAL
FOR HYDROGEN-3

DISPOSAL DATE	CHEMICAL FORM H-3	SEWERAGE (microCuries)	REMARKS
10-Feb-1992	Corticosterone 86	0.30	Emptied scint vials
17-Feb-1992	Corticosterone 86	0.30	Emptied scint vials
12-Nov-1992	Corticosterone 86	0.18	Emptied scint vials
25-Nov-1992	Corticosterone 86	0.09	Emptied scint vials
10-Dec-1992	Corticosterone 86	0.09	Emptied scint vials
05-Feb-1993	Corticosterone 86	0.35	Emptied scint vials
10-Feb-1993	Corticosterone 86	1.55	Emptied scint vials
21-Sep-1993	Corticosterone 86	1.15	Emptied scint vials
28-Dec-1993	Corticosterone 86	0.75	Emptied scint vials
28-Dec-1993	Estradiol kit 93	0.3	Emptied scint vials
09-Jan-1995	Corticosterone 86	131.8	Remainder July 1986 source
09-Feb-1995	Corticosterone 95	0.5	Emptied scint vials
17-Feb-1995	Corticosterone 95	0.5	Emptied scint vials
18-July-1995	Aldosterone kit 91	1.2	All of April 1991 source
29-Sep-1995	Corticosterone 95	1.0	Emptied scint vials
29-Sep-1995	Estradiol kit 93	0.6	Remainder Dec 1993 source
20-Oct-1995	Testosterone β 95	0.8	Emptied scint vials
03-Nov-1995	Testosterone β 95	0.8	Emptied scint vials
22-Nov-1995	Testosterone kit 95	0.1	Emptied scint vials
15-Dec-1995	Testosterone kit 95	0.1	Emptied scint vials
31-Jan-1996	Corticosterone 95	1.0	Emptied scint vials
23-Feb-1996	Testosterone kit 95	0.05	Emptied scint vials
08-Mar-1996	Testosterone β 95	0.4	Emptied scint vials
27-Mar-1996	Testosterone kit 95	0.05	Emptied scint vials (End of source)
27-Sep-1996	Testosterone kit 96	0.1	Emptied scint vials
07-Feb-1997	Corticosterone 95	1.0	Emptied scint vials
24-Oct-1997	Corticosterone 95	1.0	Emptied scint vials
10-Dec-1997	Testosterone kit 96	0.2	Emptied scint vials (End of source)

Permissible sewerage discharge: See individual inventory sheets (attached).
Gross quantity does not exceed H-3 at 1 Curie/yr.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

SUMMARY OF SEWERAGE DISPOSAL
FOR HYDROGEN-3

DISPOSAL DATE	CHEMICAL FORM H-3	SEWERAGE (microCuries)	REMARKS
06-Feb-1998	Corticosterone 95	1.2	Emptied scint vials
27-Feb-1998	Corticosterone 95	1.0	Emptied scint vials
12-Feb-1999	Corticosterone 95	1.0	Emptied scint vials
19-Nov-1999	Corticosterone 95	2.0	Emptied scint vials
03-Feb-2000	Corticosterone 95	0.8	Emptied scint vials
31-Jan-2001	Corticosterone 95	1.0	Emptied scint vials
31-Jan-2001	D-Glucose H-3 00	1.0	Emptied scint vials
01-Feb-2001	D-Glucose H-3 00	16.5	Aqueous waste
21-June-2001	Corticosterone 95	182	Remainder Feb 1995 source
07-Mar-2002	Corticosterone 01	1.0	Emptied scint vials
03-May-2002	Corticosterone 01	1.0	Emptied scint vials
30-Jan-2003	Corticosterone 01	1.0	Emptied scint vials
06-Feb-2003	D-Glucose H-3 00	1.0	Emptied scint vials
06-Feb-2003	D-Glucose H-3 00	18.6	Aqueous waste
13-Oct-2003 thru 23-Feb-2015	Corticosterone 01	NONE	Intact scint vials in trash
03-Feb-2004	D-Glucose H-3 00	2.5	Emptied scint vials
03-Feb-2004	D-Glucose H-3 00	2.3	Aqueous waste
01-Feb-2005	D-Glucose H-3 00	2.5	Emptied scint vials
01-Feb-2005	D-Glucose H-3 00	2.3	Aqueous waste
08-Mar-2005	Corticosterone kit 04	NONE	Intact scint vials in trash
15-Mar-2005	Corticosterone kit 04	NONE	Intact scint vials in trash
Dec. 15, 2015	D-Glucose H-3 00	202	Remainder of 301832
Jan. 12, 2016	Testosterone β 95	240	Remainder of 3186-140
Feb. 10, 2016	Corticosterone kit 04	0.2	Remainder of 07120021
Feb. 10, 2016	Estradiol 02	250	All of 3467-652
March 22, 2016	Corticosterone 01	175	Remainder of 3363-528
March 22, 2016	Sucrose[Fructose] 02	250	All of 3467-129

Permissible sewerage discharge: See individual inventory sheets (attached).
Gross quantity does not exceed H-3 at 1 Curie/yr.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 07-30-86
Isotope/Chemical form: H-3/Corticosterone
Total Amt: 250 microCuries in 250 µl liquid

		USAGE (microCi)		DISPOSAL (microCi)				
DATE	NAME	USED	LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
08-06-86	GC	0.4	249.6	0	0	0.25	0.15	vials
08-07-86	GC	0.4	249.2	0	0	0.34	0.06	vials
08-08-86	GC	0.6	248.6	0	0	0.53	0.07	vials
08-11-86	GC	0.8	247.8	0	0	0.73	0.07	vials
08-13-86	GC	0.8	247.0	0	0	0.69	0.11	vials
08-21-86	GC	0.8	246.2	0	0	0.69	0.11	vials
08-25-86	GC	0.8	245.4	0	0	0.67	0.13	vials
08-26-86	GC	0.8	244.6	0	0	0.67	0.13	vials
08-27-86	GC	0.8	243.8	0	0	0.65	0.15	vials
09-04-86	GC	0.8	243.0	0	0	0.70	0.10	vials
09-05-86	GC	0.8	242.2	0	0	0.69	0.11	vials
02-03-87	GC+S	1.1	241.1	0	0	1.03	0.07	vials
02-10-87	GC+S	2.2	238.9	0	0	2.06	0.14	vials
09-22-87	GC	18.9	220.0	0	0	0.00	0.00	18.9
09-22-87	GC+S	2.7	217.3	0	0	2.48	0.22	vials
10-20-87	GC+S	3.0	214.3	0	0	2.86	0.14	vials
08-23-88	GC	0.8	213.5	0	0	0.73	0.07	vials
08-24-88	GC	1.5	212.0	0	0	1.35	0.15	vials
09-22-88	GC	1.8	210.2	0	0	1.64	0.16	vials
12-29-88	GC	1.5	208.7	0	0	1.37	0.13	vials
12-30-88	GC	1.2	207.5	0	0	1.08	0.12	vials

Gloria Colurso + Student experiment.
Each vial (5 grams cocktail) contains 0.03 microCi or less of H-3.
Vial contents into sewerage (biodegradable cocktail).
Emptied scintillation vials discarded into regular trash.
Permissible H-3 sewerage disposal 10 CFR Part 20.303 (1986-1991).
Permissible H-3 sewerage disposal 1,000 microCi per month (1991-1997).

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 07-30-86 (continued)
Isotope/Chemical form: H-3/Corticosterone
Total Amt: 250 microCuries in 250 µl liquid

		USAGE (microCi)		DISPOSAL (microCi)				
DATE	NAME	USED	LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
03-09-89	GC+S	1.8	205.7	0	0	1.60	0.20	vials
03-16-89	GC+S	1.8	203.9	0	0	1.60	0.20	vials
07-14-89	GC	1.5	202.4	0	0	1.35	0.15	vials
09-12-89	GC+S	1.8	200.6	0	0	1.62	0.18	vials
10-03-89	GC+S	4.2	196.4	0	0	3.75	0.45	vials
10-10-89	GC	6.4	190.0	0	0	0.00	0.00	6.4
10-10-89	GC+S	1.5	188.5	0	0	1.35	0.15	vials
10-26-89	GC+S	1.4	187.1	0	0	1.27	0.13	vials
01-30-90	GC+S	2.9	184.2	0	0	2.63	0.27	vials
05-01-90	GC+S	3.2	181.0	0	0	2.90	0.30	vials
01-28-91	GC+S	2.1	178.9	0	0	1.90	0.20	vials
02-04-91	GC+S	2.1	176.8	0	0	1.90	0.20	vials
04-22-91	GC+S	2.7	174.1	0	0	2.30	0.40	vials
04-22-91	GC	14.1	160.0	0	0	0.00	0.00	14.1
04-29-91	GC+S	2.4	157.6	0	0	2.10	0.30	vials
12-02-91	GC+S	1.6	156.0	0	0	0.00	0.00	1.6
12-02-91	GC+S	3.2	152.8	0	0	2.72	0.48	vials
02-06-92	GC+S	2.4	150.4	0	0	2.10	0.30	vials
02-13-92	GC+S	2.4	148.0	0	0	2.10	0.30	vials

Gloria Colurso + Student experiment.
Each vial (5 grams cocktail) contains 0.03 microCi or less of H-3.
Vial contents into sewerage (biodegradable cocktail).
Emptied scintillation vials discarded into regular trash.
Permissible H-3 sewerage disposal 10 CFR Part 20.303 (1986-1991).
Permissible H-3 sewerage disposal 1,000 microCi per month (1991-1997).

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 07-30-86 (continued)
Isotope/Chemical form: H-3/Corticosterone
Total Amt: 250 microCuries in 250 µl liquid

		USAGE (microCi)		DISPOSAL (microCi)				
DATE	NAME	USED	LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
11-11-92	GC+S	1.5	146.5	0	0	1.32	0.18	vials
11-20-92	GC+S	1.5	145.0	0	0	1.41	0.09	vials
12-04-92	GC+S	1.5	143.5	0	0	1.41	0.09	vials
02-04-93	GC+S	1.8	141.7	0	0	1.45	0.35	vials
02-08-93	GC+S	4.5	137.2	0	0	2.95	1.55	vials
09-20-93	GC+S	3.3	133.9	0	0	2.15	1.15	vials
12-06-93	GC+S	2.1	131.8	0	0	1.35	0.75	vials
01-09-95	GC	131.8	NONE	NONE	NONE	NONE	NONE	131.8

Gloria Colurso + Student experiment.
Each vial (5 grams cocktail) contains 0.03 microCi or less of H-3.
Vial contents into sewerage (biodegradable cocktail).
Emptied scintillation vials discarded into regular trash.
Permissible H-3 sewerage disposal 10 CFR Part 20.303 (1986-1991).
Permissible H-3 sewerage disposal 1,000 microCi per month (1991-1997).

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 04-27-87
Isotope/Chemical form: H-3/Testosterone KIT
Total Amt: 1.2 microCuries in 12 ml liquid

	USAGE (microCi)			**DISPOSAL (microCi)**				
DATE	NAME	USED	LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
11-24-87	GC+S	0.42	0.78	0	0	0.29	0.13	vials
10-31-89	GC+S	0.62	0.16	0	0	0.43	0.19	vials
04-10-91	GC	0.16	NONE	0	0	0	0	0.16

Gloria Colurso + Student experiment.
Each vial (5 grams cocktail) contains 0.02 microCi or less of H-3.
Vial contents into sewerage (biodegradable cocktail).
Emptied scintillation vials discarded into regular trash.
Permissible H-3 sewerage disposal 10 CFR Part 20.303 (1986-1991).
Permissible H-3 sewerage disposal 1,000 microCi per month (1991-1997).

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 09/01/87
Isotope/Chemical form: H-3/Aldosterone KIT
Total Amt: 2 microCuries in 12 ml liquid

	USAGE (microCi)			**DISPOSAL (microCi)**				
DATE	NAME	USED	LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
11-24-87	GC+S	0.55	1.45	0	0	0.48	0.07	vials
04-10-91	GC	1.45	NONE	0	0	0	0	1.45

Gloria Colurso + Student experiment.
Each vial (5 grams cocktail) contains 0.02 microCi or less of H-3.
Vial contents into sewerage (biodegradable cocktail).
Emptied scintillation vials discarded into regular trash.
Permissible H-3 sewerage disposal 10 CFR Part 20.303 (1986-1991).
Permissible H-3 sewerage disposal 1,000 microCi per month (1991-1997).

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 04/25/91
Isotope/Chemical form: H-3/Aldosterone KIT
Total Amt: 1.2 microCuries in 12 ml liquid

	USAGE (microCi)			DISPOSAL (microCi)				
DATE	NAME	USED	LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
07-18-95	GC	1.2	NONE	0	0	0	0	1.2

Permissible H-3 sewerage disposal 1,000 microCi per month NRC license 1991-1997.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 12/03/93
Isotope/Chemical form: H-3/Estradiol KIT
Total Amt: 1.2 microCuries in 12 ml liquid

	USAGE (microCi)			**DISPOSAL (microCi)**				
DATE	NAME	USED	LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
12-06-93	GC	0.6	0.6	0	0	0.3	0.3	vials
09-29-95	GC	0.6	NONE	0	0	0	0	0.6

Each vial (5 grams cocktail) contains 0.02 microCi or less of H-3.
Vial contents into sewerage (biodegradable cocktail).
Emptied scintillation vials discarded into regular trash.
Permissible H-3 sewerage disposal 1,000 microCi per month NRC license 1991-1997.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: February 02, 1995
Isotope/Chemical form: H-3/Corticosterone
Total Amt: 250 microCi in 250 ul liquid

		USAGE (microCi)		**DISPOSAL (microCi)**				
DATE	NAME	USED	LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
06-Feb-95	GC+S	3.0	247	0	0	2.5	0.5	vials
13-Feb-95	GC+S	3.0	244	0	0	2.5	0.5	vials
25-Sep-95	GC+S	6.0	238	0	0	5.0	1.0	vials
30-Jan-96	GC+S	5.0	233	0	0	4.0	1.0	vials
03-Feb-97	GC+S	5.0	228	0	0	4.0	1.0	vials
29-Sep-97	GC+S	6.0	222	0	0	5.0	1.0	vials
02-Feb-98	GC+S	5.0	217	0	0	4.0	1.0	vials
04-Feb-98	GC	1.0	216	0	0	0.8	0.2	vials
09-Feb-98	GC+S	6.0	210	0	0	5.0	1.0	vials
01-Feb-99	GC+S	6.0	204	0	0	5.0	1.0	vials
04-Oct-99	GC+S	6.0	198	0	0	5.0	1.0	vials
15-Nov-99	GC+S	6.0	192	0	0	5.0	1.0	vials
31-Jan-00	GC+S	4.0	188	0	0	3.2	0.8	vials
29-Jan-01	GC+S	6.0	182	0	0	5.0	1.0	vials
21-Jun-01	GC	182	NONE	0	0	0	0	182

Gloria Colurso + Student experiment.
Each vial (5 grams cocktail) contains 0.03 microCi or less of H-3.
Vial contents emptied into sewer (biodegradable cocktail).
Emptied scintillation vials discarded into regular trash.
Permissible H-3 sewerage disposal 1,000 microCi per month NRC license 1991-2002.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: July 18, 1995 (Lot number 3186-140)
Isotope/Chemical form: H-3/Testosterone (1β,2β)
Total Amt: 0.25 milliCuries in 0.25 ml ethanol

USAGE (microCi)				DISPOSAL (microCi)				
DATE	**NAME**	**USED**	**LEFT**	**AQUEOUS**	**ORGANIC**	**DRY**	**VIALS**	**SEWER**
Oct 13, 1995	GC+S	2.0	248	0	0	1.6	0.4	vials
Oct 18, 1995	GC+S	2.0	246	0	0	1.6	0.4	vials
Oct 25, 1995	GC+S	2.0	244	0	0	1.6	0.4	vials
Nov 01, 1995	GC+S	2.0	242	0	0	1.6	0.4	vials
Mar 05, 1996	GC+S	2.0	240	0	0	1.6	0.4	vials
Jan 12, 2016	Colurso	240	NONE	0	0	0	0	240

Gloria Colurso + Student experiment.
Each vial (5 grams cocktail) contains H-3 in amounts less than 10 CFR 20.2005.
Vial contents emptied into sewer (biodegradable cocktail).
Permissible H-3 sewerage disposal 1,000 microCi per month (1991-2002).
Permissible H-3 sewerage disposal 2,500 microCi per month (2002-2022).

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: November 15, 1995 (Reference 07189002)
Isotope/Chemical form: H-3/Testosterone KIT
Total Amt: 1.2 microCuries in 12 ml liquid

	USAGE (microCi)			**DISPOSAL (microCi)**				
DATE	NAME	USED	LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
11-20-95	GC+S	0.4	0.8	0	0	0.30	0.10	vials
11-29-95	GC+S	0.2	0.6	0	0	0.15	0.05	vials
12-05-95	GC+S	0.2	0.4	0	0	0.15	0.05	vials
02-13-96	GC+S	0.2	0.2	0	0	0.15	0.05	vials
03-26-96	GC+S	0.2	NONE	0	0	0.15	0.05	vials

Gloria Colurso + Student experiment.
Each vial (5 grams cocktail) contains 0.02 microCi or less of H-3.
Vial contents into sewerage (biodegradable cocktail).
Emptied scintillation vials discarded into regular trash.
Permissible H-3 sewerage disposal 1,000 microCi per month NRC license 1991-1997.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: September 12, 1996
Isotope/Chemical form: H-3/Testosterone KIT
Total Amt: 1.2 microCuries in 12 ml liquid

	USAGE (microCi)			DISPOSAL (microCi)				
DATE	NAME	USED	LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
25-Sep-96	GC+S	0.4	0.8	0	0	0.30	0.10	vials
01-Dec-97	GC+S	0.8	NONE	0	0	0.60	0.20	vials

Gloria Colurso + Student experiment.
Each vial (5 grams cocktail) contains 0.02 microCi or less of H-3.
Vial contents into sewerage (biodegradable cocktail).
Emptied scintillation vials discarded into regular trash.
Permissible H-3 sewerage disposal 1,000 microCi per month (1991-2002).

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 15 June 2000
Isotope/Chemical form: H-3 D-Glucose (LOT #301832)
Total Amt: 0.25 milliCuries in 0.25 ml ethanol:water (9:1)

	USAGE (microCi)			**DISPOSAL (microCi)**				
DATE	NAME	USED	LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
Jan 30, 2001	EC+S	18	232	16.5	0	0.5	1.0	AQ+V
Feb 04, 2003	EC+S	20	212	18.6	0	0.4	1.0	AQ+V
Feb 03, 2004	EC+S	5	207	2.3	0	0.2	2.5	AQ+V
Feb 01, 2005	EC+S	5	202	2.3	0	0.2	2.5	AQ+V
Dec 15, 2015	Colurso	202	NONE	0	0	0	0	202

Elizabeth Cowles + Student experiment.
Each vial (5 grams cocktail) contains H-3 in amounts less than 10 CFR 20.2005.
Aqueous and vial contents into sewerage (biodegradable cocktail).
Permissible H-3 sewerage disposal 1,000 microCi per month (1998-2002).
Permissible H-3 sewerage disposal 2,500 microCi per month (2002-2022).

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: March 27, 2001
Isotope/Chemical form: H-3/Corticosterone (LOT #3363-528)
Total Amt: 0.25 milliCuries in 0.25 ml ethanol

USAGE (MICROCURIES)				DISPOSAL (MICROCURIES)				
DATE	NAME	USED	LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
25-Feb-2002	GC+S	5	245	0	0	4	1	vials
08-Apr-2002	GC+S	5	240	0	0	4	1	vials
27-Jan-2003	GC+S	5	235	0	0	4	1	vials
13-Oct-2003	GC+S	5	230	0	0	4	1	none
02-Feb-2004	GC+S	5	225	0	0	4	1	none
31-Jan-2005	GC+S	5	220	0	0	4	1	none
31-Oct-2005	GC+S	5	215	0	0	4	1	none
30-Jan-2006	GC+S	5	210	0	0	4	1	none
29-Jan-2007	GC+S	5	205	0	0	4	1	none
08-Oct-2007	GC+S	5	200	0	0	4	1	none
04-Feb-2008	GC+S	5	195	0	0	4	1	none
02-Feb-2009	GC+S	5	190	0	0	4	1	none
01-Feb-2010	GC+S	5	185	0	0	4	1	none
31-Jan-2011	GC+S	5	180	0	0	4	1	none
30-Jan-2012	GC+S	5	175	0	0	4	1	none
04-Feb-2013	GC+S	NONE	175	0	0	0	0	none
03-Feb-2014	GC+S	NONE	175	0	0	0	0	none
23-Feb-2015	GC+S	NONE	175	0	0	0	0	none
22-Mar-2016	Colurso	175	NONE	0	0	0	0	175

Gloria Colurso + Student experiment
Each vial (5 grams cocktail) contains H-3 in amounts less than 10 CFR 20.2005.
Prior to statement below, vial contents emptied into sewer (biodegradable cocktail).
Permissible H-3 sewerage disposal 1,000 microCi per month (1991-2002).
Permissible H-3 sewerage disposal 2,500 microCi per month (2002-2022).

Beginning October 13, 2003: H-3 Scintillation vials (with biodegradable cocktail) that comply with 10 CFR 20.2005 will be disposed of capped and intact into the regular trash. Records of such disposal will be maintained on the master inventory list for each appropriate radioisotope.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: October 7, 2004 REF# 07120021
Isotope/Chemical form: H-3/Corticosterone **KIT**
Total Amt: 1.2 microCuries in 12 ml liquid

USAGE (microCi)				DISPOSAL (microCi)				
DATE	**NAME**	**USED**	**LEFT**	**AQUEOUS**	**ORGANIC**	**DRY**	**VIALS**	**SEWER**
08-Mar-2005	GC+S	0.5	0.7	0	0	0.4	0.1	none
15-Mar-2005	GC+S	0.5	0.2	0	0	0.4	0.1	none
10-Feb-2016	GC	0.2	NONE	0	0	0	0	0.2

Gloria Colurso + Student experiment: Honors thesis research for Nick Murdock.
Each vial (5 grams) cocktail contains H-3 in amounts less than 10 CFR 20.2005.
Permissible H-3 sewerage disposal 2,500 microCi per month (2002-2022).

Beginning October 13, 2003: H-3 Scintillation vials (with biodegradable cocktail) that comply with 10 CFR 20.2005 will be disposed of capped and intact into the regular trash. Records of such disposal will be maintained on the master inventory list for each appropriate radioisotope.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 20-SEPTEMBER-2002
Isotope/Chemical form: H-3 ESTRADIOL (LOT #3467-652)
Total Amt: 0.25 milliCuries in 0.25 ml ethanol

USAGE (MICROCURIES)				DISPOSAL (MICROCURIES)				
DATE	**NAME**	**USED**	**LEFT**	**AQUEOUS**	**ORGANIC**	**DRY**	**VIALS**	**SEWER**
10-Feb-2016	Colurso	250	NONE	0	0	0	0	250

Free sample. Never used.
H-3 sewerage @ 2,500 microCuries per month under NRC license May 15, 2012 – August 31, 2022.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 20-SEPTEMBER-2002
Isotope/Chemical form: H-3 SUCROSE[FRUCTOSE] LOT #3467-129
Total Amt: 0.25 milliCuries in 0.25 ml ethanol:water (7:3)

USAGE (MICROCURIES)				DISPOSAL (MICROCURIES)				
DATE	**NAME**	**USED**	**LEFT**	**AQUEOUS**	**ORGANIC**	**DRY**	**VIALS**	**SEWER**
22-March-2016	Colurso	250	NONE	0	0	0	0	250

Free sample. Never used.
H-3 sewerage @ 2,500 microCuries per month under NRC license May 15, 2012 – August 31, 2022.

Iodine-125

Sewerage Disposal

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

SUMMARY OF SEWERAGE DISPOSAL
FOR IODINE-125

DISPOSAL DATE	CHEMICAL FORM I-125	SEWERAGE (microCuries)	REMARKS
04-June-1993	ACTH Kit (1993)	0.22	Aqueous waste
14-Sept-1994	ACTH Kit (1993)	0.07	Remainder of source
27-Oct-1997	TSH Kit (1997)	2.0	Aqueous waste
15-June-1999	TSH Kit (1997)	12.0	Remainder of source
27-Oct-1997	Thyrx T4 Kit (1997)	0.5	Aqueous waste
15-June-1999	Thyrx T4 Kit (1997)	3.9	Remainder of source
16-Apr-2002	ACTH Kit (2002)	0.15	Aqueous waste
15-Jan-2008	ACTH Kit (2002)	0.15	Remainder of source
08-May-2002	Mono T4 Kit (2002)	1.0	Aqueous waste
15-Jan-2008	Mono T4 Kit (2002)	7.0	Remainder of source
19-Nov-2007	ACTH Kit (2007)	0.15	Aqueous waste
27-June-2012	ACTH Kit (2007)	0.15	Remainder of source
19-Nov-2007	Mono T4 Kit (2007)	2.0	Aqueous waste
27-June-2012	Mono T4 Kit (2007)	5.0	Remainder of source
23-Feb-2016	Leptin (2002)	5.0	All of original source

I-125 sewerage @ 5 microCuries per month under NRC license 1991-1997.
I-125 sewerage @ 25 microCuries per month under NRC license 1998-2002.
I-125 sewerage @ 50 microCuries per month under NRC license 2002-2012.
I-125 sewerage @ 50 microCuries per month under NRC license 2012-2022.

Gross quantity does not exceed "All Others" at 0.5 Curie/yr.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: May 21, 1993 (RACI9306)
Isotope/Chemical form: I-125/ACTH Kit
Total Amt: 0.4 microCi in 5.5 ml liquid

	USAGE (microCi)			**DISPOSAL (microCi)**				
DATE	NAME	USED	LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
04-June-93	GC	0.33	0.07	(sewer)	0	0.11	0	0.22
14-Sept-94	GC	0.07	NONE	0	0	0	0	0.07

Aqueous waste deposited directly into sewer.
I-125 sewerage @ 5 microCuries per month under NRC license 1991-1997.
Dry waste is assay tubes for decay in storage.

Dry waste into regular trash:

0.02 mR/hr or less
Background

0.02 mR/hr or less
Contents at surface

18 65%
Background CPM %Efficiency

24
Average CPM swipe contents

Gloria J. Colucci
Signature

May 20, 1996
Date

Geiger-Mueller Meter (Model 3 Serial 43323) Probe (Model 44-7 Serial 028749)
RackBeta LSC, Model LKB 1218-011, Serial 180374

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: October 23, 1997
Isotope/Chemical form: I-125/TSH Kit
Total Amt: 16.0 microCi

USAGE (microCi)				DISPOSAL (microCi)				
DATE	NAME	USED	LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
27-Oct-97	GC+S	4.0	12.0	(sewer)	0	2.0	0	2.0
15-Jun-99	GC	12.0	NONE	0	0	0	0	12.0

Gloria Colurso + S student experiment.
Aqueous waste deposited directly into sewer.
I-125 sewerage @ 5 microCuries per month under NRC license 1991-1997.
I-125 sewerage @ 25 microCuries per month under NRC license 1998-2002.
Dry waste is assay tubes for decay in storage.

Dry waste into regular trash:

0.02 mR/hr or less — Background
0.02 mR/hr or less — Contents at surface

19 — Background CPM
65% — %Efficiency
26 — Average CPM swipe contents

Gloria J. Colurso — Signature
May 31, 2000 — Date

Geiger-Mueller Meter (Model 3 Serial 43323) Probe (Model 44-7 Serial 028749)
RackBeta LSC, Model LKB 1218-011, Serial 180374

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: October 23, 1997
Isotope/Chemical form: I-125/Thyroxine T4 Kit
Total Amt: 5.2 microCi

	USAGE (microCi)			**DISPOSAL (microCi)**				
DATE	NAME	USED	LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
27-Oct-97	GC+S	1.3	3.9	(sewer)	0	0.8	0	0.5
15-Jun-99	GC	3.9	NONE	0	0	0	0	3.9

Gloria Colurso + S student experiment.
Aqueous waste deposited directly into sewer.
I-125 sewerage @ 5 microCuries per month under NRC license 1991-1997.
I-125 sewerage @ 25 microCuries per month under NRC license 1998-2002.
Dry waste is assay tubes for decay in storage.

Dry waste into regular trash:

0.02 mR/hr or less — Background
0.02 mR/hr or less — Contents at surface

19 — Background CPM
65% — %Efficiency
26 — Average CPM swipe contents

Gloria J. Colurso — Signature
May 31, 2000 — Date

Geiger-Mueller Meter (Model 3 Serial 43323) Probe (Model 44-7 Serial 028749)
RackBeta LSC, Model LKB 1218-011, Serial 180374

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: APRIL 3, 2002
Isotope/Chemical form: I-125 ACTH Kit
Total Amt: 0.4 microCuries (reconstituted with 5.5 ml water)

	USAGE (microCi)			DISPOSAL (microCi)			
Date	**Name**	**Used**	**Left**	**Aqueous**	**Dry**	**Vials**	**Sewer**
16-Apr-02	GC+S	0.25	0.15	sewer	0.10	0	0.15
15-Jan-08	GC	0.15	NONE	sewer	0	0	0.15

Gloria Colurso + S designates student experiment.
Aqueous waste deposited directly into sewer.
I-125 sewerage @ 25 microCuries per month: NRC license 1998-2002.
I-125 sewerage @ 50 microCuries per month: NRC license 2002-2012.
Dry waste is assay tubes for decay in storage

Dry waste into regular trash.

0.02 mR/hr or less
Background

0.02 mR/hr or less
Contents at surface

19 65%
Background CPM; %Efficiency

29
Average CPM swipe contents

Gloria J. Colurso
Signature

July 22, 2005
Date

Geiger-Mueller Meter (Model 3 Serial 43323) Probe (Model 44-7 Serial 028749)
RiaCalc Wizard Gamma Counter, Model 1470-001, Serial 4701692

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: APRIL 3, 2002
Isotope/Chemical form: I-125 T4 Monoclonal solid phase RIA
Total Amt: 9.0 microCuries in 110 ml buffer

	USAGE (microCi)			DISPOSAL (microCi)			
Date	**Name**	**Used**	**Left**	**Aqueous**	**Dry**	**Vials**	**Sewer**
08-May-02	GC+S	2	7	sewer	1	0	1
15-Jan-08	GC	7	NONE	sewer	0	0	7

Gloria Colurso + S designates student experiment.

Aqueous waste deposited directly into sewer.

I-125 sewerage @ 25 microCuries per month: NRC license 1998-2002.

I-125 sewerage @ 50 microCuries per month: NRC license 2002-2012.

Dry waste is assay tubes for decay in storage

Dry waste into regular trash.

0.02 mR/hr or less
Background

0.02 mR/hr or less
Contents at surface

19 65%
Background CPM; %Efficiency

29
Average CPM swipe contents

Gloria J. Colurso
Signature

July 22, 2005
Date

Geiger-Mueller Meter (Model 3 Serial 43323) Probe (Model 44-7 Serial 028749)
RiaCalc Wizard Gamma Counter, Model 1470-001, Serial 4701692

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: NOVEMBER 7, 2007
Isotope/Chemical form: I-125 ACTH Kit
Total Amt: 0.4 microCuries (reconstituted with 5.5 ml water)

	USAGE (microCi)				**DISPOSAL (microCi)**		
Date	**Name**	**Used**	**Left**	**Aqueous**	**Dry**	**Vials**	**Sewer**
19-Nov-07	GC+S	0.25	0.15	sewer	0.10	0	0.15
27-June-12	GC	0.15	NONE	sewer	0	0	0.15

Gloria Colurso + S designates student experiment.
Aqueous waste deposited directly into sewer.
I-125 sewerage @ 50 microCuries per month: NRC license 2002-2012.
I-125 sewerage @ 50 microCuries per month: NRC license 2012-2022.
Dry waste is assay tubes for decay in storage

Dry waste into regular trash.

0.02 mR/hr or less
Background

0.02 mR/hr or less
Contents at surface

18 76%
Background CPM; %Efficiency

22
Average CPM swipe contents

Gloria J. Colurso
Signature

Nov. 10, 2010
Date

Geiger-Mueller Meter (Model 3 Serial 43323) Probe (Model 44-7 Serial 028749)
TriCarb LSC, Model 2810TR, Serial DG08084184

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: NOVEMBER 7, 2007
Isotope/Chemical form: I-125 T4 Monoclonal solid phase RIA
Total Amt: 9.0 microCuries in 110 ml buffer

USAGE (microCi)				DISPOSAL (microCi)			
Date	**Name**	**Used**	**Left**	**Aqueous**	**Dry**	**Vials**	**Sewer**
19-Nov-07	GC+S	4.0	5.0	sewer	2.0	0	2.0
27-June-12	GC	5.0	NONE	sewer	0	0	5.0

Gloria Colurso + S designates student experiment.
Aqueous waste deposited directly into sewer.
I-125 sewerage @ 50 microCuries per month: NRC license 2002-2012.
I-125 sewerage @ 50 microCuries per month: NRC license 2012-2022.
Dry waste is assay tubes for decay in storage

Dry waste into regular trash.

0.02 mR/hr or less
Background

0.02 mR/hr or less
Contents at surface

18 76%
Background CPM; %Efficiency

22
Average CPM swipe contents

Gloria J. Colurso
Signature

Nov. 10, 2010
Date

Geiger-Mueller Meter (Model 3 Serial 43323) Probe (Model 44-7 Serial 028749)
TriCarb LSC, Model 2810TR, Serial DG08084184

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: April 22, 2002
Isotope/Chemical form: I-125 LEPTIN (murine recombinant) IC51720
Total Amt: 5.0 microCuries in 0.20 ml aqueous

	USAGE (microCuries)			DISPOSAL (microCuries)			
Date	**Name**	**Used**	**Left**	**Aqueous**	**Dry**	**Vials**	**Sewer**
23-Feb-2016	Colurso	5.0	NONE	0	0	0	5.0

Free sample. Never used.

Permissible I-125 sewerage disposal 50 microCi per month: NRC license 2012-2022.

Sulfur-35

Sewerage Disposal

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

SUMMARY OF SEWERAGE DISPOSAL
FOR SULFUR-35

DATE RECEIVED	CHEMICAL FORM S-35	SEWERAGE (microCuries)	REMARKS (AqW = aqueous waste)
Nov. 10, 1986	Sulfuric acid	Negligible	AqW solidified for decay-in-storage.
Aug. 26, 1988	Sulfuric acid	Negligible	AqW solidified for decay-in-storage.
Nov. 13, 1989	Sulfuric acid	Negligible	AqW solidified for decay-in-storage.
Oct. 2, 1990	Sulfuric acid	Negligible	AqW solidified for decay-in-storage.
March 28, 1991	Sulfuric acid	Negligible	AqW solidified for decay-in-storage.
Aug. 15, 1991	Sulfuric acid	Negligible	AqW solidified for decay-in-storage.
Sept. 23, 1991	Sulfuric acid	Negligible	AqW solidified for decay-in-storage.
Sept. 3, 1992	L-Methionine	Negligible	AqW solidified for decay-in-storage.
Sept. 8, 1992	Sulfuric acid	Negligible	AqW solidified for decay-in-storage.
Feb. 2, 1993	Sulfuric acid	Negligible	AqW solidified for decay-in-storage.
Sept. 1, 1993	Sulfuric acid	Negligible	AqW solidified for decay-in-storage.
Sept. 14, 1994	Sulfuric acid	Negligible	AqW solidified for decay-in-storage.
Oct. 10, 1995	Sulfuric acid	Negligible	AqW solidified for decay-in-storage.
Feb. 6, 1996	Sulfuric acid	Negligible	AqW solidified for decay-in-storage.
April 8, 1996	Sulfuric acid	Negligible	AqW solidified for decay-in-storage.
April 10, 1996	Sulfuric acid	Negligible	AqW solidified for decay-in-storage.
Oct. 28, 1997	Sulfuric acid	Negligible	AqW solidified for decay-in-storage.
Oct. 15, 1998	Sulfuric acid	887	Liquid AqW decay-in-storage, then sewer.
Feb. 9, 2000	Sulfuric acid	900	Liquid AqW decay-in-storage, then sewer.
Nov. 28, 2000	Sulfuric acid	889	Liquid AqW decay-in-storage, then sewer.

S-35 sewerage @ 750 microCuries per month under NRC license 1998-2002.
S-35 sewerage @ 2,500 microCuries per month under NRC license 2002-2012.
S-35 sewerage @ 2,500 microCuries per month under NRC license 2012-2022.
Gross quantity does not exceed "All Others" at 0.5 Curie/yr.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

SUMMARY OF SEWERAGE DISPOSAL
FOR SULFUR-35

DATE RECEIVED	CHEMICAL FORM S-35	SEWERAGE (microCuries)	REMARKS (AqW = aqueous waste)
Oct. 23, 2001	Sulfuric acid	1,641	Liquid AqW to sewer after each use. See inventory sheet for individual disposal dates.
March 25, 2002	Sulfuric acid	2,600	Liquid AqW to sewer after each use. See inventory sheet for individual disposal dates.
Sept. 20, 2002	Sulfuric acid	1,715	Liquid AqW to sewer after each use. See inventory sheet for individual disposal dates.
Nov. 11, 2002	Sulfuric acid	1,775	Liquid AqW to sewer after each use. See inventory sheet for individual disposal dates.
Aug. 6, 2003	Sulfuric acid	454	Liquid AqW to sewer after each use. See inventory sheet for individual disposal dates.
Nov. 17, 2003	Sulfuric acid	4,570	Liquid AqW to sewer after each use. See inventory sheet for individual disposal dates.
Nov. 8, 2005	Sulfuric acid	4,795	Liquid AqW to sewer after each use. See inventory sheet for individual disposal dates.
Nov. 6, 2008	Sulfuric acid	1,775	Liquid AqW to sewer after each use. See inventory sheet for individual disposal dates.
Feb. 14, 2011	Sulfuric acid	830	Liquid AqW to sewer after each use. See inventory sheet for individual disposal dates.
Oct. 31, 2011	Sulfuric acid	500	Some liquid AqW to sewer after each use. See inventory sheet for individual disposal dates. Remaining liquid AqW decay-in-storage, then trash.
March 8, 2012	Sulfuric acid	500	Some liquid AqW to sewer after each use. See inventory sheet for individual disposal dates. Remaining liquid AqW decay-in-storage, then trash.

S-35 sewerage @ 750 microCuries per month under NRC license 1998-2002.
S-35 sewerage @ 2,500 microCuries per month under NRC license 2002-2012.
S-35 sewerage @ 2,500 microCuries per month under NRC license 2012-2022.
Gross quantity does not exceed "All Others" at 0.5 Curie/yr.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 11-10-86 **Isotope/Chemical form:** S-35/Sulfuric acid **Total Amt:** 10 milliCi in 1.0 ml liquid

		USAGE (microCi)		**DISPOSAL** (microCi)				
DATE	USER	AMT USED	AMT LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
11-12-86	MA	100	9,900	75	0	20	<5	0
11-16-86	MA	500	9,400	380	0	115	<5	0
11-17-86	MA+S	800	8,600	610	0	185	<5	0
11-20-86	CB+S	100	8,500	75	0	20	<5	0
12-02-86	MA+S	100	8,400	75	0	20	<5	0
12-04-86	CB+S	100	8,300	75	0	20	<5	0
11-19-87	CB+S	1,100	7,200	825	<10	265	Org	0
12-03-87	CB+S	1,000	6,200	920	<10	70	Org	0
04-21-88	MA+S	2,500	3,700	2,310	0	175	<15	0
04-28-88	MA+S	3,700	None	3,425	0	260	<15	0

+ Student experiment.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 08-26-88 **Isotope/Chemical form:** S-35/Sulfuric acid **Total Amt:** 2 milliCi in 1.0 ml liquid

		USAGE (microCi)		**DISPOSAL (microCi)**				
DATE	USER	AMT USED	AMT LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
10-18-88	MA+S	100	1,900	75	0	24	1	0
12-01-88	CB+S	100	1,800	75	0	20	<5	0
12-08-88	CB+S	100	1,700	75	0	20	<5	0
03-20-89	GC+S	100	1,600	90	0	5	5	0
04-08-89	MA+S	60	1,540	12	0	47	1	0
04-14-89	MA+S	40	1,500	10	0	29	1	0
04-20-89	MA+S	200	1,300	149	0	50	1	0
04-27-89	MA+S	300	1,000	234	0	65	1	0
01-02-90	GC	1,000 Stock	None	1,000	0	0	0	0

+ Student experiment.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 11-13-89 **Isotope/Chemical form:** S-35/Sulfuric acid **Total Amt:** 2 milliCi in 1.0 ml liquid

		USAGE (microCi)		**DISPOSAL (microCi)**				
DATE	USER	AMT USED	AMT LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
11-16-89	CB+S	100	1,900	90	0	9	1	0
11-30-89	CB+S	100	1,800	90	0	9	1	0
04-19-90	MA+S	200	1,600	180	0	15	5	0
04-26-90	MA+S	200	1,400	180	0	15	5	0
09-27-90	MA	400	1,000	245	0	150	5	0
10-11-90	MA	400	600	245	0	150	5	0
10-15-90	MA	200	400	120	0	75	5	0
10-18-90	MA	400	None	245	0	150	5	0

+ Student experiment.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 10-02-90 **Isotope/Chemical form:** S-35/Sulfuric acid **Total Amt:** 2 milliCi in 1.0 ml liquid

		USAGE (microCi)		**DISPOSAL** (microCi)				
DATE	USER	AMT USED	AMT LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
11-01-90	MA	60	1,940	36	0	23	1	0
11-02-90	MA	20	1,920	12	0	8	0	0
11-08-90	MA	40	1,880	24	0	15	1	0
11-29-90	CB+S	100	1,780	90	0	9	1	0
12-06-90	CB+S	100	1,680	90	0	9	1	0
01-31-91	MA	60	1,620	36	0	23	1	0
02-07-91	MA	60	1,560	36	0	23	1	0
02-14-91	MA	60	1,500	36	0	23	1	0
02-21-91	MA	90	1,410	55	0	34	1	0
03-07-91	MA	80	1,330	48	0	31	1	0
03-14-91	MA	80	1,250	48	0	31	1	0
03-21-91	MA	162	1,088	97	0	64	1	0
04-04-91	MA+S	500	588	300	0	195	5	0
04-11-91	MA+S	360	228	220	0	138	2	0
04-16-91	MA	228	None	150	0	73	5	0

+ Student experiment.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 03-28-91 **Isotope/Chemical form:** S-35/Sulfuric acid **Total Amt:** 2 milliCi in 1.0 ml liquid

		USAGE (microCi)		**DISPOSAL (microCi)**				
DATE	USER	AMT USED	AMT LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
04-18-91	MA	180	1,820	100	0	78	2	0
05-02-91	MA	60	1,760	36	0	23	1	0
05-30-91	MA	60	1,700	36	0	23	1	0
06-03-91	MA	60	1,640	36	0	23	1	0
06-17-91	MA	160	1,480	100	0	57	3	0
06-18-91	MA	140	1,340	85	0	53	2	0
07-09-91	MA	240	1,100	140	0	97	3	0
07-18-91	MA	180	920	100	0	78	2	0
07-23-91	MA	100	820	60	0	39	1	0
07-25-91	MA	160	660	100	0	57	3	0
07-26-91	MA	240	420	140	0	96	4	0
08-06-91	MA	180	240	100	0	78	2	0
08-07-91	MA	80	160	48	0	31	1	0
08-13-91	MA	160	None	96	0	62	2	0

All expt assisted by Marc Freeman

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 08-15-91 **Isotope/Chemical form:** S-35/Sulfuric acid **Total Amt:** 2 milliCi in 1.0 ml liquid

		USAGE (microCi)		**DISPOSAL** (microCi)				
DATE	USER	AMT USED	AMT LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
08-28-91	MA	180	1,820	100	0	78	2	0
10-10-91	MA	180	1,640	100	0	78	2	0
10-17-91	MA	80	1,560	48	0	31	1	0
11-14-91	MA	220	1,340	130	0	85	5	0
11-21-91	MA	240	1,100	140	0	95	5	0
11-21-91	MA	180	920	100	0	78	2	0
01-06-92	MA	240	680	140	0	95	5	0
01-11-92	MA	100	580	60	0	39	1	0
01-13-92	MA	20	560	12	0	8	0	0
02-27-92	MA	40	520	24	0	15	1	0
03-03-92	MA	260	260	150	0	105	5	0
03-12-92	MA	60	200	35	0	24	1	0
03-23-92	MA	40	160	24	0	15	1	0
03-26-92	MA	140	20	100	0	38	2	0
04-04-92	MA	20	None	12	0	8	0	0

All expt assisted by Marc Freeman or Mike Haas

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 09-23-91 **Isotope/Chemical form:** S-35/Sulfuric acid **Total Amt:** 2 milliCi in 1.0 ml liquid

		USAGE (microCi)		**DISPOSAL (microCi)**				
DATE	USER	AMT USED	AMT LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
11-21-91	CB+S	100	1,900	90	0	9	1	0
12-05-91	CB+S	100	1,800	90	0	9	1	0
04-04-92	MA	240	1,560	140	0	95	5	0
04-30-92	MA+S	100	1,460	90	0	9	1	0
05-05-92	MA	120	1,340	95	0	20	5	0
05-06-92	MA	100	1,240	90	0	9	1	0
05-07-92	MA+S	100	1,140	90	0	9	1	0
05-07-92	MA	300	840	275	0	20	5	0
05-11-92	MA	160	680	95	0	62	3	0
09-15-92	MA	120	560	70	0	48	2	0
09-22-92	MA	120	440	70	0	48	2	0
09-22-92	MA	160	280	95	0	62	3	0
10-05-92	MA	280	None	175	0	90	5	0

\+ Student laboratory
Research use by Marc Freeman, Michael Haas, or Ed Savino

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 09-03-92 **Isotope/Chemical form:** S-35/L-Methionine **Total Amt:** 1 milliCi in 0.098 ml liquid

USAGE (microCi)				DISPOSAL (microCi)				
DATE	USER	AMT USED	AMT LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
11-09-92	MA+S	480	520	200	0	260	20	0
01-04-93	MA+S	20	500	16	0	3	1	0
03-25-93	GC	500	NONE	Transferred to University of Connecticut License 06-01450-47 For use by Jean Lucas-Leonard				

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 09-08-92 **Isotope/Chemical form:** S-35/Sulfuric acid **Total Amt:** 2.0 milliCi in 1.0 ml liquid

		USAGE (microCi)		**DISPOSAL (microCi)**				
DATE	USER	AMT USED	AMT LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
10-05-92	MA	200	1,800	180	0	18	2	0
10-06-92	MA	100	1,700	90	0	9	1	0
10-13-92	MA	120	1,580	70	0	48	2	0
10-13-92	MA	100	1,480	90	0	9	1	0
10-20-92	MA	120	1,360	70	0	48	2	0
11-12-92	MA	100	1,260	90	0	9	1	0
11-17-92	MA	320	940	280	0	35	5	0
11-19-92	MA	60	880	35	0	24	1	0
11-24-92	MA	300	580	270	0	27	3	0
12-01-92	MA	160	420	95	0	62	3	0
12-08-92	MA	160	260	95	0	62	3	0
12-15-92	MA	160	100	95	0	62	3	0
01-04-93	MA	80	20	47	0	32	1	0
06-21-93	GC	20	NONE	0	0	0	0	20

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 02-02-93
Isotope/Chemical form: S-35/Sulfuric acid
Total Amt: 2.0 milliCi in 1.0 ml liquid

		USAGE (microCi)		**DISPOSAL** (microCi)				
DATE	USER	AMT USED	AMT LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
02-04-93	MA	140	1,860	126	0	12	2	0
02-10-93	MA	420	1,440	378	0	37	5	0
03-11-93	MA	60	1,380	54	0	5	1	0
04-01-93	MA	60	1,320	54	0	5	1	0
04-06-93	MA	100	1,220	90	0	9	1	0
04-15-93	MA	100	1,120	90	0	9	1	0
04-27-93	MA	200	920	180	0	18	2	0
05-04-93	MA	200	720	180	0	18	2	0
05-11-93	MA	200	520	180	0	18	2	0
05-18-93	MA	200	320	180	0	18	2	0
08-09-93	MA	160	160	95	0	62	3	0
08-11-93	MA	160	NONE	132	0	25	3	0

All experiments student assisted.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 09-01-93
Isotope/Chemical form: S-35/Sulfuric acid
Total Amt: 2.0 milliCi in 1.0 ml liquid

	USAGE (microCi)			**DISPOSAL** (microCi)				
DATE	USER	AMT USED	AMT LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
10-28-93	CB	40	1,960	30	0	9	1	0
11-02-93	CB	180	1,780	135	0	40	5	0
11-11-93	CB	100	1,680	75	0	23	2	0
11-18-93	CB	100	1,580	75	0	23	2	0
11-19-93	CB	200	1,380	180	0	18	2	0
11-28-93	CB	200	1,180	180	0	18	2	0
03-25-94	MA	200	980	180	0	18	2	0
04-05-94	MA	200	780	180	0	18	2	0
04-21-94	MA	200	580	180	0	18	2	0
04-28-94	MA	200	380	180	0	18	2	0
05-02-94	MA	380	NONE	342	0	34	4	0

All experiments are student assisted.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 09-14-94
Isotope/Chemical form: S-35/Sulfuric acid
Total Amt: 2.0 milliCi in 1.0 ml liquid

		USAGE (microCi)		**DISPOSAL** (microCi)				
DATE	USER	AMT USED	AMT LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
10-04-94	MA	200	1,800	180	0	18	2	0
10-06-94	MA	100	1,700	90	0	9	1	0
10-13-94	MA	120	1,580	70	0	48	2	0
10-13-94	MA	100	1,480	90	0	9	1	0
10-20-94	MA	120	1,360	70	0	48	2	0
11-15-94	MA	100	1,260	90	0	9	1	0
11-17-94	MA	320	940	280	0	35	5	0
11-22-94	MA	60	880	35	0	24	1	0
11-24-94	MA	60	820	35	0	24	1	0
12-01-94	MA	160	660	95	0	62	3	0
12-08-94	MA	160	500	95	0	62	3	0
04-20-95	MA	100	400	90	0	9	1	0
04-27-95	MA	100	300	90	0	9	1	0
10-11-95	MA	100	200	90	0	9	1	0
10-18-95	MA	100	100	90	0	9	1	0
11-30-95	CB	100	NONE	90	0	9	1	0

All experiments are student assisted.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 10-10-95
Isotope/Chemical form: S-35/Sulfuric acid
Total Amt: 2.0 milliCi in 1.0 ml liquid

	USAGE (microCi)			**DISPOSAL** (microCi)				
DATE	USER	AMT USED	AMT LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
02-Nov-95	MA	160	1,840	145	0	14	1	0
10-Nov-95	MA	120	1,720	70	0	48	2	0
16-Nov-95	MA	120	1,600	100	0	18	2	0
17-Nov-95	MA	200	1,400	180	0	18	2	0
01-Dec-95	MA	320	1,080	300	0	18	2	0
07-Dec-95	CB	160	920	145	0	14	1	0
08-Dec-95	MA	160	760	145	0	14	1	0
25-Jan-96	MA	320	440	300	0	18	2	0
01-Feb-96	MA	100	340	60	0	39	1	0
02-Feb-96	MA	200	140	180	0	18	2	0
05-Feb-96	MA	140	NONE	135	0	4	1	0

All experiments are student assisted.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 02-06-96
Isotope/Chemical form: S-35/Sulfuric acid
Total Amt: 2.0 milliCi in 1.0 ml liquid

		USAGE (microCi)		**DISPOSAL** (microCi)				
DATE	USER	AMT USED	AMT LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
08-Feb-96	MA	100	1900	60	0	38	2	0
08-Feb-96	MA	100	1800	60	0	38	2	0
21-Feb-96	MA	200	1600	170	0	28	2	0
22-Feb-96	MA	200	1400	170	0	28	2	0
29-Feb-96	MA	100	1300	60	0	38	2	0
01-Mar-96	MA	200	1100	170	0	28	2	0
05-Mar-96	MA	100	1000	60	0	38	2	0
05-Mar-96	MA	200	800	170	0	28	2	0
07-Mar-96	MA	320	480	300	0	18	2	0
13-Mar-96	MA	160	320	145	0	14	1	0
15-Mar-96	MA	300	20	280	0	18	2	0
22-Mar-96	MA	20	NONE	18	0	1	1	0

All experiments are student assisted.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 08-APRIL-96
Isotope/Chemical form: S-35/Sulfuric acid
Total Amt: 2.0 milliCi in 1.0 ml liquid

	USAGE (microCi)			**DISPOSAL** (microCi)				
DATE	USER	AMT USED	AMT LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
08-Apr-96	MA	100	1900	90	0	9	1	0
12-Apr-96	MA	100	1800	90	0	9	1	0
16-Apr-96	MA	200	1600	180	0	18	2	0
18-Apr-96	CB	200	1400	180	0	18	2	0
23-Apr-96	MA	200	1200	180	0	18	2	0
25-Apr-96	CB	200	1000	180	0	18	2	0
26-Apr-96	MA	160	840	95	0	62	3	0
02-May-96	MA	200	640	180	0	18	2	0
07-May-96	MA	200	440	180	0	18	2	0
08-May-96	MA	200	240	180	0	18	2	0
14-May-96	MA	240	NONE	210	0	27	3	0

All experiments are student assisted.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 10-APRIL-96 duplicate order
Isotope/Chemical form: S-35/Sulfuric acid
Total Amt: 2.0 milliCi in 1.0 ml liquid

		USAGE (microCi)		**DISPOSAL** (microCi)				
DATE	USER	AMT USED	AMT LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
10-Sep-96	MA	160	1840	95	0	62	3	0
17-Sep-96	MA	100	1740	90	0	9	1	0
19-Sep-96	MA	120	1620	70	0	48	2	0
08-Oct-96	MA	200	1420	180	0	18	2	0
22-Oct-96	MA	120	1300	70	0	48	2	0
12-Nov-96	MA	100	1200	90	0	9	1	0
21-Nov-96	CB	200	1000	180	0	18	2	0
05-Dec-96	CB	200	800	180	0	18	2	0
04-Feb-97	MA	160	640	95	0	62	3	0
18-Feb-97	MA	100	540	90	0	9	1	0
27-Apr-97	CB	540	NONE	500	0	35	5	0

All experiments are student assisted.
Aqueous waste, dry waste, and vials stored for in-house decay.
S-35 sewerage @ 100 microCuries per month under NRC license 1991-1997.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 28-OCTOBER-97
Isotope/Chemical form: S-35/Sulfuric acid
Total Amt: 2.0 milliCi in 1.0 ml liquid

		USAGE (microCi)		**DISPOSAL** (microCi)				
DATE	USER	AMT USED	AMT LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
10-Nov-97	MA	160	1840	95	0	62	3	0
12-Nov-97	MA	180	1660	100	0	75	5	0
17-Nov-97	MA	100	1560	90	0	9	1	0
19-Nov-97	MA	120	1440	70	0	48	2	0
20-Nov-97	MA	160	1280	95	0	62	3	0
20-Nov-97	CB	80	1200	60	0	18	2	0
04-Dec-97	CB	90	1110	70	0	18	2	0
05-Dec-97	MA	200	910	180	0	18	2	0
03-Feb-98	MA	360	550	200	0	150	10	0
13-Feb-98	MA	40	510	35	0	4	1	0
16-Feb-98	MA	40	470	35	0	4	1	0
20-Feb-98	MA	40	430	35	0	4	1	0
23-Apr-98	CB	150	280	100	0	45	5	0
30-Apr-98	CB	150	130	100	0	45	5	0
19-Nov-98	CB	130	NONE	80	0	45	5	0

All experiments are student assisted. Aqueous waste, dry waste, and vials stored for in-house decay.
S-35 sewerage @ 100 microCuries per month under NRC license 1991-1997.
S-35 sewerage @ 750 microCuries per month under NRC license 1998-2002.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 15-OCTOBER-98
Isotope/Chemical form: S-35/Sulfuric acid
Total Amt: 1.0 milliCi in 1.0 ml liquid

	USAGE (microCi)			**DISPOSAL (microCi)**				
DATE	USER	AMT USED	AMT LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
05-Nov-98	MA	40	960	37	0	2	1	0
19-Nov-98	MA	40	920	37	0	2	1	0
03-Dec-98	CB	40	880	37	0	2	1	0
13-Dec-98	MA	40	840	37	0	2	1	0
28-Jan-99	MA	80	760	70	0	8	2	0
08-Feb-99	MA	80	680	70	0	8	2	0
17-Feb-99	MA	80	600	70	0	8	2	0
01-Mar-99	MA	120	480	105	0	11	4	0
23-Mar-99	MA	120	360	105	0	11	4	0
07-Apr-99	MA	80	280	70	0	8	2	0
14-Apr-99	MA	120	160	105	0	11	4	0
21-Apr-99	MA	80	80	70	0	8	2	0
22-Apr-99	CB	40	40	37	0	2	1	0
29-Apr-99	CB	40	NONE	37	0	2	1	0

All experiments are student assisted.
Aqueous waste, dry waste, and vials stored for in-house decay.
S-35 sewerage @ 750 microCuries per month under NRC license 1998-2002.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 09-FEBRUARY-2000
Isotope/Chemical form: S-35/Sulfuric acid
Total Amt: 1.0 milliCi in 1.0 ml liquid

		USAGE (microCi)		**DISPOSAL** (microCi)				
DATE	USER	AMT USED	AMT LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
11-Apr-00	MA	80	920	70	0	9	1	0
24-Apr-00	MA	120	800	110	0	9	1	0
27-Apr-00	MA	50	750	45	0	4	1	0
01-May-00	MA	150	600	125	0	20	5	0
08-May-00	MA	70	530	65	0	4	1	0
30-Nov-00	CB	80	450	75	0	4	1	0
07-Dec-00	CB	160	290	150	0	9	1	0
19-Apr-01	CB	100	190	90	0	8	2	0
26-Apr-01	CB	190	NONE	170	0	16	4	0

All experiments are student assisted.
Aqueous waste, dry waste, and vials stored for in-house decay.
S-35 sewerage @ 750 microCuries per month under NRC license 1998-2002.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 28-NOVEMBER-2000
Isotope/Chemical form: S-35/Sulfuric acid
Total Amt: 1.0 milliCi in 1.0 ml liquid

	USAGE (microCi)			**DISPOSAL** (microCi)				
DATE	USER	AMT USED	AMT LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
30-Nov-00	MA+S	80	920	75	0	4	1	0
07-Dec-00	MA+S	160	760	150	0	1	9	0
02-Feb-01	MA+S	80	680	70	0	9	1	0
26-Apr-01	MA+S	50	630	40	0	5	5	0
03-May-01	MA+S	50	580	40	0	5	5	0
22-Aug-01	MA	100	480	94	0	5	1	0
29-Aug-01	MA	480	NONE	420	0	54	6	0

(+S) designates experiments that are student assisted.
Aqueous waste, dry waste, and vials stored for in-house decay.
S-35 sewerage @ 750 microCuries per month under NRC license 1998-2002.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 23-OCTOBER-2001
Isotope/Chemical form: S-35/Sulfuric acid
Total Amt: (Ten) 10.0 milliCi in 1.0 ml water

	USAGE (microCi)			**DISPOSAL** (microCi)				
DATE	USER	AMT USED	AMT LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
25-Oct-01	MA	600	9400	152	0	448	<1	aqua
01-Nov-01	MA	200	9200	126	0	74	<1	aqua
08-Nov-01	MA	200	9000	156	0	44	<1	aqua
15-Nov-01	MA	200	8800	96	0	104	<1	aqua
22-Nov-01	MA	200	8600	26	0	174	<1	aqua
29-Nov-01	MA	200	8400	42	0	158	<1	aqua
06-Dec-01	MA	300	8100	42	0	258	<1	aqua
07-Dec-01	MA	200	7900	26	0	174	<1	aqua
31-Dec-01	MA	250	7650	26	0	224	<1	aqua
04-Jan-02	MA	1000	6650	115	0	885	<1	aqua
08-Jan-02	MA	250	6400	26	0	224	<1	aqua
15-Jan-02	MA	300	6100	42	0	258	<1	aqua
23-Jan-02	MA	600	5500	76	0	524	<1	aqua
14-Feb-02	MA	1000	4500	115	0	885	<1	aqua
21-Feb-02	MA	1000	3500	115	0	885	<1	aqua
06-Mar-02	MA	1000	2500	115	0	885	<1	aqua
13-Mar-02	MA	1000	1500	115	0	885	<1	aqua
20-Mar-02	MA	1000	500	115	0	885	<1	aqua
28-Mar-02	MA	500	NONE	115	0	385	<1	aqua

All experiments are student assisted.
Aqueous waste deposited directly into sewer. Dry waste and vials stored for in-house decay.
S-35 sewerage @ 750 microCuries per month under NRC license 1998-2002.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 25-MARCH-2002
Isotope/Chemical form: S-35/Sulfuric acid
Total Amt: 5.0 milliCuries in 1.0 ml water

	USAGE (microCi)			**DISPOSAL** (microCi)				
DATE	USER	AMT USED	AMT LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
28-Apr-02	MA+S	375	4625	200	0	175	<1	aqua
06-May-02	MA+S	375	4250	200	0	175	<1	aqua
13-May-02	MA+S	500	3750	250	0	250	0	aqua
05-Jun-02	MA	500	3250	250	0	250	<1	aqua
27-Jun-02	MA	500	2750	250	0	250	<1	aqua
08-Jul-02	MA	500	2250	250	0	250	0	aqua
16-Jul-02	MA	500	1750	250	0	250	0	aqua
22-Aug-02	MA	500	1250	250	0	250	0	aqua
26-Sep-02	MA	500	750	250	0	250	0	aqua
27-Sep-02	MA	500	250	250	0	250	0	aqua
30-Sep-02	MA	250	NONE	200	0	50	0	aqua

(+S) designates experiments that are student assisted.
Aqueous waste deposited directly into sewer. Dry waste and vials stored for in-house decay.
S-35 sewerage @ 750 microCuries per month under NRC license 1998-2002.
S-35 sewerage @ 2,500 microCuries per month under NRC license 2002-2012.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 20-SEPTEMBER-2002
Isotope/Chemical form: S-35/Sulfuric acid
Total Amt: 5.0 milliCuries in 1.0 ml water

	USAGE (microCi)			**DISPOSAL** (microCi)				
DATE	USER	AMT USED	AMT LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
30-Sep-02	MA	500	4500	250	0	250	0	aqua
01-Oct-02	MA	375	4125	200	0	175	<1	aqua
08-Oct-02	MA	500	3625	50	0	450	0	aqua
17-Oct-02	MA	500	3125	50	0	450	<1	aqua
01-Nov-02	MA	500	2625	150	0	350	<1	aqua
21-Nov-02	MA	500	2125	50	0	450	<1	aqua
21-Nov-02	CB	75	2050	50	0	20	5	aqua
03-Dec-02	MA	600	1450	300	0	300	0	aqua
12-Dec-02	CB	75	1375	50	0	20	5	aqua
17-Dec-02	MA	250	1125	200	0	50	<1	aqua
09-Jan-03	MA	750	375	245	0	500	5	aqua
15-Jan-03	MA	375	NONE	120	0	250	5	aqua

ALL experiments are student assisted.
Aqueous waste deposited directly into sewer. Dry waste and vials stored for in-house decay.
S-35 sewerage @ 2,500 microCuries per month under NRC license 2002-2012.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 11-NOVEMBER-2002
Isotope/Chemical form: S-35/Sulfuric acid
Total Amt: 5.0 milliCuries in 1.0 ml water

	USAGE (microCi)			**DISPOSAL** (microCi)				
DATE	USER	AMT USED	AMT LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
15-Feb-03	MA+S	500	4500	200	0	300	<1	aqua
22-Feb-03	MA+S	500	4000	200	0	300	<1	aqua
13-Mar-03	MA+S	500	3500	200	0	300	<1	aqua
19-Mar-03	MA+S	500	3000	200	0	300	<1	aqua
20-Mar-03	MA+S	250	2750	50	0	200	<1	aqua
01-Apr-03	MA+S	250	2500	50	0	200	<1	aqua
19-May-03	MA	400	2100	150	0	250	<1	aqua
26-May-03	MA	400	1700	150	0	250	<1	aqua
30-May-03	MA	500	1200	200	0	300	<1	aqua
03-Jun-03	MA	400	800	125	0	274	1	aqua
17-Jun-03	MA	400	400	125	0	274	1	aqua
14-Jul-03	MA	400	NONE	125	0	274	1	aqua

Mike Adams +S indicates experiments that are student assisted.
Aqueous waste deposited directly into sewer. Dry waste and vials stored for in-house decay.
S-35 sewerage @ 2,500 microCuries per month under NRC license 2002-2012.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 06-AUGUST-2003
Isotope/Chemical form: S-35/Sulfuric acid
Total Amt: 5.0 milliCuries in 1.0 ml water

	USAGE (microCi)			**DISPOSAL** (microCi)				
DATE	USER	AMT USED	AMT LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
07-Aug-03	MA	250	4750	37	0	212	1	aqua
13-Aug-03	MA	250	4500	52	0	197	1	aqua
10-Sep-03	MA+S	250	4250	28	0	221	1	aqua
19-Sep-03	MA+S	250	4000	31	0	219	0	aqua
22-Sep-03	MA+S	250	3750	32	0	217	1	aqua
02-Oct-03	MA+S	250	3500	28	0	221	1	aqua
09-Oct-03	MA+S	250	3250	21	0	228	1	aqua
16-Oct-03	MA+S	450	2800	73	0	375	2	aqua
23-Oct-03	MA+S	500	2300	24	0	475	1	aqua
30-Oct-03	MA+S	500	1800	30	0	468	2	aqua
11-Nov-03	MA+S	600	1200	49	0	550	1	aqua
13-Nov-03	MA+S	600	600	20	0	580	0	aqua
04-Dec-03	MA+S	600	NONE	29	0	570	1	aqua

Mike Adams +S indicates experiments that are student assisted.
Aqueous waste deposited directly into sewer. Dry waste and vials stored for in-house decay.
S-35 sewerage @ 2,500 microCuries per month under NRC license 2002-2012.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 17-NOVEMBER-2003
Isotope/Chemical form: S-35/Sulfuric acid
Total Amt: 5.0 milliCuries in 1.0 ml water

	USAGE (microCi)			**DISPOSAL** (microCi)				
DATE	USER	AMT USED	AMT LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
04-Feb-04	MA+S	50	4,950	48	0	2	0	aqua
11-Feb-04	MA+S	250	4,700	220	0	29	1	aqua
18-Feb-04	MA+S	500	4,200	482	0	17	1	aqua
25-Feb-04	MA+S	250	3,950	231	0	18	1	aqua
10-Mar-04	MA+S	250	3,700	227	0	22	1	aqua
31-Mar-04	MA+S	500	3,200	479	0	20	1	aqua
07-Apr-04	MA+S	250	2,950	210	0	39	1	aqua
13-Apr-04	MA+S	250	2,700	232	0	17	1	aqua
21-Apr-04	MA+S	250	2,450	206	0	44	0	aqua
29-Apr-04	MA+S	250	2,200	212	0	37	1	aqua
06-May-04	MA+S	250	1,950	197	0	52	1	aqua
21-Oct-04	MA+S	100	1,850	90	0	10	0	aqua
26-Oct-04	MA+S	200	1,650	185	0	14	1	aqua
12-Nov-04	MA+S	400	1,250	375	0	24	1	aqua
18-Nov-04	MA+S	250	1,000	240	0	9	1	aqua
02-Dec-04	MA+S	125	875	116	0	8	1	aqua
21-Apr-05	MA+S	425	450	400	0	23	2	aqua
28-Apr-05	MA+S	450	NONE	420	0	28	2	aqua

Mike Adams +S indicates experiments that are student assisted.
Aqueous waste deposited directly into sewer. Dry waste and vials stored for in-house decay.
S-35 sewerage @ 2,500 microCuries per month under NRC license 2002-2012.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

Received: 08-NOVEMBER-2005
Isotope/Chemical form: S-35/Sulfuric acid
Total Amt: 5.0 milliCuries in 1.0 ml water

	USAGE (microCi)			**DISPOSAL** (microCi)				
DATE	USER	AMT USED	AMT LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
17-Nov-05	CB+S	125	4,875	110	0	10	5	aqua
01-Dec-05	CB+S	125	4,750	110	0	10	5	aqua
20-Apr-06	MA+S	250	4,500	230	0	15	5	aqua
27-Apr-06	MA+S	250	4,250	230	0	15	5	aqua
10-Oct-06	MA+S	450	3,800	415	0	25	10	aqua
30-Nov-06	CB+S	375	3,425	350	0	15	10	aqua
07-Dec-06	CB+S	375	3,050	350	0	15	10	aqua
19-Apr-07	MA+S	300	2,750	285	0	10	5	aqua
26-Apr-07	MA+S	600	2,150	565	0	25	10	aqua
23-Jul-07	GC	2,150	NONE	0	0	0	0	2,150

Mike Adams, Chuck Booth +S indicates experiments that are student assisted.
Aqueous waste deposited directly into sewer.
S-35 sewerage @ 2,500 microCuries per month under NRC license 2002-2012.
Dry waste and vials stored for in-house decay.

Fall 2007 semester: **NO use of S-35. Lab expts were simulation only. NO research use, either.**
Spring 2008 semester: **NO use of S-35. Lab expts were simulation only. NO research use, either.**
Summer 2008: **NO use of S-35. NO teaching and NO research.**

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

SCIENCE BUILDING

Received: 06-NOVEMBER-2008
Isotope/Chemical form: S-35/Sulfuric acid
Total Amt: 2.0 milliCuries in 1.0 ml water

	USAGE (microCi)			**DISPOSAL (microCi)**				
DATE	USER	AMT USED	AMT LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
13-Nov-2008	CB+S	60	1,940	50	0	5	5	aqua
16-Apr-2009	CB+S	90	1,850	80	0	5	5	aqua
05-Nov-2009	CB+S	120	1,730	105	0	5	10	aqua
02-Mar-2010	MA+S	500	1,230	470	0	10	20	aqua
22-Apr-2010	CB+S	250	980	220	0	10	20	aqua
26-Oct-2010	MA+S	560	420	520	0	10	30	aqua
16-Nov-2010	EC+S	140	280	110	0	10	20	aqua
18-Nov-2010	CB+S	140	140	110	0	10	20	aqua
18-Nov-2010	CB+S	140	NONE	110	0	10	20	aqua

Mike Adams, Chuck Booth, Elizabeth Cowles + Student experiment.
Aqueous waste deposited directly into sewer.
S-35 sewerage @ 2,500 microCuries per month under NRC license 2002-2012.
Dry waste and vials stored for in-house decay.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

SCIENCE BUILDING

Received: 14-FEBRUARY-2011 Lot 031113C
Isotope/Chemical form: S-35/Sulfuric acid
Total Amt: 1.0 milliCurie in 1.0 ml water

	USAGE (microCi)			**DISPOSAL (microCi)**				
DATE	USER	AMT USED	AMT LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
15-Feb-2011	MA+S	25	975	15	0	5	5	aqua
28-Apr-2011	CB+S	25	950	15	0	5	5	aqua
13-Sep-2011	MA+S	50	900	30	0	10	10	aqua
19-Sep-2011	MA+S	50	850	30	0	10	10	aqua
20-Sep-2011	MA+S	100	750	60	0	20	20	aqua
20-Sep-2011	MA+S	50	700	30	0	10	10	aqua
27-Sep-2011	MA+S	50	650	30	0	10	10	aqua
04-Oct-2011	MA+S	25	625	15	0	5	5	aqua
06-Oct-2011	MA+S	20	605	10	0	5	5	aqua
18-Oct-2011	MA+S	20	585	10	0	5	5	aqua
26-Jun-2012	Colurso	585	NONE	585	0	0	0	aqua

Mike Adams, Chuck Booth + Student experiment.
Aqueous waste deposited directly into sewer.
S-35 sewerage @ 2,500 microCuries per month under NRC license 2002-2012.
Dry waste and vials stored for in-house decay.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

SCIENCE BUILDING

Received: 31-OCTOBER-2011 Lot 111111C
Isotope/Chemical form: S-35/Sulfuric acid
Total Amt: 5.0 milliCuries in 1.0 ml water

	USAGE (microCi)			**DISPOSAL (microCi)**				
DATE	USER	AMT USED	AMT LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
01-Nov-2011	MA+S	200	4,800	100	0	20	60	20
09-Nov-2011	MA+S	350	4,450	175	0	35	105	35
23-Nov-2011	MA+S	250	4,200	125	0	25	75	25
14-Dec-2011	MA	250	3,950	125	0	25	75	25
28-Dec-2011	MA	750	3,200	375	0	75	225	75
03-Feb-2012	MA+S	1000	2,200	500	0	100	300	100
14-Feb-2012	MA+S	250	1,950	125	0	25	75	25
21-Feb-2012	MA+S	750	1,200	375	0	75	225	75
28-Feb-2012	MA+S	500	700	250	0	50	150	50
02-Mar-2012	MA+S	700	NONE	350	0	70	210	70

Mike Adams + Student experiment.
Some aqueous waste deposited directly into sewer after each use.
S-35 sewerage @ 2,500 microCuries per month under NRC license 2002-2012.
Remaining aqueous waste stored for in-house decay, then trash. Dry waste and vials stored for in-house decay.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

INVENTORY OF USE & DISPOSAL

SCIENCE BUILDING

Received: 08-MARCH-2012 Lot 041216B
Isotope/Chemical form: S-35/Sulfuric acid
Total Amt: 5.0 milliCuries in 1.0 ml water
Notation: Not corrected for decay.

	USAGE (microCi)			**DISPOSAL (microCi)**				
DATE	USER	AMT USED	AMT LEFT	AQUEOUS	ORGANIC	DRY	VIALS	SEWER
12-Mar-2012	MA+S	500	4,500	250	0	50	150	50
14-Mar-2012	MA+S	600	3,900	300	0	60	180	60
15-Mar-2012	MA+S	400	3,500	200	0	40	120	40
16-Mar-2012	MA+S	600	2,900	300	0	60	180	60
07-Mar-2013	MA+S	500	2,400	240	0	60	150	50
14-Mar-2013	MA+S	500	1,900	240	0	60	150	50
03-Apr-2013	MA	900	1,000	450	0	90	270	90
10-Apr-2013	MA+S	500	500	250	0	50	150	50
17-Apr-2013	MA+S	500	NONE	240	0	60	150	50

Mike Adams + Student experiment.
Some aqueous waste deposited directly into sewer after each use.
S-35 sewerage @ 2,500 microCuries per month under NRC license 2002-2012 and NRC license 2012-2022.
Remaining aqueous waste stored for in-house decay, then trash. Dry waste and vials stored for in-house decay.

2. Prior to termination of a license,10 CFR 30.35(g), 30.36(k)(4) and 30.51 require that you submit to the NRC certain records. Please submit the following records, or explain why such records are not applicable.

a. for unsealed materials with half-lives greater than 120 days, records for disposal made pursuant to 10 CFR 20.2002 (alternate disposal procedures, including burial authorized prior to January 28, 1981), 20.2004 (incineration of wastes), and 20.2103(b)(4), evaluations of effluent releases.

Disposal Manifest 1989

U.S. Ecology, Inc.

Louisville, KY

GENERATOR NUMBER 06-20971-01

REV. 5/85

RADIOACTIVE WASTE SHIPMENT & DISPOSAL MANIFEST

US ECOLOGY, INC.

EXECUTIVE OFFICE: (502) 426-7160
P.O. BOX 7246 • LOUISVILLE, KENTUCKY 40207

PAGE 1 OF 2

USE THIS NO. ON ALL CONTINUATION PAGES ➔ 79504

(1) GENERATOR NAME Eastern CT State University
ADDRESS Biology Dept
Goddard Hall
CITY Willimantic STATE CT ZIP 06226
CONTACT G. Colurso PHONE 203-456-5259
USER PERMIT # 1551 SHIPMENT #

(2) BILL DISPOSAL CHARGES TO Eastern CT State University
NAME G. Colurso PURCHASE ORDER # 2001071529
ADDRESS Purchasing Dept Shafer Hall
CITY Willimantic STATE CT ZIP 06226

(3) AGENT/BROKER Radiac Research Corp.
BROKER'S US ECOLOGY #
ADDRESS 261 Kent Avenue
CITY Brooklyn STATE NY ZIP 11211
CONTACT Art Green PHONE 718-963-2233
BROKER SHIPMENT # BROKER USER PERMIT #

Broker's Authorized Signature Acknowledging Waste Receipt Date

(4) CONSIGNED TO
☒ P.O. BOX 638 Hanford Reservation Richland, WA 99352 509-377-2411
☐ P.O. BOX 578 HWY 95, 12 mi. So. of Beatty, NV 89003 702-553-2203
☐ OTHER
CONTACT
ADDRESS
CITY STATE ZIP
PHONE

(5) CARRIER SHIPPING DATE
CARRIER EPA # (if any)
ADDRESS
CITY STATE ZIP
PHONE
CASK TYPE CASK SURFACE EXPOSURE RATE mR/hr

(6)

# OF PACKAGES (TOTAL FOR EACH CLASS)	WEIGHT (Pounds)	PROPER SHIPPING NAME & HAZARD CLASS (PER 49 CFR 172.101)	ID NUMBER
		Radioactive Material, empty packages	UN2908
		Radioactive Material, fissile, n.o.s. — Radioactive Material	UN2918
		Radioactive Material, low specific activity, n.o.s. — Radioactive Material	UN2912
One	100	Radioactive Material, n.o.s. — Radioactive Material	UN2982
		Radioactive Material, limited quantity, n.o.s. — Radioactive Material	UN2910
		Radioactive Material, special form, n.o.s. — Radioactive Material	UN2974
		Radioactive Material, instruments and articles — Radioactive Material	UN2911
		Thorium Nitrate — Radioactive Material	UN2976
		Uranyl Acetate (RQ-5000/2270) — Radioactive Material	NA9180
		Uranyl Nitrate, solid (RQ-5000/2270) — Radioactive Material	UN2981

(7) SHIPMENT TOTALS (DO NOT WRITE IN SHADED AREAS)

VOLUME (cu ft)	TOTAL # OF PACKAGES	SOURCE MATERIAL (kgs)	U-233	U-235	PLUTONIUM	TOTAL
4.01	One					

SPECIAL NUCLEAR MATERIAL (grams) applies to U-233, U-235, PLUTONIUM, TOTAL.

ACTIVITY TOTALS	TRITIUM	C-14	Tc-99	I-129	ALL ISOTOPES
☐ Curies / ☒ Millicuries (10CFR20.311)	0.0066				9.485

(8) THIS IS TO CERTIFY THAT THE HEREIN-NAMED MATERIALS ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED AND LABELED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO THE APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION AND ARE IN COMPLIANCE WITH ALL REQUIREMENTS APPLICABLE AT THE DESIGNATED DISPOSAL SITE, AND THAT THE MATERIALS ARE CLASSIFIED AND DESCRIBED IN ACCORDANCE WITH THE REQUIREMENTS OF 10CFR, PART 61 AND PART 20.311 OR EQUIVALENT STATE REGULATIONS.

Gloria J. Colurso — Authorized Signature | RSO — Title | 01-31-89 — Date

TERMS AND CONDITIONS

A. TITLE: Upon inspection and acceptance at the disposal site by US Ecology and all appropriate regulatory authorities, title to the Waste which conforms to Company's representations herein shall thereupon transfer from the Customer and be vested in US Ecology.

B. WASTE PRODUCTS: Customer represents and warrants that data set forth in this Radioactive Waste Shipment & Disposal Manifest is true and correct in all respects and in accordance with all applicable governmental laws, rules, regulations and the designated facility license.

C. INDEMNIFICATION: Customer agrees to indemnify US Ecology, its officers, employees and agents against all loss and liability whatsoever if such loss or liability results from the failure of the Waste to conform in all material respects to the data supplied on the Radioactive Waste Shipment & Disposal Manifest or this shipment fails to meet the standards prescribed by the Department of Transportation or any other governmental agency having jurisdiction over such matters.

FOR US ECOLOGY'S USE ONLY

TYPE OF CONTAINER	CONTAINER VOLUME CU. FT.	# OF PKGS	CU. FT. PER CONTAINER TYPE
DRUMS			
OVERPACK			
55	7.50		
30	4.01		
5	0.67		
OTHER			
BOXES			
1st SIZE			
2nd SIZE			
3rd SIZE			
CASK LINERS			
OTHER			
OTHER			
SHIPMENT TOTALS			

LOAD EVALUATION

CHECK ALL THAT APPLY TO THIS LOAD. DESCRIBE INADEQUACIES IN COMMENT SECTION
☐ Manifest Waste Description Inadequate ☐ Bracing Inadequate
☐ Contamination or Leakage Detected ☐ Labels, Markings, etc. Inadequate
☐ Unexpected Exposure Rates Detected ☐ Container Integrity Inadequate
☐ No Violations Detected on this Load ☐ Other

DESCRIBE THE EXTENT OF ANY VIOLATION CHECKED ABOVE AND THE REMEDIAL ACTION TAKEN

☐ CHECK HERE IF A SUPPLEMENTAL REPORT IS ATTACHED

BURIAL DATA

CONTAINER SEPARATION
(Code all that apply to this load:
CODES: Bin. soil (SNM) ... 1; 4ft. waste (SNM) ... 2; 10ft. between upright containers (Cases) ... 3; 10ft. soil (Chelating agent 1% by volume) ... 4; Other ... 8; No requirement ... 9)

INDICATE MINIMUM BURIAL DEPTH FOR EACH WASTE CATEGORY BURIED FROM THIS MANIFEST

WASTE CATEGORY	HIGH R/H	CLASS A	CLASS B	CLASS C
DEPTH IN FEET				

Date Received
Date Disposed
Trench No.
☐ This material meets licensed limits.
☐ This material was disposed of in accordance with license
AUTHORIZED INITIALS

US ECOLOGY INVOICE #
US ECOLOGY CUSTOMER # (Must agree with Agent named in Block 2)
US ECOLOGY INVOICE DATE: MO DY YR
DISCREPANCY CODE(S)

BATES #

CONSIGNEE ORIGINAL COPY
(MUST ACCOMPANY WASTE IN TRANSIT)

GENERATOR NO. 06-20971-01
GENERATOR NAME: Eastern CT State University
AGENT/BROKER: Radiac Research Corp

US ECOLOGY, INC.

CONTINUATION SHEET

REV. 8/85

MANIFEST # 79504
PAGE 2 OF 2

(9) Item No	(10) Container Type	(11) Container Volume (Cu. Ft.)	(12) Container Weight (pounds)	(13) Physical Form	(14) Waste Description (See Note #1)	(15) Solidification or Absorbent Media (See Note #2)	(16) Chemical Form/ Chelating Agent (10CFR20.311)	Check Below if < 0.1% Chelating Agent by Weight	(17) Radionuclide (10CFR20.311)	(18) Activity ☐ Curies ☒ Millicuries (10CFR20.311)	(19) D.O.T. Sub Type (A1, A2, LSA, etc.)	(20) Special Nuclear Material (Grams)	(21) Source Material (Kilograms)	(22) Waste Form Class 10CFR 61.55	(23) Stability class (See Note #3) 10CFR 61.56	Radiation Levels mR/HR (24) Disposal Container Surface	[illegible]	(26) Disposal Container At 1 Meter	(27) Transport Index	(28) Fissile Class	(29) D.O.T. Label 49CFR173.444
1	DRUM	4.01	100		3	14			S-35	8.770	A2			A	U	0.03		0.01			Radioactive — White I
					2				S-35	0.715	A2			A	U						Radioactive — White I
					2				H-3	0.006	A2			A	U						Radioactive — White I
																					Radioactive —
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1		4.01	100	(30) **PAGE TOTALS**						9.491											

NOTE #1 - Waste Description Codes

- 2. Dry Solid
- 3. Solidified Liquid.
- 4. Biological (not animal carcasses)
- 7. Filter Media
- 8. Dewatered Resins
- 9. Solidified Resins
- 10. Absorbed Aqueous Liquid
- 11. Absorbed Organic Liquid
- 12. Scintillation (or organic) Liquid in Vials in Absorbent
- 13. Aqueous Liquid in Vials in Absorbent
- 14. Animal Carcasses in Absorbent
- *99. Other

* ANY USE OF "OTHER" AS A DESCRIPTION MUST INCLUDE A WRITTEN AND SIGNED EXPLANATION ATTACHED TO THIS MANIFEST.

NOTE #2 - Solidified or Absorbent Media Codes

- 2. Speedi-Dry
- 3. Celatom (MP-78)
- 4. Floor Dry/Super Fine
- 5. Hi Dri
- 6. Florco or Florco X
- 7. Instant-Dri
- 8. Safe-T-Sorb
- 9. Oil-Dri (Safe n Dri)
- 10. Zonolite, Grades 2, 3, 4
- 11. Dow Media
- 12. Cement
- 13. Asphalt
- 14. Delaware Custom Media
- 15. Envirostone
- 16. Krolite
- *99. Other

NOTE #3 - NRC Stability Class Code

S - Stable
U - Unstable

CONSIGNEE ORIGINAL COPY
(MUST ACCOMPANY WASTE IN TRANSIT)

Disposal Manifest 2005

Philotechnics, Ltd.

Oak Ridge, TN

PHILOTECHNICS

November 18, 2005

Ms. Gloria Colurso
Eastern Connecticut State University
Biology Dept., Goddard Hall
83 Windham Street
Willimantic, CT 06226-2295

Subject: Shipment Receipt Acknowledgement

Dear Gloria:

In accordance with the requirements of 10 CFR 20, Appendix G, Section III, C.1., the attached signed manifest copy is provided as your notice of receipt and acceptance of the radioactive waste materials specified on the manifest. Manifest No. 0533-091405Pe was received at Pacific EcoSolutions (PEcoS) on October 12, 2005 and assigned Receipt No. LLR05-156.

This letter is acknowledgement of receipt only. Any manifest discrepancies found during unloading or processing will be reported at a later date.

Please contact me if you have any questions or require additional information. I can be reached at 888-RADWASTe or 865-285-3006 (direct), or via email at pseiber@philotechnics.com.

Sincerely,

Philotechnics, Ltd.

Kenneth Hansen

for Patty Seiber
Customer Service

ps
Enclosure

FORM 540 (8-98/ISIP) — Philotechnics, Ltd.

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST

SHIPPING PAPER

1. EMERGENCY TELEPHONE NUMBER (Include Area Code): 800-424-9300
ORGANIZATION: CHEMTREC

2. IS THIS AN EXCLUSIVE USE SHIPMENT? [ ] YES [X] NO

3. TOTAL NUMBER OF PACKAGES IDENTIFIED ON THIS MANIFEST ====> 1

4. DOES EPA REGULATED WASTE REQUIRING A MANIFEST ACCOMPANY THIS SHIPMENT? [ ] YES [X] NO
If 'Yes' provide manifest Number ====>

EPA MANIFEST NUMBER: Not Applicable

5. SHIPPER -- NAME AND FACILITY
Philotechnics @ Eastern Connecticut St. University
Biology Dept.-Goddard Hall
83 Windham Street
Willimantic, CT 06226-2295CT

SHIPPER ID NUMBER: 0533-091405Pe
[X] COLLECTOR [ ] PROCESSOR [ ] GENERATOR TYPE Specify

USER PERMIT NUMBER: NA
SHIPMENT NUMBER: 0533-091405Pe

CONTACT: Gloria Colurso
TELEPHONE NUMBER (Include Area Code): 860-465-5259

CARRIER -- Name and Address
R & R Trucking
302 Thunder Road
Duenweg, MO, 64841

EPA I.D. NUMBER: NA
SHIPPING DATE: 09/08/2005

CONTACT: Mitch Lunsford
TELEPHONE NUMBER (Include Area Code): 866-252-2784

SIGNATURE -- Authorized carrier acknowledging receipt
DATE: 9-13-05

7. FORM 540 AND 540A — PAGE 1 OF 1 PAGES
FORM 541 AND 541A — 1 PAGES
FORM 542 AND 542A — 1 PAGES
ADDITIONAL INFORMATION — PAGES

8. MANIFEST NUMBER (Use this number on all continuation pages.)
0533-091405Pe

9. CONSIGNEE -- Name and Facility Address
PeCos, LLC
2025 Battelle Blvd.
Richland, WA 99352

CONTACT: Larry Morin
TELEPHONE NUMBER (Include Area Code): 509-375-5160

SIGNATURE -- Authorized consignee acknowledging receipt
DATE

10. CERTIFICATION

This is to certify that the herein named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. This also certifies that the materials are classified, packaged, marked, and labeled and are in proper condition for transportation and disposal as described with the applicable requirements of 10 CFR Parts 20 and 61, or equivalent state regulations.

AUTHORIZED SIGNATURE
TITLE: Radcon
DATE: 9-13-05

11. U.S. DEPARTMENT OF TRANSPORTATION DESCRIPTION (Include proper shipping name, hazard class, UN ID number, and any other information	12. DOT LABEL RADIOACTIVE	13. TRANSPORT INDEX	14. PHYSICAL AND CHEMICAL FORM	15. INDIVIDUAL RADIONUCLIDES	16. TOTAL PACKAGE MBq ACTIVITY	mCi	17. LSA/SCO CLASS	18. TOTAL WEIGHT OR VOLUME (Use appropriate units)	19. IDENTIFICATION NUMBER OF PACKAGE
Exempt Material -DOT Exempt Package NA, NA-- Pa,PI,GI-BPU/NDV	NA	NA	Solid/Oxides	H-3 C-14	5.99E+00	(1.62E-01)	NA	5.80E+01 kg 150.0 lbs	001

Disposal of dry H-3 + C-14 LLRW with Philotechnics.

Volume was 30 gallon drum (not 55 gallon)
= 4.1 cubic feet
= 0.12 cubic meters

20. GENERATOR CERTIFICATION STATEMENT

A) Radioactive Materials. Certification is hereby made to Philotechnics,Ltd. that this shipment of low-level radioactive material/waste has been prepared in accordance with a radioactive waste management program which has been approved by the NRC or an Agreement State regulatory agency and furthermore meets the criteria set forth in 49 CFR 173.443 concerning contamination controls on the external surfaces of the packages.

B) Data. Generator hereby represents and warrants that alldata set forth in this UNIFORM RADIOACTIVE WASTE MANIFEST are true and correct in all respects and in accordance with all applicable governmental laws, rules, regulations and the above mentioned processors Radioactive Material Licenses.

C) Hazardous Materials. Generator hereby certifies that this material does not contain a hazardous waste as defined in 40 CFR 261. ( ) N/A

D. INFECTIOUS SUBSTANCE: Generator hereby certifies that this material does not contain an infectious substance as defined in 49CFR 173.134.

Gloria Colurso (Print Name) — Gloria Colurso (Signature) — 9-13-2005 (Date)

FORM 541
(8-98/ISIP)

Consigned to: Philotechnics, Ltd.

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST

CONTAINER AND WASTE DESCRIPTION

1. MANIFEST TOTALS

NUMBER OF PACKAGES/ DISPOSAL CONTAINERS	NET WASTE VOLUME	NET WASTE WEIGHT	SPECIAL NUCLEAR MATERIAL(grams) U-233	U-235	Pu	TOTAL
1	m³ 0.21 / ft³ 7.500E+00	kg 68.04 / lb 1.500E+02	NP	NP	NP	NP

ACTIVITY (MBq/mCi)	ALL NUCLIDES	TRITIUM	C-14	Tc-99	I-129	SOURCE	
MBq	5.990E+00	5.920E+00	7.400E-02	NP	NP	kg	NP
mCi	1.620E-01	1.600E-01	2.000E-03	NP	NP	lb	NP

2.MANIFEST NUMBER 0533-091405Pe

3. PAGE 1 OF 1 PAGE(S)

4. SHIPPER NAME Philotechnics, Ltd.

SHIPPER ID NUMBER 0533-091405Pe

DISPOSAL CONTAINER DESCRIPTION

5. CONTAINER IDENTIFICATION NUMBER/ TRANSPORT PERMIT NUMBER(S)	6. CONTAINER DESCRIPTION (See Note 1)	7. VOLUME m³ / ft³	8. WASTE AND CONTAINER WEIGHT kg / lb	9. SURFACE RADIATION LEVEL mSv/hr / mrem/hr	10. SURFACE CONTAMINATION MBq/100 cm² / dpm/100 cm² ALPHA	BETA-GAMMA
001 0533	Rig 55 GAL 30	~~0.21~~ 0.13	68.04	<5.00E-03	<3.33E-07	<1.67E-05
		~~7.50~~ 4.1	150.0 #	<0.50	<20.00	<1.00E+03

WASTE DESCRIPTION FOR EACH WASTE TYPE IN CONTAINER

PHYSICAL DESCRIPTION 11. WASTE DESCRIPTOR (See Note 2)	12. APPROXIMATE WASTE VOLUME(S) IN CONTAINER m³ / ft³	13. SORBENT SOLIDIFICATION, STABILIZATION MEDIA (See Note 3)	14. CHEMICAL DESCRIPTION CHEMICAL FORM/ CHELATING AGENT	WEIGHT % CHELATING AGENT IF > 0.1%	15. RADIOLOGICAL DESCRIPTION INDIVIDUAL RADIONUCLIDES AND ACTIVITY AND CONTAINER TOTAL OR CONTAINER TOTAL ACTIVITY AND RADIONUCLIDE PERCENT RADIONUCLIDES	MBq	mCi	16. WASTE CLASSIFICATION AS-Class A Stable AU-Class A Unstable B-ClassB C-Class C
59 Pa,PI,GI-BPU/NDV	2.12E-01	100	Oxides NP	NP	H-3	5.92E+00	1.60E-01	AU
					C-14	7.40E-02	2.00E-03	
					SubTotal	5.99E+00	1.62E-01	
	7.50E+00				Pkg Total	5.99E+00	1.62E-01	

NOTE 1: Container Description Codes. For containers/ waste requiring disposal in approved structural overpacks, the numerical code must be followed by "-OP."

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

NOTE 2: Waste Descriptor Codes. Choose up to three which predominate by volume

20. Charcoal
21. Incinerator Ash
22. Soil
23. Gas
24. Oil
25. Aqueous Liquid
26. Filter Media
27. Mechanical Filter
28. EPA or State Hazardous
29. Demolition Rubble
30. Cation Ion-exchange Media
31. Anion Ion-exchange Media
32. Mixed Bed Ion-exchange Media
33. Contaminated Equipment
34. Organic Liquid, except Oil
35. Glassware or Labware
36. Sealed Source/Device
37. Paint or Plating
38. Evaporator Bottoms/Sludges/Concentrates
39. Compactible Trash
40. Noncompactible Trash
41. Animal Carcass
42. Biological Material (except animal carcass)
43. Activated Material
59. Other, Describe in Item 11, or additional page

Note 3: Sorption, Solidification, Stabilization Media Codes.(Choose up to three which predominate by volume.) For media meeting disposal site structural stability requirements, the numerical code must be followed by "-S" and the media vendor and brand name must also be identified in Item 13. Code 100 = NONE REQUIRED

Sorption

60. Speed Dri
61. Celetom
62. Floor Dry Superfine
63. Hi DriGas
64. safe T Sorb
65. Safe N Dri
66. Florco
67. Florco X
68. Solid A Sorb
69. Chemsil 30
70. Chemsil 50
71. Chemsil 3030
72. Dicaperl HP200
73. Dicaperl HP500
74. Petroset
75. Petroset II
76. Aquaset
77. Aquaset II
89. Other. Describe in item13, or additional page

Solidification

90. Cement
91. Concrete (encapsulation)
92. Bitumen
93. Vinyl Chloride
94. Vinyl Ester Styrene
99. Other. Describe in item 13, or additional page
100. None Required

FORM 542 — Consigned to: Philotechnics, Ltd.

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST

MANIFEST INDEX AND REGIONAL COMPACT TABULATION

List all original "PROCESSED WASTE" generators (if any) before "COLLECTED WASTE" generators

1. WASTE COLLECTOR/PROCESSOR

NAME: Philotechnics, Ltd.

SC TRANSPORT PERMIT NUMBER: NA

SHIPPING DATE: 09/08/2006

SHIPPER USE ONLY

2. MANIFEST NUMBER: 0533-091405Pe

3. PAGE 1 OF 1 PAGE(S)

4. GENERATOR IDENDIFICATION NUMBER	5. GENERATOR NAME AND TELEPHONE NUMBER	6. GENERATOR FACILITY ADDRESS	6A. WASTE DESCRIPTION (NOMENCLATURE)	7. PREPROCESSED WASTE (OR MATERIAL) VOLUME (m³)	(ft³)	8. MANIFEST NUMBER(S) UNDER WHICH WASTE(OR MATERIAL) RECEIVED AND DATE OF RECEIPT	9. WASTE CODE P=PROCESSED C=COLLECTED	10. ORIGINATING COMPACT REGION OR STATE	11. AS PROCESSED/COLLECTED TOTAL A. SOURCE MATERIAL (kg)	(lb)	B. SNM (g)	C. ACTIVITY (MBq)	(mCi)	D. VOLUME (m³)	(ft³)	E. WEIGHT (lb)	F. MAXIMUM PACKAGE RADIATION LEVEL
0533	Eastern Connecticut St. University 860-466-5259	Biology Dept.-Goddard Hall 83 Windham Street Willimantic, 06226-2295	Pe,PI,GI-BPU/NDV	~~0.21~~ 0.12	~~7.00~~ 4.1	NA 09/08/2006	C		0.00E+00	0.00E+00	0.00E+00	6.99E+00	1.62E-01	~~0.21~~ 0.12	~~7.00~~ 4.1	150.00	<0.50
TOTALS OF ALL PAGES (FORMS 542 AND 542A)									NP	NP	NP	1.620E-01	4.38E-03	0.21	7.500E+00	1.650E+02	N/A

FORM 542 (10-94)

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

DRY WASTE DISPOSAL OF C-14 AND H-3

Date	Name	MicroCuries
08-06-86	GC	0.25 H-3 Corticosterone
08-07-86	GC	0.34 H-3 Corticosterone
08-08-86	GC	0.53 H-3 Corticosterone
08-11-86	GC	0.73 H-3 Corticosterone
08-13-86	GC	0.69 H-3 Corticosterone
08-21-86	GC	0.69 H-3 Corticosterone
08-25-86	GC	0.67 H-3 Corticosterone
08-26-86	GC	0.67 H-3 Corticosterone
08-27-86	GC	0.65 H-3 Corticosterone
09-04-86	GC	0.70 H-3 Corticosterone
09-05-86	GC	0.69 H-3 Corticosterone
02-03-87	GC	1.03 H-3 Corticosterone
02-10-87	GC	2.06 H-3 Corticosterone
09-22-87	GC	2.48 H-3 Corticosterone
10-20-87	GC	2.86 H-3 Corticosterone
11-24-87	GC	0.29 H-3 Testosterone
11-24-87	GC	0.48 H-3 Aldosterone
08-23-88	GC	0.73 H-3 Corticosterone
08-24-88	GC	1.35 H-3 Corticosterone
09-22-88	GC	1.64 H-3 Corticosterone
12-29-88	GC	1.37 H-3 Corticosterone
12-30-88	GC	1.08 H-3 Corticosterone
03-09-89	GC	1.60 H-3 Corticosterone
03-16-89	GC	1.60 H-3 Corticosterone
07-14-89	GC	1.35 H-3 Corticosterone
09-12-89	GC	1.62 H-3 Corticosterone
10-03-89	GC	3.75 H-3 Corticosterone
10-10-89	GC	1.35 H-3 Corticosterone
10-26-89	GC	1.27 H-3 Corticosterone
10-31-89	GC	0.43 H-3 Testosterone
01-30-90	GC	2.63 H-3 Corticosterone
05-01-90	GC	2.90 H-3 Corticosterone
01-28-91	GC	1.90 H-3 Corticosterone
02-04-91	GC	1.90 H-3 Corticosterone
04-22-91	GC	2.30 H-3 Corticosterone
04-29-91	GC	2.10 H-3 Corticosterone
12-02-91	GC	2.72 H-3 Corticosterone
02-06-92	GC	2.10 H-3 Corticosterone
02-13-92	GC	2.10 H-3 Corticosterone
11-11-92	GC	1.32 H-3 Corticosterone
11-20-92	GC	1.41 H-3 Corticosterone
12-04-92	GC	1.41 H-3 Corticosterone
04-Feb-93	GC	1.45 H-3 Corticosterone
08-Feb-93	GC	2.95 H-3 Corticosterone
20-Sep-93	GC	2.15 H-3 Corticosterone
06-Dec-93	GC	1.35 H-3 Corticosterone
06-Dec-93	GC	0.3 H-3 Estradiol

CONTINUE DATA NEXT PAGE. SAME WASTE DRUM.

EASTERN CONNECTICUT STATE UNVERSITY
RADIATION RECORDS

DRY WASTE DISPOSAL OF C-14 and H-3

Date	Name	MicroCuries	
06-Feb-95	GC	2.5	H-3 Corticosterone
13-Feb-95	GC	2.5	H-3 Corticosterone
25-Sep-95	GC	5.0	H-3 Corticosterone
13-Oct-95	GC	1.6	H-3 Testosterone β
18-Oct-95	GC	1.6	H-3 Testosterone β
25-Oct-95	GC	1.6	H-3 Testosterone β
01-Nov-95	GC	1.6	H-3 Testosterone β
20-Nov-95	GC	0.3	H-3 Testosterone kit
29-Nov-95	GC	0.15	H-3 Testosterone kit
05-Dec-95	GC	0.15	H-3 Testosterone kit
30-Jan-96	GC	4.0	H-3 Corticosterone
13-Feb-96	GC	0.15	H-3 Testosterone kit
05-Mar-96	GC	1.6	H-3 Testosterone β
26-Mar-96	GC	0.15	H-3 Testosterone kit
25-Sep-96	GC	0.3	H-3 Testosterone kit
03-Feb-97	GC	4.0	H-3 Corticosterone
29-Sep-97	GC	5.0	H-3 Corticosterone
01-Dec-97	GC	0.6	H-3 Testosterone kit
02-Feb-98	GC	4.0	H-3 Corticosterone
04-Feb-98	GC	0.8	H-3 Corticosterone
09-Feb-98	GC	5.0	H-3 Corticosterone
01-Feb-99	GC	5.0	H-3 Corticosterone
04-Oct-99	GC	5.0	H-3 Corticosterone
15-Nov-99	GC	5.0	H-3 Corticosterone
31-Jan-00	GC	3.2	H-3 Corticosterone
29-Jan-01	GC	5.0	H-3 Corticosterone
30-Jan-01	EC	0.5	C-14 Glucose
30-Jan-01	EC	0.5	H-3 Glucose
25-Feb-02	GC	4.0	H-3 Corticosterone
08-Apr-02	GC	4.0	H-3 Corticosterone
27-Jan-03	GC	4.0	H-3 Corticosterone
04-Feb-03	EC	0.4	C-14 Glucose
04-Feb-03	EC	0.4	H-3 Glucose
13-Oct-03	GC	4.0	H-3 Corticosterone
02-Feb-04	GC	4.0	H-3 Corticosterone
03-Feb-04	EC	0.2	C-14 Glucose
03-Feb-04	EC	0.2	H-3 Glucose
31-Jan-05	GC	4.0	H-3 Corticosterone
01-Feb-05	EC	0.2	C-14 Glucose
01-Feb-05	EC	0.2	H-3 Glucose
08-Mar-05	GC	0.4	H-3 Corticosterone kit
15-Mar-05	GC	0.4	H-3 Corticosterone kit

TOTAL MicroCuries 1.30 C-14 ONLY
TOTAL MicroCuries 159.84 H-3 ONLY
DISPOSAL ON SEPTEMBER 13, 2005 PHILOTECHNICS, LTD.

703

READY ->A1

PARAMETER GROUP: 1
ID:COLURSD

01A	PROGRAM MODE	1 ->
01B	COUNT MODE	3 ->
02	LISTING	Y ->
03	TIME	60 ->
04	COUNTS 1	900000 ->
06A	AUTO WINDOW	N ->
07	RATIO MONITOR	N ->
08	CHANNEL 1	8 - 110 ->
09	CHANNEL 2	0 - 0 ->
10	CHANNEL 3	100 - 135 ->
11	CHANNEL 4	135 - 184 ->
12	EXTERNAL STD TIME	30 ->
13	EXTERNAL STD COUNTS	900000 ->
14	PRINT 1,2,5,7,21,22	
	->	

September 13, 2005
Dry waste drum H3, C14
Swipes from external surface 4 areas
and background cpm.

Gloria J. Colburn
to Philotechnics, Ltd
for permanent disposal.

POS	TIME		CPM1	CPM1%	ESR	CPR%
001	00060	surface	27.0	19.2	1.269	1.18
002	00060		16.0	25.0	1.228	1.13
003	00060		13.0	27.7	1.280	1.12
004	00060		16.0	25.0	1.156	1.17
005	00060	Bkg	11.0	30.2	1.832	1.32

READY ->

Disposal Manifest 2016

Philotechnics, Ltd.
Oak Ridge, TN

Comprehensive documentation previously submitted May 12, 2016.

PHILOTECHNICS

April 6, 2016

Eastern Connecticut University
Science Bldg., Room 358
Willimantic, CT 06226

Subject: Shipment Receipt Acknowledgement

Dear Sir or Madam:

In accordance with the requirements of 10 CFR 20, Appendix G, Section III, C.1., the attached signed Manifest copy #0533-032916EN is provided as your notice of receipt and acceptance of the radioactive materials specified on the manifest.

This letter is acknowledgement of receipt only. Any manifest discrepancies found during unloading or processing will be reported at a later date.

Please contact me if you have any questions or require additional information. I can be reached at 888-RADWASTe or 865-285-3028 (direct), or via email at akbrown@philotechnics.com.

Sincerely,

Philotechnics, Ltd.

Amanda Brown

Amanda Brown

FORM 540 Energy Solutions/Bear Creek

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST

SHIPPING PAPER

1. EMERGENCY TELEPHONE NUMBER (Include Area Code)
800-424-9300

ORGANIZATION
CHEMTREC #17253

2. IS THIS AN "EXCLUSIVE USE" SHIPMENT?
[ ] YES
[X] NO

3. TOTAL NUMBER OF PACKAGES IDENTIFIED ON THIS MANIFEST ==========> 1

4. DOES EPA REGULATED WASTE REQUIRING A MANIFEST ACCOMPANY THIS SHIPMENT? [ ] YES [X] NO
If "Yes", provide Manifest Number ====>

EPA MANIFEST NUMBER
N/A

5. SHIPPER - NAME AND FACILITY
Philotechnics @ Eastern Connecticut State University
Biology Dept. - Goddard Hall, 86 Windham Street
Willimantic, CT 06226-2295

USER PERMIT NUMBER
T-TN024-D16

SHIPMENT NUMBER
0533-032916EN

CONTACT
Gloria Colurso

TELEPHONE NUMBER (Include Area Code)
(860) 465-5259

6. CARRIER - Name and Address
Philotechnics, Ltd
201 Renovare Blvd.
Oak Ridge, TN 37830

Truck #:
Trailer #:

CONTACT
Justin Button

TELEPHONE NUMBER (Include Area Code)
(865) 466-4812

SIGNATURE - Authorized carrier acknowledging waste receipt

DATE
3-29-16

SHIPMENT ID NUMBER
0533-032916EN

[ ] COLLECTOR
[ ] PROCESSOR
[X] GENERATOR TYPE (Specify) A

EPA I.D. NUMBER
TNR000030544

SHIPPING DATE
03/29/2016

7. FORM 540 AND 540A PAGE 1 OF 1 PAGE(S)
FORM 541 AND 541A 1 PAGE(S)
FORM 542 AND 542A 1 PAGE(S)
ADDITIONAL INFORMATION NONE PAGE(S)

8. MANIFEST NUMBER
(Use this number on all continuation pages)
0533-032916EN

9. CONSIGNEE - Name and Facility Address
Energy Solutions/Bear Creek
Operated By Energy Solutions
1560 Bear Creek Road
Oak Ridge, TN 37830

CONTACT
Donnie Brackett

TELEPHONE NUMBER (Include Area Code)
(865) 220-1629

SIGNATURE - Authorized consignee acknowledging waste receipt

DATE

10. CERTIFICATION
This is to certify that the herein-named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. This also certifies that the materials are classified, packaged, marked, and labeled and in proper condition for transportation and disposal in accordance with the requirements of 10 CFR Parts 20 and 61, or equivalent state regulation.

AUTHORIZED SIGNATURE

TITLE
Tech

DATE
3-29-16

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	16. TOTAL PACKAGE ACTIVITY MBq	mCi	17. LSA/SCO CLASS	18. TOTAL WEIGHT OR VOLUME (Use appropriate units)	19. IDENTIFICATION NUMBER OF PACKAGE
NON-DOT REGULATED MATERIALS DAW/COMPACT 1 - 5 GALLON DRUM	NA	NA	SOLID/OXIDES	H-3	1.8500000000	(0.0500000000)	NA	0.68 ft³ 20.00000 lb	16-000337 (ENSO)

FOR CONSIGNEE USE ONLY

Tennessee "License For Delivery" No. _____

South Carolina Transport Permit No. _____

US Ecology Generator No. _____

US Ecology Permit No. _____

20. Generator Certification Statement

A) Radioactive Materials. Certification is hereby made that this shipment of low-level radioactive waste has been prepared in accordance with a radioactive waste management program which has been approved by the Nuclear Regulatory Commission or an Agreement State regulatory agency and with the current revision of the site Material Acceptance Criteria.
B) Hazardous Materials. Generator hereby certifies that this material __ does (or) __ does not contain a hazardous waste as defined in 40 CFR 261.
C) Data. Generator hereby represents and warrants that all data set forth in this (UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST) are true and correct in all respects and in accordance with all applicable governmental laws, rules, regulations and site Radioactive Material Licenses.
D) INFECTIOUS SUBSTANCE: Generator hereby certifies that this material does not contain an infectious substance as defined in 49CFR 173.134

Gloria J. Colurso (Print Name) Gloria J Colurso (Signature) 3.29.2016 (Date)

Form 540 (10-96)

Modified Date: 03/24/2016 10:27

FORM 541 — **Energy Solutions/Bear Creek**

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST

CONTAINER AND WASTE DESCRIPTION

Additional Nuclear Regulatory Commission (NRC) Requirements for Control, Transfer and Disposal of Radioactive Waste

1. MANIFEST TOTALS

NUMBER OF PACKAGES/ DISPOSAL CONTAINERS	NET WASTE VOLUME	NET WASTE WEIGHT	SPECIAL NUCLEAR MATERIAL (grams) U-233	U-235	Pu	TOTAL
1	m^3 0.01926	kg 6.80385	NP	NP	NP	NP
	ft^3 0.68000	lb 15.00000				

ACTIVITY (MBq/mCi) (LLD UNITS IN uCi/cc)	ALL NUCLIDES	TRITIUM	C-14	Tc-99	I-129	SOURCE
MBq	1.8500000000	1.8500000000	NP	NP	NP	NP
mCi	0.0500000000	0.0500000000	NP	NP	NP	NP

2. MANIFEST NUMBER 0533-032916EN

3. PAGE 1 OF 1 PAGE(S)

4. SHIPPER NAME Philotechnics @ Eastern Connecticut State Uni

SHIPMENT ID NUMBER 0533-032916EN

DISPOSAL CONTAINER DESCRIPTION / WASTE DESCRIPTION FOR EACH WASTE TYPE IN CONTAINER

5. CONTAINER IDENTIFICATION NUMBER/ GENERATOR NUMBER	6. CONTAINER DESCRIPTION (See Note 1) PROCESS REQUESTED (See Note 1A) BURIAL/DISPOSITION (See Note 2A)	7. VOLUME m^3 / ft^3	8. WASTE AND CONTAINER WEIGHT kg / lb	9. SURFACE RADIATION LEVEL mSv/hr / mrem/hr	10. SURFACE CONTAMINATION MBq/100 cm^2 / dpm/100 cm^2 ALPHA	BETA-GAMMA	11. WASTE DESCRIPTOR (See Note 2)	12. APPROXIMATE WASTE VOLUME(S) IN CONTAINER m^3 / ft^3	13. SOLIDIFICATION OR STABILIZATION MEDIA (See Note 3)	14. CHEMICAL DESCRIPTION CHEMICAL FORM/ CHELATING AGENT	WEIGHT % CHELATING AGENT IF > 0.1%	15. RADIOLOGICAL DESCRIPTION INDIVIDUAL RADIONUCLIDES AND ACTIVITY AND CONTAINER TOTAL; OR CONTAINER TOTAL ACTIVITY AND RADIONUCLIDE PERCENT			16. WASTE CLASSIFICATION AS - Class A Stable AU - Class A Unstable B - Class B C - Class C
# - Innerpack Container												RADIONUCLIDES	MBq	mCi	
16-000337 (ENSO) 533	4 O - GENERAL COMPACTION O	0.01926	9.07180	< 5.0000E-03	< 1.6700E-06	< 1.6700E-05	39	0.01926	100	SOLID OXIDES / NP	NP	H-3	1.8500000000	0.0500000000	AU
		0.68000	20.00000	< 5.0000E-01	< 1.0000E+02	< 1.0000E+03		0.68000							
												Sub Total	1.8500000000	0.0500000000	
												Package Total	1.8500000000	0.0500000000	
Shipment Total		0.01926	9.07180										1.8500000000	0.0500000000	
		0.68000	20.00000												

NOTE 1: Container Description Codes. For containers/waste requiring disposal in approved structural overpacks, the numerical code must be followed by "-OP."

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

NOTE 1A: Process Requested

C. Compaction
SR. Steam Reforming
DI. Direct Incineration
SI. Sort & Incinerate
D. Decon
G. Green is Clean
M. Metal Melt
T. Trans-Ship
LI. Liquid for Incineration
OI. Oil for Incineration
O. Other (describe)

NOTE 2: Waste Descriptor Codes. (Choose up to three which predominate by volume.)

20. Charcoal
21. Incinerator Ash
22. Soil
23. Gas
24. Oil
25. Aqueous Liquid
26. Filter Media
27. Mechanical Filter
28. EPA or State Hazardous
29. Demolition Rubble
30. Cation Ion-exchange Media
31. Anion Ion-exchange Media
32. Mixed Bed Ion-exchange Media
33. Contaminated Equipment
34. Organic Liquid (except oil)
35. Glassware or Labware
36. Sealed Source/Device
37. Paint or Plating
38. Evaporator Bottoms/Sludges/ Concentrates
39. Compactible Trash
40. Noncompactible Trash
41. Animal Carcass
42. Biological Material (except animal carcass)
43. Activated Material
59. Other. Describe in item 11, or additional page

NOTE 2A: Burial/Disposition Site

B Barnwell Waste Management Facility
E EnergySolutions / Clive
R Richland, WA
PR Process and Return
O Other

NOTE 3: Solidification and Stabilization Media Codes. (Choose up to three which predominate by volume.) For media meeting disposal site structral stability requirements, the numerical code must be followed by "-S" and the media vendor and brand name must also be identified in item 13. Code 100=None Required

Solidification
90. Cement
91. Concrete (encapsulation)
92. Bitumen
93. Vinyl Chloride
94. Vinyl Ester Styrene
99. Other. Describe in item 13, or additional page
100. None Required

 * - Indicates Cross Contamination

NRC FORM 542 (7-2001) Energy Solutions/Bear Creek

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST

MANIFEST INDEX AND REGIONAL COMPACT TABULATION

List all original "PROCESSED WASTE" generators (if any) before "COLLECTED WASTE" generators

1. WASTE COLLECTOR/PROCESSOR

NAME: Philotechnics @ Eastern Connecticut State University

IDENTIFICATION NUMBER: 533

SHIPPING DATE: 03/29/2016

SHIPPER USE ONLY

2. MANIFEST NUMBER: 0533-032916EN

3. PAGE 1 OF 1 PAGE(S)

4. GENERATOR IDENTIFICATION NUMBER	5. GENERATOR NAME PERMIT NUMBER (IF APPLICABLE), AND TELEPHONE NUMBER	6. GENERATOR FACILITY ADDRESS	7. PREPROCESSED WASTE (OR MATERIAL) VOLUME m^3	8. MANIFEST NUMBER(S) UNDER WHICH WASTE (OR MATERIAL) RECEIVED AND DATE OF RECEIPT	9. WASTE CODE P=PROCESSED C=COLLECTED	10. ORIGINATING COMPACT REGION OR STATE	11. AS PROCESSED/COLLECTED TOTAL A. SOURCE MATERIAL (kg)	B. SNM (g)	C. ACTIVITY MBq	D. VOLUME m^3
533	Eastern Connecticut State University EPA #: (860) 465-5259	Biology Dept. - Goddard Hall, 86 Windham Street Willimantic, CT 06226-2295	0.01926	Onsite Generation 03/21/2016	C	CT	NP	NP	1.85	0.01926
						TOTALS OF ALL PAGES (FORMS 542 AND 542A)	NP	NP	1.8500000000	0.01926

PHILOTECHNICS

April 6, 2016

Eastern Connecticut University
Science Bldg., Room 358
Willimantic, CT 06226

Subject: Shipment Receipt Acknowledgement

Dear Sir or Madam:

This letter is provided as certification that the waste on attached BOL #0533-032916PH consigned to Philotechnics, Ltd. was received on April 4, 2016.

Please contact me if you have any questions or require additional information. I can be reached at 888-RADWASTe or 865-285-3028 (direct), or via email at akbrown@philotechnics.com.

Sincerely,

Philotechnics, Ltd.

Amanda Brown

Amanda Brown

STRAIGHT BILL OF LADING

STRAIGHT BILL OF LADING – Short Form – Original – Not Negotiable Authorization No.

Shipper's No. 0533-032916PH

Carrier Philotechnics, Ltd. SCAC _____ Carrier's No. _____

Received, subject to the classifications and tariffs in effect on the date of this Bill of Lading:

at Willimantic, CT (City, State) Date: 03/29/16 From: Eastern Connecticut University (Company Name)

The property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said company (the word company being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its own road or its own water line, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written, herein contained (as specified in Appendix B to Part 1035) which are hereby agreed to by the shipper and accepted for himself and his assigns.

TO: (Mail or street address of consignee for purposes of notification only.)	FROM:
Consignee: Philotechnics, Ltd.	Shipper: Philotechnics, Ltd @ Eastern Connecticut University
Street: 201 Renovare Blvd.	Address: Science Bldg, Room 358
Destination: Oak Ridge, TN Zip: 37830 Contact: Justin Button @ 865-285-3027	Origin: Willimantic, CT Zip: 06226 Contact: Gloria Colurso @ 860-465-5259
Route:	

Delivering Carrier: Philotechnics, Ltd. Trailer Initial/Number

No. of packages	HM	Description of articles, special marks, and exceptions	Hazard Class	I.D. Number	Packaging Group	Weight (subject to correction)	Class or rate	Labels required (or exemption)	Check column
5	x	UN2908, Radioactive Material, Excepted Package- Empty Packaging	7	UN2908	N/A	77.27 kgs. (170 lbs.)			
		Physical Form: Solid Chemical Form: Oxides							
		Isotope: S-35							
		ERG# 161							
		CHEMTREC# 17253							
		Emergency Contact# 800-424-9300							

Received By: Justin Button
Date: 4/4/16

FREIGHT CHARGES
☒ Prepaid
☐ Collect

Generator hereby certifies that this material does not contain a hazardous waste as defined in 40 CFR 261 or an infectious substance as defined in 49 CFR 173.134. Generator hereby certifies and warrants that all data is true and correct. Gloria J Colurso
Customer Signature

PLACARDS REQUIRED: Yes

PLACARDS REQUIRED Radioactive

☒ Yes ☐ No – Furnished by Carrier
Drivers Signature:

Special Instructions:

Shipper: Philotechnics, Ltd @ Eastern Connecticut	Carrier: Philotechnics, Ltd.
Per: _____ Date: 03/29/16	Per: _____ Date: 03/29/16
	Emergency Response Telephone No. 800-424-9300 (CHEMTREC)
Permanent post office address of shipper	Monitored at all times the Hazardous Material is in transporation including storage indentical to transportation (§172.604).

EASTERN CONNECTICUT STATE UNVERSITY
RADIATION RECORDS

DRY WASTE DISPOSAL OF C-14 and H-3

BEGIN BRAND NEW WASTE DRUM.

Date	Name	MicroCuries	Remarks
31-Oct-2005	GC	4.0 H-3 Corticosterone	Endocrine lab
30-Jan-2006	GC	4.0 H-3 Corticosterone	Physiology lab
30-Jan-2007	GC	4.0 H-3 Corticosterone	Physiology lab
09-Oct-2007	GC	4.0 H-3 Corticosterone	Endocrine lab
05-Feb-2008	GC	4.0 H-3 Corticosterone	Physiology lab
03-Feb-2009	GC	4.0 H-3 Corticosterone	Physiology lab
02-Feb-2010	GC	4.0 H-3 Corticosterone	Physiology lab
01-Feb-2011	GC	4.0 H-3 Corticosterone	Physiology lab
31-Jan-2012	GC	4.0 H-3 Corticosterone	Physiology lab
04-Feb-2013	GC	NONE Experiment was just a simulation	Physio lab
03-Feb-2014	GC	NONE Experiment was just a simulation	Physio lab
23-Feb-2015	GC	NONE Experiment was just a simulation	Physio lab

TOTAL: **36 MicroCuries H-3 ONLY**

TRANSFER TO: **Philotechnics Ltd. Oak Ridge, TN** **March 29, 2016**

PAGE 1 of 1

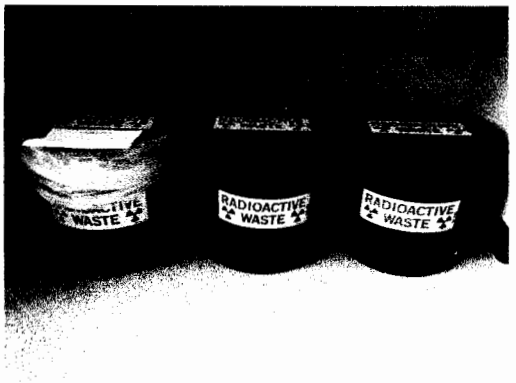
Gloria J Glenn

EASTERN CONNECTICUT STATE UNIVERSITY
SCIENCE BUILDING, LABORATORY 306 and 306A
Survey Date: March 22, 2016
Survey Method: TriCarb A-2810 Liquid Scintillation Counter DG08084184
Preventive Maintenance December 31, 2014 by Perkin-Elmer
Counting efficiencies: 65% H-3. 93% C-14.
WASTE DRUM CONTAINS DAW SURVEYS FOR H-3

LOCATION	CPM	BKG	CPM>BKG	%EFF	DPM
Outside lid surface	17	15	2	65	3
Outside lid rim	17	15	2	65	3
Inside lid surface	18	15	3	65	5
Inside lid rim	22	15	7	65	11
DAW bag 1 outer surface	26	15	11	65	17
DAW bag 2 outer surface	19	15	4	65	6
DAW bag 3 outer surface	11	15	0	65	0
Liner 1 inner surface	26	15	11	65	17
Liner 1 absorbent paper$_1$	25	15	10	65	15
Liner 1 absorbent paper$_2$	14	15	0	65	0
Liner 1 inside bottom	10	15	0	65	0
Liner 1 outer surface	23	15	8	65	12
Liner 2 inner surface	25	15	10	65	15
Liner 2 vermiculite	11	15	0	65	0
Liner 2 outer surface	27	15	12	65	18
Liner 3 inner surface	23	15	8	65	12
Liner 3 vermiculite	22	15	7	65	11
Liner 3 outer surface	13	15	0	65	0
Drum outer wall upper-half	17	15	2	65	3
Drum outer wall lower-half	30	15	15	65	23
Drum inner wall upper-half	21	15	6	65	9
Drum inner wall lower-half	26	15	11	65	17
Drum outer floor flat	20	15	5	65	8
Drum outer floor rim	18	15	3	65	5
Drum inner floor flat	28	15	13	65	20
Drum inner floor rim	19	15	4	65	6
C-14 Standard	104,263				

Permissible limit < 220 dpm per 100 square cm. If > limit, decontaminate and recount.

SCIENCE BUILDING, LABORATORY 306, 306A, WASTE DRUM DAW H-3
Survey Date: March 22, 2016
Survey Method: Geiger-Mueller Meter 43323, Probe 028749, Alpha/Beta scans
Calibrated July 1, 2015 by Ludlum Measurements
Survey Results: Background 0.02 mRem/hour or less
Items listed above 0.02 mRem/hour or less
Check Source: 0.3 mRem/hour at 1X scale
March 29, 2016 Transferred drum with less than 50 microCi DAW H-3 to Philotechnics, Oak Ridge, TN.



Eastern Connecticut State University
Radioactive Waste Storage Drums

Left Drum H-3 Dry Active Waste
DAW and drum transferred to Philotechnics Ltd., Oak Ridge, TN

Eastern Connecticut State University
Radioactive Waste Storage Drums

Center and Right Drums Sulfur-35 Scintillation Vials
Decay-in-storage, then regular trash.
Empty drums transferred to Philotechnics Ltd., Oak Ridge, TN

Eastern Connecticut State University
Radioactive Waste Storage Drums

Sulfur-35 Aqueous and Dry
Decay-in-storage, then regular trash.
Empty drums transferred to Philotechnics Ltd., Oak Ridge, TN

Eastern Connecticut State University
Radioactive Waste Storage Boxes

Sulfur-35 Dry
Decay-in-storage, then regular trash.
Empty boxes shredded, then regular trash.

2. Prior to termination of a license,10 CFR 30.35(g), 30.36(k)(4) and 30.51 require that you submit to the NRC certain records. Please submit the following records, or explain why such records are not applicable.

b. records important for decommissioning as described in 30.35(g). Examples of such records include but are not limited to: records of contamination, identifying the radionuclides, quantities and concentrations; as-built drawings and modifications of structures and equipment in restricted areas and locations of inaccessible contamination such as buried pipes; a single list, updated at least every 2 years, of areas to which access is limited for the purpose of radiation protection (restricted areas); and records related to the provision of financial assurance.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

No Restricted Areas

Since its origin in 1986, there has been **no** contamination incident associated with our licensed program that has required the designation of a restricted area. Therefore, there are no corresponding records to submit.

Current Licensed Radioisotopes and Maximum Amount Permitted

Carbon-14	@ 10 milliCuries
Hydrogen-3	@ 10 milliCuries
Iodine-125	@ 500 microCuries
Sulfur-35	@ 100 milliCuries

Given the types and quantities of our radioisotopes, restricted areas are not a part of our program. It is noteworthy that the actual amount of radioisotopes that we typically have on hand is significantly lower than the maximum permitted.

Financial Assurance

See letter from James Howarth, Vice President for Finance and Administration, dated June 17, 2016.

EASTERN CONNECTICUT STATE UNIVERSITY

A Liberal Education. Practically Applied.

June 17, 2016

To Whom It May Concern:

Eastern Connecticut State University is a public higher education institution owned by the State of Connecticut with an annual budget in excess of $130.0 million.

As the Vice President for Finance and Administration I am responsible for managing the university's budget.

I hereby certify that Eastern Connecticut State University and the State of Connecticut would have sufficient resources in the unlikely event of an accident.

Sincerely,

James Howarth

Vice President for Finance and Administration

3. The disposal records to the sanitary sewerage system did not contain the information as required by 10 CFR 20.2003(a)(3). Please provide the average monthly volume of water released into the sewer and calculate the fraction and compare to the limit in table 3 of Appendix B to part 20 represented by discharges into sanitary sewerage.

Eastern Connecticut State University
Radiation Records

Radionuclide	10 CRF Part 20, Appendix B, Table 3 Releases to Sewers μCi/ml Monthly Average Concentration	Conversion from μCi/ml to μCi/gallon
C-14	3 E-4	1.135
H-3	1 E-2	37.854
I-125	2 E-5	0.757
S-35	1 E-3	3.785

When more than one radionuclide is discharged, the total is less than unity.

Gross quantity does not exceed C-14 0.5 Curie/yr, H-3 1 Curie/yr, All others 0.5 Curie/yr.

Average monthly volume of water released on campus 400,000 gallons.
This is a **very conservative** estimate based on information provided by the University Facilities Department.

Radionuclide	Eastern CT State University Disposal Limits to Sewers μCi per month	Based on 400,000 gallons of water released per month on campus equals μCi/gallon
C-14	500	0.00125
H-3	2,500	0.00625
I-125	50	0.000125
S-35	2,500	0.00625

It is evident that the sewerage disposal limits set by the University are much lower than those permitted by 10 CFR Part 20. Furthermore, the amount of radionuclides that we actually release is typically below our University limits.

Depending on the year of our license, sewerage disposal limits have varied somewhat, but they have always been markedly below those permitted by 10 CRF Part 20.
See attachments.

EASTERN CONNECTICUT STATE UNIVERSITY

SUMMARY OF SEWERAGE LIMITS

LICENSE RENEWAL May 15, 2012 – August 31, 2022

MAXIMUM ALLOWED		SEWERAGE DISPOSAL PERMITTED/MONTH *(page 30)*	
H-3	10 milliCi	2,500 microCi	400,000 gallons/month
C-14	10 milliCi	500 microCi	
S-35	100 milliCi	2,500 microCi	
I-125	500 microCi	50 microCi	

LICENSE AMENDMENT May 18, 2009 – June 30, 2012

MAXIMUM ALLOWED		SEWERAGE DISPOSAL PERMITTED/MONTH *(page 30)*	
H-3	5 milliCi	2,500 microCi	400,000 gallons/month
C-14	5 milliCi	500 microCi	
S-35	100 milliCi	2,500 microCi	
I-125	500 microCi	50 microCi	

LICENSE RENEWAL May 23, 2002 – June 30, 2012

MAXIMUM ALLOWED		SEWERAGE DISPOSAL PERMITTED/MONTH *(page 37)*	
H-3	5 milliCi	2,500 microCi	325,000 gallons/month
C-14	5 milliCi	500 microCi	
S-35	75 milliCi	2,500 microCi	
I-125	500 microCi	50 microCi	

LICENSE AMENDMENT August 1, 1998 – June 30, 2002

MAXIMUM ALLOWED		SEWERAGE DISPOSAL PERMITTED/MONTH *(page 35)*	
H-3	5 milliCi	1,000 microCi	3,900,000 gallons/month
C-14	5 milliCi	500 microCi	
S-35	25 milliCi	750 microCi	
I-125	250 microCi	25 microCi	

LICENSE AMENDMENT July 10, 1992 – June 30, 1997 – June 30, 2002

Change in NRC Ruling extended same license to June 30, 2002

MAXIMUM ALLOWED	SEWERAGE DISPOSAL PERMITTED/MONTH
Same as 1991-97	Same as 1991-97

LICENSE RENEWAL February 5, 1991 – June 30, 1997

Still under review, NRC asked for more information December 3, 1991.

We responded March 23, 1992, which included sewerage limits below.

MAXIMUM ALLOWED		SEWERAGE DISPOSAL PERMITTED/DAY *(page 31)*	
H-3	5 milliCi	1,000 microCi	2,500,000 gallons/month
C-14	6 milliCi	100 microCi	
S-35	25 milliCi	100 microCi	
Cl-36	500 microCi	10 microCi	
I-125	200 microCi	5 microCi	

LICENSE AMENDMENT June 1, 1989 – March 31, 1991

MAXIMUM ALLOWED		SEWERAGE DISPOSAL PERMITTED/DAY
H-3	5 milliCi	Same as 1986-91
C-14	6 milliCi	
S-35	25 milliCi	
Cl-36	500 microCi	

LICENSE AMENDMENT June 19, 1986 – March 31, 1991

MAXIMUM ALLOWED		SEWERAGE DISPOSAL PERMITTED/DAY
H-3	5 milliCi	Same as 1986-91
C-14	6 milliCi	
S-35	25 milliCi	
Cl-36	500 microCi	

"FIRST" LICENSE March 18, 1986 – March 31, 1991

MAXIMUM ALLOWED		SEWERAGE DISPOSAL PERMITTED/DAY *(page 22)*
H-3	3 milliCi	No specific amounts listed. Just said
C-14	4 milliCi	as designated in 10 CFR Part 20.303.
Cl-36	500 microCi	

4. NUREG-1757, Volume 1, Revision 2, "Consolidated Decommissioning Guidance Decommissioning Process for Materials Licensees," states for in Figure 8.1 for simplified survey procedures, "One hundred percent scanning of all surfaces in the area of the facility where licensed material was used or stored, using an appropriate radiation detection instrument (including scan sensitivity)." Please state the percentage of all surfaces were scanned for the surveys performed and the rate of survey speed that was performed.

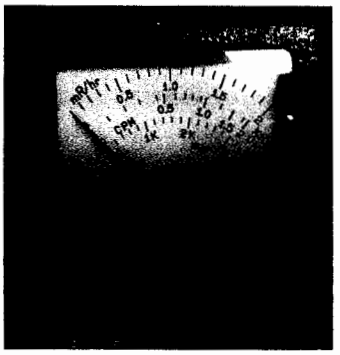
EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS
SAFETY SURVEYS OF LABORATORY FACILITIES

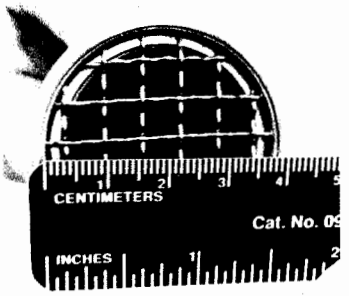
Geiger-Mueller Survey Meter (Calibrated annually):

Model 3, Serial # 43323, Ludlum Measurements, Inc., Sweetwater, TX 79556

The meter dial (Model 202-49) is dual scale with readings provided as 0-3.2K counts per minute and 0-2 millirem per hour. The meter provides multiplier ranges X0.1, X1, X10, and X100.

The probe detector (Model 44-7, Serial # PR-028749) has an indicated use for alpha and beta-gamma surveys. The window is 1.7 $\pm$ 0.3 mg per square centimeter mica. Active window area is approximately 6.4 square centimeters. Efficiency is 30% for alpha, 10% for C-14, and 1700 counts per minute per millirem per hour for Cs-137 gamma.





Please review the contents of our decommissioning booklet submitted with NRC Form 314 dated May 12, 2016. Wherever swipe surveys were conducted for laboratories, waste drums, counters, etc., Geiger-Mueller (GM) surveys were also performed and documented. These GM surveys were conducted at the surface of each designated object at a rate of approximately 8-10 inches per second. The GM surveys covered a major portion of each object, but not literally every square inch. Furthermore, because no scan showed readings above background at 0.02 mRem per hour, the final results were documented in each report with one common statement. Individual readings were not recorded for each item one-by-one. While these survey methods may not be adequate for license termination, I want to affirm that GM surveys were completed and recorded, however modest they may have been.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS
SAFETY SURVEYS OF LABORATORY FACILITIES

It is our understanding that additional GM surveys are NOT required for:

- H-3.
- I-125 that has gone through a minimum of ten half-lives.
  Last I-125 obtained was November 7, 2007.
  Furthermore, I-125 was never used for experiments in the Science Building.
- S-35 that has gone through a minimum of ten half-lives.
  Last S-35 obtained was March 8, 2012.

Additional GM surveys ARE enclosed for C-14 in Science Building rooms 306 and 306A.

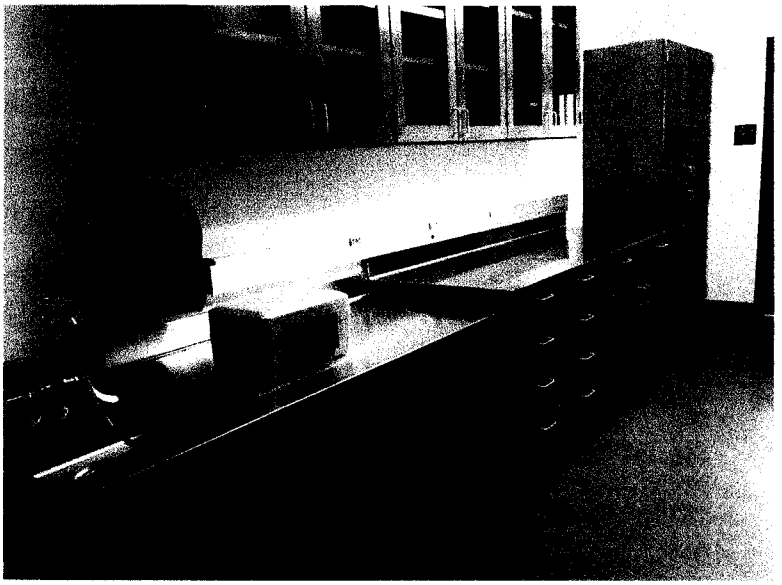
Carbon-14 was **never** used for experiments in the Science Building.
The C-14 materials that we had in the Science Building were stored in a locked safe, within a locked refrigerator, in room 306 also locked. These same C-14 materials were subsequently disposed of into the sanitary sewerage system using the sink in room 306. *(Room 306A is for waste storage.)*

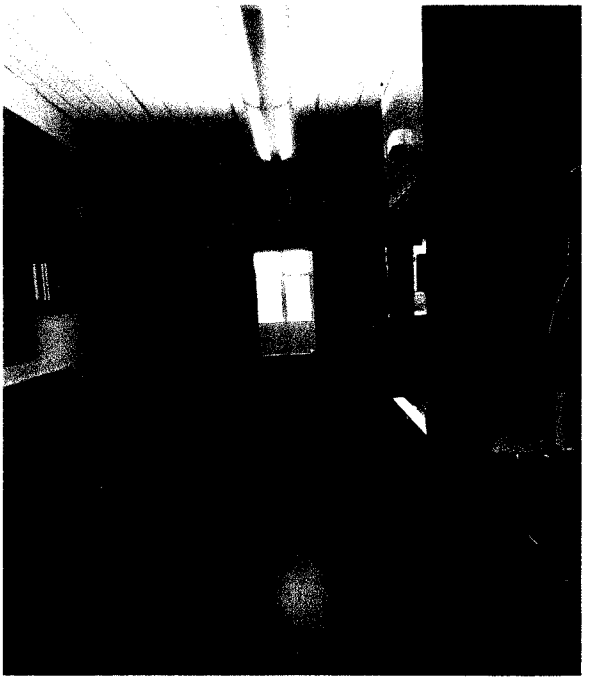
Since C-14 was never used for experimentation, the GM surveys focus on areas relevant to storage and disposal. Note that the sink and benchtops are stainless steel, which limits the absorption of C-14 into structural components.

Swipe surveys for C-14 were previously conducted in Science Building rooms 306 and 306A. These results have already been reported to the NRC with Form 314 dated May 12, 2016.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS
SAFETY SURVEYS OF LABORATORY FACILITIES

Science Building Room 306



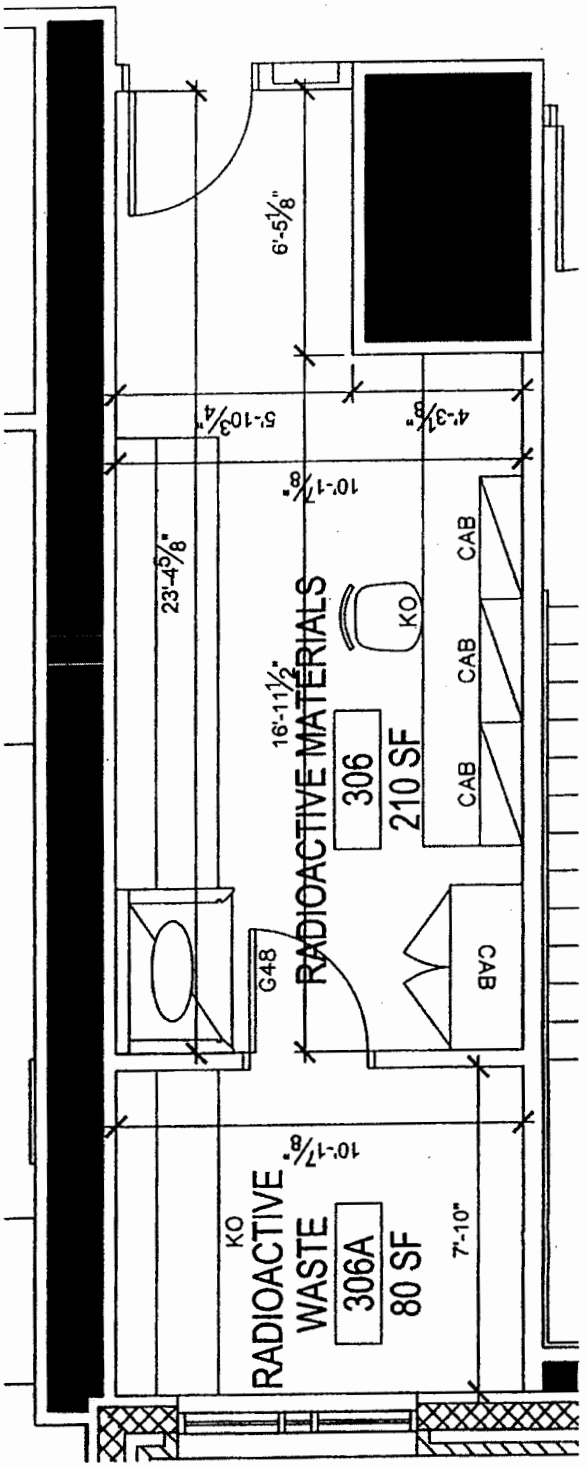


EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS
SAFETY SURVEYS OF LABORATORY FACILITIES

Science Building, Room 306A

Figure 2

Eastern Connecticut State University, Science Building
Rooms 306, 306A



EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

SCIENCE BUILDING, LABORATORY 306 GM SURVEYS FOR CARBON-14

Survey Dates: June 14-15, 2016
Survey Method: Geiger-Mueller Meter 43323, Probe 028749, Alpha/Beta scans
Calibrated July 1, 2015 by Ludlum Measurements
Check Source: 0.3 mRem/hour at 1X scale

Surveys were conducted at the surface of each designated area listed below.
Probe was advanced at a rate of 3 inches per second.

Background averages 0.02 mRem/hour or less.

LOCATION	Direct GM Survey mRem/hour No correction for Background
Rm 306 outside door handle, surface, frame	0.01 – 0.03
Rm 306 inside door handle, surface, frame	0.01 – 0.03
Light switch	0.01 – 0.03
Refrigerator lock and latch	0.01 – 0.03
Refrigerator outside door handle, surface	0.01 – 0.03
Refrigerator inside door	0.01 – 0.03
Refrigerator inside walls	0.01 – 0.03
Refrigerator shelf for storage safe	0.01 – 0.03
Storage safe outer surface	0.01 – 0.03
Storage safe inside lid	0.01 – 0.03
Storage safe inside walls and base	0.01 – 0.03
Benchtop and rim right front	0.01 – 0.03
Outer surface of drawers right front	0.01 – 0.03
Outer surface of cabinets right front	0.01 – 0.03
Benchtop and rim left front	0.01 – 0.03
Outer surface of drawers left front	0.01 – 0.03
Outer surface of cabinets left front	0.01 – 0.03

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

SCIENCE BUILDING, LABORATORY 306 GM SURVEYS FOR CARBON-14

Survey Dates: June 14-15, 2016
Survey Method: Geiger-Mueller Meter 43323, Probe 028749, Alpha/Beta scans
Calibrated July 1, 2015 by Ludlum Measurements
Check Source: 0.3 mRem/hour at 1X scale

Surveys were conducted at the surface of each designated area listed below.
Probe was advanced at a rate of 3 inches per second.

Background averages 0.02 mRem/hour or less.

LOCATION	Direct GM Survey mRem/hour No correction for Background
Benchtop and rim sink area	0.01 – 0.03
Sink faucet and handles	0.01 – 0.03
Sink basin and drain	0.01 – 0.03
Papertowel dispenser	0.01 – 0.03
Soap dispenser	0.01 – 0.03
FLOOR surveys extend lengthwise from hallway door and cover complete width.	
Floor 0-3 feet	0.01 – 0.03
Floor 3-6 feet	0.01 – 0.03
Floor 6-9 feet	0.01 – 0.03
Floor 9-12 feet	0.01 – 0.03
Floor 12-15 feet	0.01 – 0.03
Floor 15-18 feet	0.01 – 0.03
Floor 18-21 feet	0.01 – 0.03
Floor 21-23.5 feet	0.01 – 0.03

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

SCIENCE BUILDING, LABORATORY 306 GM SURVEYS FOR CARBON-14

Survey Dates: June 14-15, 2016
Survey Method: Geiger-Mueller Meter 43323, Probe 028749, Alpha/Beta scans
Calibrated July 1, 2015 by Ludlum Measurements
Check Source: 0.3 mRem/hour at 1X scale

Surveys were conducted at the surface of each designated area listed below.
Probe was advanced at a rate of 3 inches per second.

Background averages 0.02 mRem/hour or less.

LOCATION	Direct GM Survey mRem/hour No correction for Background
WALL surveys extend up six feet from the floor, where possible. In many areas, walls are covered (fully or partially) by refrigerator, shelves, fume hood, or cabinets.	
WALLS (Right Side)	
From hallway door to refrigerator	0.01 – 0.03
From refrigerator to fume hood	0.01 – 0.03
From fume hood to back wall	0.01 – 0.03
Adjacent to doorway of 306A	0.01 – 0.03
WALLS (Left Side)	
Adjacent to doorway of 306A	0.01 – 0.03
From standing cabinet to wall cabinets	0.01 – 0.03
From wall cabinets to sink	0.01 – 0.03
Surrounding sink	0.01 – 0.03
From sink to file cabinet	0.01 – 0.03
From file cabinet to hallway door	0.01 – 0.03

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

SCIENCE BUILDING, LABORATORY 306A GM SURVEYS FOR CARBON-14

Survey Date: June 17, 2016
Survey Method: Geiger-Mueller Meter 43323, Probe 028749, Alpha/Beta scans
Calibrated July 1, 2015 by Ludlum Measurements
Check Source: 0.3 mRem/hour at 1X scale

Surveys were conducted at the surface of each designated area listed below.
Probe was advanced at a rate of 3 inches per second.

Background averages 0.02 mRem/hour or less.

LOCATION	Direct GM Survey mRem/hour No correction for Background
Rm 306A outside door handle, surface, frame	0.01 – 0.03
Window outer surface of door	0.01 – 0.03
Rm 306A inside door handle, surface, frame	0.01 – 0.03
Window inner surface of door	0.01 – 0.03
Screen of air vent	0.01 – 0.03
Benchtop and rim	0.01 – 0.03
Electric strip above bench	0.01 – 0.03
Undersurface of bench	0.01 – 0.03
Windows right side	0.01 – 0.03
Windows center	0.01 – 0.03
Windows left side	0.01 – 0.03
Entire window sill	0.01 – 0.03

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

SCIENCE BUILDING, LABORATORY 306A GM SURVEYS FOR CARBON-14

Survey Date: June 17, 2016
Survey Method: Geiger-Mueller Meter 43323, Probe 028749, Alpha/Beta scans
Calibrated July 1, 2015 by Ludlum Measurements
Check Source: 0.3 mRem/hour at 1X scale

Surveys were conducted at the surface of each designated area listed below.
Probe was advanced at a rate of 3 inches per second.

Background averages 0.02 mRem/hour or less.

LOCATION	Direct GM Survey mRem/hour No correction for Background
FLOOR surveys extend lengthwise from inside doorway to back wall.	
Floor 0-2 feet right-half	0.01 – 0.03
Floor 2-4 feet right-half	0.01 – 0.03
Floor 4-6 feet right-half	0.01 – 0.03
Floor 6-8 feet right-half	0.01 – 0.03
Floor 0-2 feet left-half	0.01 – 0.03
Floor 2-4 feet left-half	0.01 – 0.03
Floor 4-6 feet left-half	0.01 – 0.03
Floor 6-8 feet left-half	0.01 – 0.03

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

SCIENCE BUILDING, LABORATORY 306A GM SURVEYS FOR CARBON-14
Survey Date: June 17, 2016
Survey Method: Geiger-Mueller Meter 43323, Probe 028749, Alpha/Beta scans
Calibrated July 1, 2015 by Ludlum Measurements
Check Source: 0.3 mRem/hour at 1X scale

Surveys were conducted at the surface of each designated area listed below.
Probe was advanced at a rate of 3 inches per second.

Background averages 0.02 mRem/hour or less.

LOCATION	Direct GM Survey mRem/hour No correction for Background
WALL surveys extend up six feet from the floor, where possible.	
Wall adjacent to doorway right side	0.01 – 0.03
Wall above air vent	0.01 – 0.03
Wall above lab bench right side	0.01 – 0.03
Wall above lab bench center	0.01 – 0.03
Wall above lab bench left side	0.01 – 0.03
Wall below lab bench right side	0.01 – 0.03
Wall below lab bench center	0.01 – 0.03
Wall below lab bench left side	0.01 – 0.03
Wall below windows right side	0.01 – 0.03
Wall below windows center	0.01 – 0.03
Wall below windows left side	0.01 – 0.03
Wall on left-side of windows	0.01 – 0.03
Left-side wall 0-2 feet lengthwise	0.01 – 0.03
Left-side wall 2-4 feet lengthwise	0.01 – 0.03
Left-side wall 4-6 feet lengthwise	0.01 – 0.03
Left-side wall 6-8 feet lengthwise	0.01 – 0.03
Wall adjacent to doorway left side	0.01 – 0.03

Designer and Manufacturer of Scientific and Industrial Instruments

CERTIFICATE OF CALIBRATION

LUDLUM MEASUREMENTS, INC.
501 Oak Street
325-235-5494
Sweetwater, TX 79556, U.S.A.
☐ 10744 Dutchtown Road
865-392-4601
Knoxville, TN 37932, U.S.A.

CUSTOMER EASTERN CONNECTICUT ST UNIV ORDER NO. 20270777/422985

Mfg. Ludlum Measurements, Inc. Model 3 Serial No. 43323

Mfg. Ludlum Measurements, Inc. Model 44-7 Serial No. PR028749

Cal. Date 1-Jul-15 Cal Due Date 1-Jul-16 Cal. Interval 1 Year Meterface 202-049

Check mark ☑ applies to applicable instr. and/or detector IAW mfg. spec. T. 75 °F RH 53 % Alt 699.8 mm Hg

☐ New Instrument Instrument Received ☑ Within Toler. +-10% ☐ 10-20% ☐ Out of Tol. ☐ Requiring Repair ☐ Other-See comments

☑ Mechanical ck. ☑ Meter Zeroed ☐ Background Subtract ☐ Input Sens. Linearity
☑ F/S Resp. ck ☑ Reset ck. ☐ Window Operation ☑ Geotropism
☑ Audio ck. ☐ Alarm Setting ck. ☑ Batt. ck. (Min. Volt) 2.2 VDC

☐ Calibrated in accordance with LMI SOP 14.8 rev 12/05/89. ☑ Calibrated in accordance with LMI SOP 14.9 rev 02/07/97.

Instrument Volt Set 900 V Input Sens. 28 mV Det. Oper. 900 V at 28 mV Threshold Dial Ratio = mV

☐ HV Readout (2 points) Ref./Inst. / V Ref./Inst. / V

COMMENTS:

Gamma Calibration: GM detectors positioned perpendicular to source except for M 44-9 in which the front of probe faces source.

RANGE/MULTIPLIER	REFERENCE CAL. POINT	INSTRUMENT REC'D "AS FOUND READING"	INSTRUMENT METER READING*
X 100	150mR/hr	1.65	1.5
X 100	50mR/hr	0.52	0.47
X 10	15mR/hr	1.5	1.5
X 10	5mR/hr	0.55	0.55
X 1	1.5mR/hr= 3150 cpm	1.5	1.5
X 1	1.0mR/hr	1.0	1.0
X 0.1	315 cpm	1.5	1.5
X 0.1	105 cpm	0.5	0.5

*Uncertainty within ± 10% C.F. within ± 20%

X0.1 **Range(s) Calibrated Electronically**

Digital Readout	REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING*	Log Scale	REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING*

Ludlum Measurements, Inc. certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology, or to the calibration facilities of other International Standards Organization members, or have been derived from accepted values of natural physical constants or have been derived by the ratio type of calibration techniques. The calibration system conforms to the requirements of ANSI/NCSL Z540-1-1994 and ANSI N323-1978 State of Texas Calibration License No. LO-1963

Reference Instruments and/or Sources: Cs-137 S/N: ☐ 059 ☐ 2171CP ☐ 2261CP ☐ 720 ☐ 734 ☐ 781 ☐ 1131 ☐ 1616 ☐ 1696 ☐ 1909 ☐ 1916CP ☐ 5105 ☐ 5717CO ☐ 5719CO ☐ 60646 ☐ 70897 ☐ 73410 ☐ E552 ☑ G112 ☑ M565 ☐ S-394 ☐ S-1054 ☐ T10081 ☐ T10082 Neutron Am-241 Be S/N: ☐ T-304 Ra-226 S/N: ☐ Y982

☐ Alpha S/N ☐ Beta S/N ☐ Other

☑ m 500 S/N 189509 ☐ Oscilloscope S/N ☑ Multimeter S/N 71300492

Calibrated By: Wendell Williams Date 1 JUL 15

Reviewed By: Date 1 Jul 15

AC Inst. Only ☐ Passed Dielectric (Hi-Pot) and Continuity Test ☐ Failed:

5. In your May 15, 2012, renewal letter, you stated that you could use materials in Room 316, 332, 342, and 434 in which no survey data was submitted. Please submit survey data or state that radioactive materials were not used in these rooms.

6. You submitted surveys for specific isotopes in rooms 306, 306A, 315, 334, 335, 337, and a cold room. Please confirm that only these isotopes were used.

8. You performed surveys in a cold room, please confirm that this is room 337A or provide surveys of room 337A.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS

From our current program description: **ITEM 9 FACILITIES AND EQUIPMENT**

A. Facilities, 1. Science Building, Third Floor and Fourth Floor

We listed rooms for storage and/or disposal of radioactive materials and radioactive waste. We listed additional rooms where we expected radioactive materials to be used for general teaching and research under proper supervision, with no long-term storage of materials or waste. As it turned out, not all the designated rooms were used for radioisotope studies.

Designated Rooms	Radioisotope Use	Primary Rad Function
306	C14, H3, I125, S35	Storage of materials Waste disposal Material preparation, but no extended experimental studies
306A	C14, H3, I125, S35	Waste storage
315	H3	Teaching/research
316	**NONE**	**NONE**
332	**NONE**	**NONE**
334	S35	Teaching/research
335	S35	Teaching/research
337	S35	Teaching/research
337A **COLDROOM**	S35	Teaching/research
342	**NONE**	**NONE**
434	**NONE**	**NONE**

The Biology Department moved into the new Science Building during the summer of 2008, where classes began with the Fall 2008 semester.

Prior to that, licensed activities (using all four radioisotopes) were conducted in Goddard Hall and Media Center Building. Decommissioning of those areas was conducted during 2008-2009 and was approved by the U.S. NRC and State of Connecticut, DEEP, Radiation Division.

C-14 and I-125 were never used for experiments in the Science Building. The C-14 and I-125 that we had in the Science Building were stored, never used, followed by sewerage disposal.

7. You have been licensed for I-125, in which no surveys were submitted. Please submit surveys where I-125 was used or confirm that there was no use of I-125 in the Science Building.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS
SAFETY SURVEYS OF LABORATORY FACILITIES

Iodine-125 was **never** used for experiments in the Science Building.
The I-125 materials that we had in the Science Building were stored in a locked safe, within a locked refrigerator, in room 306 also locked. These same I-125 materials were subsequently disposed of into the sanitary sewerage system using the sink in room 306. *(Room 306A is for waste storage.)*

The last date of I-125 obtained/used was November 2007.

Since I-125 was never used for experimentation, the swipe surveys focus on areas relevant to storage and disposal. Note that the sink and benchtops are stainless steel.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS
SAFETY SURVEYS

SCIENCE BUILDING, LABORATORY 306 SWIPE SURVEYS FOR IODINE-125

Survey Date: June 17, 2016

Survey Method: TriCarb A-2810 Liquid Scintillation Counter DG08084184
Preventive Maintenance December 31, 2014 by Perkin-Elmer
Counting efficiencies: 65% H-3. 93% C-14.

LOCATION	CPM	BKG	CPM>BKG	%EFF	DPM
Door to 306 outside	15	14	1	76	1
Door to 306 inside	16	14	2	76	3
Light switch	22	14	8	76	11
Frig lock and latch	27	14	13	76	17
Frig door outside and	23	14	9	76	12
Frig door inside	19	14	5	76	7
Frig shelf for storage safe	26	14	12	76	16
Benchtop/rim right front	18	14	4	76	5
Drawers right front	22	14	8	76	11
Cabinets right front	20	14	6	76	8
Benchtop/rim right back	23	14	9	76	12
Electric strip above bench	28	14	14	76	18
Cabinets right back	23	14	9	76	12
Long drawers right back	24	14	10	76	13
Short drawers right back	25	14	11	76	14
Short drawers left side	19	14	5	76	7
Long drawers left side	26	14	12	76	16
Cabinets left side	23	14	9	76	12
Benchtop/rim left side	26	14	12	76	16
Electric strip above bench	22	14	8	76	11
Benchtop/rim sink area	18	14	4	76	5
Sink faucet, handles	23	14	9	76	12
Sink basin, drain	24	14	10	76	13
C-14 Standard	104,459				

Permissible limit < 220 dpm per 100 square cm. If > limit, decontaminate and recount.
Counting efficiency for I-125 based on meta-analysis of literature.

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS
SAFETY SURVEYS

SCIENCE BUILDING, LABORATORY 306 SURVEYS FOR IODINE-125

Survey Date: June 17, 2016
Survey Method: TriCarb A-2810 Liquid Scintillation Counter DG08084184
Preventive Maintenance December 31, 2014 by Perkin-Elmer
Counting efficiencies: 65% H-3. 93% C-14.

LOCATION	CPM	BKG	CPM>BKG	%EFF	DPM
Papertowel dispenser	22	14	8	76	11
Soap dispenser	18	14	4	76	5
Hood sash	22	14	8	76	11
Hood glass front	22	14	8	76	11
Cabinets below hood	29	14	15	76	20
Storage safe outer surface	26	14	12	76	16
Storage safe inside lid	28	14	14	76	18
Storage safe walls and	24	14	10	76	13
Floor left front	20	14	6	76	8
Floor left center	22	14	8	76	11
Floor left back	19	14	5	76	7
Floor right front	16	14	2	76	3
Floor right center	15	14	1	76	1
Floor right back	20	14	6	76	8
C-14 Standard	104,459				

Permissible limit < 220 dpm per 100 square cm. If > limit, decontaminate and recount.
Counting efficiency for I-125 based on meta-analysis of literature.

SCIENCE BUILDING, LABORATORY 306 SURVEYS FOR IODINE-125

Survey Date: June 17, 2016
Survey Method: Geiger-Mueller Meter 43323, Probe 028749, Alpha/Beta scans
Calibrated July 1, 2015 by Ludlum Measurements
Survey Results: Background 0.02 mRem/hour or less
Lab areas listed 0.02 mRem/hour or less
Check Source: 0.3 mRem/hour at 1X scale

EASTERN CONNECTICUT STATE UNIVERSITY
RADIATION RECORDS
SAFETY SURVEYS

SCIENCE BUILDING, LABORATORY 306A SURVEYS FOR IODINE-125

Survey Date: June 17, 2016
Survey Method: TriCarb A-2810 Liquid Scintillation Counter DG08084184
Preventive Maintenance December 31, 2014 by Perkin-Elmer
Counting efficiencies: 65% H-3. 93% C-14.

LOCATION	CPM	BKG	CPM>BKG	%EFF	DPM
Door to 306A outside	28	14	14	76	18
Door window outside	15	14	1	76	1
Door to 306A inside	26	14	12	76	16
Door window inside	24	14	10	76	13
Light timer	20	14	6	76	8
Light switch	19	14	5	76	7
Benchtop/rim	22	14	8	76	11
Lower walls right side (area of waste drums)	24	14	10	76	13
Back wall beneath windows (area of waste compactor)	28	14	14	76	18
Lower walls left side (area of waste drums)	23	14	9	76	12
Floor right-side front	26	14	12	76	16
Floor right-side back	23	14	9	76	12
Floor center front	25	14	11	76	14
Floor center back	22	14	8	76	11
Floor left-side front	24	14	10	76	13
Floor left-side back	20	14	6	76	8
C-14 standard	104,459				

Permissible limit < 220 dpm per 100 square cm. If > limit, decontaminate and recount.
Counting efficiency for I-125 based on meta-analysis of literature.

SCIENCE BUILDING, LABORATORY 306A SURVEYS FOR IODINE-125

Survey Date: June 17, 2016
Survey Method: Geiger-Mueller Meter 43323, Probe 028749, Alpha/Beta scans
Calibrated July 1, 2015 by Ludlum Measurements
Survey Results: Background 0.02 mRem/hour or less
Lab areas listed 0.02 mRem/hour or less
Check Source: 0.3 mRem/hour at 1X scale

PerkinElmer
For the Better
PerkinElmer Health Sciences, Inc.
710 Bridgeport Avenue
SHELTON CT 06484-4794
TEL: (800) 762-4000 FAX: (203) 944-4914

ONESOURCE LABORATORY SERVICES

FIELD SERVICE REPORT

SERVICE ORDER NO:	320811098
TYPE:	ZM02

FUNCTIONAL LOC.	US100641062	**EQUIPMENT NO.**	10615690
ADDRESS	EASTER CONN STATE UNIV FACILITIES BLDG RECEIVING CHARTER OAK RD WILLIMANTIC CT 06226 USA	**DESCRIPTION**	TRICARBA2810 / DG08084184
		JOB TYPE	Billable PM
		SHIP-TO NO.	100641062
		PAYER NO.	4535794
		PURCHASE ORDER	P0031019
CONTACT	GLORIA COLURSO	**CONTRACT NO.**	
TELEPHONE	860-465-5259	**LINE ITEM**	
FAX		**START DATE**	
EMAIL	colurso@easternct.edu	**END DATE**	
START DATE	12.24.2014	**DESCRIPTION**	
END DATE	12.31.2014	**COVERAGE**	
SOFTWARE			
HARDWARE	RRD		

PROBLEM DESCRIPTION
AO-BILLABLE PM

WORK DESCRIPTION
1 No Contamination to the instrument.
Perform routine maintenance by Perkin Elmer's specifications. Re-boot PC and log in under TSE. once in diagnostics I then check the belt motors, elevator motors, pin drives and clean the elevator body assembly. I then check the error log and elevator cycles. No errors reported. Ran the SNC protocol and these are the results:

C 14 efficiency: 93.44 %

H3 Efficiency: 64.73%
BKG: 10 cpm
3415 elevator cycles since August 7, 2008
Clean the filter in the rear of instrument to the exhaust fan for the detector assembly. Clean elevator pedestal, Ran diagnostics, check sensors, belt motors, check all fans , wipe down entire instrument.
HV left: 3799
V
HV right: 2521

ADC voltage reading
-5.2 5 -15 15
-6.02 5.08 -17.45 17.46

2 portal to portal

	MATERIAL	DESCRIPTION	QTY	UNIT
	SV000160	Flat Rate – Onsite Support	1.0	HR

	ACTIVITY	CSE	START	FINISH	DURATION	UNIT
1	Plan Maint. Labor	US204063 KHAN, HAFEEZ (VM 385	12.31.2014	12.31.2014	4.0	H
2	Travel - Nonbillable	US204063 KHAN, HAFEEZ (VM 385	12.31.2014	12.31.2014	2.0	H