WEST Pharmaceutical SERVICES

May 19, 2006

MS16
J-6

Mr. Dennis Lawyer
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406-1415

RECEIVED
REGION 1
2006 MAY 22 PM 1:15

RE: NRC License Number 37-30229-01
Docket Number: 03033881
Control Number: 138463

Dear Dennis:

This letter is response to your e-mail dated 3/1/06 requesting additional information regarding our application to terminate our license. The information is enclosed as follows:

1) a. Attachment 1 includes Waste Manifest Records and an example of our Monthly Sewage Disposal Report. Sewage disposal was of liquid scintillation cocktail waste. The sample form attached is for the last month that we disposed of waste in the sewer.

1) b. You requested records important to the decommissioning process. Attachment 2 includes records of spill incident reports and dose evaluations.

2. Attachment 3 includes the last sample survey for the Tissue Culture Laboratory adjacent to the Radioisotope Laboratory. None of the current employees working at West Pharmaceutical Services recalls handling licensed material on this side of the laboratory. However, the vestibule and Tissue Culture Laboratory were surveyed.

   Attachment 3 also includes the last sample survey of the Waste Storage Area in the Chemical Closet. (Sample numbers 25, 26, 27, 28, 29 on survey dated 1/30/03) Again, based on interviews, the Waste Storage Area never contained regulated waste. The small quantity of waste that was generated was stored in the Radioisotope Lab.

3. The Simplified Survey Procedure as outlined in NUREG-1757 has not yet been completed. I will forward you results as soon as they are available.

4. All Sulfur 35 and Iodine 124 and their associated waste were removed as of 6/26/03. We do not have any licensed material on hand.

5. The License Number for RSO, Inc. is MD-33-021-02.

138463

NMSS/RGN1 MATERIALS-002

6) a. The name of the facility to be released is West Pharmaceutical Services, Radioisotope Laboratory.

b. The size of the Radioisotope Laboratory and adjoining Tissue Culture Laboratory is 528 square feet. The size of the entire building is 260,000 square feet with 41,000 square feet of general office space leased to a tenant.

c. The majority of the 219,000 square feet of the building occupied by West Pharmaceutical Services is primarily used for general office space. Approximately 36,000 square feet of the facility is analytical laboratory space used to analyze pharmaceutical packaging components.

d. The area surrounding this facility is mixed, a combination of residential, light industrial, retail and commercial. There is a pond (storm water retention) on the property.

e. The license authorized the use of materials for research and development. The licensed materials were primarily used as tracers to monitor the absorption of active pharmaceutical ingredients by cells in tissue samples.

Please call me if you have any questions. (610-594-2951)

Respectfully,

Paul G. Diorio

Paul G. Diorio
Director – Safety, Health and Security
West Pharmaceutical Services

May 19, 2006
West Pharmaceutical Services
NRC License Number 37-30229-01
Docket Number: 03033881
Control Number: 138463

ATTACHMENT 1

APPROVED BY OMB: NO. 3150-0164
EXPIRES: 05/31/2001

Estimated burden per response to comply with this information collection request: 1.17 hours. This uniform manifest is required by NRC to meet reporting requirements of Federal and State Agencies for the safe transportation and disposal of low-level waste. Forward comments regarding burden estimate to the Records Management Branch (T-6 F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0164), Office of Management and Budget, Washington, DC 20503. If an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

NRC FORM 540 (5-1998)

U.S. NUCLEAR REGULATORY COMMISSION

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST

SHIPPING PAPER

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

ORGANIZATION
CHEMTREC

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

3. TOTAL NUMBER OF PACKAGES IDENTIFIED ON THIS MANIFEST =====> 5

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

EPA MANIFEST NUMBER

5. SHIPPER – NAME AND FACILITY
West Pharmaceutical Services
101 Gordon Drive
Lionville PA 19341

SHIPPER I.D. NUMBER
[ ] COLLECTOR
[ ] PROCESSOR

USER PERMIT NUMBER

SHIPMENT NUMBER 14876

[X] GENERATOR TYPE (Specify) 1

CONTACT
Thad Radzanowski

TELEPHONE NUMBER (Include Area Code)
(610)594-3149

6. CARRIER – Name and Address
RSO, INC.
5204 MINNICK RD
PO BOX 1526
LAUREL MD 20707

EPA I.D. NUMBER
MDD-06-927-9669

SHIPPING DATE
11/15/99

CONTACT
DAVID WELLNER

TELEPHONE NUMBER (Include Area Code)
301-953-2482

SIGNATURE – Authorized carrier acknowledging waste receipt
David Fraser

DATE
11-15-99

7. NRC FORM 540 AND 540A PAGE 1 OF 1 PAGE(S)
NRC FORM 541 AND 541A 2 PAGE(S)
NRC FORM 542 AND 542A None PAGE(S)
ADDITIONAL INFORMATION None PAGE(S)

8. MANIFEST NUMBER (Use this number on all continuation pages)
14876

9. CONSIGNEE - Name and Facility Address
RSO, Inc.
5204 Minnick Road
Laurel MD 20707

CONTACT
David Wellner

TELEPHONE NUMBER (Include Area Code)
(301)953-2482

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 are in proper condition for transportation and disposal as described in accordance with the applicablerequirements of 10 CFR Parts 20 and 61, or equivalent state regulations.

AUTHORIZED SIGNATURE
Edward Kamuit

TITLE
RSO

DATE
15 NOV 99

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)	17. LSA/SCO CLASS	18. TOTAL WEIGHT OR VOLUME (Use appropriate units)	19. IDENTIFICATION NUMBER OF PACKAGE
Radioactive material, excepted package-limited quantity of material, 7, UN2910	NA	NA	Solid /Paper,Plastic,Glass	C-14	H-3			1.4508E+00	NA	100. LBS; 4.1 FT3	52609
Radioactive material, excepted package-limited quantity of material, 7, UN2910	NA	NA	Solid /Paper,Plastic,Glass	C-14	H-3			1.5244E-01	NA	100. LBS; 4.1 FT3	52610
Radioactive material, excepted package-limited quantity of material, 7, UN2910	NA	NA	Solid /Paper,Plastic,Glass	C-14				8.4360E-01	NA	100. LBS; 4.1 FT3	52611
Radioactive material, excepted package-limited quantity of material, 7, UN2910	NA	NA	Solid /Paper,Plastic,Glass	C-14	H-3			9.6437E+00	NA	100. LBS; 4.1 FT3	52612
Radioactive material, excepted package-limited quantity of material, 7, UN2910	NA	NA	Liquid/Non-Haz Scintilation Liquid	C-14	H-3			2.1838E+00	NA	126. LBS; 4.1 FT3	52613

FOR CONSIGNEE USE ONLY For processing at GTSD and burial at Envirocare of Utah.

APPROVED BY OMB: NO. 3150-0166
EXPIRES: 06/31/2001

Estimated burden per response to comply with this information collection request: 5.43 hours. This uniform manifest is required by NRC to meet reporting requirements of Federal and State Agencies for the safe transportation and disposal of low-level waste. Forward comments regarding burden estimate to the Records Management Branch (T-6 F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0164), Office of Management and Budget, Washington, DC 20503. If an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

NRC FORM 541
(5-1998)

U.S. NUCLEAR REGULATORY COMMISSION

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 (m3)	NET WASTE WEIGHT (kg)	SPECIAL NUCLEAR MATERIAL (grams) U-233	U-235	Pu	TOTAL
5	0.5805	238.1359	NP	NP	NP	NP

ACTIVITY (MBq) ALL NUCLIDES	TRITIUM	C-14	Tc-99	I-129	SOURCE (kg)
1.4274E+01	6.7303E-01	1.3601E+01	NP	NP	NA

2. MANIFEST NUMBER 14876

3. PAGE 1 OF 2 PAGE(S)

4. SHIPPER NAME
West Pharmaceutical Services

SHIPPER ID NUMBER

DISPOSAL CONTAINER DESCRIPTION: 5. CONTAINER IDENTIFICATION NUMBER/ GENERATOR ID NUMBER(S)	6. CONTAINER DESCRIPTION (See Note 1)	7. VOLUME (m3)	8. WASTE AND CONTAINER WEIGHT (kg)	9. SURFACE RADIATION LEVEL (μSv/hr) √ (mSv/hr)	10. SURFACE CONTAMINATION MBq/100 cm2 ALPHA	BETA-GAMMA	WASTE DESCRIPTION FOR EACH WASTE TYPE IN CONTAINER: PHYSICAL DESCRIPTION 11. WASTE DESCRIPTOR (See Note 2)	12. APPROXIMATE WASTE VOLUME(S) IN CONTAINER (m3)	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 (MBq) 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
52609/WPS	4	0.1161	45.3592	2.0000E-04	<1.6700E-06	<1.6700E-06	39	0.1161	NA	Paper,Plastic,Glass/NP	NP	C-14 1.1970E+00 H-3 2.5382E-01	AU
												Total 1.4508E+00 MBq	
52610/WPS	4	0.1161	45.3592	2.0000E-04	<1.6700E-06	<1.6700E-06	39	0.1161	NA	Paper,Plastic,Glass/NP	NP	C-14 1.1359E-01 H-3 3.8850E-02	AU
												Total 1.5244E-01 MBq	
52611/WPS	4	0.1161	45.3592	2.0000E-04	<1.6700E-06	<1.6700E-06	39	0.1161	NA	Paper,Plastic,Glass/NP	NP	C-14 8.4360E-01	AU
												Total 8.4360E-01 MBq	

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. Polyethlene 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: For solidification media that meet disposal site structural stability requirements, the numerical code must be followed by "-S." For all solidification media, the vendor (manufacturer) and brand name must also be identified in Item 13. Code 100=NONE REQUIRED.

Sorption

60. Speedi Dri
61. Celetom
62. Floor Dry/ Superfine
63. Hi Dri
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

Solidification

89. Other. Describe in item 13, or additional page.
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.

APPROVED BY OMB: NO. 3150-0166
EXPIRES: 06/31/2001

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NRC FORM 541A
(5-1998)

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST

U.S. NUCLEAR REGULATORY COMMISSION

2. MANIFEST NUMBER 14876

3. PAGE 2 OF 2 PAGE(S)

CONTAINER AND WASTE DESCRIPTION

DISPOSAL CONTAINER DESCRIPTION							WASTE DESCRIPTION FOR EACH WASTE TYPE IN CONTAINER							
							PHYSICAL DESCRIPTION			14. CHEMICAL DESCRIPTION		15. RADIOLOGICAL DESCRIPTION		
5. CONTAINER IDENTIFICATION NUMBER/ GENERATOR ID NUMBER(S)	6. CONTAINER DESCRIP-TION (See Note 1)	7. VOLUME (m3)	8. WASTE AND CONTAINER WEIGHT (kg)	9. SURFACE RADIATION LEVEL (µSv/hr) √ (mSv/hr)	10. SURFACE CONTAMINATION MBq/100 cm2 ALPHA	BETA-GAMMA	11. WASTE DESCRIP-TOR (See Note 2)	12. APPROXIMATE WASTE VOLUME(S) IN CONTAINER (m3)	13. SORBENT SOLIDIFICATION STABILIZATION MEDIA (See Note 3)	CHEMICAL FORM/ CHELATING AGENT	WEIGHT % CHELATING AGENT IF>0.1%	INDIVIDUAL RADIONUCLIDES AND ACTIVITY (MBq) AND CONTAINER TOTAL; OR CONTAINER TOTAL ACTIVITY AND RADIONUCLIDE PERCENT		16. WASTE CLASSIFI-CATION AS-Class A Stable AU-Class A Unstable B-Class B C-Class C
52612/WPS	4	0.1161	45.3592	2.0000E-04	<1.6700E-06	<1.6700E-06	39	0.1161	NA	Paper,Plastic,Glass/NP	NP	C-14 9.6174E+00 H-3 2.6270E-02		AU
												Total 9.6437E+00 MBq		
52613/WPS	4	0.1161	56.6991	2.0000E-04	<1.6700E-06	<1.6700E-06	59-NON-HAZARD OUS SCINTILL ATION VIAL	0.1161	NA	Non-Haz Scintilation Liquid/NP	NP	C-14 1.8297E+00 H-3 3.5409E-01		AU
												Total 2.1838E+00 MBq		

DURATEK

COPY

Attn: David Wellner
Radiation Service Organization
P.O. Box 1526
Laurel, MD 20725-1526

May 3, 2000

This monthly report supplies the current status of each shipment of radioactive material from your company. Please note that all activity is in millicuries, weight is in pounds, and volumes are in cubic feet.

This report also lets you look at the shipments that we have received in the previous year and the current year. The separate reports contain different information which show the status of each manifest and what type of processing has occurred to it. We report unprocessed waste as weight left to process.

The following is a breakdown of the types of information found on each report:

Report #1
Provides a review of all of your shipments received after May 1997 along with burial/return information up to the current reporting period.

Report #2
Shows the waste weight received on each of your manifest(s) and how much of that weight went to each of our processes.

Report #3
Provides information on material buried or returned, per your manifest number, in detail, for the reporting month.

Report #4
Only required for Brokers, provides burial/return information by generator by manifest by item number in detail for the reporting month.

Should you have any questions, or need additional information, please contact your Account Executive at 1-877-GO2-GTSD (462-4873).

GTS Duratek Tracking Systems

To: David Wellner

DURATEK

Customer Monthly Report

Broker/Generator Item Number Information

Report 4

Customer #: 54
Radiation Service Organization
P.O. Box 1526
Laurel, MD 20725-1526
Contact: David Wellner

For Shipments between 04/01/2000 and 04/30/2000

Manifest Number	Date Received	Generator Name	Shipment Number	Date Shipped	Manifest Line Item	Volume Returned/Buried (cu. ft.)	Reported Activity Returned/Buried (mCi.)	Adjusted Activity Returned/ Buried(mCi)
[redacted]	[redacted]	[redacted]	001960	04/27/2000	52583	1.70000	1.0137	0.0000
						1.70000	1.0137	0.0000
		[redacted]	001960	04/27/2000	52604	3.90000	1.0754	0.0000
					52605	5.30000	6.8570	0.0000
					52606	2.90000	4.0993	0.0000
					52607	2.90000	6.9069	0.0000
						15.00000	18.9386	0.0000
		[redacted]	001960	04/27/2000	52644	1.00000	0.0930	0.0000
					52645	2.90000	0.0160	0.0000
					52646	1.70000	0.0430	0.0000
						5.60000	0.1520	0.0000
		[redacted]	001960	04/27/2000	52648	6.00000	0.7560	0.0000
						6.00000	0.7560	0.0000
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
			002168	04/24/2000	[redacted]	1.20000	0.2606	0.0000
						2.70000	0.2874	0.0000
					54-RSO#623GTS#68 Totals	31.00000	21.1477	0.0000
Totals:	2					32.72339	36.3977	0.0000

DURATEK

Customer Monthly Report

Summary of Shipments Received with Returned and/or Buried Information

Report 1

Customer #: 54
Radiation Service Organization
P.O. Box 1526
Laurel, MD 20725-1526
Contact: David Wellner

For All Manifests Received between 05/01/1999 and 04/30/2000 *

Manifest Number	Date Received	Volume Received (cu. ft.)	Volume Returned/Buried (cu. ft.)	Reported Activity Received (mCi.)	Reported Activity Returned/Buried (mCi.) (1)	Reported Activity from Terminal Processes (mCi) (2)	Adjusted Activity Returned/ Buried(mCi) (3)
54-RSO#611GTS#65	03/08/1999	339.96000	96.67783	1836.2025	1590.6994	245.5031	0.0000
54-RSO#616GTS#66	05/13/1999	293.90000	69.31642	112.1158	112.1158	0.0000	0.0000
54-RSO#620GTS#67	09/21/1999	300.10000	55.48495	100.0206	100.0206	0.0000	0.0000
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
54-RSO#626GTS#69	04/18/2000	377.64000	0.00000	41.2833	0.0000	0.0000	0.0000
Totals:	**5**	**1,595.05000**	**252.47919**	**2125.1271**	**1823.9835**		**0.0000**

Total Volume Received for Completed Manifests: 633.86000

Total Volume Buried/RTC for Completed Manifests: 165.99424

Total Volume Reduction for Completed Manifests: 3.8 to One

Notes: (1) Includes activity reported by customer returned / buried.
(2) Includes activity from waste/scrap metal which was decontaminated, metal melted or incineration of liquids. GTS is responsible for disposition of this activity.
(3) Includes measured activity of the material to be buried at Envirocare.

- Includes Manifests Received before this period that are not complete or manifests that have had been completed in the last 2 months prior to the end of this period.

DURATEK

Customer Monthly Report

Summary of Material Processsed and Unprocessed

Report 2

Customer #: 54 For All Manifests Received between 05/01/1999 and 04/30/2000 *
Radiation Service Organization
P.O. Box 1526
Laurel, MD 20725-1526
Contact: David Wellner

Manifest Number	Date Received	Anchor Weight (Pounds)	Incineration (Pounds)	Total Ash Volume (cu. ft.)	Ultra Compacted (Pounds)	Total Compacted Volume (cu. ft.)	Liquid/Oil Incinerated (Pounds)	Deconned (Pounds)	GIC Released (Pounds)	Pounds Metal Melted (Pounds)	Pounds Other Methods (Pounds)	Volume Other Methods (cu. ft.)	Weight To Process (Pounds)	Est. Volume To Bury/Ret. (cu. ft.)
54-RSO#611GTS#65	03/08/1999	7,350	482	0.40783	6,042	96.27000	0	0	0	826	0	0.00000	0	0.00000
54-RSO#616GTS#66	05/13/1999	4,544	1,048	9.51642	3,496	59.80000	0	0	0	0	0	0.00000	0	0.00000
54-RSO#620GTS#67	09/21/1999	3,889	1,043	1.72339	2,749	53.76156	0	0	0	0	0	0.00000	97	0.00000
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
54-RSO#626GTS#69 *	04/18/2000	7,745	0	0.00000	0	0.00000	0	0	0	0	0	0.00000	7,745	0.00000
Totals: 5		**27,887**	**3,286**	**13.07609**	**14,536**	**257.63156**	**0**	**0**	**0**	**826**	**0**	**0.00000**	**9,239**	**18.22845**

* Indicates shipment is not unloaded or is in process of entry.

** Includes Manifests Received before this period that are not complete or manifests that have had been completed in the last 2 months prior to the end of this period.

DURATEK

Customer Monthly Report

Shipment Summary for Burials/Returns

Report 3

Customer #: 54
Radiation Service Organization
P.O. Box 1526
Laurel, MD 20725-1526
Contact: David Wellner

For Shipments between 04/01/2000 and 04/30/2000

Manifest Number	Received Date	Shipment Number	Date Shipped	Shipping Destination	Volume Returned/Buried (cu. ft.)	Reported Activity Returned/Buried (mCi.)	Adjusted Activity Returned/ Buried(mCi)
54-RSO#620GTS#67	09/21/1999	001957	04/12/2000	CNSI	1.72339	15.2500	0.0000
					1.72339	15.2500	0.0000
[redacted]	[redacted]	001960	04/27/2000	CNSI	28.30000	20.8603	0.0000
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
					31.00000	21.1477	0.0000
Totals:	**2**				**32.72339**	**36.3977**	**0.0000**

PERMA-FIX®
ENVIRONMENTAL SERVICES

26-Apr-00

WEST PHARMACEUTICAL SERVICES
THAD RADZANOWSKI
ENVIRONMENTAL SAFETY
101 GORDON DRIVE
LIONVILLE PA 14876

REF: MANIFEST NUMBER: 14876
SHIPMENT NUMBER: RSO-31

CERTIFICATE OF DISPOSAL

THIS IS TO CERTIFY THAT THE WASTE MATERIALS RECEIVED FROM:

WEST PHARMACEUTICAL SERVICES

MANIFEST NUMBER: **14876**

HAVE BEEN DISPOSED OF IN FULL BY RECLAMATION OR REUSE. THIS MATERIAL WAS DISTILLED AND/OR BLENDED INTO FUELS FOR ROTARY KILN INCINERATION, IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS.

RAYMOND WHITTLE, FACILITY MANAGER

1940 N.W. 67TH PLACE · GAINESVILLE, FLORIDA 32653 · TEL (352) 373-6066 · FAX (352) 372-8963
E- MAIL: floridasales@perma-fix.com · WEBSITE: www.perma-fix.com/florida

APPROVED BY OMB: NO. 3150-0164
EXPIRES: 06/31/2001

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NRC FORM 540 (5-1998)

U.S. NUCLEAR REGULATORY COMMISSION

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST

SHIPPING PAPER

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

ORGANIZATION
CHEM TREC

2. IS THIS AN "EXCLUSIVE USE" SHIPMENT?
[X] YES
[ ] 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

5. SHIPPER – NAME AND FACILITY
West Pharmaceutical Services
101 Gordon Drive
Lionville PA 14876

USER PERMIT NUMBER

SHIPMENT NUMBER
RSO#622 PFX#35

CONTACT
Thad Radzanowski

6. CARRIER – Name and Address
RSO, INC.
5204 MINNICK RD
PO BOX 1526
LAUREL MD 20707

CONTACT
DAVID WELLNER

SIGNATURE – Authorized carrier acknowledging waste receipt
David Frazier

SHIPPER I.D. NUMBER

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

TELEPHONE NUMBER (Include Area Code)
610-594-3149

EPA I.D. NUMBER
MDD-06-927-9669

SHIPPING DATE
12/03/99

TELEPHONE NUMBER (Include Area Code)
301-953-2482

DATE
12-3-99

7. NRC FORM 540 AND 540A — PAGE 1 OF 1 PAGE(S)
NRC FORM 541 AND 541A — 1 PAGE(S)
NRC FORM 542 AND 542A — None PAGE(S)
ADDITIONAL INFORMATION — 6 ~~None~~ PAGE(S)

8. MANIFEST NUMBER (Use this number on all continuation pages)
14878

9. CONSIGNEE - Name and Facility Address
Perma-Fix of Florida Inc
1940 NW 67th Place
Gainesville FL 32606

CONTACT
Jack Flaacke

TELEPHONE NUMBER (Include Area Code)
352-373-6066

SIGNATURE – Authorized consignee acknowledging waste receipt

DATE
12-6-99

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 in accordance with the applicablerequirements of 10 CFR Parts 20 and 61, or equivalent state regulations.

AUTHORIZED SIGNATURE
David Wellner

TITLE
Manager

DATE
12-3-99

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)	17. LSA/SCO CLASS	18. TOTAL WEIGHT OR VOLUME (Use appropriate units)	19. IDENTIFICATION NUMBER OF PACKAGE
Radioactive material, low specific activity, n.o.s., 7, UN2912	NA	NA	Liquid/Non-Haz Scintillation Vial	C-14	H-3		2.1838E+00	LSA-II	126. LBS; 4.1 FT3	52613

FOR CONSIGNEE USE ONLY

APPROVED BY OMB: NO. 3150-0166
EXPIRES: 06/31/2001

Estimated burden per response to comply with this information collection request: 5.43 hours. This uniform manifest is required by NRC to meet reporting requirements of Federal and State Agencies for the safe transportation and disposal of low-level waste. Forward comments regarding burden estimate to the Records Management Branch (T-6 F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0164), Office of Management and Budget, Washington, DC 20503. If an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

NRC FORM 541
(5-1998)

U.S. NUCLEAR REGULATORY COMMISSION

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST

CONTAINER AND WASTE DESCRIPTION

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

B

1. MANIFEST TOTALS

NUMBER OF PACKAGES/ DISPOSAL CONTAINERS	NET WASTE VOLUME (m3)	NET WASTE WEIGHT (kg)	SPECIAL NUCLEAR MATERIAL (grams) U-233	U-235	Pu	TOTAL
1	0.1161	56.6991	NP	NP	NP	NP

ACTIVITY (MBq) ALL NUCLIDES	TRITIUM	C-14	Tc-99	I-129	SOURCE (kg)
2.1838E+00	3.5409E-01	1.8297E+00	NP	NP	NA

2. MANIFEST NUMBER 14876

3. PAGE 1 OF 1 PAGE(S)

4. SHIPPER NAME
West Pharmaceutical Services

SHIPPER ID NUMBER

DISPOSAL CONTAINER DESCRIPTION							WASTE DESCRIPTION FOR EACH WASTE TYPE IN CONTAINER							
							PHYSICAL DESCRIPTION			CHEMICAL DESCRIPTION		RADIOLOGICAL DESCRIPTION		
5. CONTAINER IDENTIFICATION NUMBER/ GENERATOR ID NUMBER(S)	6. CONTAINER DESCRIP-TION (See Note 1)	7. VOLUME (m3)	8. WASTE AND CONTAINER WEIGHT (kg)	9. SURFACE RADIATION LEVEL (μ Sv/hr) √ (mSv/hr)	10. SURFACE CONTAMINATION MBq/100 cm2 ALPHA	BETA-GAMMA	11. WASTE DESCRIP-TOR (See Note 2)	12. APPROXIMATE WASTE VOLUME(S) IN CONTAINER (m3)	13. SORBENT SOLIDIFICATION STABILIZATION MEDIA (See Note 3)	CHEMICAL FORM/ CHELATING AGENT	WEIGHT % CHELATING AGENT IF>0.1%	INDIVIDUAL RADIONUCLIDES AND ACTIVITY (MBq) AND CONTAINER TOTAL; OR CONTAINER TOTAL ACTIVITY AND RADIONUCLIDE PERCENT		18. WASTE CLASSIFI-CATION AS-Class A Stable AU-Class A Unstable B-Class B C-Class C
52613/WPS	4	0.1161	56.6991	2.0000E-04	<1.6700E-06	<1.6700E-06	59-NON-HAZARD OUS SCINTILL ATION VIAL	0.1161	NA	Non-Haz Scintillation Vial/NP	NP	C-14 1.8297E+00 H-3 3.5409E-01		AU
												Total 2.1838E+00 MBq		

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. Polyethlene 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: For solidification media that meet disposal site structural stability requirements, the numerical code must be followed by "-S." For all solidification media, the vendor (manufacturer) and brand name must also be identified in Item 13. Code 100=NONE REQUIRED.

Sorption

60. Speedi Dri
61. Celetom
62. Floor Dry/ Superfine
63. Hi Dri
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 item 13, 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.

APPROVED BY OMB: NO. 3150-0166
EXPIRES: 07/31/2004

Estimated burden per response to comply with this information collection request: 2 hours. This uniform manifest is required by NRC to meet reporting requirements of Federal and State Agencies for the safe transportation and disposal of low-level waste. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to bjs1@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0164), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

NRC FORM 541
(7-2001)

U.S. NUCLEAR REGULATORY COMMISSION

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 (m3)	NET WASTE WEIGHT (kg)	SPECIAL NUCLEAR MATERIAL (grams) U-233	U-235	Pu	Total
3	0.3369	56.6990	NP	NP	NP	NP

ACTIVITY (MBq) ALL NUCLIDES	TRITIUM	C-14	Tc-99	I-129	SOURCE (kg)
1.2448E+02	1.0427E+01	1.1405E+02	NP	NP	NA

2. MANIFEST NUMBER 15402

3. PAGE 1 OF 1 PAGE(S)

4. SHIPPER NAME
The West Company

NA
SHIPPER ID NUMBER

5. CONTAINER IDENTIFICATION NUMBER/ GENERATOR ID NUMBER(S)	6. CONTAINER DESCRIPTION (See Note 1)	7. VOLUME (m3)	8. WASTE AND CONTAINER WEIGHT (kg)	9. SURFACE RADIATION LEVEL ☑ (µSv/hr) ☐ (mSv/hr)	10. SURFACE CONTAMINATION (MBq/100 cm2) ALPHA	BETA-GAMMA	11. WASTE DESCRIPTOR (See Note 2)	12. APPROXIMATE WASTE VOLUME(S) IN CONTAINER (m3)	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 (MBq) 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
54216/TWC	4	0.1161	22.2260	2.0000E-01	<1.6700E-06	<1.6700E-06	59-NON-HAZARDOUS SCINTILATION VIALS	0.1161	NA	Non-Haz Scintillation Liquid/NP	NP	C-14 9.6200E-01 H-3 2.1127E-01	AU
												Total 1.1733E+00	
54217/TWC	19 FIBERBOARD BOX	0.1104	18.1437	2.0000E-01	<1.6700E-06	<1.6700E-06	59-INCINERABLE TRASH	0.1104	NA	Lab Trash/NP	NP	C-14 7.5195E+01 H-3 6.8857E+00	AU
												Total 8.2081E+01	
54218/TWC	19 FIBERBOARD BOX	0.1104	16.3293	2.0000E-01	<1.6700E-06	<1.6700E-06	59-INCINERABLE TRASH	0.1104	NA	Lab Trash/NP	NP	C-14 3.7892E+01 H-3 3.3300E+00	AU
												Total 4.1222E+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 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. Polyethlene Tank or
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

Note3: For solidification media that meet disposal site structural stability requirements, the numerical code must be followed by "-S." For all solidification media, the vendor (manufacturer) and brand name must also be identified in Item 13. Code 100=NONE REQUIRED.

Sorption

60. Speedi Dri
61. Celetom
62. Floor Dry/ Superfine
63. Hi Dri
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 item 13, 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.

APPROVED BY OMB: NO. 3150-0164
EXPIRES: 07/31/2004

Estimated burden per response to comply with this information collection request: 45 minutes. This uniform manifest is required by NRC to meet reporting requirements of Federal and State Agencies for the safe transportation and disposal of low-level waste. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to bjs1@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0164), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

NRC FORM 540 (7-2001)

U.S. NUCLEAR REGULATORY COMMISSION

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST

SHIPPING PAPER

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

ORGANIZATION: Chemtrec

2. IS THIS AN "EXCLUSIVE USE" SHIPMENT? ☐ YES ☑ NO

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

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

EPA MANIFEST NUMBER

5. SHIPPER -- NAME AND FACILITY
The West Company
101 Gordon Drive
Lionville, PA 19341

SHIPPER I.D. NUMBER: NA
☐ COLLECTOR
☐ PROCESSOR
☑ GENERATOR TYPE (Specify) O

USER PERMIT NUMBER: NA
SHIPMENT NUMBER: 15402

CONTACT: Thad Radanowski
TELEPHONE NUMBER (Include Area Code): (610)594-3149

6. CARRIER -- Name and Address
RSO, Inc.
5204 Minnick Road
Laurel,, MD 20707

EPA I.D. NUMBER: MDD-06-927-9669
SHIPPING DATE: 06/26/2003

CONTACT: David Wellner
TELEPHONE (Include Area Code): (301)953-2482

SIGNATURE -- Authorized carrier acknowledging waste receipt
DATE: 6-26-03

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

8. MANIFEST NUMBER (Use this number on all continuation pages): 15402

9. CONSIGNEE - Name and Facility
RSO, Inc.
5204 Minnick Road
Laurel, MD 20707

CONTACT: David Wellner
TELEPHONE (Include Area Code): (301)953-2482

SIGNATURE -- Authorized consignee acknowledging waste receipt
DATE: 6-26-03

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 in accordance with the applicable requirements of 10 CFR Parts 20 and 61, or equivalent state regulations.

AUTHORIZED SIGNATURE | TITLE: Sr. Rad Sci / RSO | DATE: 26 Jun 03

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)	17. LSA/SCO CLASS	18. TOTAL WEIGHT OR VOLUME (Use appropriate units)	19. IDENTIFICATION NUMBER OF PACKAGE
Radioactive material, excepted package-limited quantity of material, 7, UN2910	NA	NA	Liquid Non-Haz Scintillation Liquid	C-14	H-3		1.1733E+00	NA	49 LBS; 4.1 FT3	54216
Radioactive material, excepted package-limited quantity of material, 7, UN2910	NA	NA	Solid Lab Trash	C-14	H-3		8.2081E+01	NA	40 LBS; 3.9 FT3	54217
Radioactive material, excepted package-limited quantity of material, 7, UN2910	NA	NA	Solid Lab Trash	C-14	H-3		4.1222E+01	NA	36 LBS; 3.9 FT3	54218

FOR CONSIGNEE USE ONLY

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST
SHIPPING PAPER

The West Company
101 Gordon Drive
Lionville, PA 19341

☐ COLLECTOR
☐ PROCESSOR
☑ GENERATOR TYPE (Specify) O

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)

(Use this number on all continuation pages) 15402

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

ORGANIZATION: Chemtrec

USER PERMIT NUMBER: NA

SHIPMENT NUMBER: RSO#663 GTS#84

CONTACT: Thad Radanowski

TELEPHONE NUMBER (Include Area Code): 610-594-3149

2. IS THIS AN "EXCLUSIVE USE" SHIPMENT? ☑ YES ☐ NO

3. TOTAL NUMBER OF PACKAGES IDENTIFIED ON THIS MANIFEST ==> 2

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

EPA MANIFEST NUMBER

6. CARRIER – Name and Address
RSO, Inc.
5204 Minnick Road
Laurel, MD 20707
Truck #: 01334
Trailer #:

EPA I.D. NUMBER: MDD-06-927-9669

SHIPPING DATE: 09/26/2003

CONTACT: David Wellner

TELEPHONE (Include Area Code): (301)953-2482

SIGNATURE – Authorized carrier acknowledging waste receipt: David Wellner

DATE: 9-26-03

9. CONSIGNEE - Name and Facility
Duratek, Inc.
1560 Bear Creek Road
Oak Ridge, TN 37831

CONTACT: Donnie Brackett

TELEPHONE (Include Area Code): (865)220-1526

SIGNATURE – Authorized consignee acknowledging waste receipt: [signature]

DATE: 9/30/03

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 in accordance with the requirements of 10 CFR Parts 20 and 61, or equivalent state regulations.

AUTHORIZED SIGNATURE: David E Wellner

TITLE: Manager RMS

DATE: 9-26-03

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
Radioactive material, low specific activity, n.o.s., 7, UN2912	NA	NA	Solid Lab Trash	C-14	H-3		8.2081E+01	2.2184E+00	LSA-II	40 LBS; 3.9 FT3	54217
Radioactive material, low specific activity, n.o.s., 7, UN2912	NA	NA	Solid Lab Trash	C-14	H-3		4.1222E+01	1.1141E+00	LSA-II	36 LBS; 3.9 FT3	54218

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 to Duratek, Inc. That this shipment of low-level radioactive material/waste has been prepared in accordance with 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 Duratek Material Acceptance Criteria.

B) Hazardous Materials. Generator hereby certifies that this material 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 Duratek, Inc. State of Tennessee Radioactive Material Licenses.

See manifest #15402 — Print Name
6-26-03 on file @ RSO Inc. — Signature / Date

FORM 540 (10-96)

Duratek

Tuesday, September 30, 2003

David Wellner
Radiation Service Organization, Inc.
P.O. Box 1450
5204 Minnick Road
Laurel, MD 20725-1450

Dear Mr. Wellner:

In compliance with the requirements of 10 CFR 20, Appendix G, Section III, C.1, the attached signed shipping manifest copies are your notice of receipt and acceptance of the radioactive waste materials specified on the manifests.

Manifest Number	Date Received
54-RSO#663GTS#84	09/30/2003

This is acknowledgement of receipt only. Any manifest discrepancies found during manifest review, unloading or processing will be listed on page 2 of this letter.

Thank you for your business.

Sincerely,

Shipping and Receiving

cc: Manifest File
Shipping and Receiving file

FORM 541

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	m3 0.1161	kg 22.2260	NP	NP	NP	NP
	ft3 4.1000	lb 49.0000				

ACTIVITY	ALL NUCLIDES	TRITIUM	C-14	Tc-99	I-129	SOURCE (kg)	
MBq	1.1733E+00	2.1127E-01	9.6200E-01	NP	NP	(kg)	NA
mCi	3.1710E-02	5.7100E-03	2.6000E-02	NP	NP	(lbs)	NA

2. MANIFEST NUMBER 15402-A

3. PAGE 1 OF 1 PAGE(S)

4. SHIPPER NAME The West Company

SHIPMENT ID NUMBER NA

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

5. CONTAINER IDENTIFICATION NUMBER/ GENERATOR ID NUMBER	6. CONTAINER DESCRIPTION (See Note 1) PROCESS REQUESTED (See Note 1A) BURIAL/DISPOSITION (See Note 2A)	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/100cm2) ALPHA	BETA-GAMMA	11. WASTE DESCRIPTOR (See Note 2 & Note 2A)	12. APPROXIMATE WASTE VOLUME(S) IN CONTAINER (m3) (FT3)	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 (MBq) 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-Class B C-Class C
54216/TWC	4	0.1161	22.2260	2.0000E-04	<1.6700E-06	<1.6700E-06	59-NON-HAZARDOUS SCINTILATION VIALS	0.1161	NA	Non-Haz Scintillation Liquid/NP	NP	C-14	9.6200E-01	2.6000E-02	AU
		4.1000	49.0000	2.0000E-02	<1.0000E+02	<1.0000E+02		4.1000				H-3	2.1127E-01	5.7100E-03	
												Subtotal	1.1733E+00	3.1710E-02	
												Total	1.1733E+00	3.1710E-02	
Shipment Totals		0.1161	22.2260										1.1733E+00	3.1710E-02	
		4.1000	49.0000												

Note 1: Container Description Codes. For containers/ waste requiring disposal in approved structural over-packs 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. Polyethlene 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 1A: Process Requested

SC.	Supercompaction
B.	Bulk
I.	Inventory
BS.	Bulk Sort
DE.	Decon
DS.	Direct Survey
O.	Other (See Attached)

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: End Disposition

RG	Return to Generator
S	Storage
R	Recycle
REL	Release
O	Other (See Attached)
EOU	Envirocare, UT
WCS	Waste Control Specialist, TX
BAR	Barnwell, SC
BAR	Richland, WA

Note3: Solidification and 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

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 541 (10-96)

FORM 540

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST

SHIPPING PAPER

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

ORGANIZATION
Chemtrec

2. IS THIS AN "EXCLUSIVE USE" SHIPMENT?
☑ YES
☐ NO

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

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

EPA MANIFEST NUMBER

5. SHIPPER – NAME AND FACILITY
The West Company
101 Gordon Drive
Lionville, PA 19341

SHIPPER I.D. NUMBER
NA
☐ COLLECTOR
☐ PROCESSOR
☑ GENERATOR TYPE (Specify) O

NA

SHIPMENT NUMBER
RSO#664 NSSI#6

CONTACT
Thad Radanowski

TELEPHONE NUMBER (Include Area Code)
610-594-3149

6. CARRIER – Name and Address
RSO, Inc.
5204 Minnick Road
Laurel, MD 20707
Truck #: 01334
Trailer #:

EPA I.D. NUMBER
MDD-06-927-9669

SHIPPING DATE
09/26/2003

CONTACT
David Wellner

TELEPHONE (Include Area Code)
(301)953-2482

SIGNATURE – Authorized carrier acknowledging waste receipt
David Trusi

DATE
9-26-03

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

8. MANIFEST NUMBER (Use this number on all continuation pages)
15402-A

9. CONSIGNEE - Name and Facility
NSSI, Inc.
5711 Etheridge Street
Houston, TX 77087

CONTACT
Kimberly Page

TELEPHONE (Include Area Code)
713-641-0391

SIGNATURE – Authorized consignee acknowledging waste receipt
Kimberly Page

DATE
10-2-03

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 in accordance with the requirements of 10 CFR Parts 20 and 61, or equivalent state regulations.

AUTHORIZED SIGNATURE
David E Wellner

TITLE
Manager RHS

DATE
9-26-03

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
Radioactive material, low specific activity, n.o.s., 7, UN2912	NA	NA	Liquid Non-Haz Scintillation Liquid	C-14	H-3	1.1733E+00	3.1710E-02	LSA-II	49 LBS; 4.1 FT3	54216

FOR CONSIGNEE USE ONLY

20.
This is to inform the generator of the waste shipped on this manifest, that NSSI has the appropriate permits for, and will accept, the waste the generator is shipping.

FORM 540 (10-96)

MONTHLY SEWERAGE DISPOSAL LOG

Use this form if a radioactive disposal via sanitary sewer is performed. Use one section for each radionuclide. Page 1 of 2.

Date Performed	Description of Radioactivity	Radionuclide	Quantity
		^{3}H	
		^{3}H	
		^{3}H	
		^{3}H	
		Total:	

Date Performed	Description of Radioactivity	Radionuclide	Quantity
		^{14}C	
		^{14}C	
		^{14}C	
		^{14}C	
		Total:	

Date Performed	Description of Radioactivity	Radionuclide	Quantity
		^{32}P	
		^{32}P	
		^{32}P	
		^{32}P	
		Total:	

Date Performed	Description of Radioactivity	Radionuclide	Quantity
		^{33}P	
		^{33}P	
		^{33}P	
		^{33}P	
		Total:	

Date Performed	Description of Radioactivity	Radionuclide	Quantity
		^{35}S	
		^{35}S	
		^{35}S	
		^{35}S	
		Total:	

July 99
Reviewed
2 July 99
Edward Ackermann

RADIATION
SAFETY OFFICER

MONTHLY SEWERAGE DISPOSAL LOG

Use this form if a radioactive disposal via sanitary sewer is performed. Use one section for each radionuclide.

Date Performed	Description of Radioactivity	Radionuclide	Quantity
20 ~~19~~ July 99	RIA RINSATE	^{125}I	11.91 uci
		^{125}I	
		^{125}I	
		^{125}I	
		Total(F):	

Date Performed	Description of Radioactivity	Radionuclide	Quantity
		^{131}I	
		^{131}I	
		^{131}I	
		^{131}I	
		Total(G):	

Under 10 CFR 20.2003, sewerage disposal is permissible if the material is readily soluble or dispersible biological material in water and the concentration is less than the following:

$$\frac{\sum^{3}H/8.22E8\ ml}{1E{-}2\ \mu Ci/ml} + \frac{\sum^{14}C/8.22E8\ ml}{3E{-}4\ \mu Ci/ml} + \frac{\sum^{32}P/8.22E8\ ml}{9E{-}5\ \mu Ci/ml} + \frac{\sum^{33}P/8.22E8\ ml}{8E{-}4\ \mu Ci/ml} + \frac{\sum^{35}S/8.22E8\ ml}{1E{-}3\ \mu Ci/ml} + \frac{\sum^{125}I/8.22E8\ ml}{2E{-}5\ \mu Ci/ml} + \frac{\sum^{131}I/8.22E8\ ml}{1E{-}5\ \mu Ci/ml} \leq 1$$

AND

$$\sum A/0.2Ci + \sum B/0.04Ci + \sum C/0.005Ci + \sum D/0.025Ci + \sum E/0.025Ci + \sum F/0.04Ci + \sum G/0.002Ci \leq 1$$

Where A, B, ...G are the monthly totals released to the sanitary sewer system in the Tables shown above.

re, 8.22 E8 ml is the monthly average dilution from the facility, based on 7285 gpd for the pilot plant and an average of 10 gallons per occupant per day. Values based letter to Uwchlan Township Manager Douglas Hanley from Richard H. Lusch, dated November 23, 1994, and Title 25, Rules and Regulations, Part 1, Department of Environmental Resources, Subpart C, Article I, Chapter 73.17, *Sewage Flows*, which uses the 10 gpd value for commercial buildings for sewerage flow.

July
^{125}I Resin to Dispose

END OF COUNTING

COUNTING

1470, 2 detectors, RiaCalc WIZ, program 3.4

5 SURVEY 81 99-JUL-20

Gelle 20 gels

SEQ	PAT	CODE	TIME	CPM	CONC	UNIT	XCV
1	1		60	626.2			
2	2		60	582.1			

200 ul of RIA liquid waste ^{125}I LOTR990413.

Σ = 604 cpm

$\frac{604}{80\% \text{ eff}}$ = 755 DPM

$\frac{755 \text{ DPM}}{200 \text{ ul}} \times 7.0 \text{ l} = 26431563 \text{ dpm}$

$\frac{\text{DPM}}{2.22 \times 10^6 \text{ dpm}/\mu\text{ci}}$ = 11.91 mCi / 7 liters of liquid

May 19, 2006
West Pharmaceutical Services
NRC License Number 37-30229-01
Docket Number: 03033881
Control Number: 138463

ATTACHMENT 2

DOSE EVALUATION REPORT

Name: PAULA KARDOS Social Security No.: 168-44-6788

Date of Birth: 6/29/40 Title: TEMPORARY BIOLOGIST

Lost TLD ☐ No.: NA Lost Film Badge ☐ No.: NA

Description of Occurrence: A SCINTILLATION VIAL BROKE CONTAINING APPROXIMATELY 400 DPM OF 14C RADIOISOTOPE AND PRODUCED A SUPERFICIAL FINGERCUT

Use additional sheets if necessary and check here if used ☑

SPILL INCIDENT REPORT DATED 11 JUNE 97

Summary of Available Records of Exposure: (Survey information, reconstruction)

PERSONAL EFFECTS AND SKIN CONTAMINATION REPORT DATED 11 JUNE 97

Use additional sheets if necessary and check here if used ☑

Estimated Exposure: (Evaluate above information and estimate occupational external radiation exposure. Describe evaluation below and attach additional sheets if necessary. Check here ☐ if used.

A SURVEY READING OF THE LEFT THUMB PRODUCED 21.0 DPM AFTER DECONTAMINATION, DOSE RECEIVED ESTIMATED TO BE ZERO (BELOW BACKGROUND)

Dose Category:

WB: _____ LDE: _____ SDE,WB: ✓ SDE,ME: _____

Employee Supervisor Investigator

Action: Personnel Monitoring Records Adjusted, File This Report with Applicable Dosimetry Records.

Date: 25 June 97 By: _____

The West Company

Personal Effects and Skin Contamination Report

Personal Effects Contamination Record	Name: Paula Kardos		Department: Research	Extension: 3146
Date: 6/11/97	Time of Incident: 3.15 pm	TLD #	Survey Log #	

Time	Survey Inst.	Contaminated Article	Survey Reading	Decontamination Agent Used	Survey Reading After Decon.

Skin Contamination Record	Name: Paula Kardos		Department: Research	Extension: 3146
Date: 6/11/97	Time of Incident: 3.15 pm	TLD # 019-013 Q	Survey Log # P05AS053	

Time	Survey Inst.	Skin Area Concerned	Survey Reading	Decontamination Agent Used	Survey Reading After Decon.
	β Counter	Left Thumb	Not Read	Alcohol - Soap - Water	21.0 (see attached document)
		The broken vial	contained at most 400 dpm		

Signature: Paula S. Kardos

Date: 11 June 97

RSO Signature: Edward A. Kamm

Date: 12 June 97

RADIATION SAFETY OFFICER

PROTOCOL : 5 14-C-VD-survey
DATE : 1997/06/11
TIME : 15:52
ID : P05AS053

Unknown samples:

Pos	CTime	SQPE	C14_DPMer	Pos	C14_DPM
1	60	818.18	22.92	1	21.0

Total activity: C14 21.0 DPM 0.000 kBq

The West Company

Spill Incident Report

Name of Employee: Valérie Dodane

Department: Research **Extension #:** 3326

Date of Incident: 11 June 97

Location of Incident: Tissue Culture Lab

What Happened: Scintillation vial broke

Cause Analysis: Crack in scintillation vial

Corrective Actions: Absorp liquid - Clean with Isoclean - Swipe - Survey (All contaminated waste was disposed of in radioactive waste)

Witnesses: Paula Kardos

Signature: [signature]

Date: 11 June 97

RSO Signature: [signature]

Date: 12 June 97

RADIATION
SAFETY OFFICER

RADIOLOGICAL SURVEY DATA SHEET

Item Description: ☐ Hood

☐ Radioisotope Laboratory

☐ Storage Area

☐ Radioisotope Hood Ventilation System

☒ Other Tissue Culture Lab.

Survey Date: 11 June 97 Performed by: Valérie Dodane

Survey Instrument: Model: N/A Serial No.: – Probe No.: –

Calibration Due Date: –

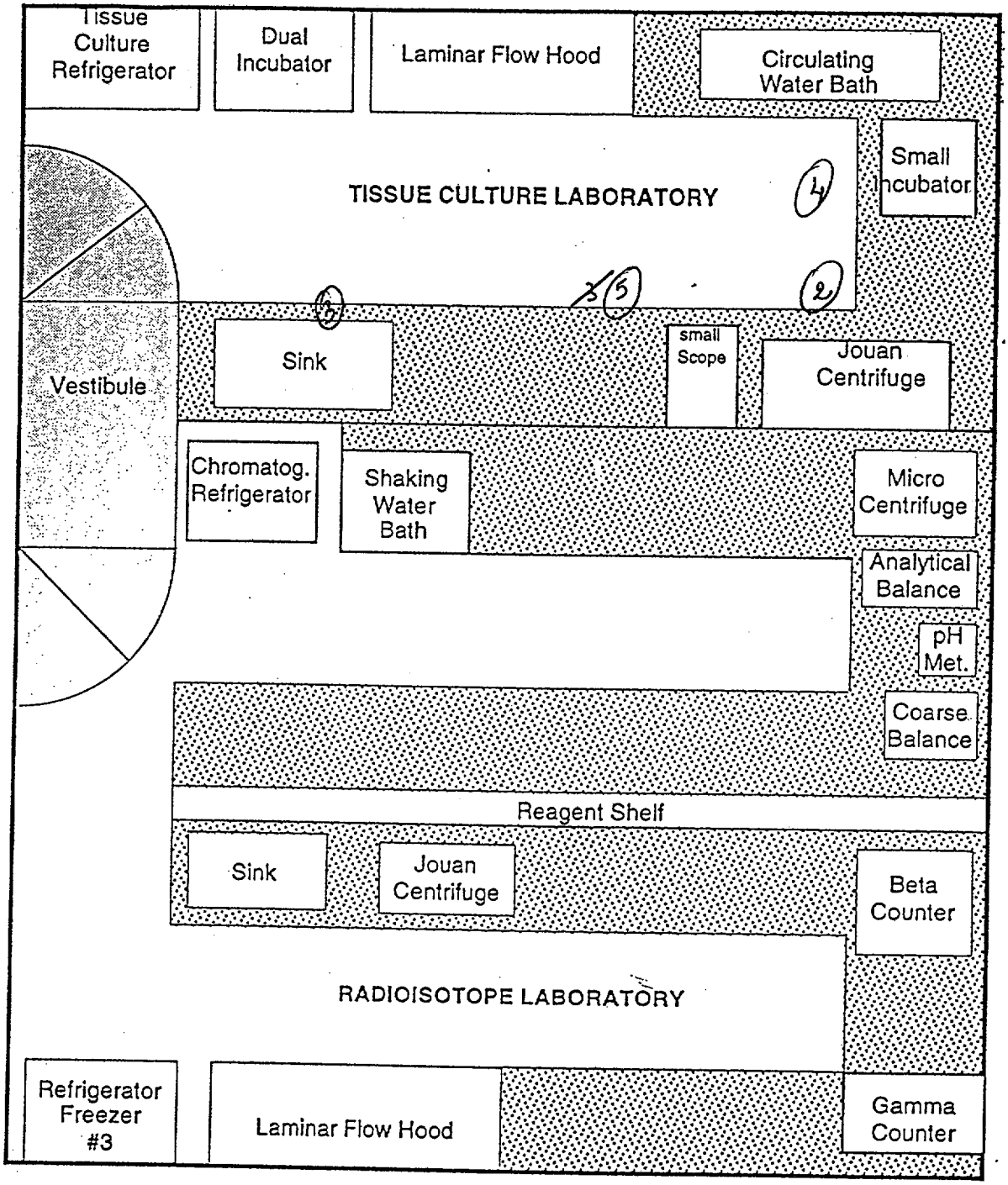
Location of Reading	Smear Number	Beta-Gamma Activity (dpm/100cm²)			β, γ Direct
		Direct	Removable	Fixed	
Handle Drawer	1	see attached map			
Floor	2				
Bench	3				
Floor	4				
Floor	5				
VD Shoes	6				
PK Shoes	7				

see attached document

Remarks:

Reviewed by: [signature] Date: 11 June 97

RADIATION SAFETY OFFICER



COHN LABORATORY

PROTOCOL : 5 14-C-VD-survey
DATE : 1997/06/11
TIME : 13:45
ID : P05AS052

Unknown samples:

Pos	CTime	SQPE	C14_DPMer	Pos	C14_DPM
1	60	815.52	28.85	1	13.0
2	60	816.53	20.95	2	25.3
3	60	814.54	21.34	3	24.5
4	60	815.07	19.99	4	27.7
5	60	815.94	18.89	5	31.1
6	60	816.87	20.84	6	25.5
7	60	814.62	16.25	7	42.0

Total activity: C14 189.0 DPM 0.003 kBq

May 19, 2006
West Pharmaceutical Services
NRC License Number 37-30229-01
Docket Number: 03033881
Control Number: 138463

ATTACHMENT 3

RADIOLOGICAL SURVEY DATA SHEET

Item Description:

- [x] Hood
- [x] Radioisotope Laboratory
- [x] Storage Area
- [ ] Radioisotope Hood Ventilation System
- [ ] Other

RADIATION SAFETY OFFICER
Rad Safe 31 Octo2

Survey Date: 21 OCT 02 Performed by: Thad Radzanowski

Survey Instrument: Model: Ludlum 3 Serial No.: 120333 Probe No.: Model: 44-9 S/N: 122417

Calibration Due Date: 26 JUN 03

TR 21 OCT 02 TR 21 OCT 02

Location of Reading	Wipe Number	Beta-Gamma Activity (dpm/100cm²)			β, γ Direct
		Direct	Removable	Fixed	
Radiation sink	1	Background			0.02 mR/hr ≤ background
Rad centrifuge exterior	2				
Rad centrifuge interior	3				
Scintillation counter	4				
Drawer RA3	5				
Counter top A	6	see attached printouts			
~~Beta~~ Gamma Counter (TR 21 OCT 02)	7				
Counter top B	8				
Hood	9				
Jordon #3 refrigerator	10				
Jordon #3 freezer	11				
Floor by sink	12				
Floor by counters	13				

Remarks:

Reviewed by: [signature] Date: 31 Octo2

RADIOLOGICAL SURVEY DATA SHEET

Item Description:

- [x] Hood
- [x] Radioisotope Laboratory
- [x] Storage Area
- [ ] Radioisotope Hood Ventilation System
- [ ] Other

Survey Date: 21 OCT 02 Performed by: Thad Radzanowski

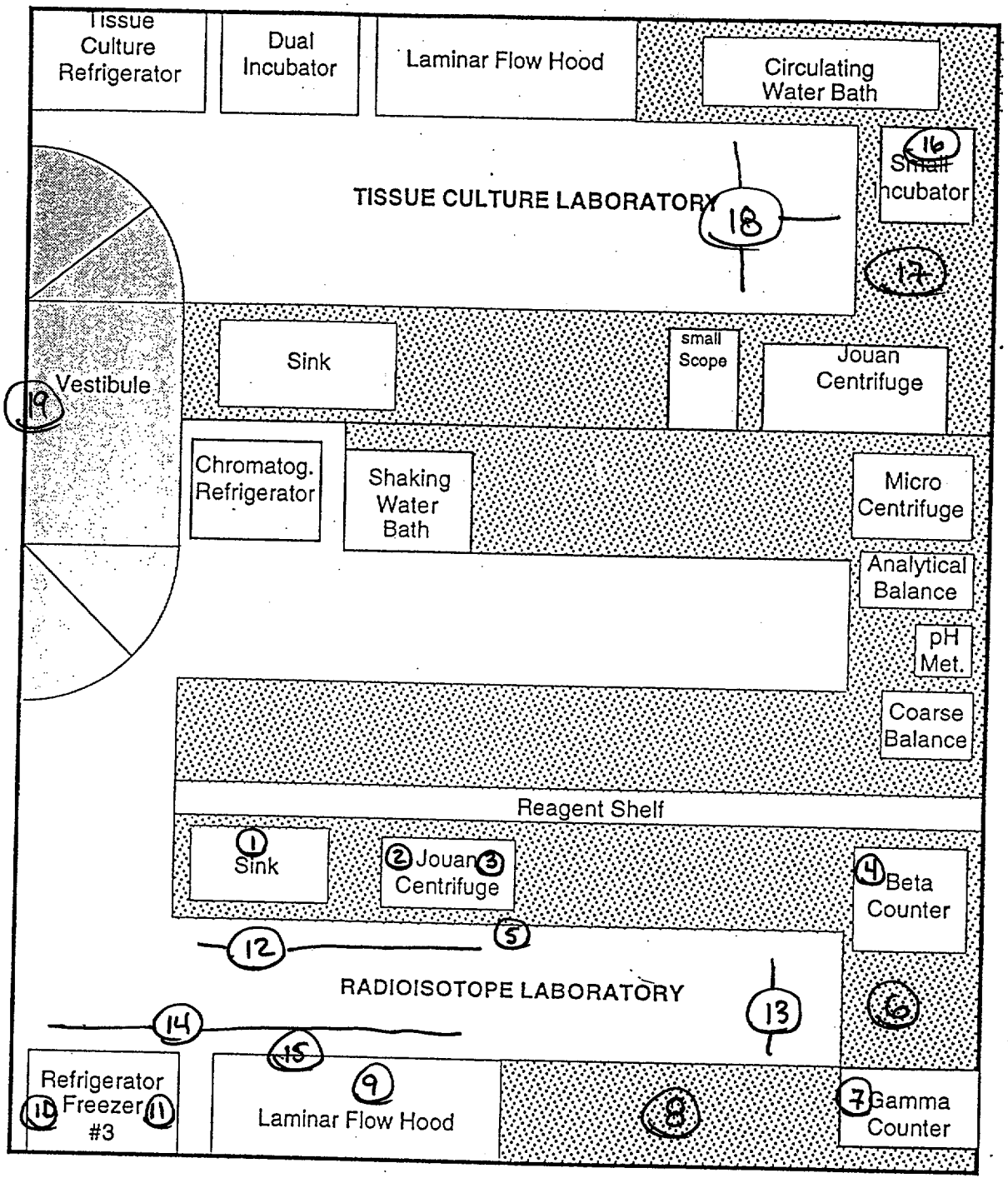
Survey Instrument: Model: Ludlum 3 Serial No.: 120333 Probe No.: Model: 44-9 s/n: 122417

Calibration Due Date: 26 JUN 03

Location of Reading	Wipe Number	Beta-Gamma Activity (dpm/100cm²) TR 21 OCT 02			β/γ Direct TR 21 OCT 02
		Direct	Removable	Fixed	
Floor by hood/Jordan 3	14	See attached printouts			≤ background (0.02 mR/hr)
Storage Cab under hood	15				
Small incubator	16				
Biology lab bench	17				
Floor biology room	18				
Main Door	19				
Blank	20				
Chemical closet door	21			Background →	0.02 mR/hr ≤ background
Rad cage door	22				
Waste barrel ~~28~~ TR 21 OCT 02	23				
Cage floor	24				
Air Sample	25				NA
Air sample blank	26				NA

Remarks:

Reviewed by: [signature] Date: 31 Octo 2



COHN LABORATORY

PROTOCOL : 1 Survey All
DATE : 2002/10/21
TIME : 13:25
ID : P01AS161

Wipe Testing

Wallac 1414 WinSpectral v1.30 S/N 4140008
Counting mode : DPM
Quench index : SQP(E)
Isotope(s) : H3,C14
H3 = ,12.43 y
C14 = ,5730.00 y
Protocol name : Survey All
Counting time : 60
Repeats : 1
Cycles : 1
Replicates : 1
2 sigma % : 0.01
Minimum cpm : 0.00 Checking time: 10
Sp. library of isotope H3 : Wallac
Sp. library of isotope C14 : Wallac
Vial type : Clear
Liquid system : HiSafe
Output to Display :
POS,RACKPOS,CTIME,CPM1,CPM2,DPM1,DPM2,EFF1,EFF2,CPM,SQPI
Additions to Display : Listing,Header,Spectrum
Header : Wipe Testing
Spectrum : Beta
Window 1 : 1-1024 /Beta
Window 2 : 1-1024 /Beta
Window 3 : 1-1024 /Beta
Window 4 : 1-1024 /Beta
Window 5 : 1-1024 /Beta
Window 6 : 1-1024 /Beta
FNCT1 = FNCT1 :
FNCT2 = FNCT2 :
FNCT3 = FNCT3 :
FNCT4 = FNCT4 :

Total activity:

H3	302.4 DPM	0.005 kBq
C14	90.1 DPM	0.002 kBq

SWIPE / WIPE

~~RACKPOS~~	CTIME	CPM1	CPM2	DPM1	DPM2	EFF1	EFF2
1	60	0.00	0.00	0.00	0.00	34.78	91.58
2	60	7.10	0.00	18.20	0.00	39.11	92.46
3	60	12.40	0.00	32.90	0.00	37.73	92.21

SWIPE ~~BACKPOS.~~	CTIME	CPM1	CPM2	DPM1	DPM2	EFF1	EFF2	
4	60	7.80	0.00	19.60	0.00	39.56	92.53	
5	60	11.70	42.40	30.50	45.90	38.29	92.31	Elevated but still below 3x blank
6	60	-1.60	6.20	-4.10	6.70	38.44	92.35	
7	60	9.60	0.00	25.00	0.00	38.25	92.31	
8	60	6.10	12.30	15.70	13.30	39.12	92.46	
9	60	7.30	0.00	20.20	0.00	36.21	91.89	
10	60	0.00	0.00	0.00	0.00	35.89	91.83	
11	60	-1.40	12.20	-3.80	13.20	37.03	92.06	
12	60	0.00	0.00	0.00	0.00	36.59	91.91	
13	60	4.90	0.00	14.00	0.00	35.06	91.62	
14	60	6.00	0.00	17.20	0.00	35.17	91.65	
15	60	10.80	0.00	33.00	0.00	32.65	91.05	
16	60	0.00	0.00	0.00	0.00	37.87	92.24	
17	60	0.00	0.00	0.00	0.00	38.82	92.41	
18	60	0.00	0.00	0.00	0.00	36.38	91.93	
19 A	60	0.00	0.00	0.00	0.00	35.93	91.83	
20 B	60	6.90	10.10	18.30	10.90	37.58	92.18	Blank
21 B	60	6.00	0.00	15.60	0.00	38.29	92.30	
22 A	60	1.10	0.00	2.90	0.00	37.82	92.23	
23 B	60	9.30	0.00	26.80	0.00	34.75	91.57	
24 B	60	5.90	0.00	20.20	0.00	29.24	90.07	
25 A	60	0.00	0.00	0.20	0.00	14.69	82.28	
26 B	60	0.00	0.00	0.00	0.00	13.74	80.96	

RADIOLOGICAL AIR SAMPLE

B only

Purpose of Sample: ☐ Personal Air Sampler

☒ General Work Area

☐ Radioisotope Hood ___ Pre Treatment ___ Post Treatment

Date/Time Sampler On: 21 OCT 02 11:30am Date/Time Sampler Off: 21 OCT 02 12:00pm.

Air Sampler Model No.: CI47 Air Sampler Serial No.: 0523-1010-6582 Dx Pump

Average Flow Rate NA ☐CFM ☐lpm x Sample Time NA = Total Flow NA ☐CF ☐ liters

(To correct for cubic feet multiply by 28316 ml/ft^3)

Sample Results:

Date	Time	Instrument/Ser. No.	Total Counts
21 OCT 02	30 min sample period	Wallac Scint. Ct.	See Attached.

Count Time	CPM, BKG	CPM, Gross	CCPM	CF	µ Ci/ml

Perform calculations or enter remarks:

If this air sample was performed for the purpose of personnel air sampling, divide sample concentrations by the respective derived air concentration (DAC) value found in Table 1, Column 3 of Appendix B to 10 CFR 20 thus determining the magnitude of DAC to which the individual was exposed. Multiply this number by the time of the exposure and determine DAC-Hours. Each DAC-Hour is equivalent to 2.5 mrem CEDE.

If the identity or percentages of the radionuclide(s) in a mixture are unknown, divide the concentration by the most restrictive radionuclide DAC value.

Instrument performance report

Report date : 10/21/2002
Instrument type : WinSpectral
Serial number : 4140008
Protocol used : 99
Date of last measurement : 10/21/2002
Sample ID : Wallac reference samples BLANK, H3 and C14.

H3 statistics

	measured	low	high	test
CPM	127439	98700	138180	passed
SQPI	168.6	150.0	200.0	passed
Eff %	64.6	50.0	70.0	passed
Bg	24.9	5.0	50.0	passed

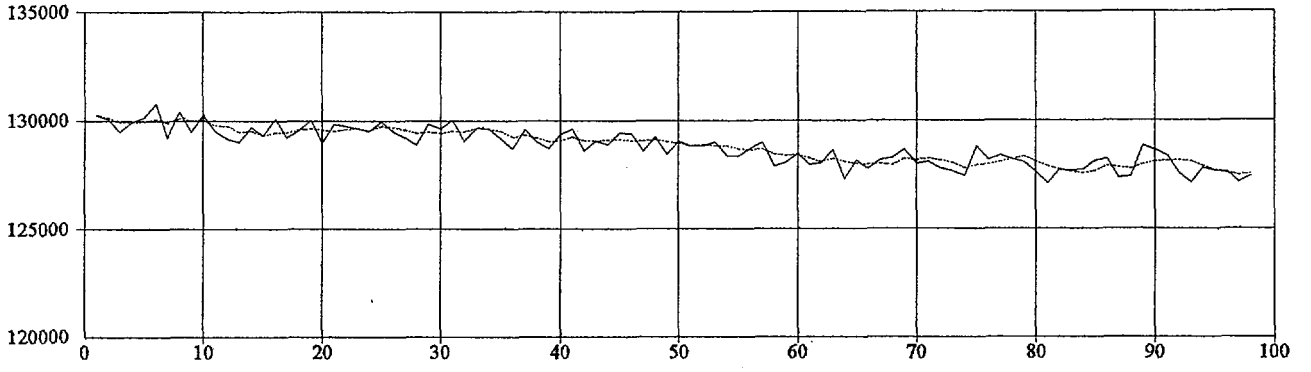
C14 statistics

	measured	low	high	test
CPM	105736	98730	109700	passed
SQPI	404.0	400.0	440.0	passed
Eff %	96.4	90.0	100.0	passed
Bg	28.0	10.0	70.0	passed

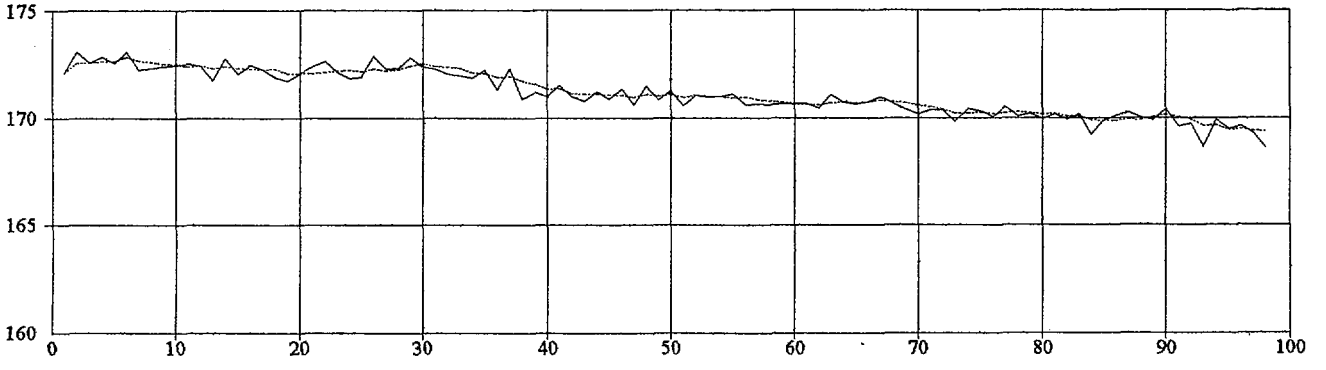
All test passed.

All values are ok.

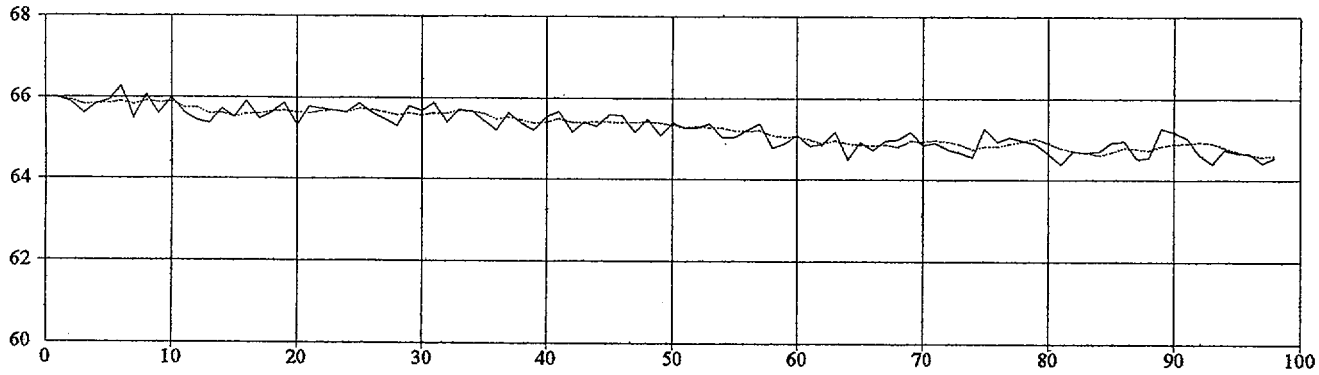
H3 CPM trend



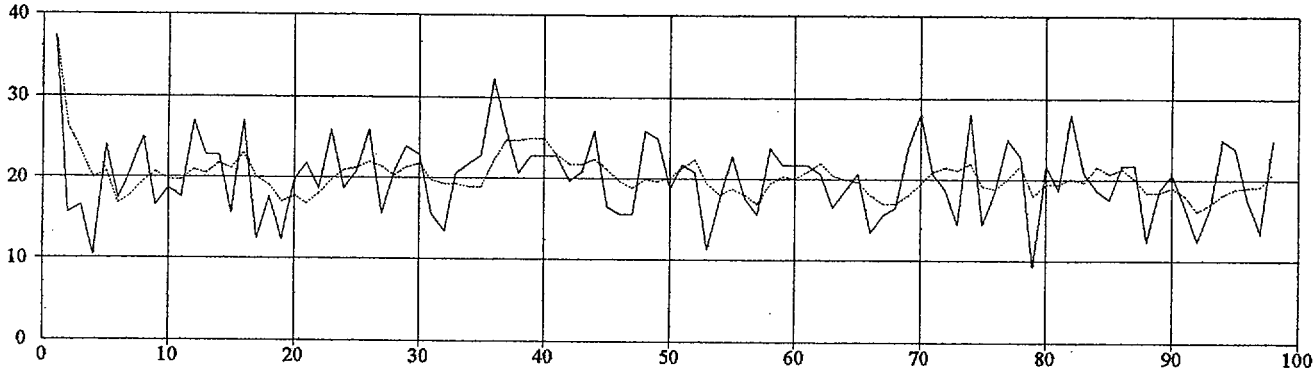
H3 SQPI trend



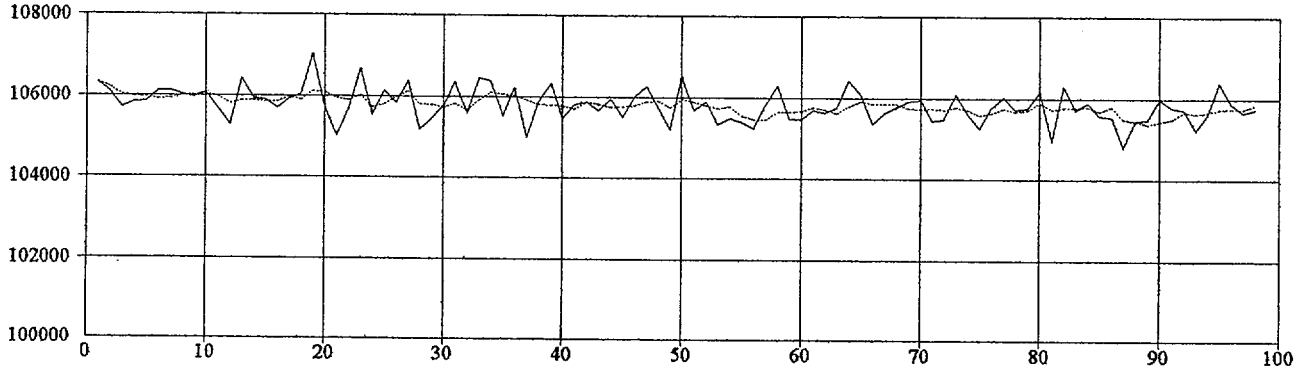
H3 efficiency trend



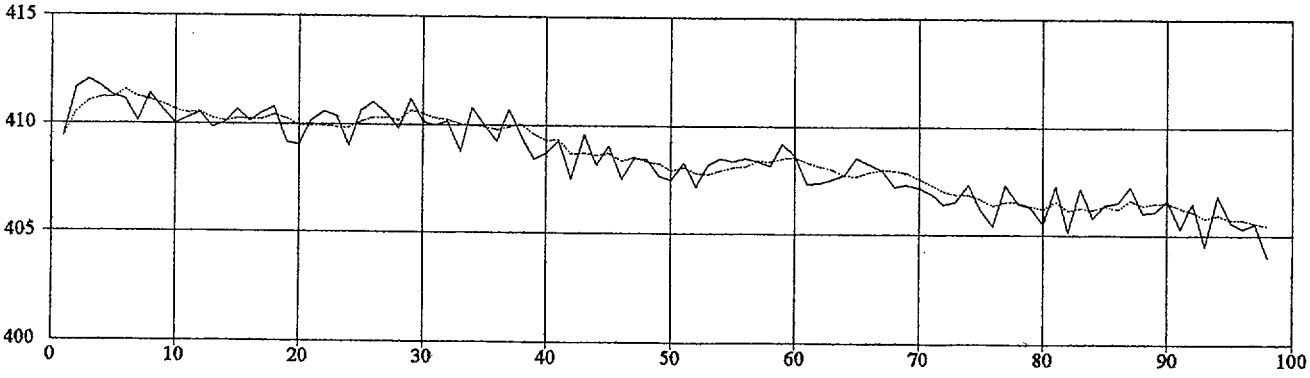
H3 background trend



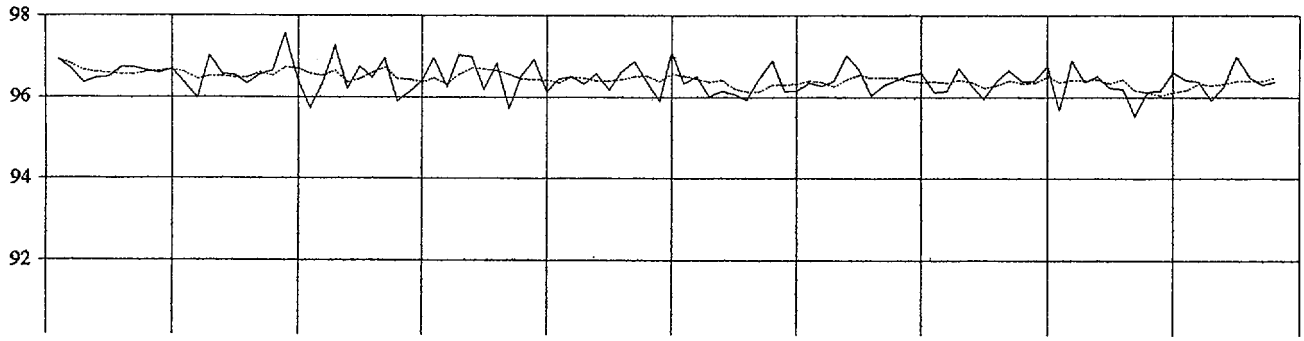
C14 CPM trend



C14 SQPI trend



C14 efficiency trend



COUNTING

1470. 2 detectors. Hindale WIC. program 3.4

ASSAY 21-Oct-2002 10:58:36

Protocol id 5 SURVEY
Time limit 60
Count limit 99999999
Isotope I-125
Protocol date 07-Jul-2000 14:51:03
Run id. 62

POS	RACK	DET	BATCH	TIME	COUNTS	CPM	ERROR %	Isocalibrator
3	1	1	1	60	13	3.7	126.53	543845 > disposed
4	1	2	1	60	16	1.1	481.44	543846
5	1	1	2	60	37	28.6	24.40	545830 Returned to Jordan #3 fridge
6	1	2	2	60	36	21.2	33.96	545829
7	1	1	3	60	184	176.0	8.45	548201
8	1	2	3	60	160	144.7	9.69	548202
9	1	1	4	60	1943	1949.7	2.83	550115
10	1	2	4	60	1949	1920.5	2.87	550114
15	2	1	5	60	13	4.0	116.92	LIQUID > Disposed
16	2	2	5	60	10	-4.2	116.81	LIQUID
17	2	1	6	60	14	5.0	95.74	Blanks
18	2	2	6	60	13	-1.4	382.91	
19	2	1	7	60	8	-1.2	330.02	
20	2	2	7	60	12	-2.8	181.92	

END OF ASSAY

END OF COUNTING

28 JUL 02 – 21 OCT 02
TR
No sewage disposal

MONTHLY SEWERAGE DISPOSAL LOG

Use this form if a radioactive disposal via sanitary sewer is performed. Use one section for each radionuclide. Page 1 of 2.

Date Performed	Description of Radioactivity	Radionuclide	Quantity
		^{3}H	
		^{3}H	
		^{3}H	
		^{3}H	
		Total:	

Date Performed	Description of Radioactivity	Radionuclide	Quantity
		^{14}C	
		^{14}C	
		^{14}C	
		^{14}C	
		Total:	

Date Performed	Description of Radioactivity	Radionuclide	Quantity
		^{32}P	
		^{32}P	
		^{32}P	
		^{32}P	
		Total:	

Date Performed	Description of Radioactivity	Radionuclide	Quantity
		^{33}P	
		^{33}P	
		^{33}P	
		^{33}P	
		Total:	

Date Performed	Description of Radioactivity	Radionuclide	Quantity
		^{35}S	
		^{35}S	
		^{35}S	
		^{35}S	
		Total:	

MONTHLY SEWERAGE DISPOSAL LOG

Use this form if a radioactive disposal via sanitary sewer is performed. Use one section for each radionuclide.

Date Performed	Description of Radioactivity	Radionuclide	Quantity
		^{125}I	
		^{125}I	
		^{125}I	
		^{125}I	
		Total(F):	

Date Performed	Description of Radioactivity	Radionuclide	Quantity
		^{131}I	
		^{131}I	
		^{131}I	
		^{131}I	
		Total(G):	

Under 10 CFR 20.2003, sewerage disposal is permissible if the material is readily soluble or dispersible biological material in water and the concentration is less than the following:

$$\frac{\sum {}^{3}H/8.22E8\ ml}{1E{-}2\ \mu Ci/ml} + \frac{\sum {}^{14}C/8.22E8\ ml}{3E{-}4\ \mu Ci/ml} + \frac{\sum {}^{32}P/8.22E8\ ml}{9E{-}5\ \mu Ci/ml} + \frac{\sum {}^{33}P/8.22E8\ ml}{8E{-}4\ \mu Ci/ml} + \frac{\sum {}^{35}S/8.22E8\ ml}{1E{-}3\ \mu Ci/ml} + \frac{\sum {}^{125}I/8.22E8\ ml}{2E{-}5\ \mu Ci/ml} + \frac{\sum {}^{131}I/8.22E8\ ml}{1E{-}5\ \mu Ci/ml} \leq 1$$

AND

$$\sum A/0.2Ci + \sum B/0.04Ci + \sum C/0.005Ci + \sum D/0.025Ci + \sum E/0.025Ci + \sum F/0.04Ci + \sum G/0.002Ci \leq 1$$

Where A, B, ...G are the monthly totals released to the sanitary sewer system in the Tables shown above.

ere, 8.22 E8 ml is the monthly average dilution from the facility, based on 7285 gpd for the pilot plant and an average of 10 gallons per occupant per day. Values based 1 letter to Uwchlan Township Manager Douglas Hanley from Richard H. Lusch, dated November 23, 1994, and Title 25, Rules and Regulations, Part 1, Department of Environmental Resources, Subpart C, Article I, Chapter 73.17, *Sewage Flows*, which uses the 10 gpd value for commercial buildings for sewerage flow.

RADIOLOGICAL SURVEY DATA SHEET

RADIATION SAFETY OFFICER
Rec'd 31 Jan 03

Item Description:
- [x] Hood
- [x] Radioisotope Laboratory
- [ ] Storage Area
- [ ] Radioisotope Hood Ventilation System
- [ ] Other

Survey Date: 30 JAN 03 Performed by: Thad Radzanowski

Survey Instrument: Model: Ludlam 3 Serial No.: 120333 Probe No.: 122417 (44-9)

Calibration Due Date: 26 JUN 03

Location of Reading	Wipe Number	Beta-Gamma Activity (dpm/100cm²)			β Direct
		Direct	Removable	Fixed	
Sink	1	See Attachments			0.03 mR/hr or less
Cabinet Under Sink	2				
Floor by Sink	3				
Jouan Centrifuge ext.	4				
Jouan Centrifuge int.	5				
Floor by Jouan	6				
Beta Counter	7				
Floor by Beta Counter	8				
Counter top (see map)	9				
Gamma Counter	10				
Floor by Gamma Counter	11				
Counter Top (see map)	12				
Floor by Counter	13				

TR 30 JAN 03

Remarks:

Reviewed by: [signature] Date: 31 Jan 03

TR 30 JAN 03

RADIOLOGICAL SURVEY DATA SHEET

Item Description:

- ☒ Hood
- ☒ Radioisotope Laboratory
- ☒ Storage Area
- ☐ Radioisotope Hood Ventilation System
- ☐ Other

Survey Date: 30 JAN 03 Performed by: Thad Radzavorski

Survey Instrument: Model: Ludlum 3 Serial No.: 120333 Probe No.: 122417 (44-9)

Calibration Due Date: 26 JUN 03

Location of Reading	Wipe Number	Beta-Gamma Activity (dpm/100cm²)			Direct
		Direct	Removable	Fixed	
Laminar Flow Hood	14	See Attachments			0.03 mR/hr or less
Cabinet under Hood	15				
Floor by Hood	16				
Jordon #3 Fridge	17				
Jordon #3 Freezer	18				
Floor by Jordon #3	19				
Vestibule doors	20				
Vestibule Floor	21				
Blank	22				NA
Air Sample	23				NA
Air Sample blank	24				NA
Door to storage room	25				Background 0.02 mR/hr
Cage door	26				

Remarks:

Reviewed by: [signature] Date: 31 Jan 03

TR 30 JAN 03

RADIOLOGICAL SURVEY DATA SHEET

Item Description:

- ☐ Hood
- ☐ Radioisotope Laboratory
- ☒ Storage Area
- ☐ Radioisotope Hood Ventilation System
- ☐ Other

Survey Date: 30 JAN 03 Performed by: Thad Radzwarski

Survey Instrument: Model: Ludlum 3 Serial No.: 120333 Probe No.: 122417 (44-9)

Calibration Due Date: 26 JAN 03

Location of Reading	Wipe Number	Beta Gamma Activity (dpm/100cm²)			β, γ Direct
		Direct	Removable	Fixed	
Cage Floor	27	See Attachments			Background
Barrel # 8	28				
Barrel # 9	29				
Blank	30				N/A

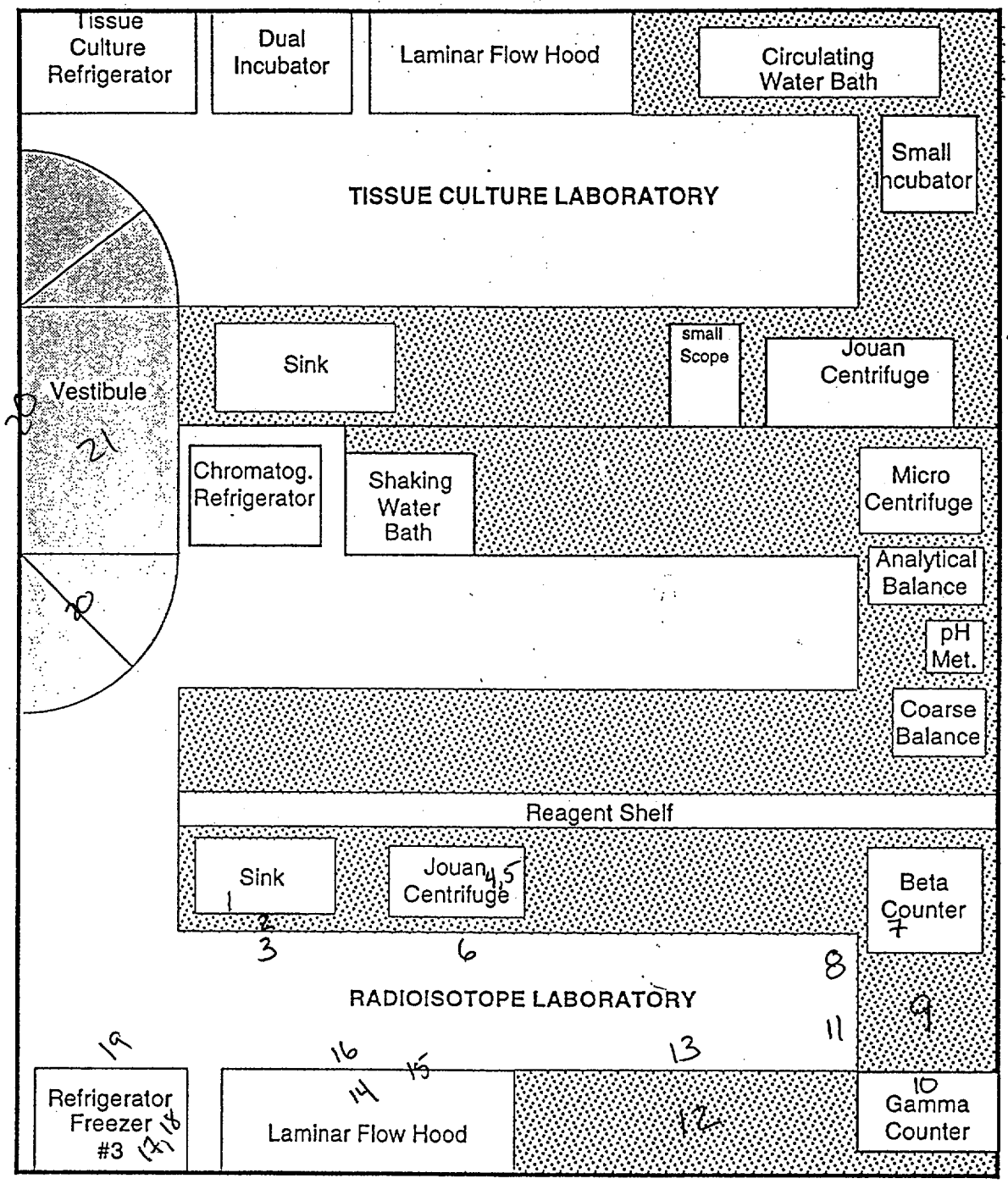
TR 30 JAN 03

Remarks:

Reviewed by: [signature] Date: 31 Jan 03

TR 30 JAN 03

Cohn lab swipe location #'s



COHN LABORATORY

TPR
30 JAN 03

ORIGINAL

RADIOLOGICAL AIR SAMPLE

For B only

Purpose of Sample: ☐ Personal Air Sampler

☒ General Work Area

☐ Radioisotope Hood ___ Pre Treatment ___ Post Treatment

Date/Time Sampler On: 30 JAN 03 10:00am Date/Time Sampler Off: 10:30am 30 JAN 03

Air Sampler Model No.: CJ47 Air Sampler Serial No.: 6523-1010-6582 Dx Pump

Average Flow Rate NA ☐CFM ☐lpm x Sample Time NA = Total Flow NA ☐CF ☐ liters

(To correct for cubic feet multiply by 28316 ml/ft^3)

Sample Results:

Date	Time	Instrument/Ser. No.	Total Counts
30 JAN 03	30min sample period	Wallac 1414	See Attached

Count Time	CPM, BKG	CPM, Gross	CCPM	CF	µ Ci/ml
			TR 30JAN03		

Perform calculations or enter remarks:

If this air sample was performed for the purpose of personnel air sampling, divide sample concentrations by the respective derived air concentration (DAC) value found in Table 1, Column 3 of Appendix B to 10 CFR 20 thus determining the magnitude of DAC to which the individual was exposed. Multiply this number by the time of the exposure and determine DAC-Hours. Each DAC-Hour is equivalent to 2.5 mrem CEDE.

If the identity or percentages of the radionuclide(s) in a mixture are unknown, divide the concentration by the most restrictive radionuclide DAC value.

TR
30 JAN 03

1+ DEC 02 TR

to

30 JAN 03 TR

MONTHLY SEWERAGE DISPOSAL LOG

Use this form if a radioactive disposal via sanitary sewer is performed. Use one section for each radionuclide. Page 1 of 2.

No disposal during this period.

Date Performed	Description of Radioactivity	Radionuclide	Quantity
		^{3}H	
		^{3}H	
		^{3}H	
		^{3}H	
		Total:	

Date Performed	Description of Radioactivity	Radionuclide	Quantity
		^{14}C	
		^{14}C	
		^{14}C	
		^{14}C	
		Total:	

Date Performed	Description of Radioactivity	Radionuclide	Quantity
		^{32}P	
		^{32}P	
		^{32}P	
		^{32}P	
		Total:	

Date Performed	Description of Radioactivity	Radionuclide	Quantity
		^{33}P	
		^{33}P	
		^{33}P	
		^{33}P	
		Total:	

Date Performed	Description of Radioactivity	Radionuclide	Quantity
		^{35}S	
		^{35}S	
		^{35}S	
		^{35}S	
		Total:	

30 JAN 03 TR

17 DEC 02
to
30 JAN 03

MONTHLY SEWERAGE DISPOSAL LOG

Use this form if a radioactive disposal via sanitary sewer is performed. Use one section for each radionuclide. Page 2 of 2.

NO sink disposal during this period

Date Performed	Description of Radioactivity	Radionuclide	Quantity
		^{125}I	
		^{125}I	
		^{125}I	
		^{125}I	
		Total(F):	

Date Performed	Description of Radioactivity	Radionuclide	Quantity
		^{131}I	
		^{131}I	
		^{131}I	
		^{131}I	
		Total(G):	

Under 10 CFR 20.2003, sewerage disposal is permissible if the material is readily soluble or dispersible biological material in water and the concentration is less than the following:

$$\frac{\sum {}^{3}H/8.22E8\ ml}{1E{-}2\ \mu Ci/ml} + \frac{\sum {}^{14}C/8.22E8\ ml}{3E{-}4\ \mu Ci/ml} + \frac{\sum {}^{32}P/8.22E8\ ml}{9E{-}5\ \mu Ci/ml} + \frac{\sum {}^{33}P/8.22E8\ ml}{8E{-}4\ \mu Ci/ml} + \frac{\sum {}^{35}S/8.22E8\ ml}{1E{-}3\ \mu Ci/ml} + \frac{\sum {}^{125}I/8.22E8\ ml}{2E{-}5\ \mu Ci/ml} + \frac{\sum {}^{131}I/8.22E8\ ml}{1E{-}5\ \mu Ci/ml} \leq 1$$

AND

$$\sum A/0.2Ci + \sum B/0.04Ci + \sum C/0.005Ci + \sum D/0.025Ci + \sum E/0.025Ci + \sum F/0.04Ci + \sum G/0.002Ci \leq 1$$

TK
30 JAN 03

Where A, B, ...G are the monthly totals released to the sanitary sewer system in the Tables shown above.

ere, 8.22 E8 ml is the monthly average dilution from the facility, based on 7285 gpd for the pilot plant and an average of 10 gallons per occupant per day. Values based a letter to Uwchlan Township Manager Douglas Hanley from Richard H. Lusch, dated November 23, 1994, and Title 25, Rules and Regulations, Part 1, Department of Environmental Resources, Subpart C, Article I, Chapter 73.17, *Sewage Flows*, which uses the 10 gpd value for commercial buildings for sewerage flow.

Instrument performance report

Report date : 1/30/2003
Instrument type : WinSpectral
Serial number : 4140008
Protocol used : 99
Date of last measurement : 1/30/2003
Sample ID : Wallac reference samples BLANK, H3 and C14.

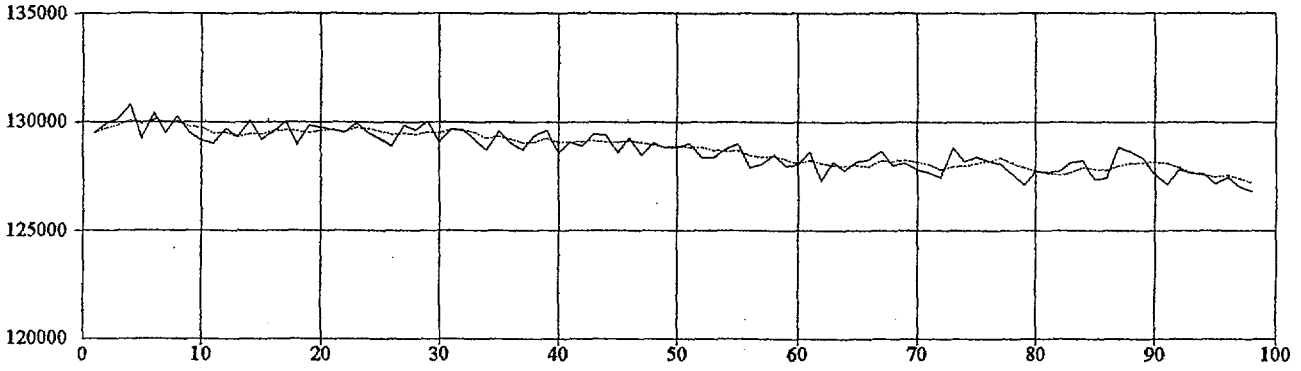
H3 statistics	measured	low	high	test
CPM	126807	98700	138180	passed
SQPI	169.1	150.0	200.0	passed
Eff %	64.2	50.0	70.0	passed
Bg	16.6	5.0	50.0	passed

C14 statistics	measured	low	high	test
CPM	105507	98730	109700	passed
SQPI	404.7	400.0	440.0	passed
Eff %	96.2	90.0	100.0	passed
Bg	24.9	10.0	70.0	passed

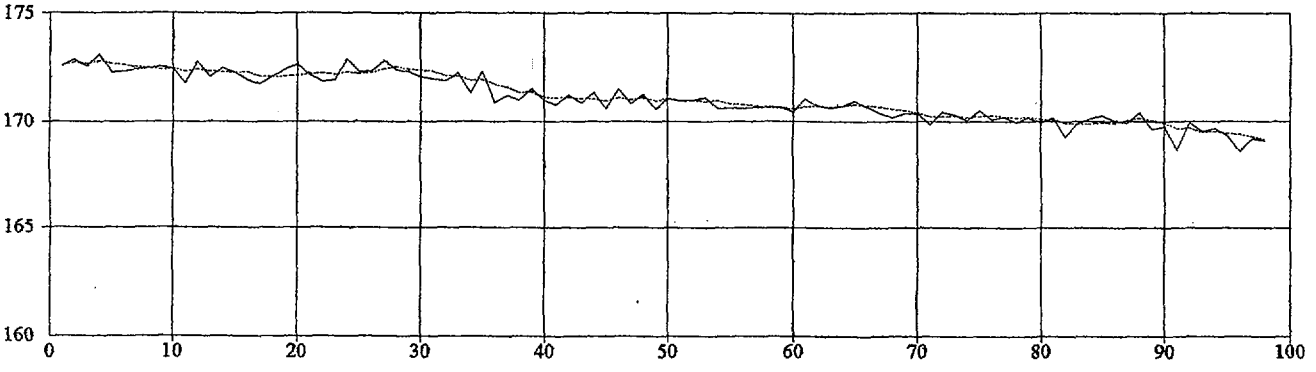
All test passed.

All values are ok.

H3 CPM trend

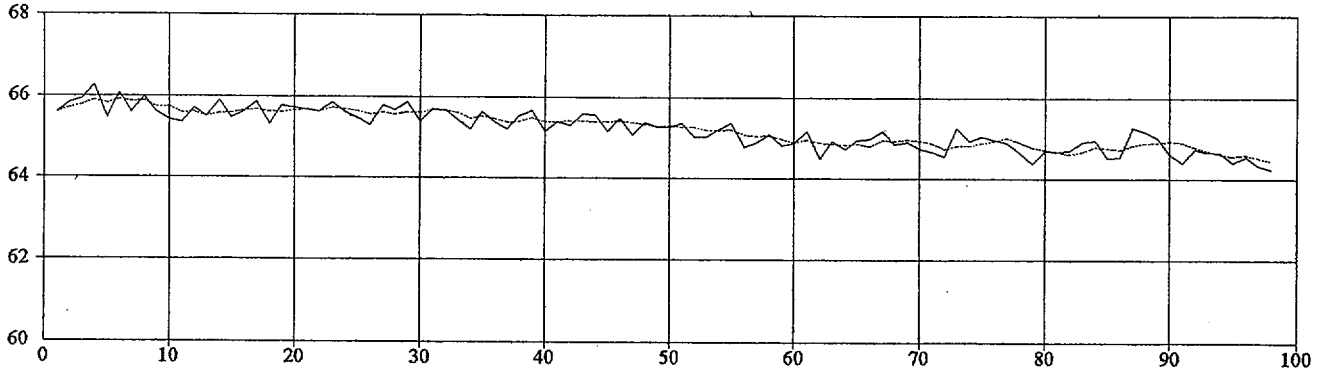


H3 SQPI trend

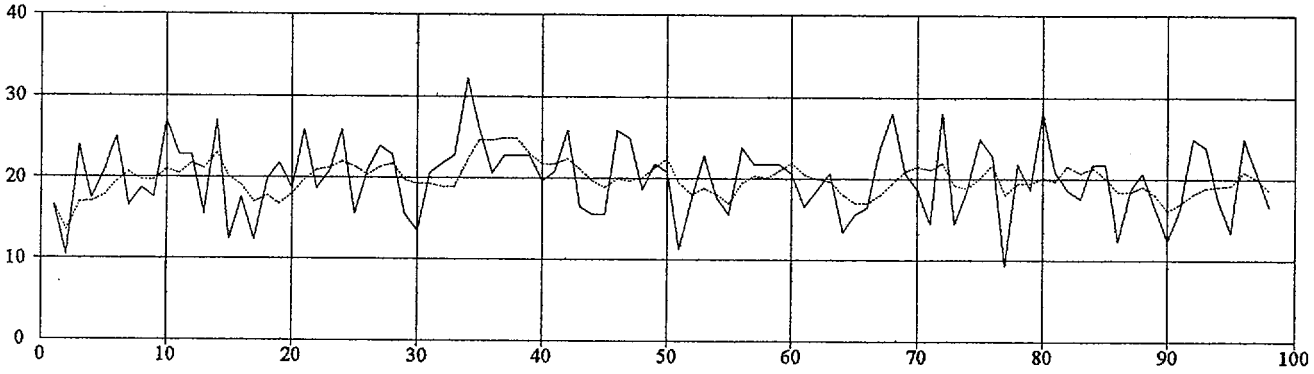


TR

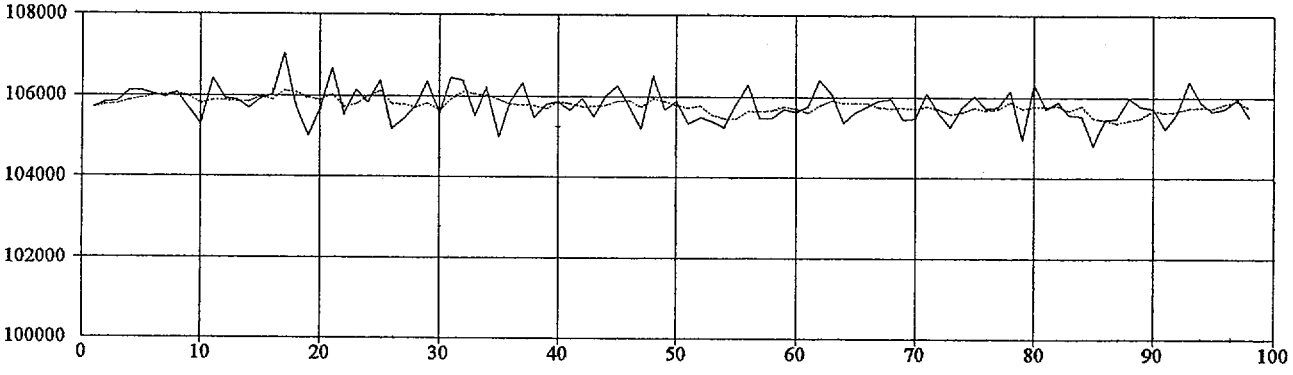
H3 efficiency trend



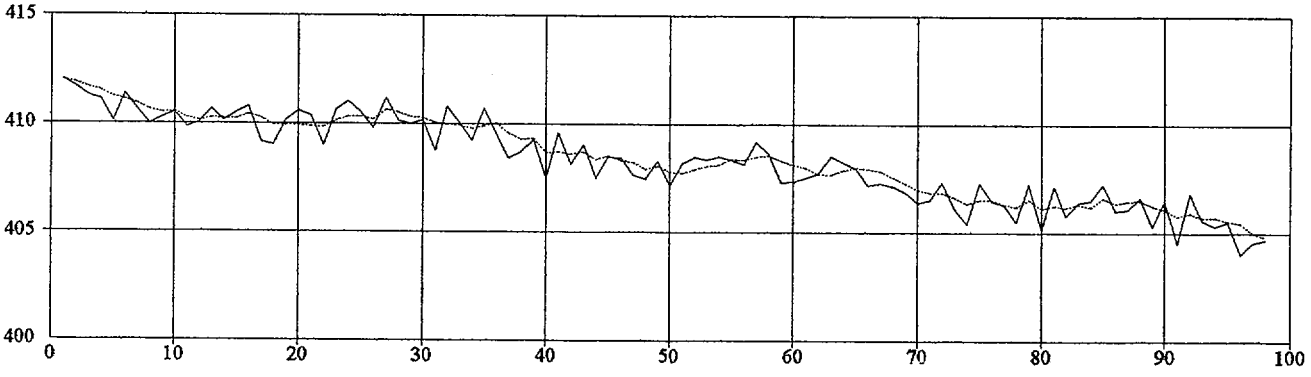
H3 background trend



C14 CPM trend

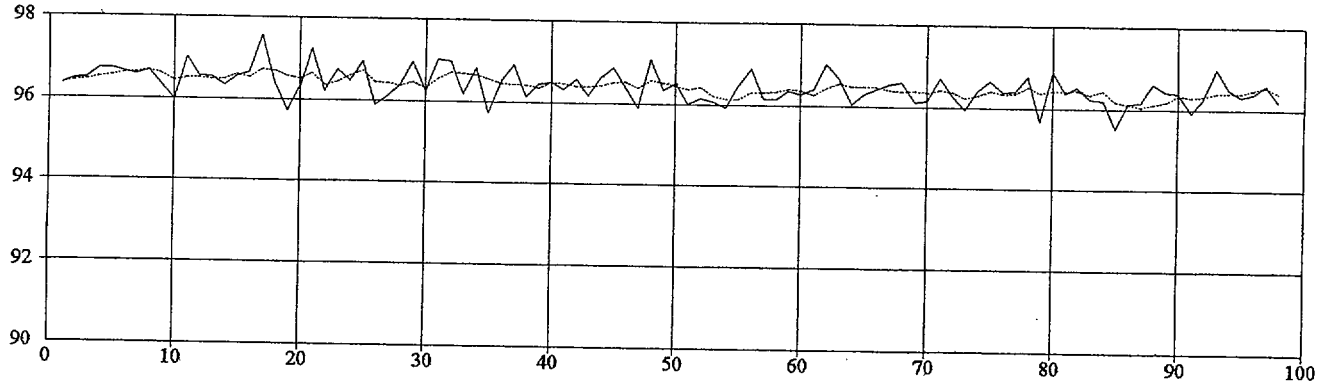


C14 SQPI trend

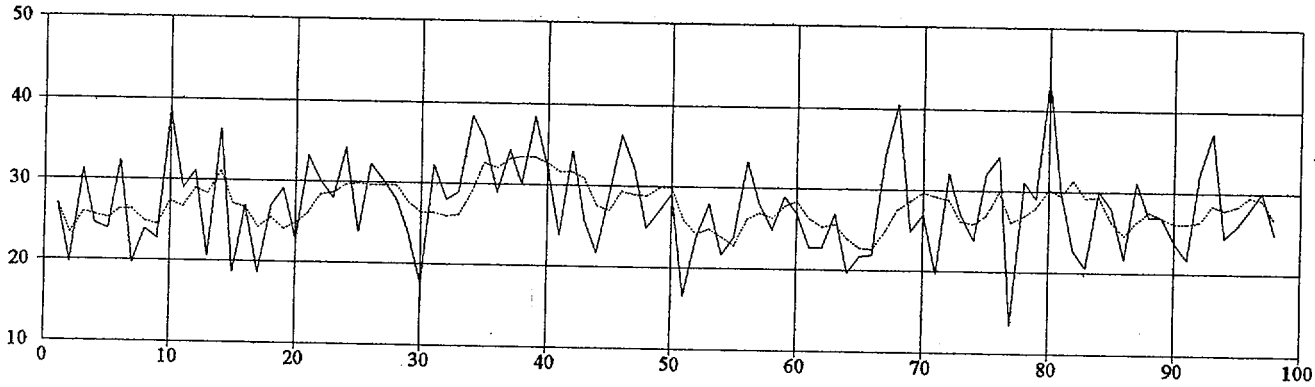


PR

C14 efficiency trend



C14 background trend



TR

PROTOCOL : 1 Survey All
DATE : 2003/01/30
TIME : 14:59
ID : P01AS163

Wipe Testing

Wallac 1414 WinSpectral v1.30 S/N 4140008
Counting mode : DPM
Quench index : SQP(E)
Isotope(s) : H3,C14
H3 = ,12.43 y
C14 = ,5730.00 y
Protocol name : Survey All
Counting time : 60
Repeats : 1
Cycles : 1
Replicates : 1
2 sigma % : 0.01
Minimum cpm : 0.00 Checking time: 10
Sp. library of isotope H3 : Wallac
Sp. library of isotope C14 : Wallac
Vial type : Clear
Liquid system : HiSafe
Output to Display :
POS,RACKPOS,CTIME,CPM1,CPM2,DPM1,DPM2,EFF1,EFF2,CPM,SQPI
Additions to Display : Listing,Header,Spectrum
Header : Wipe Testing
Spectrum : Beta
Window 1 : 1-1024 /Beta
Window 2 : 1-1024 /Beta
Window 3 : 1-1024 /Beta
Window 4 : 1-1024 /Beta
Window 5 : 1-1024 /Beta
Window 6 : 1-1024 /Beta
FNCT1 = FNCT1 :
FNCT2 = FNCT2 :
FNCT3 = FNCT3 :
FNCT4 = FNCT4 :

Total activity:

H3	459.1 DPM	0.008 kBq
C14	12.0 DPM	0.000 kBq

RACKPOS Swipe #	CTIME	CPM1	CPM2	DPM1	DPM2	EFF1	EFF2
1	60	4.80	0.00	12.60	0.00	37.73	92.16
2	60	6.20	0.00	16.60	0.00	37.54	92.17
3	60	10.70	0.00	27.10	0.00	39.65	92.55

FK

30 JAN 03
FK

RACKPOS SWIPE #	CTIME	CPM1	CPM2	DPM1	DPM2	EFF1	EFF2
4	60	0.00	0.00	0.00	0.00	39.75	92.56
5	60	0.00	0.00	0.00	0.00	38.85	92.39
6	60	6.70	0.00	17.00	0.00	39.34	92.50
7	60	9.60	11.20	24.60	12.10	39.24	92.48
8	60	0.00	0.00	0.00	0.00	39.49	92.52
9	60	7.20	0.00	19.20	0.00	37.27	92.12
10	60	9.70	0.00	24.80	0.00	39.20	92.46
11	60	0.00	0.00	0.00	0.00	39.76	92.56
12	60	4.90	0.00	12.80	0.00	38.24	92.30
13	60	6.40	0.00	16.50	0.00	38.95	92.43
14	60	5.50	0.00	15.70	0.00	34.83	91.57
15	60	8.30	0.00	21.20	0.00	39.32	92.50
16	60	5.40	0.00	13.70	0.00	39.26	92.48
17	60	7.90	0.00	20.30	0.00	38.77	92.38
18	60	16.60	0.00	47.50	0.00	35.00	91.63
19 1	60	0.00	0.00	0.00	0.00	38.73	92.39
20 2	60	8.70	0.00	23.00	0.00	37.95	92.24
21 3	60	10.40	0.00	28.50	0.00	36.60	91.97
22 4	60	9.50	0.00	25.10	0.00	37.95	92.25
23 5	60	1.80	0.00	11.60	0.00	15.20	82.68
24 6	60	0.00	0.00	0.00	0.00	14.26	79.92
25 7	60	1.00	0.00	2.60	0.00	38.82	92.39
26 8	60	11.90	0.00	31.60	0.00	37.84	92.19
27 9	60	7.80	0.00	20.10	0.00	38.69	92.36
28 10	60	8.10	0.00	23.40	0.00	34.86	91.60
29 11	60	1.40	-0.10	3.90	-0.10	36.66	91.97
30 12	60	0.00	0.00	0.00	0.00	35.04	91.63

TK 30 JAN 03

30 JAN 03
FR

COUNTING

1470, 2 detectors, RiaCalc WIZ, program 3.4

Iso calibrator checks

ASSAY 30-Jan-2003 13:26:04

Protocol id 5 SURVEY
Time limit 60
Count limit 99999999
Isotope I-125
Protocol date 07-Jul-2000 14:51:03
Run id. 64

POS	RACK	DET	BATCH	TIME	COUNTS	CPM	ERROR %	Isocalibrator #'s
1	1	1	1	60	63	53.9	16.25	548201
2	1	2	1	60	59	44.3	19.90	548202
3	1	1	2	60	644	640.4	4.56	550116
4	1	2	2	60	605	585.7	4.81	550114
5	1	1	3	60	11	2.0	222.44	Blanks
6	1	2	3	60	9	-5.3	90.09	
7	1	1	4	60	14	5.0	95.74	
8	1	2	4	60	14	-0.8	655.04	

END OF ASSAY

END OF COUNTING

The isocalibrators were returned to the Jordan #3 refrigerator.

TR
30 JAN 03