

November 11, 2019

RECRG11114'19AM05:39

Q-5

Licensing Assistant Section  
Nuclear Safety Branch  
U.S. Nuclear Regulatory Commission, Region I  
2100 Renaissance Boulevard, Suite 100  
King of Prussia, PA 19406-2713

Re: Termination of Materials License # 06-30628-01

03035670

To Whom it May Concern:

I am writing to inform you that Achillion Pharmaceuticals, Inc. (Achillion) has decided to terminate radioactive materials license number 06-30628-01. Radioactive materials used at and/or by Achillion ceased on October 30, 2019. Achillion no longer possesses any radioactive materials. A completed NRC form 314, "Certification of Disposition of Materials" and the associated radioactive waste manifest showing the proper disposal of our remaining licensed material are attached.

No licensed radioactive materials were disposed of pursuant to 10 CFR 20.2002, 20.2004 or 20.2005. No evaluations of effluent releases were made pursuant to 20.2103 (b)(4).

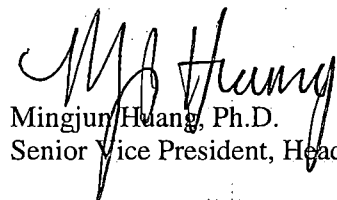
Licensed radioactive materials were disposed of to the sanitary sewer system pursuant to 10 CFR 200.2003. A copy of the sewer disposal records for the long-lived isotopes (H-3 and C-14) disposed are attached.

Regarding records related to 10 CFR 30.35(g), there were no documented spills or contamination of the facility. There were no restricted areas at the facility and no known areas of inaccessible contamination. Achillion also never possessed quantities of radioactive material requiring a decommissioning funding plan.

Achillion contracted Radcor, LLC of Salem, Connecticut to perform a radiological survey of all areas where licensed radioactive materials had been used an/or stored over the years. A copy of this report is enclosed.

Should you have any questions regarding this license termination request, please contact Steven Podos, Ph.D., our current Radiation Safety Officer, at (203) 752-5458 or at [SPodos@achillion.com](mailto:SPodos@achillion.com).

Sincerely,



Mingjun Huang, Ph.D.  
Senior Vice President, Head of Research

Enclosures (4)

1. NRC Form 314—Certificate of Disposal of Materials
2. NRC Form 540—Uniform Low-Level Radioactive Waste Manifest
3. Sewer disposal records
4. Radiological Decommissioning Report, dates October 21, 2019

617262  
NMSS/RGN1 MATERIALS-002



# **CERTIFICATE OF DISPOSITION OF MATERIALS**

Estimated burden per response to comply with this mandatory collection request: 30 minutes. This submittal is used by NRC as part of the basis for its determination that the facility is released for unrestricted use. Send comments regarding burden estimate to the FOIA, Privacy, and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to [Infocollections.Resource@nrc.gov](mailto:Infocollections.Resource@nrc.gov), and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0028), 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.

## LICENSEE NAME AND ADDRESS

Achillion Pharmaceuticals, Inc.  
300 George Street  
New Haven, CT 06511

## LICENSE NUMBER

06-30628-01

## DOCKET NUMBER

030-35670

## LICENSE EXPIRATION DATE

April 30, 2021

**A. LICENSE STATUS (Check the appropriate box)**

- ☐ This license has expired. ☒ This license has not yet expired; please terminate it.

**B. DISPOSAL OF RADIOACTIVE MATERIAL**

*(Check the appropriate boxes and complete as necessary. If additional space is needed, provide attachments)*

The licensee, or any individual executing this certificate on behalf of the licensee, certifies that:

- ☐ 1. No radioactive materials have ever been procured or possessed by the licensee under this license.
- ☒ 2. All activities authorized by this license have ceased, and all radioactive materials procured and/or possessed by the licensee under this license number cited above have been disposed of in the following manner.
- ☐ a. Transfer of radioactive materials to the licensee listed below:
- ☒ b. Disposal of radioactive materials:
- ☐ 1. Directly by the licensee:
- ☐ 2. By licensed disposal site:
- ☒ 3. By waste contractor:
- Chase Environmental Group, Inc. 11450 Watterson Court, Louisville KY 40299 (665)250-4593
- ☒ c. All radioactive materials have been removed such that any remaining residual radioactivity is within the limits of 10 CFR Part 20, Subpart E, and is ALARA.

**C. SURVEYS PERFORMED AND REPORTED**

- ☒ 1. A radiation survey was conducted by the licensee. The survey confirms:
- ☒ a. the absence of licensed radioactive materials
- ☒ b. that any remaining residual radioactivity is within the limits of 10 CFR 20, Subpart E, and is ALARA.
- ☒ 2. A copy of the radiation survey results:
- ☒ a. is attached; or ☐ b. is not attached (Provide explanation); or ☐ c. was forwarded to NRC on: \_\_\_\_\_ Date
- ☐ 3. A radiation survey is not required as only sealed sources were ever possessed under this license, and
- ☐ a. The results of the latest leak test are attached; and/or ☐ b. No leaking sources have ever been identified.

The person to be contacted regarding the information provided on this form:

## NAME

Steven Podos, Ph.D.

## TITLE

Radiation Safety Officer

## TELEPHONE (Include Area Code)

203-752-5458

## E-MAIL ADDRESS

SPodos@Achillion.com

Mail all future correspondence regarding this license to:

Achillion Pharmaceuticals, Inc. 300 George Street New Haven, CT 06511

**C. CERTIFYING OFFICIAL**

**I CERTIFY UNDER PENALTY OF PERJURY THAT THE FOREGOING IS TRUE AND CORRECT**

## PRINTED NAME AND TITLE

Mingjun Huang, Ph.D., Senior VP, Head of Research

## SIGNATURE

## DATE

11/11/19

**WARNING: FALSE STATEMENTS IN THIS CERTIFICATE MAY BE SUBJECT TO CIVIL AND/OR CRIMINAL PENALTIES. NRC REGULATIONS REQUIRE THAT SUBMISSIONS TO THE NRC BE COMPLETE AND ACCURATE IN ALL MATERIAL RESPECT. 18 U.S.C. SECTION 1001 MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION.**

<b>NRC FORM 540</b>  <b>UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST</b> <b>SHOPPING PAPER</b>		<b>5. SHIPPER- NAME AND FACILITY</b> Chase Environmental Group, Inc. 11450 Waterson Court Louisville, KY 40299		<b>SHIPPER ID #</b> N/A <input checked="" type="checkbox"/> COLLECTION <input type="checkbox"/> PROCESSOR		<b>7. Manifest Number</b> (Use this number on all continuation pages) TO-2019-333	
<b>1. EMERGENCY TELEPHONE NUMBER (INCLUDE AREA CODE)</b> 800-424-9300		<b>3. CARRIER NAME AND ADDRESS</b> SJ Transportation Co., Inc. PO Box 189 Woodstown, NJ 08098		<b>8. CONSIGNEE- NAME AND FACILITY ADDRESS</b> TOXCO, Inc. 109 Flint Road Oak Ridge, TN 37830		<b>Contact</b> Rick Low Telephone Number (Include area code) 885-482-5532	
<b>2. ORGANIZATION</b> CHEMTREC WSDS #: CHEN01RAD Customer #: 4395		<b>4. CARRIER NAME AND ADDRESS</b> SJ Transportation Co., Inc. PO Box 189 Woodstown, NJ 08098		<b>EPA ID #</b> NJD0071829878		<b>9. SIGNATURE</b> Authorized signatory acknowledging receipt Date	
<b>10. Certification</b> This is to certify that the herein-named materials are acceptable for disposal, 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 the Comptroller		<b>11. US DEPARTMENT OF TRANSPORTATION DESCRIPTION</b> (Including proper shipping name, hazard class, LHM ID number and any additional information)		<b>12. DOT LABEL</b> "Radioactive"		<b>13. TRANSPORT INDEX</b>	
<b>14. TOTAL NUMBER OF PACKAGES IDENTIFIED FOR THIS MANIFEST</b> 2		<b>15. EPA MANIFEST NUMBER</b> N/A		<b>16. PHYSICAL AND CHEMICAL FORM</b> Solid/Oxide		<b>17. TOTAL PACKAGE ACTIVITY IN MBq</b> 7.80E+02	
<b>18. DATE</b> 10/30/2019		<b>19. AUTHORIZED SIGNATURE</b> <i>Steven Podos</i>		<b>20. TITLE</b> Technician/Driver		<b>21. DATE</b> 10/30/2019	
<b>11-1 USDOT ERG # 181</b>  Generator: Achillion Pharmaceuticals		<b>Generator Certification Statement:</b> The constituents of the waste manifested herein are known to the generator. There are no EPA RCRA, pathogenic or other hazards present other than those specifically listed on the Form 541.		<b>Signature</b> <i>Steven Podos</i>		<b>Date</b> 10/30/2019	

CONSIGNEE ORIGINAL (MUST ACCOMPANY WASTE IN TRANSIT)

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST CONTAINER AND WASTE DESCRIPTION				1. MANIFEST TOTALS							2. MANIFEST NUMBER						
US NUCLEAR REGULATORY COMMISSION				SPECIAL NUCLEAR MATERIAL (grams)							TO-2018-333						
				NET WASTE		NET WASTE		U-233		U-235		Pu		TOTAL			
				VOL. (m3)		WT. (kg)		NP		NP		NP		NP			
				0.228		53											
				8.1													
				ACTIVITY (MBq/mCi)							SOURCE		4. SHIPPER NAME				
				ALL NUCLIDES		TRITIUM		C-14		Tc-99		I-129		(kg)		Chase Environmental Group	
				7.80E+02 MBq		3.02E+02		4.78E+02		NP		NP		0.00E+00		SHIPPER ID NUMBER	
				2.11E+01 mCi		8.15E+00		1.28E+01								NA	
DISPOSAL CONTAINER DESCRIPTION				WASTE DESCRIPTION FOR EACH WASTE TYPE IN CONTAINER													
5. CONTAINER IDENTIFICATION NUMBER	6. CONTAINER DESCRIPTION (See Note 1)	7. VOLUME (m3)	8. WASTE AND CONTAINER WEIGHT (kg)	9. SURFACE RADIATION LEVEL (See Note 2)	10. SURFACE CONTAMINATION MBq/100 cm2		11. PHYSICAL DESCRIPTION			12. CHEMICAL DESCRIPTION		13. RADIOLOGICAL DESCRIPTION			14. WASTE CLASS		
NUMBER					ALPHA	BETA-GAMMA	WASTE DESCRIPTION	WASTE VOLUME (m3)	WASTE WEIGHT (kg)	CORESENT	CHEMICAL FORM / CHELATING AGENT	WEIGHT	NUCLIDES AND ACTIVITY (MBq AND mCi)	CONTAINER TOTAL ACTIVITY AND RADIOLOGICAL PERCENT	CLASS		
TO-CT-E-19-411 2044	19 Fiber drum	0.114	13	<5.0	<3.67E-8	<3.67E-5	39	0.114	100	Oxide/NP	NP	NP	C-14 H-3	4.78E+02 3.01E+02	1.29E+01 8.15E+00	NA	
TO-VL-E-19-412 2044	4	0.114	40	<5.0	<3.67E-8	<3.67E-5	58 Non-haz LSV	0.114	89 Absorbent Pads	Oxide/NP	NP	NP	C-14 H-3	3.70E-02 3.70E-02	1.00E-03 1.00E-03	NA	
													Package total	7.80E+02 2.11E+01			
													Package total	7.40E-02 2.00E-03			

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

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

Note 2: Waste Descriptor Codes. (Choose up to three which best describe by volume.)

20. Corrosive	21. Inert/Non-Acid	22. Solid	23. Gas	24. Other
25. Corrosive/Non-Acid	26. Solid/Non-Acid	27. Liquid/Non-Acid	28. Other, describe in Item 11, or additional page	

Note 3: For identification waste that must be disposed in structural overpacks, the numerical code must be followed by "OP". For all additional waste, the waste (from/active) and brand name must also be identified in Item 11. Code 100 = NONE REQUIRED.

30. Speed On	31. Floor K	32. Floor Dry	33. Floor Dry	34. Floor Dry
35. Floor Dry	36. Floor Dry	37. Floor Dry	38. Floor Dry	39. Floor Dry
40. Floor Dry	41. Floor Dry	42. Floor Dry	43. Floor Dry	44. Floor Dry
45. Floor Dry	46. Floor Dry	47. Floor Dry	48. Floor Dry	49. Floor Dry
50. Floor Dry	51. Floor Dry	52. Floor Dry	53. Floor Dry	54. Floor Dry
55. Floor Dry	56. Floor Dry	57. Floor Dry	58. Floor Dry	59. Floor Dry
60. Floor Dry	61. Floor Dry	62. Floor Dry	63. Floor Dry	64. Floor Dry
65. Floor Dry	66. Floor Dry	67. Floor Dry	68. Floor Dry	69. Floor Dry
70. Floor Dry	71. Floor Dry	72. Floor Dry	73. Floor Dry	74. Floor Dry
75. Floor Dry	76. Floor Dry	77. Floor Dry	78. Floor Dry	79. Floor Dry
80. Floor Dry	81. Floor Dry	82. Floor Dry	83. Floor Dry	84. Floor Dry
85. Floor Dry	86. Floor Dry	87. Floor Dry	88. Floor Dry	89. Floor Dry
90. Floor Dry	91. Floor Dry	92. Floor Dry	93. Floor Dry	94. Floor Dry
95. Floor Dry	96. Floor Dry	97. Floor Dry	98. Floor Dry	99. Floor Dry

NRC FORM 542 (5-1998)			U.S. NUCLEAR REGULATORY COMMISSION			1. WASTE COLLECTOR/PROCESSOR NAME Chase Environmental Group, Inc. IDENTIFICATION NUMBER T-KY003-L19 SHIPPING DATE 10/30/2019				2. MANIFEST NUMBER TO-2019-333	
UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST						SHEPPER USE ONLY				3. PAGE_1_OF_1_PAGE(S)	
MANIFEST INDEX AND REGIONAL COMPACT TABULATION List of original "PROCESSED WASTE" before "COLLECTED WASTE".											
4. GENERATOR IDENTIFICATION NUMBER	5. GENERATOR NAME PERMIT NUMBER AND TELEPHONE NUMBER	6. GENERATOR FACILITY ADDRESS	7. PREPROCESSED WASTE (OR MATERIAL) VOLUME (m3)	8. MANIFEST NUMBER UNDER WHICH WASTE (OR MATERIAL) RECEIVED AND DATE OF RECEIPT	9. WASTE CODE PROCESSING METHOD	10. DESIGNATED COMPACT OR STATE	11. AS PROCESSED/COLLECTED TOTAL				
A. SOURCE MATERIAL (kg)	B. SNM (g)	C. ACTIVITY (MBq)	D. VOLUME (m3)								
2044	Achillion Pharmaceuticals 203-624-7000	300 George St. New Haven, CT 06511	0.228	NA	C	CT	0.00E+00	NP	7.80E+02	0.228	
TOTALS OF ALL PAGES (NRC FORMS 542 AND 542A)							0.00E+00	0.00E+00	7.80E+02	2.28E-01	

~~1 of 1~~  
[1 of 3]  
[1 of 5]

# Record of Sanitary Sewer Disposal

<sup>3</sup>H

Date	Performed by (initials)	Amount (μCi)
7/12	JF	29.06
7/16	JF	4.375
7/30	JF	2.5
8/5	JF	1.25
8/10	JF	1.25
8/15	JF	5
10/12/01	JV	0.5 μCi
10/15/01	JV	0.5 μCi
10/16/01	JV	0.5 μCi
10/17/01	JV	0.5 μCi
10/25/01	JV	0.5 μCi
10/29/01	JV	0.5 μCi

Comments

11/06/01

JV

0.5 μCi

7/3/02

JV

0.5 μCi

9/16/02

YS

20 μCi

9/25/02

YS

20 μCi

10/14/02

YS

5 μCi

10/28/02

Not to exceed:  
20 mCi/month

20 μCi

10/4/02

YS

5 μCi

10/15/02

YS

5 μCi

/142.435 <sup>3</sup>H

## Record of Sanitary Sewer Disposal

$^3\text{H}$

Date	Performed by (initials)	Amount ( $\mu\text{Ci}$ )
8/31/01	JF	2.5 $\mu\text{Ci}$
9/10/01	JF	2.5 $\mu\text{Ci}$
10/23/01	JF	1.25 $\mu\text{Ci}$
10/30/01	JF	1.25 $\mu\text{Ci}$
11/6/01	JF	1.25 $\mu\text{Ci}$
11/9/01	JF	1.25 $\mu\text{Ci}$
11/16/01	JF	1.25 $\mu\text{Ci}$
11/27/01	JF	1.25 $\mu\text{Ci}$
2/7/02	JV	1.25 $\mu\text{Ci}$
2/13/02	JV	1.25 $\mu\text{Ci}$
<del>X</del>	<del>X</del>	<del>X</del>
<del>X</del>	<del>X</del>	<del>X</del>

Comments

15  $\mu\text{Ci}$

Not to exceed:  
20 mCi/month

## Record of Sanitary Sewer Disposal

$^3\text{H}$

Date	Performed by (initials)	Amount ( $\mu\text{Ci}$ )
1/24/02	JF	1.25 $\mu\text{Ci}$
1/30/02	JF	1.875 $\mu\text{Ci}$
2/7/02	JF	1.875 $\mu\text{Ci}$
2/13/02	JF	1.25 $\mu\text{Ci}$
2/19/02	JF	1.25 $\mu\text{Ci}$
2/21/02	JV	1.25 $\mu\text{Ci}$
2/21/02	JV	1.25 $\mu\text{Ci}$
2/25/02	JV	1.25 $\mu\text{Ci}$
3/1/02	JF	1.25 $\mu\text{Ci}$
3/6/02	JF	1.25 $\mu\text{Ci}$
3/18/02	JF	1.25 $\mu\text{Ci}$
4/3/02	JF	1.875 $\mu\text{Ci}$

Comments

15.875

Not to exceed:  
20 mCi/month

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## Record of Sanitary Sewer Disposal

$^3\text{H}$

Date	Performed by (initials)	Amount ( $\mu\text{Ci}$ )
2/27/02	JU	0.5 $\mu\text{Ci}$
3/5/02	JU	0.5 $\mu\text{Ci}$
3/14/02	JU	0.5 $\mu\text{Ci}$
7/15/02	JU	1.25 $\mu\text{Ci}$
3/19/02	JU	1.25 $\mu\text{Ci}$
3/20/02	JU	1.25 $\mu\text{Ci}$
4/3/02	JU	1.25 $\mu\text{Ci}$
5/8/02	YS	1.25 $\mu\text{Ci}$
6/14/02	YS	1.25 $\mu\text{Ci}$
6/17/02	YS	3 $\mu\text{Ci}$
7/2/02	YS	5 $\mu\text{Ci}$
8/24/02	YS	8 $\mu\text{Ci}$

Comments

11/19/02	YS	5 $\mu\text{Ci}$
12/9/02	YS	1 $\mu\text{Ci}$
12/12/02	YZ	2.5 $\mu\text{Ci}$
12/16/02	YS	1 $\mu\text{Ci}$
12/19/02	YS	2 $\mu\text{Ci}$
1/6/03	YS	2 $\mu\text{Ci}$
1/28/03	YS	10 $\mu\text{Ci}$
2/13/03	SP	3 $\mu\text{Ci}$
3/4/03	YS SP	1 $\mu\text{Ci}$
3/5/03		

Not to exceed:  
20 mCi/month

/61  $\mu\text{Ci}$

[5 of 5]

## Record of Sanitary Sewer Disposal

$^3\text{H}$

Date	Performed by (initials)	Amount ( $\mu\text{Ci}$ )
<del>3/12/03</del> 3/12/03	SP	19
4/1/03	SP	16
4/3/03	SP	17
4/15/03	SP	15
4/17/03	SP	19
7/2 7/31/03	VH	1.25 $\mu\text{Ci}$
8/20/03	XT	20
8/21/03	XT	20
8/28/03	XT	20
9/4/03	XT	10
9/18/03	XT	10 $\mu\text{Ci}$
9/26/03	XT	10 $\mu\text{Ci}$

Comments

~~6/12/03~~

Not to exceed:  
20 mCi/month

Achillion Pharmaceuticals, Inc.  
300 George Street, Suite 801  
New Haven, CT 06511

## Record of Sanitary Sewer Disposal

$^3\text{H}$

Date	Performed by (initials)	Amount ( $\mu\text{Ci}$ )
9/15/03	JF	3.5 $\mu\text{Ci}$
9/25/03	JF	3.5 $\mu\text{Ci}$
10/23/03	JF	3.5 $\mu\text{Ci}$
10/30/03	JF	3.5 $\mu\text{Ci}$
11/18/03	JF	3.5 $\mu\text{Ci}$
11-24-03	XT	10 $\mu\text{Ci}$
11-14-03	XT	10 $\mu\text{Ci}$
10-30-03	XT	40 $\mu\text{Ci}$
1-13-04	XT	10 $\mu\text{Ci}$
1-15-04	XT	20 $\mu\text{Ci}$
1-19-04	JW	20 $\mu\text{Ci}$
1-28-04	JW	20 $\mu\text{Ci}$

Comments

2-12-04  
3-3-04  
3-17-04  
4-6-04  
4-12-04

JW  
JW  
JW  
JW  
JW

20  $\mu\text{Ci}$   
20  $\mu\text{Ci}$   
20  $\mu\text{Ci}$   
20  $\mu\text{Ci}$   
20  $\mu\text{Ci}$

6-3/05

YZ

250  $\mu\text{Ci}$

6/27/05

YS

5  $\mu\text{Ci}$

7/14/05

Not to exceed:  
20  $\text{mCi/month}$

10  $\mu\text{Ci}$

7/19/05

YZ

20  $\mu\text{Ci}$

## Record of Sanitary Sewer Disposal

$^3\text{H}$

Not to exceed: 20 mCi/month

Date	Performed by (initials)	Amount ( $\mu\text{Ci}$ )
7/25/05	YS	30 $\mu\text{Ci}$
4/18/06	YS	20 $\mu\text{Ci}$
1/30/06	JF	.02 $\mu\text{Ci}$
2/30/06	JF	.02 $\mu\text{Ci}$
2/17/06	JF	.02 $\mu\text{Ci}$
2/24/06	JF	.02 $\mu\text{Ci}$
3/9/06	JF	.02 $\mu\text{Ci}$
3/23/06	JF	.02 $\mu\text{Ci}$
5/11/06	JF	.02 $\mu\text{Ci}$
5/22/06	JF	.02 $\mu\text{Ci}$
5/26/06	JF	.025 $\mu\text{Ci}$
6/19/06	JF	.02 $\mu\text{Ci}$
7/14/06	JF	.02 $\mu\text{Ci}$
1/19/07	SP	19 $\mu\text{Ci}$
1/26/07	SP	95 $\mu\text{Ci}$
1/31/07	SP/CT	29 $\mu\text{Ci}$

2/6/07 SP/CT 36  $\mu\text{Ci}$

Achillion Pharmaceuticals, Inc.  
300 George Street, Suite 801  
New Haven, CT 06511

## Record of Sanitary Sewer Disposal

<sup>14</sup>C

Not to exceed: 5 mCi/month

Date	Performed by (initials)	Amount (μCi)
11/30/09	GY	20 μCi
<del>12/1/10</del>	<del>GY</del>	



# **RADIOLOGICAL DECOMMISSIONING REPORT**

Achillion Pharmaceuticals, Inc.  
300 George Street  
New Haven, Connecticut 06511

October 21, 2019

*Performed by*  
Radcor, LLC  
345 Laurelwood Drive  
Salem, CT 06420  
(860) 887-1538

## **EXECUTIVE SUMMARY**

On October 14, 2019 a radiological assessment for the purpose of decommissioning was performed at the Achillion Pharmaceuticals, Inc. facility located at 300 George Street, New Haven, Connecticut. This assessment was conducted by Radcor, LLC of Salem, Connecticut.

After performing a radiological assessment and decontamination of the use and storage areas designated by the licensee, it is the opinion of Radcor, LLC that the areas assessed do not present any significant radiological hazard to facility personnel, the public, or the environment, and that once radioactive waste has been removed from the facility, these areas may be released for unrestricted use.

## SCOPE

Radcor, LLC of Salem, Connecticut was contracted to perform a radiological assessment of selected areas of the Achillion Pharmaceuticals, Inc. (Achillion) facility located at 300 George Street, New Haven, Connecticut. This facility is licensed by the U.S. Nuclear Regulatory Commission (NRC) for the possession and use of radioactive materials under license No. 06-30628-01.

Achillion is ceasing licensed operations and is relocating to a different floor within the same building and therefore wishes to decommission their current facility and terminate the radioactive materials license.

## FACILITY DESCRIPTION

Achillion leased approximately 20,150 square-feet of space on the 8th floor of the building located at 300 George Street, New Haven, CT. This space is composed of both laboratory and office space.

### Affected Areas (Class 2)

Facility personnel indicated that licensed radioactive material had been used and/or stored in only the following five (5) areas at the facility:

1. Tissue Culture lab with associated hallway;
2. Molecular Biology Lab;
3. Radioactive Waste Storage Area within the Glass Wash Room;
4. BL2 Lab; and
5. Biochemistry Lab.

Since no known radioactive contamination exists at the facility and the areas where licensed material had been used and/or stored had the potential to be contaminated to levels expected to be below the screening criteria, these areas were designated as Class 2 areas.

Floor plans showing the locations of these areas are provided as Attachment A of this report.

### Identity of Potential Contaminants

According to facility personnel, the following isotopes had been possessed under the license: hydrogen-3, carbon-14, phosphorus-32, phosphorus-33, sulfur-35, and iodine-125. The approximate dates that these isotopes were last used at the facility are provided in Table 1 below.

**Table 1: Isotopes and Last Use Dates**

Isotope	Last use	Isotope	Last use
H-3 and C-14	2017	I-125	2004
S-35, P-32 and P-33	2016		

Therefore, it was determined that potential contamination from licensed material could only be due to H-3 and/or C-14, so survey and release criteria were based upon these isotopes.

### ASSESSMENT PERSONNEL

The radiological assessment was performed under the supervision of Mr. David J. Durkee, a professional health physicist. Mr. Durkee's resume is included as Attachment B to this report.

### SURVEY PROCEDURES

The survey was based upon the screening approach outlined in NRC's Consolidated Decommissioning Guidance (NUREG-1757) Section 6.6.3 (Vol. 1) "Criteria for Conducting Screening" and Section 3.3 (Vol. 2) "Insignificant Radionuclides and Exposure Pathways." In this approach, the NRC allows the licensee to simplify decommissioning in cases where the licensee can demonstrate that low levels of radioactive contamination exist, e.g., academic research laboratories. All decommissioning survey measurements of any existing radioactive contamination found on building surfaces are then compared to radionuclide values found in a screening table developed by the NRC using appropriate dose modeling.

### SCREENING CRITERIA

10 CFR 20, Subpart E specifies that a site will be considered acceptable for unrestricted use if the residual radioactivity that is distinguishable from background radiation results in a TEDE to an average member of the critical group that does not exceed 25 mrem (0.25 mSv) per year, including that from groundwater sources of drinking water, and the residual radioactivity has been reduced to levels that are as low as reasonably achievable (ALARA).

The screening criteria used were obtained from NRC's Consolidated Decommissioning Guidance (NUREG-1757) Volume 1, Table B.1. Since this screening criteria was based on a TEDE of 25 mrem and the State of Connecticut has established a limit of 19 mrem, the criteria provided in NUREG-1757 were reduced by 25% to ensure compliance with Connecticut's dose limits.

The screening values adopted are provided in Table 2.

**Table 2. Screening Values**

Radionuclide	Acceptable Screening Levels for Unrestricted Release (dpm/100 cm <sup>2</sup> )	Modified Screening Levels for Unrestricted release (dpm/100 cm <sup>2</sup> )
H-3	120,000,000	90,000,000
C-14	3,700,000	2,775,000

## INSTRUMENTATION

Table 3 lists the instrument used in the performance of the surveys, along with parameters and detection sensitivities. The instrumentation used were calibrated using NIST-traceable standards. Instrument detection sensitivity calculations and calibration information are provided in Attachment C to this report.

**Table 3. Survey Instrument Information**

Type of Measurement	Instrumentation		Bkgd. <sup>a</sup>	Eff & Cal Isotope	Minimum Detectable Concentration
	Detector	Meter			
Surface scans - $\beta$	Gas Prop. Det. Ludlum model 43-68	Count-rate meter <sup>b</sup> Ludlum mod. 2241-2	212 cpm	8.60% C-14	1,878 dpm/100 cm <sup>2</sup>
Surface scans - $\beta$	Gas Prop. Det. Ludlum model 43-37	Count-rate meter <sup>b</sup> Ludlum mod. 2241-2	504 cpm	8.69% C-14	619 dpm/100 cm <sup>2</sup>
Dose equivalent rates	Scintillation Bicron Microrem LE	(Same as detector)	2 – 5 $\mu$ rem/h	100%	1 $\mu$ rem/h
Smears, $\beta/\gamma$	Perkin Elmer Microbeta 2450	(same as detector)	23 cpm H-3 40 cpm C-14	40% H-3 75% Others	63 dpm/100 cm <sup>2</sup> 43 dpm/100 cm <sup>2</sup>

<sup>a</sup>Nominal Values

<sup>b</sup>Monitoring audible signal

## RADIOLOGICAL SURVEY

The survey of the Affected Areas was conducted as follows:

- Dose-equivalent measurements were obtained throughout each Affected Area;
- 100% of accessible lower surfaces were scanned for residual radioactivity using a gas-flow proportional counter; and,
- Wipes samples for loose radioactivity were obtained throughout each Affected Area. Samples were obtained from areas where activity would have been likely to collect (i.e., sink drains, horizontal surfaces, inside cabinets, hood ducting, etc.). Samples were analyzed for beta activity using liquid scintillation analysis.

## SURVEY FINDINGS AND RESULTS

Survey documentation is provided as Attachment D to this report.

### Dose-Equivalent Measurements Samples

Dose-equivalent measurements were consistent with normal background levels for this area of the country.

### **Surface Scans**

A scan of area surfaces and equipment identified only one (1) area with a reading in excess of the minimum detectable concentration (MDC). This area was a small spot ( $< 100 \text{ cm}^2$ ) on a counter in the Molecular Biology Lab which was found to be contaminated to a level of 13,140 dpm/100  $\text{cm}^2$  (C-14). This area was decontaminated to a level below the MDC.

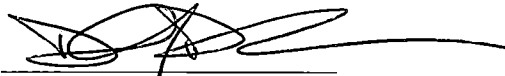
### **Wipe Samples**

A total of 1,055 samples were obtained from the five (5) Affected Areas. Only two (2) areas were found to be contaminated to a level in excess of the MDC. These areas were both floor areas located within the Molecular Biology Laboratory. One area was found to be contaminated to a level of 1,312 dpm/100  $\text{cm}^2$  (H-3) and the other area was found to be contaminated to a level of 251 dpm/100  $\text{cm}^2$  (H-3). These areas were both decontaminated to levels below the MDC.

### **SUMMARY**

On October 14, 2019 a radiological assessment for the purpose of decommissioning was performed at the Achillion Pharmaceuticals, Inc. facility located at 300 George Street, New Haven, Connecticut. This assessment was conducted by Radcor, LLC of Salem, Connecticut.

After performing a radiological assessment and decontamination of the use and storage areas designated by the licensee, it is the opinion of Radcor, LLC that the areas assessed do not present any significant radiological hazard to facility personnel, the public, or the environment, and that once radioactive waste has been removed from the facility, these areas may be released for unrestricted use.

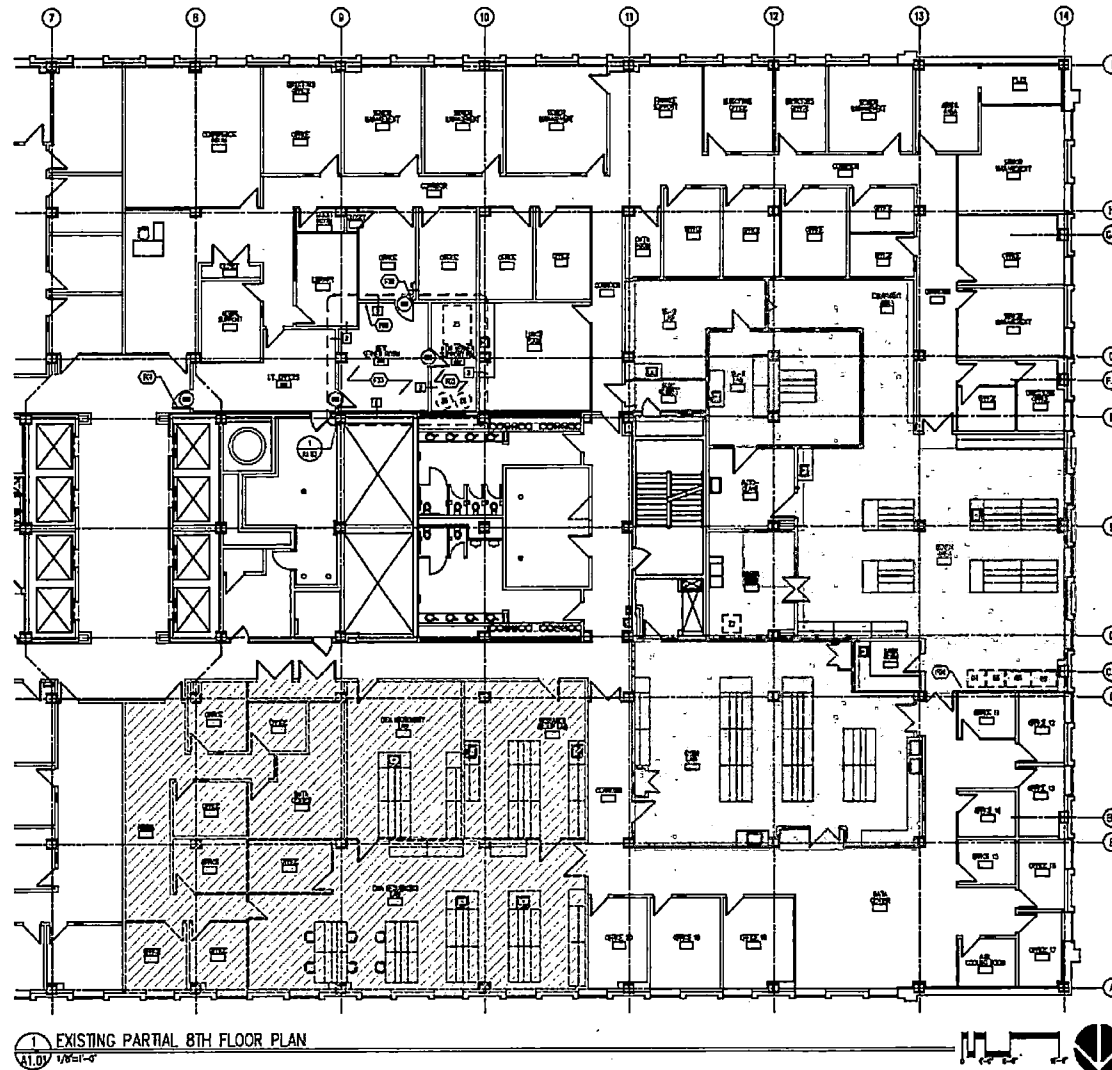


David J. Durkee  
*Health Physicist, RRPT*

## **Attachment A**

### Floor Plan

Radioactive Material  
Use/Storage Areas



1 EXISTING PARTIAL 8TH FLOOR PLAN  
A1.01 1/8"=1'-0"

NO.	BY	DESCRIPTION	DATE



## ACHILLION RENOVATION

300 GEORGE STREET  
NEW HAVEN, CT

BID  
DOCUMENTS



**SVIGALS**  
+ PARTNERS

ARCHITECTS

Principal  
Architect  
New Haven, CT

300 GEORGE  
PARTIAL 8TH FLR.  
EXISTING FLOOR PLAN

DRAWING TITLE  
SCALE: 1/8"=1'-0"  
DATE: 1/21/2010  
DRAWN BY:  
JOE NO: 0913.00

A1.01

## **Attachment B**

Resume

**RADCOR, LLC**  
345 Laurelwood Drive  
Salem, CT 06420  
(860) 887-1538

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**David J. Durkee**

**EDUCATION:**

Regents College, NY. - B.S. Technology (Nuclear/Health Physics)  
University of Phoenix, AZ. - A.A. Nuclear Technology  
Health Physics Technician Level I Basic - Radiation Safety Associates, Inc.  
*Health Physics Technician Level II* - Radiation Safety Associates, Inc.  
*Respiratory Protection at Nuclear Facilities* - Radiation Safety Associates, Inc.  
*Environmental Monitoring for Radioactivity* - Oak Ridge Associated Universities.  
*Liquid Scintillation and Gamma Spectrum Analysis* - Rutgers University  
*Health Physics Audits* - Radiation Safety Associates, Inc.

Navy

Naval Nuclear Power School (24 wks)	Diesel Operator/Maint. School
Nuclear Prototype Training Unit (26 wks)	Scuba Diver School
Engineering Laboratory Technician School	Advanced Auxiliary Package Course
Machinist Mate "A" School	Quality Assurance Inspector School

**EXPERIENCE:**

December 1996 to Present

**Radcor, LLC**, Salem, Connecticut

**Health Physicist/Owner.** Responsible for providing radiological consulting services to general industry, academic institutions, and companies involved in research and development. These services include: development and presentation of professional training; performance of program audits; performance of radiological surveys, decontamination and decommissioning; development of license applications, amendments and safety procedures; radiation protection program oversight; and, regulatory compliance.

Served as the Radiation Safety Officer (RSO) for ExxonMobil Research and Eng. Co., Paulsboro, NJ and ArQule, Inc. Woburn, Ma, and Agios Pharmaceuticals, Cambridge, MA. Currently serve as the RSO for Enanta Pharmaceuticals, Watertown, MA, Jnana Therapeutics, Boston, MA and Pfizer Inc., Groton, CT.

March 1994 to December 1996

**Radiation Safety Associates, Inc.**, Hebron Connecticut

**Vice President-Technical Services.** Responsible for the preparation of job proposals and operating budgets; making technical and manpower recommendations; supervising workers at job sites; performing technical evaluations as required; writing, editing, and developing course materials, working procedures and technical articles; and, performed duties as a health physicist.

Responsible for oversight of various site decontamination/decommissioning projects. These involved: the development of decommissioning plans; hiring and oversight of workers; hands-on performance of radiological surveys and site decontamination efforts; and the development and submittal of final reports.

Instructor for the following professional training courses: Fundamentals of Radiological Protection; Health Physics Technician Level I and II; Radiation Safety Officer; Radiation Safety Officer Refresher; and, Basic Radiation Worker.

Assistant Editor of *Radiation Protection Management*, the Journal of Applied Health Physics. Assistant RSO and Quality Control Officer for a radioanalytical laboratory.

October 1991 to March 1994

**Radiation Safety Associates, Inc.**, Hebron, Connecticut

**Health Physicist.** Responsible for providing consulting services to the nuclear industry; general industry; local, state, and federal governments; and academic institutions. These services included performing audits, radiological surveys, instrument calibrations, site decontamination services, writing license applications and amendments, maintaining radiological safety programs, providing technical advice and performing training.

September 1983 to October 1991

**United States Navy, Submarine Qualified.** Served on-board two nuclear-powered submarines.

Qualified as Leading Engineering Laboratory Technician, Engineerroom Supervisor, Quality Assurance Inspector, Duty Section Leading Mechanic and Ship's Diver.

Supervised and performed chemistry and radiological controls on reactor plant primary and secondary systems. Sampled primary coolant and secondary water chemistry and analyzed results to detect abnormal trends and out of specification conditions. Established and certified radiologically controlled areas, conducted radiation and contamination surveys, evaluated man-rem exposure and processed radioactive waste. Calibrated and operated radiation detectors and chemistry analytical equipment.

Directed the day-to-day efforts of five junior Laboratory Technicians. Awarded a Navy Achievement Medal for being "the driving force behind a dramatic turnaround in the professionalism of the (Reactor Laboratory) division." Instituted a training program that significantly upgraded the level of knowledge of the division.

Drafted detailed work procedures and quality assurance work packages for nuclear and non-nuclear maintenance efforts. Performed in-process inspections to verify that materials and procedures met required specifications.

#### **PROFESSIONAL ACTIVITIES:**

**Registered Radiation Protection Technologist (NRRPT)**

#### **PUBLICATIONS**

"NRC License Application, Renewal, or Amendment for Byproduct Material" *RSO Magazine*, 1:6: pp. 25-30; Nov/Dec, 1996.

"Personal Whole-Body Dosimetry" *RSO Magazine*, 1:4: pp. 26-28; Jul/Aug, 1996.

"Prenatal Radiation Exposure," *RSO Magazine*, 1:2: pp. 12-13; Mar/Apr, 1996.

"Loose Contamination Survey Methods," *RSO Magazine*, 1:1: pp. 19-20; Jan/Feb, 1996.

Steinmeyer, K. Paul, David J. Durkee and Paul R. Steinmeyer. *Mathematics Review for Health Physics Technicians*. Hebron, CT: RSA Publications, 1994. (393 pages).

## **Attachment C**

### **Detection Sensitivity Calculations and Instrument Calibration Information**

### Equations used for determining detection sensitivities

Variables: MDC = Minimum Detectable Concentration in dpm/100 cm<sup>2</sup>  
MDCR = Minimum detectable count rate  
s<sub>i</sub> = minimum number of source counts in interval  
d' = 1.38 (95% true positives/60% false positives acceptable - Table 6.5 NUREG-1575)  
b<sub>i</sub> = Number of background counts in interval  
i = Count interval (Assume 2 seconds)  
ε<sub>i</sub> = Instrument efficiency  
ε<sub>s</sub> = Surface efficiency (Assume 0.54)  
p = Surveyor efficiency (Assume 0.5)  
A = Active detector area in cm<sup>2</sup> (126 cm<sup>2</sup>)  
R<sub>b</sub> = Background count rate in cpm  
t = Counting time when background time equals sample time

#### MDCR for surface scans using Ludlum Model 43-68: (NUREG-1575)

$$s_i = d'(b_i)^{1/2} = 1.38(212 \times (1/60))^{1/2} = 2.59 \quad \text{MDCR} = s_i \times (60/i) = 2.59(60/2) = 77.7 \text{ cpm}$$

#### MDC for surface scans using Ludlum Model 43-68: (NUREG-1575)

$$\text{MDC (C-14)} = \text{MDCR}/(p)^{-1/2} \epsilon_i \epsilon_s (A/100) = 77.7 / (0.5)^{-1/2} (0.086)(0.54)(1.26) = 1,878 \text{ dpm/100 cm}^2$$

#### MDCR for surface scans using Ludlum Model 43-37: (NUREG-1575)

$$s_i = d'(b_i)^{1/2} = 1.38(504 \times (1/60))^{1/2} = 4.0 \quad \text{MDCR} = s_i \times (60/i) = 4.0(60/2) = 120 \text{ cpm}$$

#### MDC for surface scans using Ludlum Model 43-37: (NUREG-1575)

$$\text{MDC (C-14)} = \text{MDCR}/(p)^{-1/2} \epsilon_i \epsilon_s (A/100) = 120 / (0.5)^{-1/2} (0.0869)(0.54)(5.84) = 619 \text{ dpm/100 cm}^2$$

#### MDA for counting 100 cm<sup>2</sup> wipe samples on LSC:

$$\text{MDC} = [2.71 + 4.65 \{(R_b)(t)\}^{1/2}] \div (t)(\epsilon_i)$$

$$\text{MDC (H-3)} = [2.71 + 4.65 \{(23 \text{ cpm})(1 \text{ min.})\}^{1/2}] \div (1 \text{ min.})(0.40) = 62.5 \text{ dpm/100 cm}^2$$

$$\text{MDC (C-14)} = [2.71 + 4.65 \{(40 \text{ cpm})(1 \text{ min.})\}^{1/2}] \div (1 \text{ min.})(0.75) = 42.8 \text{ dpm/100 cm}^2$$

### Instrument Calibration Information

Bicron uRem LE B466Y. Calibrated by RSCS of Stratham, NH on 01/15/19.

Ludlum Model 2241-2 with 43-68. Calibrated by Ludlum Measurements of Sweetwater TX on 01/07/19.

PE Microbeta 2450: Calibrated by the manufacturer on 04/01/19.



Designer and Manufacturer  
of  
Scientific and Industrial  
Instruments

www.ludlums.com

# CERTIFICATE OF CALIBRATION

**LUDLUM MEASUREMENTS, INC.**

501 Oak Street  
325-235-5494  
Sweetwater, TX 79556, U.S.A.



CERT # 4084.01

Customer **RADCOR LLC**

ORDER NO. 20346891/472864

Mfr. **Ludlum Measurements, Inc.** Model **2241-2**

Serial No. **137251**

Mfr. **Ludlum Measurements, Inc.** Model **43-68A**

Serial No. **PR140899**

Cal. Date **7-Jan-19** Cal Due Date **7-Jan-20** Cal. Interval **1 Year** Meterface **cpm**

Check mark ☒ applies to applicable instr. and/or detector IAW mfg. spec. T. **73** °F RH **48** % Alt **688.0** 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
- ☒ Audio ck. ☒ Alarm Setting ck. ☒ Batt. ck.
- ☒ Calibrated in accordance with LMI SOP 14.9 ☐ Calibrated in accordance with LMI SOP 14.9

Instrument Volt Set **Comments** V Input Sens. **4** mV Det. Oper. **Comments** V at **4** mV Threshold Dial Ratio **=** mV

## COMMENTS:

Det.1(Alpha) Det.2(Beta) \*Si32 sub for P32 ; Firmware: P-06-01 ; OL checked but not set

Deadtime: 12uSec 15uSec 'Ratemeter calibration' achieved with no deadtime.

Cal Cons: 100e-2 100e-2 43-68 (Det.2) C14 SN:1476, Size:229767dpm, Counts:20073cpm, BG:293cpm, 4pi Eff:8.60%

Alarm: 50kcpm 50kcpm \*Si32 SN:422-44 Size:86329dpm, Counts:28205cpm, BG:293cpm, 4pi Eff:32.33%

Alert: 50kcpm 20kcpm 43-37 (Det.2) C14 SN:1476, Size:229767dpm, Counts:21144cpm, BG:1174cpm, 4pi Eff:8.69%

43-68 HV: 1250v 1725v \*Si32 SN:422-44 Size:86329dpm, Counts:30418cpm, BG:1174cpm, 4pi Eff:33.87%

43-37 HV: 1250v 1725v

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*
Dig.rate			
Dig.rate			

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

Range(s) Calibrated Electronically

REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING*	REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING*
800K cpm	799Kcpm	799Kcpm	800K cpm	79938(0)	79938(0)
200K cpm	199	199	200K cpm	19952	19952
80K cpm	79	79	80K cpm	7995	7995
20K cpm	19.9	19.9	20K cpm	1995	1995
8K cpm	7.9	7.9	8K cpm	799	799
2K cpm	1.99	1.99	2K cpm	199	199
800 cpm	800 cpm	800 cpm	800 cpm	80	80
200 cpm	200	200	200 cpm	20	20

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/NCCL Z540-1-1994 and ANSI N323-1978.

ISO/IE 17025:2005(E)

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 ☐ 2324/2521

☐ 5717CO ☐ 5719CO ☐ 60546 ☐ 70897 ☐ 73410 ☐ E552 ☐ G112 ☐ 2168CP ☐ S-394 ☐ S-1054 ☐ T10081 ☐ T10082 Neutron Am-241 Be ☐ T-304 Ra-226 ☐ Y982

☒ Alpha S/N **Pu239 SN:7053 24900dpm** ☒ Beta S/N **Tc99 SN:5280 93200dpm** ☐ Other

☒ m 500 S/N **190566** ☐ Oscilloscope S/N ☒ Multimeter S/N **86250390**

Calibrator **Jason Flores** Title **Calibrator** Date **7-Jan-19**

QC'd By **Phad H** Title **Final QC** Date **7 Jan 19**



**Calibration Certificate**  
**ID Number: B466Y128770-0**

**Customer:** David J Durkee  
Radcor, LLC.  
345 Laurelwood Drive  
Salem, CT 06420-

**Instrument**  
Bicron Model MicroRem

**Serial Number**  
B466Y

Precision Check				
Test 1	Test 2	Test 3	Mean	Results
1.50 mrem/hr	1.50 mrem/hr	1.50 mrem/hr	1.50 mrem/hr	Satisfactory

Accuracy Check			
Range	Target Value	As Found	As Left
X1000	160 mrem/hr	160 mrem/hr	160 mrem/hr
X1000	40 mrem/hr	40 mrem/hr	40 mrem/hr
X100	16 mrem/hr	16.5 mrem/hr	16.5 mrem/hr
X100	4 mrem/hr	4 mrem/hr	4 mrem/hr
X10	1.6 mrem/hr	1.5 mrem/hr	1.5 mrem/hr
X10	0.4 mrem/hr	0.4 mrem/hr	0.4 mrem/hr
X1	160 $\mu$ rem/hr	160 $\mu$ rem/hr	160 $\mu$ rem/hr
X1	40 $\mu$ rem/hr	40 $\mu$ rem/hr #	40 $\mu$ rem/hr #
X0.1	16 $\mu$ rem/hr	15.5 $\mu$ rem/hr #	15.5 $\mu$ rem/hr #
X0.1	4 $\mu$ rem/hr	4 $\mu$ rem/hr #	4 $\mu$ rem/hr #

Readings with \* indicate ranges where As-Found readings are >20% of Target value. Readings with \*\* indicate As-left readings are >10.00% of Target value  
Readings with # indicate ranges where pulser was used.

MTE Instrument Type	Model	CalDueDate
Pulser	Ludlum 500-4 SN: 66151	01/17/2019

Outer Physical Check: Pass      Mechanical Zero: Pass  
Internal Check: Pass              Tap Test: Pass  
Geotropism Check: Pass

Comments: Unless indicated with a "#" in the table above to indicate a pulser was used, all readings were obtained using the Tech Ops Model 773 Cs-137 Beam Calibrator (S/N: S-1110). Pulsed measurements are outside of the scope of ISO-17025 accreditation.

Patrick  
Cashman  
Calibration  
Technician

QA  
Review:

Calibration Date: 01/15/2019  
Expires: 01/15/2020

Atmospheric Conditions - Temperature: 69°F Humidity: 24% Barometric Pressure: 30.15"hg

This calibration was performed by RSCS using one or more of the following NIST Traceable radiation sources:

Tech Ops Model 773 Cs-137 Beam Calibrator (S/N S-1110), characterized using Exradin Model A6 (S/N 185) and Keithley Electrometer Model 617 (S/N 0547677) in accordance with methods specified in RSCS TSD 11-008, with estimated uncertainty of 6.0%.

J.L. Shepherd and Associates Model 89 Cs-137 Box Calibrator (S/N 9141), characterized using Exradin, Model A6 (S/N 185), A3 (S/N 197), A12 (S/N XA091124), and Keithley Electrometer Model 617 (S/N 0547677) in accordance with methods specified in RSCS TSD 11-001, with estimated uncertainty of 2.7%.

RSCS Neutron Calibrator, AmBe Source Model NU-MEC-AM-31 (S/N Am-478), characterized using Far West Technologies Model FWAD-1 "HAWK" TEPC (S/N 021) in accordance with the methods specified in RSCS TSD 13-002, with estimated uncertainty of 9.4%

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k such that the coverage probability corresponds to approximately 95%

Unless otherwise stated, calibrations performed in conformance to the following documents: ANSI N323AB-2013; RSCS New Hampshire Radioactive Material License Number 381R.

RSCS calibration services are performed in accordance with the RSCS Radiation Protection Program Manual and Standard Operating Procedures.

Calibration Laboratory is operated in accordance with ANSI/NCCL Z540-1-1994

RSCS, Inc. has been assessed by ANAB and meets the requirements of ISO/IEC 17025:2005 while demonstrating technical competence in the field of calibration. Refer to the Scope of Accreditation AC-2079 for information on the types of calibrations to which this accreditation applies.

This calibration certificate shall not be reproduced except in full without the express written consent of RSCS, Inc.

MicroBeta Windows Workstation - IPA View

File Counter View Window Help

Start Stop Pause Live Protocols Results System Print Help

IPA View

Trend Report History

Result: 4/1/2019 11:02:51 AM

**IPA Report for MicroBeta<sup>2</sup>**  
 Counter serial number 3130209  
 Date: 4/1/2019  
 Time: 11:02:51 AM

Isotope	DET	SQP(I)	CCPM	EFF	BGND
H3	1	179.0	98596	52.9517	8.0
	2	179.2	97064	52.1289	3.0
C14	1	426.5	107963	94.7875	9.0
	2	424.0	107929	94.7577	4.0

## **Attachment D**

### Survey Data

Job Location: Achillion Pharmaceuticals, Inc. New Haven, CT  
 Survey Purpose: Decommissioning Tissue Culture Lab and Hall  
 Performed By: David Durkee

Page: 1 of 7  
 Date: 10/14/19

<b>Inst. No. 1 (Model/SN)</b> PE Microbeta 2450 #04130262	<b>Inst. No. 2 (Model/SN)</b> Ludlum 2241-2 #137751	<b>Inst. No. 3 (Model/SN)</b> Bicron uRem LE B466Y
<b>Detector (Model/SN)</b> Internal	<b>Detector (Model/SN)</b> Ludlum 43-68 #140899/ Ludlum 43-37 #143616	<b>Detector (Model/SN)</b> Internal
<b>Efficiency:</b> $\approx$ 40% 3H / 75% 14C	<b>Efficiency:</b> 8.6%/8.69% C-14	<b>Efficiency:</b> 100%
<b>Type Rad.:</b> $\beta$	<b>Type Rad:</b> $\beta$	<b>Type Rad.:</b> $\gamma$
<b>Bkgd.:</b> See #1 Below	<b>Bkgd.:</b> 256 cpm / 864 cpm	<b>Bkgd.:</b> 4 - 8 uRem/hour
<b>Cal. Due:</b> 04/01/20	<b>Cal. Due:</b> 01/07/20	<b>Cal. Due:</b> 01/15/20

Number	Time	Location	Inst. Used	3H Activity (dpm/100 cm <sup>2</sup> )	14C Activity (dpm/100 cm <sup>2</sup> )
1	0800	Background	1	18 cpm	30 cpm
2		Upper wall	1	30.0	12.0
3		Counter	1	-5.0	1.3
4		Side of drawers	1	-15.0	6.7
5		Front of drawers	1	-5.0	4.0
6		Top drawer	1	-22.5	-5.3
7		Drawer	1	-7.5	8.0
8		Drawer	1	-2.5	2.7
9		Bottom drawer	1	-15.0	0.0
10		Upper door	1	-15.0	-6.7
11		Lower door	1	0.0	10.7
12		Upper wall	1	-22.5	-6.7
13		Lower wall	1	-2.5	-4.0
14		Upper wall	1	-2.5	21.3
15		Lower wall	1	0.0	18.7
16		Upper wall	1	-10.0	4.0
17		Upper wall	1	7.5	12.0
18		Shelf	1	-15.0	-1.3
19		Counter	1	0.0	1.3
20		Front of cabinet	1	-10.0	0.0
21		Inside cabinet	1	-10.0	-6.7
22		Upper wall	1	-22.5	-10.7
23		Shelf	1	-25.0	-14.7
24		Counter	1	-20.0	-1.3
25		Front of cabinet	1	15.0	13.3
26		Inside cabinet	1	-22.5	-12.0
27		Cubby	1	-27.5	-16.0
28		Upper wall	1	2.5	-2.7
29		Counter	1	-10.0	-9.3
30		Front of drawers	1	-30.0	-14.7

**Job Location:** Achillion Pharmaceuticals, Inc. New Haven, CT

**Page:** 2 of 7

**Survey Purpose:** Decommissioning Tissue Culture Lab and Hall

**Date:** 10/14/19

Number	Time	Location	Inst. Used	H-3 Activity (dpm/100 cm2)	14C Activity (dpm/100 cm2)
31		Inside drawers	1	2.5	1.3
32		Upper wall	1	-5.0	8.0
33		Sink	1	-20.0	-6.7
34		Sink drain	1	-10.0	-1.3
35		Front of sink	1	-15.0	-5.3
36		Upper wall	1	-17.5	-2.7
37		Counter	1	-7.5	1.3
38		Upper wall	1	-7.5	0.0
39		Lower wall	1	-17.5	-16.0
40		Upper wall	1	-22.5	-9.3
41		Lower wall	1	-12.5	-8.0
42		Upper wall	1	-17.5	-9.3
43		Shelf	1	-15.0	-6.7
44		Counter	1	12.5	18.7
45		Front of drawers	1	-22.5	-1.3
46		Top drawer	1	0.0	9.3
47		Drawer	1	-7.5	-2.7
48		Drawer	1	-7.5	-6.7
49		Bottom drawer	1	-2.5	5.3
50		Cubby	1	-15.0	-12.0
51		Upper wall	1	-20.0	-1.3
52		Counter	1	-17.5	-6.7
53		Front of drawers	1	-5.0	5.3
54		Top drawer	1	5.0	12.0
55		Drawer	1	5.0	9.3
56		Drawer	1	-20.0	-13.3
57		Bottom drawer	1	-2.5	5.3
58		Upper wall	1	-17.5	-13.3
59		Counter	1	-20.0	-13.3
60		Front of left drawer	1	17.5	13.3
61		Inside drawer	1	-7.5	-1.3
62		Front of right drawer	1	-7.5	2.7
63		Inside drawer	1	-15.0	-5.3
64		Front of cabinet	1	-12.5	-5.3
65		Inside cabinet	1	-20.0	-9.3
66		Upper wall	1	-10.0	12.0
67		Upper wall	1	0.0	5.3
68	↓	Lower wall	1	-10.0	6.7

**Job Location:** Achillion Pharmaceuticals, Inc. New Haven, CT  
**Survey Purpose:** Decommissioning Tissue Culture Lab and Hall

**Page:** 3 of 7  
**Date:** 10/14/19

Number	Time	Location	Inst. Used	H-3 Activity (dpm/100 cm2)	14C Activity (dpm/100 cm2)
69		Upper wall	1	-12.5	-8.0
70		Lower wall	1	-7.5	10.7
71		Upper wall	1	-2.5	5.3
72		Lower wall	1	0.0	-2.7
73		Upper wall	1	-22.5	-17.3
74		Lower wall	1	-22.5	-8.0
75		Upper wall	1	-22.5	-8.0
76		Lower wall	1	-20.0	-2.7
77		Upper door	1	-20.0	-2.7
78		Lower door	1	-10.0	-2.7
79		Floor	1	-7.5	5.3
80		Floor	1	2.5	5.3
81		Floor	1	-10.0	-1.3
82		Floor	1	-20.0	-8.0
83		Floor	1	-15.0	-2.7
84		Floor	1	-7.5	4.0
85		Floor	1	-12.5	-8.0
86		Floor	1	-15.0	-5.3
87		Floor	1	-27.5	-16.0
88		Floor	1	-7.5	-5.3
89		Floor	1	-10.0	10.7
90		Floor	1	-2.5	2.7
91		Floor	1	-32.5	-13.3
92		Upper door	1	-25.0	-12.0
93		Lower door	1	-15.0	-5.3
94		Upper wall	1	-15.0	1.3
95		Lower wall	1	-5.0	5.3
96		Upper wall	1	-7.5	8.0
97		Lower wall	1	2.5	5.3
98		Upper wall	1	40.0	26.7
99		Lower wall	1	-15.0	-6.7
100		Upper wall	1	7.5	16.0
101		Lower wall	1	0.0	5.3
102		Upper wall	1	12.5	10.7
103		Lower wall	1	10.0	22.7
104		Upper wall	1	-5.0	10.7
105		Lower wall	1	2.5	5.3
106		Upper wall	1	-7.5	9.3
107		Lower wall	1	-10.0	4.0
108		Upper wall	1	-10.0	-4.0

Job Location: Achillion Pharmaceuticals, Inc. New Haven, CT

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Survey Purpose: Decommissioning Tissue Culture Lab and Hall

Date: 10/14/19

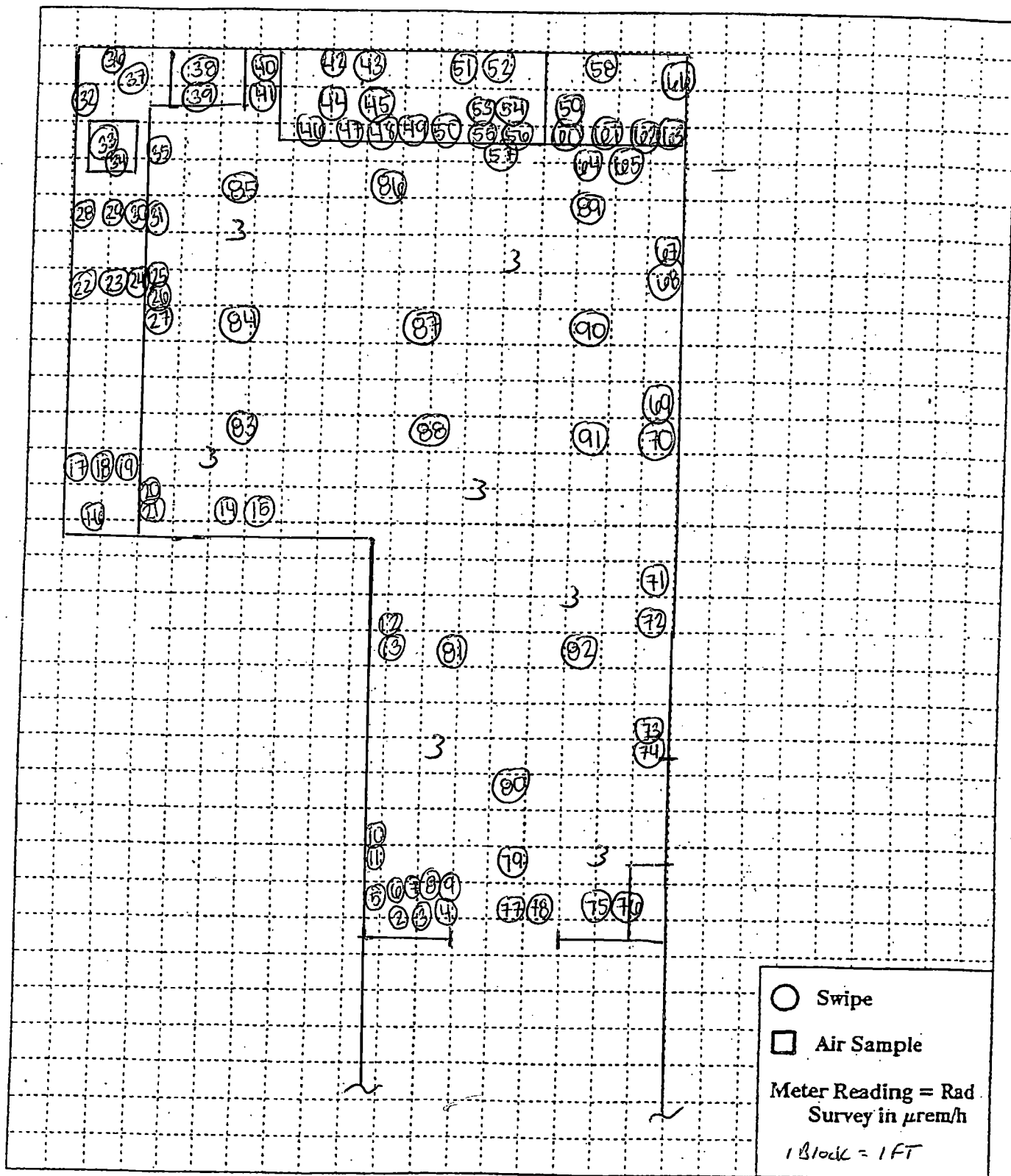
Number	Time	Location	Inst. Used	H-3 Activity (dpm/100 cm2)	14C Activity (dpm/100 cm2)
109		Lower wall	1	-10.0	4.0
110		Upper wall	1	-17.5	-6.7
111		Lower wall	1	-12.5	5.3
112		Upper wall	1	-10.0	1.3
113		Lower wall	1	-12.5	2.7
114		Upper wall	1	-12.5	-4.0
115		Lower wall	1	7.5	9.3
116		Upper wall	1	-10.0	1.3
117		Lower wall	1	-15.0	-9.3
118		Upper wall	1	-7.5	5.3
119		Lower wall	1	-2.5	0.0
120		Upper wall	1	-7.5	2.7
121		Lower wall	1	-2.5	-2.7
122		Upper wall	1	-12.5	-2.7
123		Lower wall	1	-20.0	0.0
124		Upper wall	1	-2.5	0.0
125		Lower wall	1	-7.5	-1.3
126		Upper wall	1	-15.0	5.3
127		Lower wall	1	-27.5	-16.0
128		Upper wall	1	-17.5	-6.7
129		Lower wall	1	-7.5	6.7
130		Floor	1	-7.5	5.3
131		Floor	1	-7.5	-6.7
132		Floor	1	-15.0	-1.3
133		Floor	1	-17.5	-17.3
134		Floor	1	-22.5	1.3
135		Floor	1	-17.5	-10.7
136		Floor	1	-25.0	-2.7
137		Floor	1	-12.5	-6.7
138		Floor	1	-7.5	2.7
139		Floor	1	5.0	14.7
140		Floor	1	-15.0	-1.3
141		Floor	1	0.0	9.3
142		Floor	1	-2.5	-4.0
143		Floor	1	-5.0	-1.3
144		Floor	1	-10.0	-8.0
145		Floor	1	7.5	4.0
146		Floor	1	5.0	10.7
147		Floor	1	2.5	-9.3
148		Floor	1	7.5	1.3

**Survey Purpose:** Decommissioning Tissue Culture Lab and Hall

**Date:** 10/14/19

[illegible]

Job Location: ACHILLIS PHARMACEUTICALS INC. MIDDLETOWN CT Page: 6 of 7  
 Survey Purpose: DECOMMISSIONING TISSUE CULTURE LAB Date: 10/14/19  
 Performed By: DAVID DWORKIN



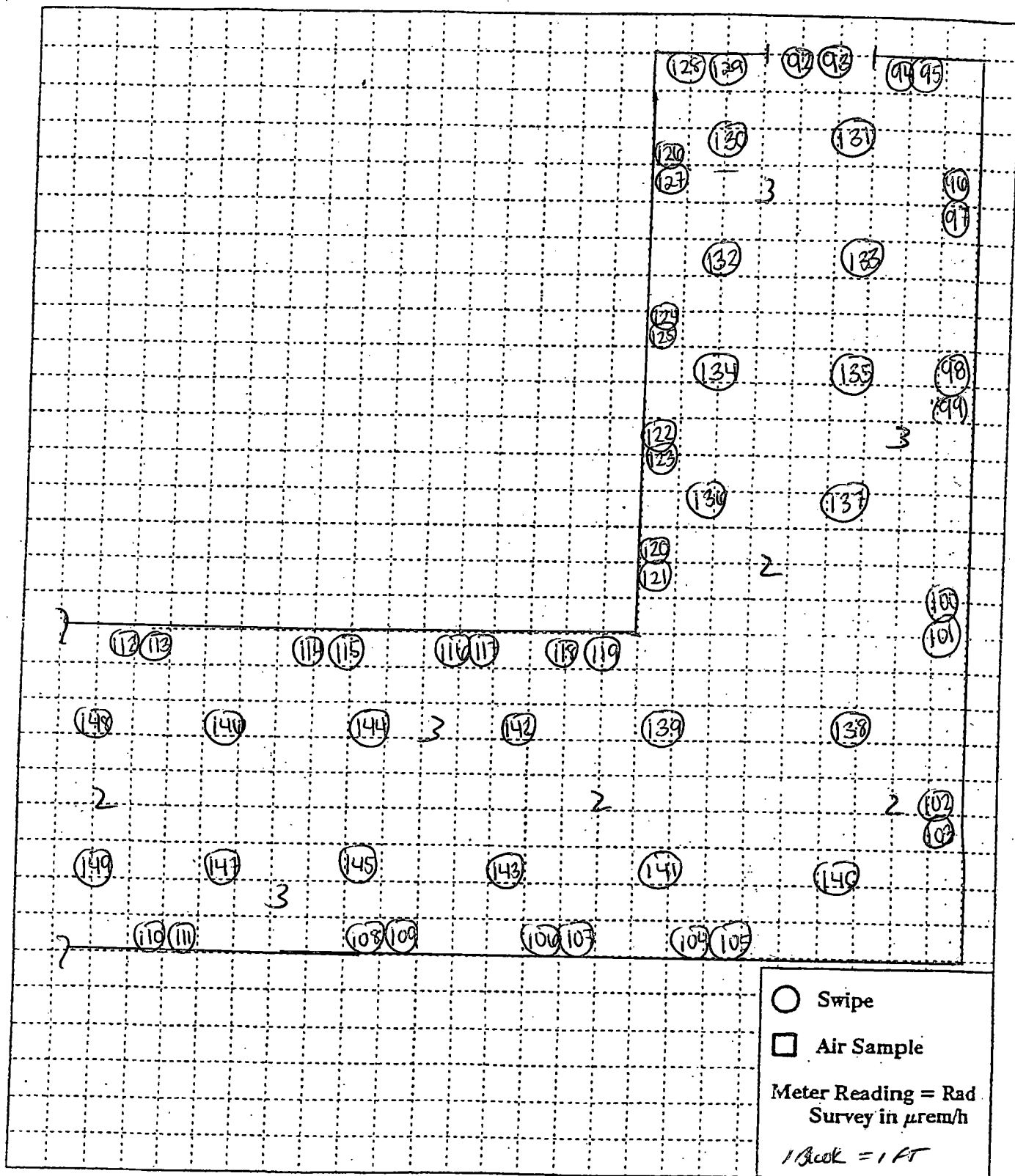
Job Location: ACHILLION PHARMACEUTICALS INC. NEW HAVEN CT

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Survey Purpose: DECOMMISSIONING HALL

Date: 10/14/19

Performed By: DAVID DWOREZ



**Job Location:** Achillion Pharmaceuticals, Inc. New Haven, CT  
**Survey Purpose:** Decommissioning Molecular Biology (A&B)  
**Performed By:** David Durkee

**Page:** 1 of 8  
**Date:** 10/14/19

<b>Inst. No. 1 (Model/SN)</b> PE Microbeta 2450 #04130262	<b>Inst. No. 2 (Model/SN)</b> Ludlum 2241-2 #137751	<b>Inst. No. 3 (Model/SN)</b> Bicron uRem LE B466Y
<b>Detector (Model/SN)</b> Internal	<b>Detector (Model/SN)</b> Ludlum 43-68 #140899/ Ludlum 43-37 #143616	<b>Detector (Model/SN)</b> Internal
<b>Efficiency:</b> $\approx$ 40% 3H / 75% 14C	<b>Efficiency:</b> 8.6%/8.69% C-14	<b>Efficiency:</b> 100%
<b>Type Rad.:</b> $\beta$	<b>Type Rad:</b> $\beta$	<b>Type Rad.:</b> $\gamma$
<b>Bkgd.:</b> See #1 Below	<b>Bkgd.:</b> 256 cpm / 864 cpm	<b>Bkgd.:</b> 4 - 8 uRem/hour
<b>Cal. Due:</b> 04/01/20	<b>Cal. Due:</b> 01/07/20	<b>Cal. Due:</b> 01/15/20

Number	Time	Location	Inst. Used	3H Activity (dpm/100 cm <sup>2</sup> )	14C Activity (dpm/100 cm <sup>2</sup> )
1	1000	Background	1	10 cpm	40 cpm
2		Upper Wall	1	10.0	-16.0
3		Lower Wall	1	27.5	-12.0
4		Upper Wall	1	12.5	-16.0
5		Lower Wall	1	0.0	-18.7
6		Upper Wall	1	-5.0	-21.3
7		Lower Wall	1	27.5	-16.0
8		Upper Wall	1	12.5	-13.3
9		Counter	1	7.5	-16.0
10		Sink	1	7.5	-13.3
11		Sink Drain	1	-2.5	-22.7
12		Front of Drawers	1	7.5	-20.0
13		Front of Cabinets	1	10.0	-16.0
14		Left Drawer	1	22.5	-2.7
15		Right Drawer	1	25.0	-5.3
16		Inside Cabinet	1	32.5	-6.7
17		Front of Sink	1	-2.5	-21.3
18		Upper Wall	1	0.0	-14.7
19		Lower Wall	1	-7.5	-25.3
20		Upper Door	1	10.0	-17.3
21		Lower Door	1	5.0	-20.0
22		Wall	1	5.0	-20.0
23		Side of Hood	1	20.0	-12.0
24		Outside Hood Sash	1	17.5	-17.3
25		Inside Hood Sash	1	12.5	-16.0
26		Hood Counter	1	7.5	-12.0
27		Back of Hood	1	12.5	-9.3
28		Left Wall Inside Hood	1	10.0	-13.3
29		Right Wall Inside Hood	1	15.0	-12.0
30		Hood Duct	1	2.5	-25.3

**Job Location:** Achillion Pharmaceuticals, Inc. New Haven, CT**Page:** 2 of 8**Survey Purpose:** Decommissioning Molecular Biology (A&B)**Date:** 10/14/19

Number	Time	Location	Inst. Used	H-3 Activity (dpm/100 cm2)	14C Activity (dpm/100 cm2)
31		Front of Cabinets	1	2.5	-24.0
32		Inside Left Cabinet	1	10.0	-10.7
33		Inside Right Cabinet	1	5.0	-20.0
34		Side of Hood	1	2.5	-17.3
35		Upper Wall	1	20.0	0.0
36		Lower Wall	1	7.5	-10.7
37		Shelf	1	17.5	-1.3
38		Shelf	1	27.5	1.3
39		Counter	1	17.5	-9.3
40		Front of Drawers	1	17.5	-1.3
41		Left Drawer	1	0.0	-14.7
42		Right Drawer	1	12.5	-9.3
43		Front of Cabinets	1	22.5	6.7
44		Inside Cabinets	1	15.0	-5.3
45		Shelf	1	-2.5	-22.7
46		Shelf	1	7.5	-18.7
47		Counter	1	2.5	-14.7
48		Cubby	1	5.0	-12.0
49		Shelf	1	30.0	-4.0
50		Shelf	1	5.0	-26.7
51		Counter	1	25.0	-5.3
52		Front of Drawers	1	-5.0	-13.3
53		Left Drawer	1	12.5	-10.7
54		Right Drawer	1	35.0	1.3
55		Front of Cabinets	1	12.5	-9.3
56		Inside Cabinets	1	35.0	4.0
57		Side of Cabinet	1	5.0	-20.0
58		Side of Cabinet	1	7.5	-13.3
59		Counter	1	-2.5	-14.7
60		Front of Drawers	1	2.5	-20.0
61		Left Drawer	1	37.5	1.3
62		Right Drawer	1	10.0	-9.3
63		Front of Cabinets	1	25.0	-5.3
64		Inside Cabinets	1	25.0	-6.7
65		Counter	1	10.0	-8.0
66		Cubby	1	5.0	-5.3
67		Counter	1	7.5	-13.3
68	↓	Front of Drawers	1	12.5	-13.3

Job Location: Achillion Pharmaceuticals, Inc. New Haven, CT  
 Survey Purpose: Decommissioning Molecular Biology (A&B)

Page: 3 of 8  
 Date: 10/14/19

Number	Time	Location	Inst. Used	H-3 Activity (dpm/100 cm2)	14C Activity (dpm/100 cm2)
69		Left Drawer	1	7.5	-22.7
70		Right Drawer	1	0.0	-8.0
71		Outside Cabinet	1	2.5	-16.0
72		Inside Cabinet	1	0.0	-21.3
73		Front of Drawers	1	17.5	-12.0
74		Left Drawer	1	25.0	-2.7
75		Right Drawer	1	-7.5	-25.3
76		Inside Cabinet	1	20.0	-16.0
77		Outside Cabinet	1	27.5	2.7
78		Cubby	1	-7.5	-26.7
79		Front of Drawers	1	10.0	-13.3
80		Left Drawer	1	12.5	-16.0
81		Right Drawer	1	22.5	-14.7
82		Front of Drawers	1	2.5	-25.3
83		Inside Cabinet	1	25.0	-12.0
84		Side Counter	1	17.5	-17.3
85		Floor	1	12.5	-17.3
86		Floor	1	27.5	-6.7
87		Floor	1	-5.0	-22.7
88		Floor	1	15.0	-12.0
89		Floor	1	<b>202.5</b>	<b>250.7</b>
90		Floor	1	-7.5	-17.3
91		Floor	1	10.0	-21.3
92		Floor	1	22.5	-6.7
93		Floor	1	5.0	-8.0
94		Floor	1	12.5	-10.7
95		Floor	1	2.5	-16.0
96		Floor	1	27.5	-2.7
97		Floor	1	42.5	4.0
98		Floor	1	42.5	13.3
99		Floor	1	5.0	-20.0
100		Floor	1	22.5	-4.0
101		Floor	1	25.0	0.0
102		Floor	1	27.5	-9.3
103		Floor	1	25.0	-13.3
104		Floor	1	22.5	-1.3
105		Floor	1	17.5	-5.3
106		Floor	1	7.5	-18.7
107		Floor	1	0.0	-20.0
108		Shelf	1	12.5	-16.0

**Job Location:** Achillion Pharmaceuticals, Inc. New Haven, CT  
**Survey Purpose:** Decommissioning Molecular Biology (A&B)

**Page:** 4 of 8  
**Date:** 10/14/19

Number	Time	Location	Inst. Used	H-3 Activity (dpm/100 cm <sup>2</sup> )	14C Activity (dpm/100 cm <sup>2</sup> )
109		Shelf	1	12.5	-12.0
110		Counter	1	22.5	-5.3
111		Shelf	1	22.5	-2.7
112		Shelf	1	22.5	-4.0
113		Counter	1	22.5	-8.0
114		Shelf	1	-5.0	-18.7
115		Shelf	1	17.5	-4.0
116		Counter	1	17.5	-2.7
117		Counter	1	5.0	-25.3
118		Counter	1	7.5	-16.0
119		Front of Drawers	1	5.0	-21.3
120		Left Drawer	1	27.5	10.7
121		Right Drawer	1	0.0	-14.7
122		Front of Cabinets	1	10.0	-9.3
123		Inside Cabinet	1	20.0	-13.3
124		Counter	1	2.5	-24.0
125		Cubby	1	5.0	-10.7
126		Counter	1	12.5	-14.7
127		Front of Drawers	1	-5.0	-26.7
128		Left Drawer	1	7.5	-18.7
129		Right Drawer	1	-2.5	-18.7
130		Front of Cabinets	1	15.0	-16.0
131		Inside Cabinet	1	5.0	-21.3
132		Side of Cabinet	1	2.5	-17.3
133		Side of Cabinet	1	2.5	-22.7
134		Front of Drawers	1	15.0	-24.0
135		Front of Cabinets	1	5.0	-20.0
136		Left Drawer	1	0.0	-17.3
137		Right Drawer	1	12.5	-9.3
138		Inside Cabinet	1	12.5	1.3
139		Upper Door	1	10.0	-12.0
140		Lower Door	1	17.5	-5.3
141		Upper Wall	1	2.5	-16.0
142		Lower Wall	1	22.5	1.3
143		Upper Wall	1	12.5	-6.7
144		Counter	1	12.5	-12.0
145		Upper Wall	1	30.0	-6.7
146		Shelf	1	17.5	-9.3
147		Front of Drawers	1	25.0	-6.7
148		Inside Drawer	1	20.0	-10.7

**Job Location:** Achillion Pharmaceuticals, Inc. New Haven, CT  
**Survey Purpose:** Decommissioning Molecular Biology (A&B)

**Page:** 5 of 8  
**Date:** 10/14/19

Number	Time	Location	Inst. Used	H-3 Activity (dpm/100 cm <sup>2</sup> )	14C Activity (dpm/100 cm <sup>2</sup> )
149		Front of Cabinet	1	-2.5	-28.0
150		Inside Cabinet	1	10.0	-16.0
151		Front of Drawer	1	-5.0	-20.0
152		Inside Drawer	1	30.0	-6.7
153		Front Cabinet	1	7.5	-18.7
154		Inside Cabinet	1	2.5	-13.3
155		Front of Drawer	1	22.5	-8.0
156		Inside Drawer	1	5.0	-9.3
157		Front of Cabinet	1	12.5	-12.0
158		Inside Cabinet	1	37.5	-2.7
159		Front of Drawer	1	27.5	-5.3
160		Inside Drawer	1	27.5	-6.7
161		Front Cabinet	1	45.0	8.0
162		Inside Cabinet	1	17.5	-6.7
163		Cubby	1	12.5	-13.3
164		Front of Drawer	1	20.0	-6.7
165		Inside Drawer	1	0.0	-22.7
166		Front of Cabinet	1	7.5	-25.3
167		Inside Cabinet	1	12.5	-16.0
168		Front of Drawer	1	20.0	-4.0
169		Inside Drawer	1	12.5	-13.3
170		Front of Cabinet	1	-5.0	-30.7
171		Inside Cabinet	1	5.0	-14.7
172		Side Cabinet	1	25.0	-10.7
173		Upper Wall	1	10.0	-13.3
174		Shelf	1	25.0	-8.0
175		Counter	1	40.0	-1.3
176		Upper Wall	1	12.5	-10.7
177		Shelf	1	7.5	-14.7
178		Counter	1	10.0	-8.0
179		Upper Wall	1	25.0	-4.0
180		Shelf	1	12.5	-14.7
181		Upper Wall	1	10.0	-17.3
182		Lower Wall	1	22.5	-12.0
183		Upper Wall	1	15.0	-14.7
184		Lower Wall	1	7.5	-16.0
185		Upper Door	1	20.0	-10.7
186		Lower Door	1	5.0	-16.0
187		Upper Wall	1	0.0	-14.7
188		Lower Wall	1	-2.5	-20.0

Job Location: Achillion Pharmaceuticals, Inc. New Haven, CT

Page: 6 of 8

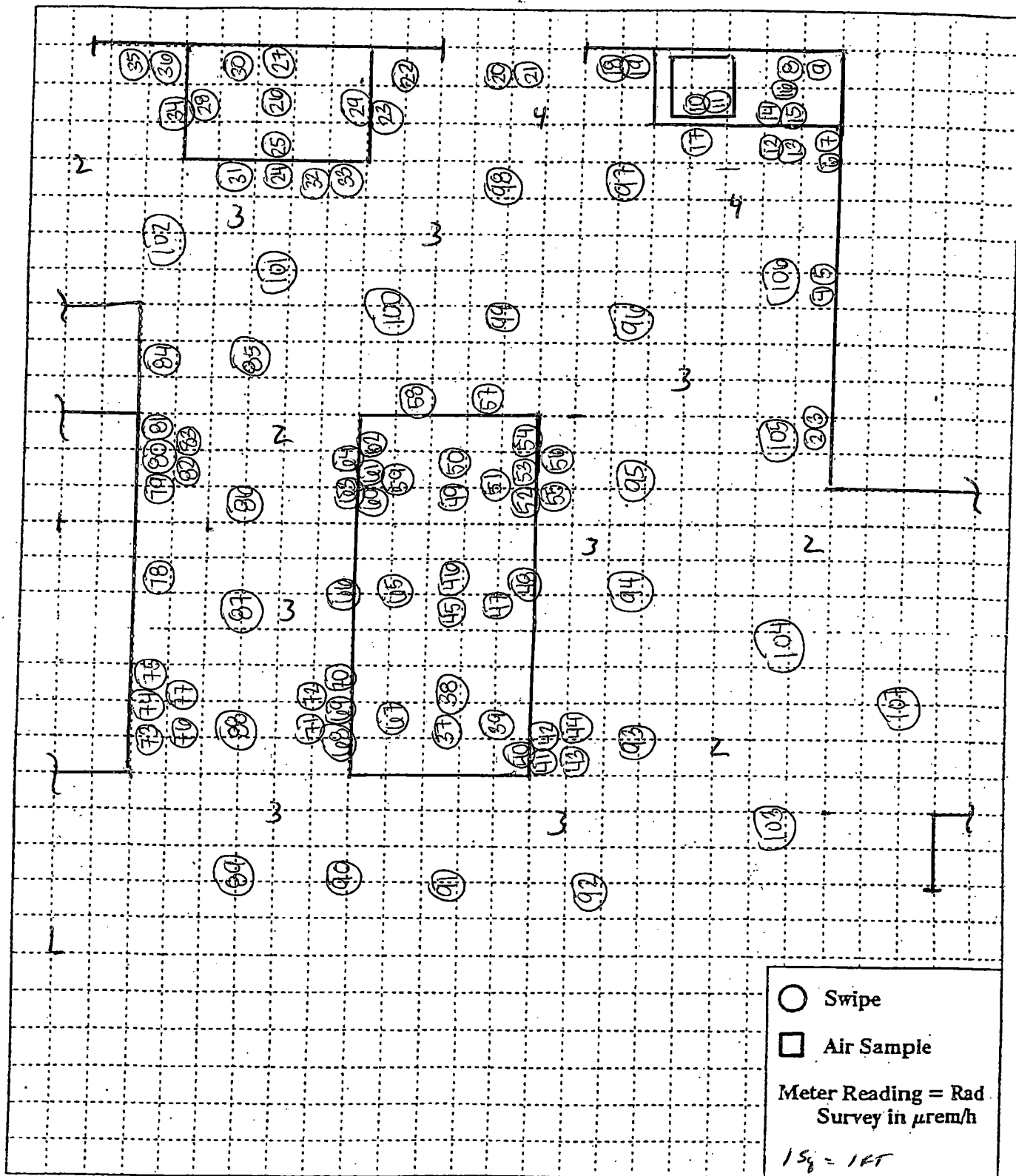
Survey Purpose: Decommissioning Molecular Biology (A&B)

Date: 10/14/19

Number	Time	Location	Inst. Used	H-3 Activity (dpm/100 cm2)	14C Activity (dpm/100 cm2)
189		Upper Door	1	22.5	0.0
190		Lower Door	1	2.5	-13.3
191		Floor	1	20.0	-12.0
192		Floor	1	7.5	-12.0
193		Floor	1	12.5	-22.7
194		Floor	1	17.5	-9.3
195		Floor	1	22.5	-9.3
196		Floor	1	-5.0	-28.0
197		Floor	1	12.5	-12.0
198		Floor	1	<b>2497.5</b>	<b>1312.0</b>
199		Floor	1	2.5	-21.3
200		Floor	1	-10.0	-30.7
201		Floor	1	7.5	-16.0
202		Floor	1	12.5	-2.7
203		Floor	1	2.5	-12.0
204		Floor	1	12.5	-20.0
205	1700	Post Decon #89	1	30.0	-4.0
206		Post Decon #198	1	22.5	-12.0
207		Post Decon Counter	1	20.0	-4.0

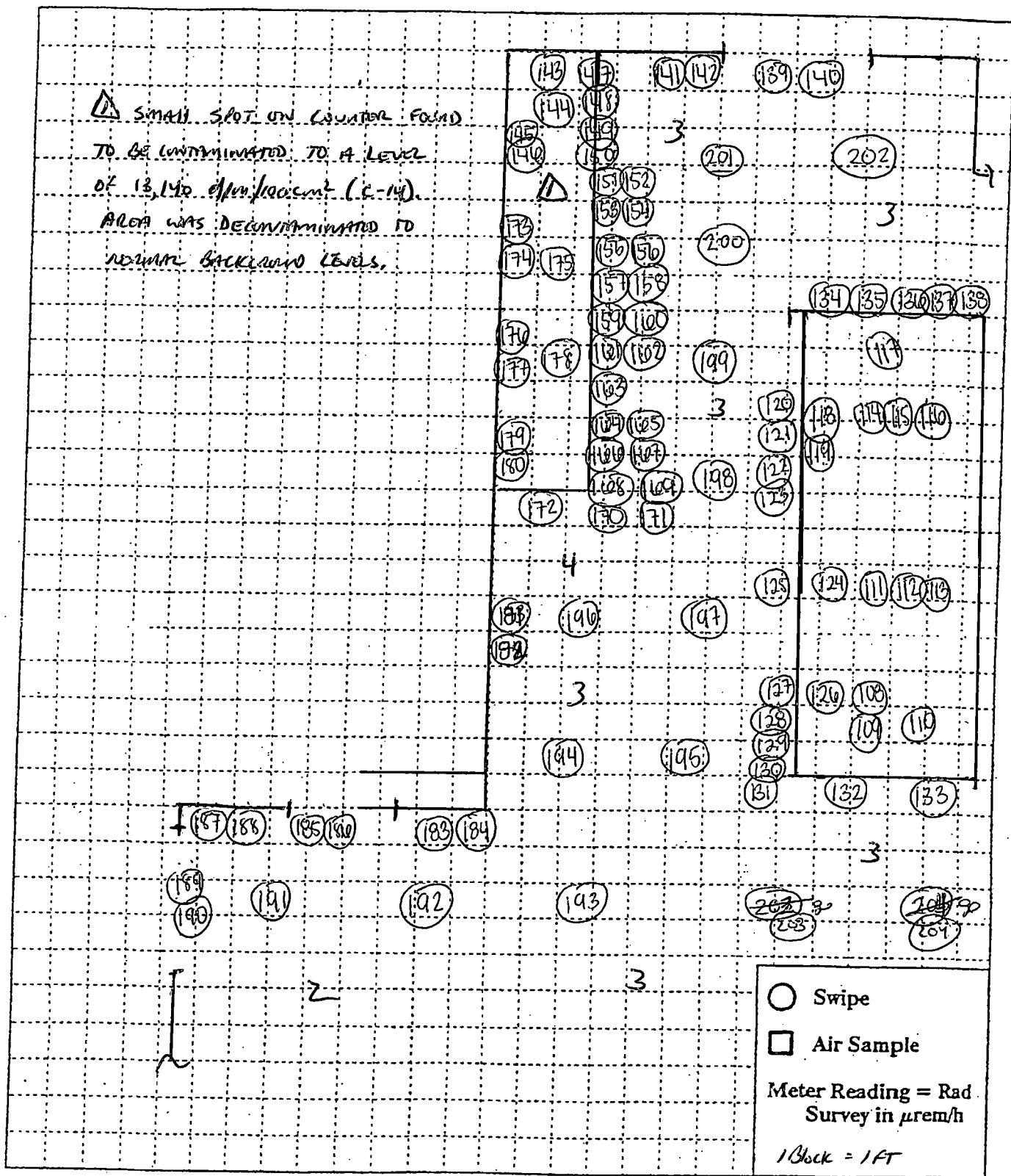
Job Location: ACHILLION PHARMACEUTICALS INC. NEWTON CT Page: 7 of 8  
 Survey Purpose: DECOMMISSIONING MOLECULAR BIOLOGY LAB Date: 6/14/19  
 Performed By: DAVID DURLISS

MAP A



Job Location: ACHILLION PHARMACEUTICALS INC. NEW HAVEN, CT Page: 8 of 8  
 Survey Purpose: DECOMMISSIONING MOLECULAR BIOLOGY LAB Date: 10/14/19  
 Performed By: DAVID DURKEE

MAP B



**Job Location:** Achillion Pharmaceuticals, Inc. New Haven, CT  
**Survey Purpose:** Decommissioning Molecular Biology (C&D)  
**Performed By:** David Durkee

**Page:** 1 of 7  
**Date:** 10/14/19

<b>Inst. No. 1 (Model/SN)</b> PE Microbeta 2450 #04130262	<b>Inst. No. 2 (Model/SN)</b> Ludlum 2241-2 #137751	<b>Inst. No. 3 (Model/SN)</b> Bicron uRem LE B466Y
<b>Detector (Model/SN)</b> Internal	<b>Detector (Model/SN)</b> Ludlum 43-68 #140899/ Ludlum 43-37 #143616	<b>Detector (Model/SN)</b> Internal
<b>Efficiency:</b> $\approx$ 40% 3H / 75% 14C	<b>Efficiency:</b> 8.6%/8.69% C-14	<b>Efficiency:</b> 100%
<b>Type Rad.:</b> $\beta$	<b>Type Rad:</b> $\beta$	<b>Type Rad.:</b> $\gamma$
<b>Bkgd.:</b> See #1 Below	<b>Bkgd.:</b> 256 cpm / 864 cpm	<b>Bkgd.:</b> 4 - 8 uRem/hour
<b>Cal. Due:</b> 04/01/20	<b>Cal. Due:</b> 01/07/20	<b>Cal. Due:</b> 01/15/20

Number	Time	Location	Inst. Used	3H Activity (dpm/100 cm <sup>2</sup> )	14C Activity (dpm/100 cm <sup>2</sup> )
1	1245	Background	1	23 cpm	36 cpm
2		Upper Door	1	-17.5	-5.3
3		Lower Door	1	-25.0	-18.7
4		Upper Wall	1	-10.0	9.3
5		Lower Wall	1	-25.0	-10.7
6		Upper Wall	1	-20.0	1.3
7		Lower Wall	1	-32.5	-13.3
8		Upper Wall	1	-15.0	-12.0
9		Lower Wall	1	-27.5	-20.0
10		Upper Wall	1	-10.0	8.0
11		Lower Wall	1	-10.0	0.0
12		Counter	1	-22.5	-10.7
13		Counter	1	-7.5	1.3
14		Counter	1	-25.0	-9.3
15		Upper Wall	1	-17.5	-6.7
16		Lower Wall	1	-25.0	-17.3
17		Upper Wall	1	-32.5	-22.7
18		Lower Wall	1	-22.5	-6.7
19		Upper Wall	1	-7.5	0.0
20		Shelf	1	-20.0	-16.0
21		Shelf	1	-27.5	-5.3
22		Counter	1	-32.5	-14.7
23		Front of Drawers	1	-22.5	-8.0
24		Left Drawer	1	-37.5	-10.7
25		Right Drawer	1	-27.5	-5.3
26		Front of Cabinets	1	-10.0	-2.7
27		Inside Cabinet	1	-7.5	-4.0
28		Shelf	1	-15.0	-10.7
29		Shelf	1	-17.5	-10.7
30		Counter	1	-5.0	6.7

Job Location: Achillion Pharmaceuticals, Inc. New Haven, CT  
 Survey Purpose: Decommissioning Molecular Biology (C&D)

Page: 2 of 7  
 Date: 10/14/19

Number	Time	Location	Inst. Used	H-3 Activity (dpm/100 cm2)	14C Activity (dpm/100 cm2)
31		Cubby	1	-12.5	-5.3
32		Shelf	1	-30.0	-8.0
33		Shelf	1	-22.5	-9.3
34		Counter	1	-35.0	-5.3
35		Front of Drawers	1	2.5	8.0
36		Left Drawer	1	-27.5	-14.7
37		Right Drawer	1	-20.0	-2.7
38		Front of Cabinets	1	-25.0	-10.7
39		Inside Cabinets	1	-20.0	-6.7
40		Front of Drawers	1	-25.0	-9.3
41		Front of Cabinets	1	-10.0	-5.3
42		Left Drawer	1	-17.5	-9.3
43		Right Drawer	1	-32.5	-20.0
44		Inside Cabinets	1	-15.0	-9.3
45		Counter Around Sink	1	-37.5	-25.3
46		Side of Cabinet	1	-17.5	2.7
47		Sink	1	-45.0	-25.3
48		Sink Drain	1	-27.5	-13.3
49		Front of Drawers	1	-32.5	-6.7
50		Front of Cabinets	1	-2.5	0.0
51		Left Drawer	1	-22.5	-14.7
52		Right Drawer	1	-27.5	-22.7
53		Side of Cabinet	1	-20.0	-5.3
54		Counter	1	-25.0	-16.0
55		Counter	1	-27.5	-8.0
56		Counter	1	-22.5	-12.0
57		Front of Drawers	1	-2.5	-1.3
58		Front of Cabinets	1	-2.5	6.7
59		Left Drawer	1	-15.0	-12.0
60		Right Drawer	1	-22.5	-6.7
61		Inside Cabinets	1	-27.5	-12.0
62		Front of Drawers	1	-37.5	-13.3
63		Left Drawer	1	-17.5	-5.3
64		Right Drawer	1	-20.0	-5.3
65		Front of Cabinets	1	-32.5	-13.3
66		Inside Cabinets	1	-22.5	-9.3
67		Cubby	1	-17.5	-8.0
68	▼	Front of Drawers	1	-30.0	-6.7

Job Location: Achillion Pharmaceuticals, Inc. New Haven, CT  
 Survey Purpose: Decommissioning Molecular Biology (C&D)

Page: 3 of 7  
 Date: 10/14/19

Number	Time	Location	Inst. Used	H-3 Activity (dpm/100 cm2)	14C Activity (dpm/100 cm2)
69		Front of Cabinets	1	-15.0	1.3
70		Left Drawer	1	-27.5	-8.0
71		Right Drawer	1	-32.5	-12.0
72		Inside Cabinet	1	-22.5	-12.0
73		Upper Wall	1	-25.0	-13.3
74		Lower Wall	1	-15.0	-9.3
75		Floor	1	-12.5	-2.7
76		Floor	1	-32.5	-17.3
77		Floor	1	-5.0	2.7
78		Floor	1	-25.0	-18.7
79		Floor	1	-37.5	4.0
80		Floor	1	-7.5	8.0
81		Floor	1	-15.0	-9.3
82		Floor	1	-22.5	-6.7
83		Floor	1	-12.5	-9.3
84		Floor	1	-5.0	2.7
85		Floor	1	-35.0	-4.0
86		Floor	1	-15.0	-1.3
87		Floor	1	-2.5	4.0
88		Floor	1	-22.5	-4.0
89		Floor	1	32.5	18.7
90		Floor	1	-22.5	-14.7
91		Floor	1	-10.0	1.3
92		Floor	1	-30.0	-25.3
93		Floor	1	-17.5	-9.3
94		Wall	1	-27.5	-16.0
95		Front of Drawers	1	-35.0	-12.0
96		Front of Cabinets	1	-27.5	-8.0
97		Left Drawer	1	-12.5	-2.7
98		Right Drawer	1	-22.5	-2.7
99		Inside Cabinet	1	-5.0	4.0
100		Counter	1	-27.5	-8.0
101		Shelf	1	-27.5	-12.0
102		Shelf	1	-22.5	-10.7
103		Shelf	1	-15.0	4.0
104		Shelf	1	-12.5	-9.3
105		Counter	1	-15.0	-1.3
106		Cubby	1	-25.0	-10.7
107		Shelf	1	-25.0	-13.3
108		Shelf	1	-30.0	-5.3

**Job Location:** Achillion Pharmaceuticals, Inc. New Haven, CT  
**Survey Purpose:** Decommissioning Molecular Biology (C&D)

**Page:** 4 of 7  
**Date:** 10/14/19

Number	Time	Location	Inst. Used	H-3 Activity (dpm/100 cm2)	14C Activity (dpm/100 cm2)
109		Shelf	1	-12.5	-2.7
110		Shelf	1	-22.5	0.0
111		Counter	1	-10.0	2.7
112		Counter	1	-17.5	1.3
113		Front of Drawers	1	-35.0	-5.3
114		Front of Cabinet	1	-22.5	-13.3
115		Left Drawer	1	-10.0	2.7
116		Right Drawer	1	-25.0	-12.0
117		Inside Cabinet	1	-22.5	-6.7
118		Cubby	1	-20.0	-9.3
119		Front of Drawers	1	-17.5	5.3
120		Front of Cabinet	1	-37.5	-18.7
121		Left Drawer	1	-32.5	-6.7
122		Right Drawer	1	-30.0	-1.3
123		Inside Cabinet	1	-22.5	-10.7
124		Side of Cabinet	1	-32.5	-5.3
125		Side of Cabinet	1	-20.0	-2.7
126		Counter	1	-27.5	-6.7
127		Counter	1	-17.5	-6.7
128		Counter	1	-32.5	-12.0
129		Counter	1	-22.5	-12.0
130		Front of Drawers	1	-30.0	-13.3
131		Front of Cabinet	1	-25.0	-1.3
132		Left Drawer	1	-20.0	0.0
133		Right Drawer	1	-15.0	-12.0
134		Inside Cabinet	1	-15.0	-6.7
135		Cubby	1	-17.5	1.3
136		Front of Drawers	1	-10.0	-5.3
137		Front of Cabinet	1	-30.0	-13.3
138		Left Drawer	1	-25.0	-4.0
139		Right Drawer	1	-15.0	1.3
140		Inside Cabinet	1	-17.5	-1.3
141		Cubby	1	-12.5	1.3
142		Front of Drawers	1	-25.0	-17.3
143		Front of Cabinet	1	-30.0	-17.3
144		Left Drawer	1	-12.5	-6.7
145		Right Drawer	1	-15.0	-9.3
146		Inside Cabinet	1	-20.0	-14.7
147		Upper Wall	1	-15.0	-8.0
148		Lower Wall	1	-27.5	-16.0

**Job Location:** Achillion Pharmaceuticals, Inc. New Haven, CT

**Page:** 5 of 7

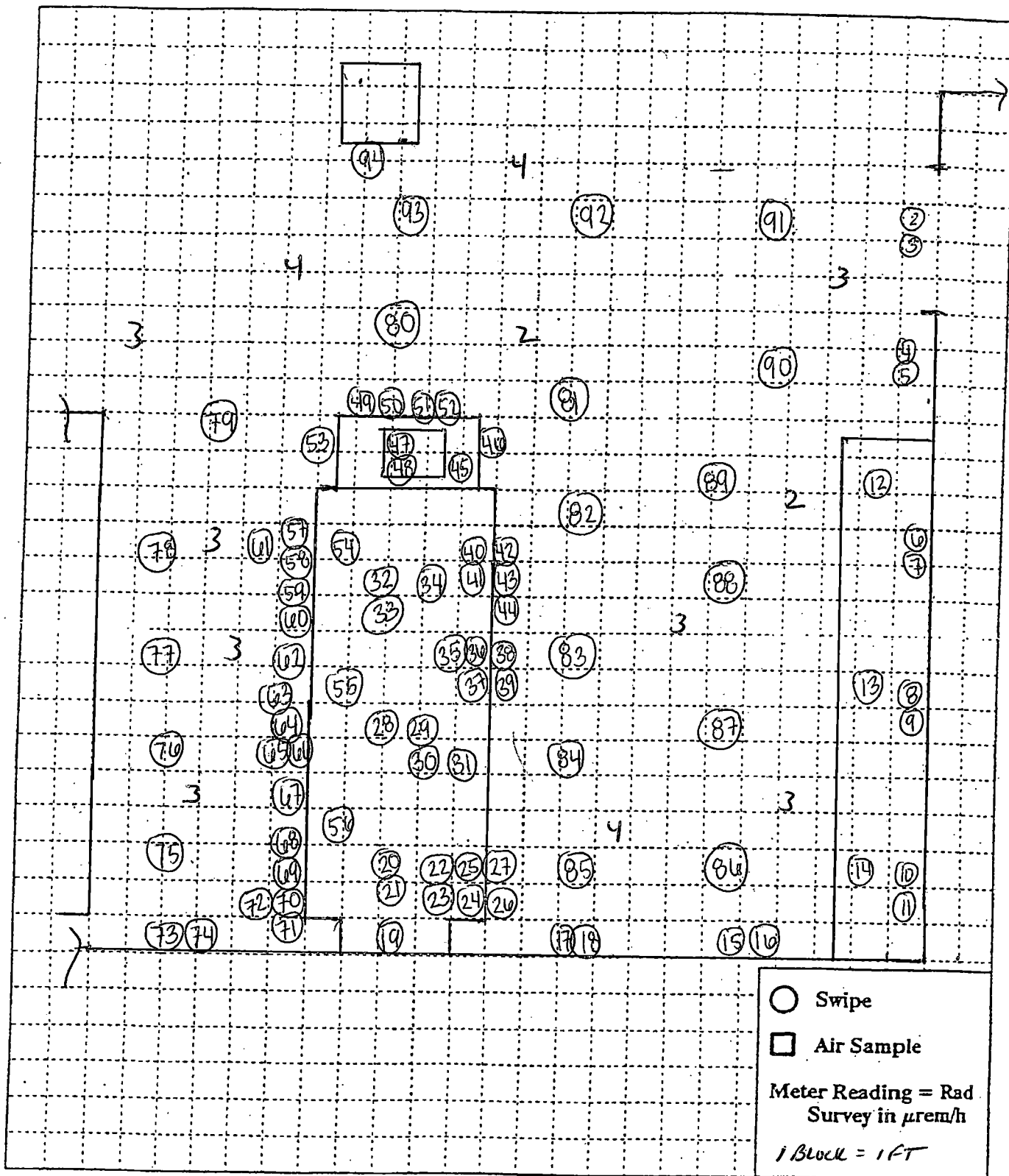
**Survey Purpose:** Decommissioning Molecular Biology (C&D)

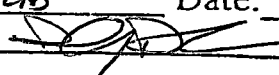
**Date:** 10/14/19

Number	Time	Location	Inst. Used	H-3 Activity (dpm/100 cm2)	14C Activity (dpm/100 cm2)
149		Upper Wall	1	-27.5	-12.0
150		Lower Wall	1	-7.5	4.0
151		Upper Wall	1	-10.0	-2.7
152		Lower Wall	1	-17.5	-6.7
153		Upper Wall	1	-10.0	-4.0
154		Lower Wall	1	-25.0	-9.3
155		Upper Wall	1	-10.0	1.3
156		Lower Wall	1	-30.0	-14.7
157		Upper Wall	1	-37.5	-1.3
158		Lower Wall	1	-5.0	1.3
159		Floor	1	-27.5	-20.0
160		Floor	1	-35.0	-13.3
161		Floor	1	-32.5	-10.7
162		Floor	1	-32.5	-16.0
163		Floor	1	-10.0	-12.0
164		Floor	1	-15.0	-5.3
165		Floor	1	-17.5	1.3
166		Floor	1	-27.5	-6.7
167		Floor	1	-27.5	-9.3
168		Floor	1	-25.0	-17.3
169		Floor	1	-32.5	-21.3
170		Floor	1	-17.5	-6.7
171		Floor	1	-30.0	-18.7
172	↓	Floor	1	-17.5	-5.3

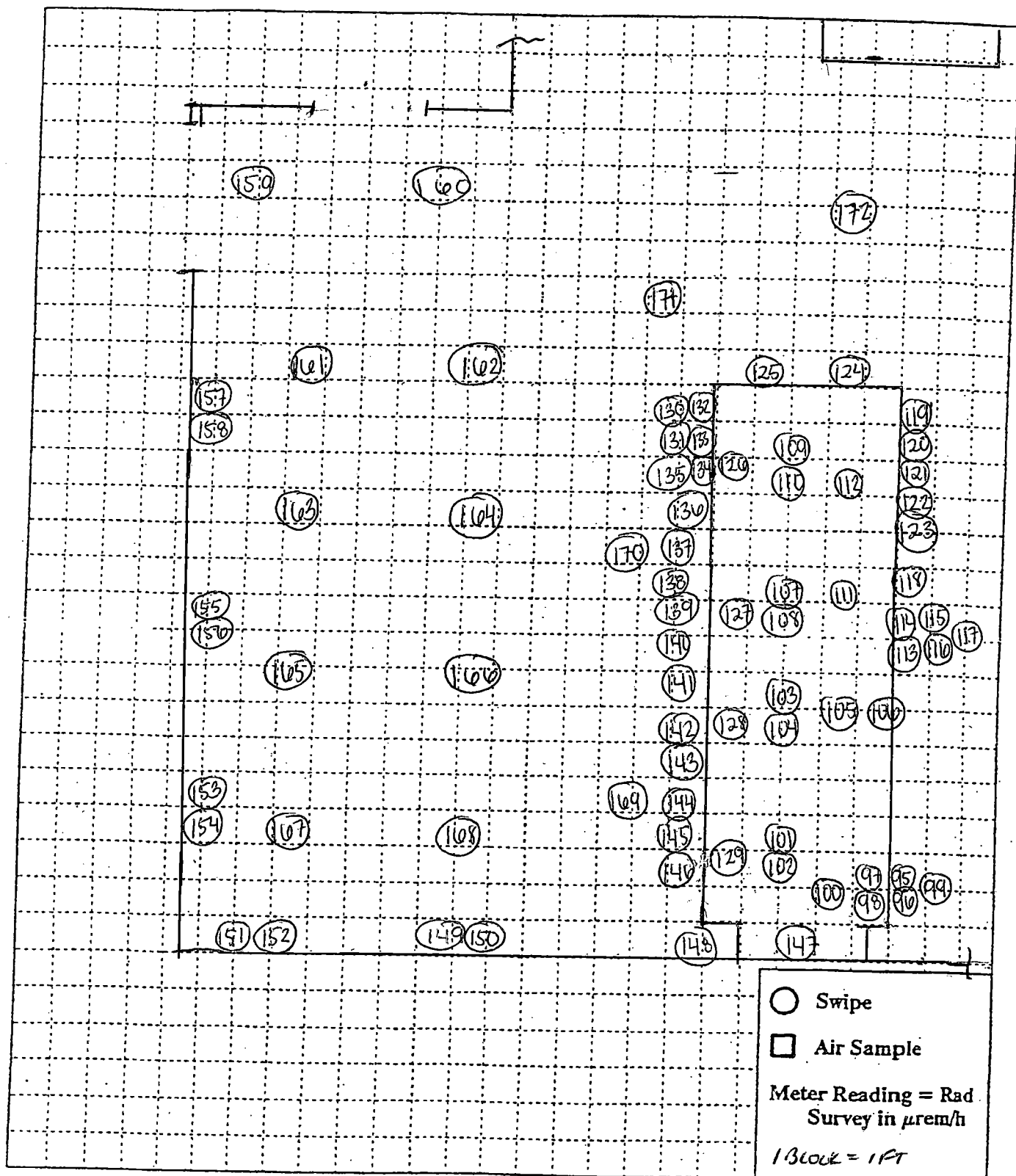
Job Location: ACHILLION PHARMACEUTICALS INC. NEW HAVEN CT Page: 6 of 7  
 Survey Purpose: DECOMMISSIONING MOLECULAR BIOLOGY LABS Date: 10/14/19  
 Performed By: DAVID DURKEE

MAP C



Job Location: ACHILLIS PHARMACEUTICALS INC. NEW HAVEN CT Page: 7 of 7  
 Survey Purpose: DECOMMISSIONING MOLECULAR BIOLOGY LAB Date: 10/14/19  
 Performed By: DAVID DUKOS 

MAP D



Job Location: Achillion Pharmaceuticals, Inc. New Haven, CT  
 Survey Purpose: Decommissioning Waste Storage and BL2  
 Performed By: David Durkee

Page: 1 of 6  
 Date: 10/14/19

<b>Inst. No. 1 (Model/SN)</b> PE Microbeta 2450 #04130262	<b>Inst. No. 2 (Model/SN)</b> Ludlum 2241-2 #137751	<b>Inst. No. 3 (Model/SN)</b> Bicron uRem LE B466Y
<b>Detector (Model/SN)</b> Internal	<b>Detector (Model/SN)</b> Ludlum 43-68 #140899/ Ludlum 43-37 #143616	<b>Detector (Model/SN)</b> Internal
<b>Efficiency:</b> $\approx$ 40% 3H / 75% 14C	<b>Efficiency:</b> 8.6%/8.69% C-14	<b>Efficiency:</b> 100%
<b>Type Rad.:</b> $\beta$	<b>Type Rad:</b> $\beta$	<b>Type Rad.:</b> $\gamma$
<b>Bkgd.:</b> See #1 Below	<b>Bkgd.:</b> 256 cpm / 864 cpm	<b>Bkgd.:</b> 4 - 8 uRem/hour
<b>Cal. Due:</b> 04/01/20	<b>Cal. Due:</b> 01/07/20	<b>Cal. Due:</b> 01/15/20

Number	Time	Location	Inst. Used	3H Activity (dpm/100 cm <sup>2</sup> )	14C Activity (dpm/100 cm <sup>2</sup> )
1	10:45	Background	1	11 cpm	26 cpm
2		Upper wall	1	-5.0	-2.7
3		Lower Wall	1	7.5	4.0
4		Electrical Outlet	1	5.0	5.3
5		Upper Wall	1	5.0	0.0
6		Lower Wall	1	5.0	-4.0
7		Outlet	1	0.0	-1.3
8		Upper Wall	1	12.5	-4.0
9		Lower Wall	1	5.0	-8.0
10		Yellow Crate 1	1	-7.5	1.3
11		Yellow Crate 2	1	2.5	-8.0
12		Floor Around Crates	1	-5.0	-6.7
13		Upper Wall	1	15.0	17.3
14		Lower Wall	1	10.0	4.0
15		Upper Wall	1	22.5	6.7
16		Lower Wall	1	5.0	-2.7
17		Upper Wall	1	-2.5	1.3
18		Lower Wall	1	0.0	-6.7
19		Electrical Outlets	1	12.5	10.7
20		Upper Wall	1	22.5	16.0
21		Lower Wall	1	2.5	4.0
22		Wall	1	0.0	-6.7
23		Counter	1	7.5	6.7
24		Wall	1	0.0	9.3
25		Sink	1	12.5	6.7
26		Wall	1	10.0	0.0
27		Floor	1	2.5	0.0
28		Floor	1	-5.0	-6.7
29		Floor	1	7.5	13.3
30	↓	Floor	1	-2.5	-6.7

**Job Location:** Achillion Pharmaceuticals, Inc. New Haven, CT

**Page:** 2 of 6

**Survey Purpose:** Decommissioning Waste Storage and BL2

**Date:** 10/14/19

Number	Time	Location	Inst. Used	H-3 Activity (dpm/100 cm2)	14C Activity (dpm/100 cm2)
31		Floor	1	12.5	9.3
32		Floor under crate	1	0.0	-1.3
33		Floor under crate	1	-7.5	-1.3
34		Upper Door	1	2.5	-2.7
35		Lower Door	1	7.5	-5.3
36		Upper Wall	1	7.5	13.3
37		Lower Wall	1	2.5	8.0
38		Upper Wall	1	22.5	16.0
39		Lower Wall	1	-7.5	10.7
40		Outlet	1	27.5	32.0
41		Glass window left	1	-2.5	-2.7
42		Glass window right	1	-22.5	-18.7
43		Upper Wall	1	2.5	0.0
44		Lower Wall	1	2.5	0.0
45		Floor under hood	1	22.5	5.3
46		Floor glass windows	1	7.5	10.7
47		Floor	1	-2.5	-13.3
48		Floor	1	2.5	2.7
49		Floor	1	7.5	-5.3
50		Floor	1	7.5	13.3
51		Floor	1	2.5	2.7
52		Floor	1	-2.5	-8.0
53		Floor in front of hood	1	7.5	-8.0
54		Floor under hood	1	12.5	13.3
55		Floor (front of cab)	1	-12.5	-8.0
56		Floor under sink	1	12.5	2.7
57		Floor (front of cab)	1	7.5	8.0
58		Floor	1	32.5	8.0
59		Floor	1	7.5	0.0
60		Floor	1	12.5	16.0
61		Floor	1	17.5	8.0
62		Floor	1	7.5	0.0
63		Floor	1	2.5	2.7
64		Floor	1	7.5	13.3
65		Floor	1	7.5	-5.3
66		Floor	1	-2.5	2.7
67		Floor	1	-2.5	-10.7
68		Floor	1	2.5	-5.3

Job Location: Achillion Pharmaceuticals, Inc. New Haven, CT  
 Survey Purpose: Decommissioning Waste Storage and BL2

Page: 3 of 6  
 Date: 10/14/19

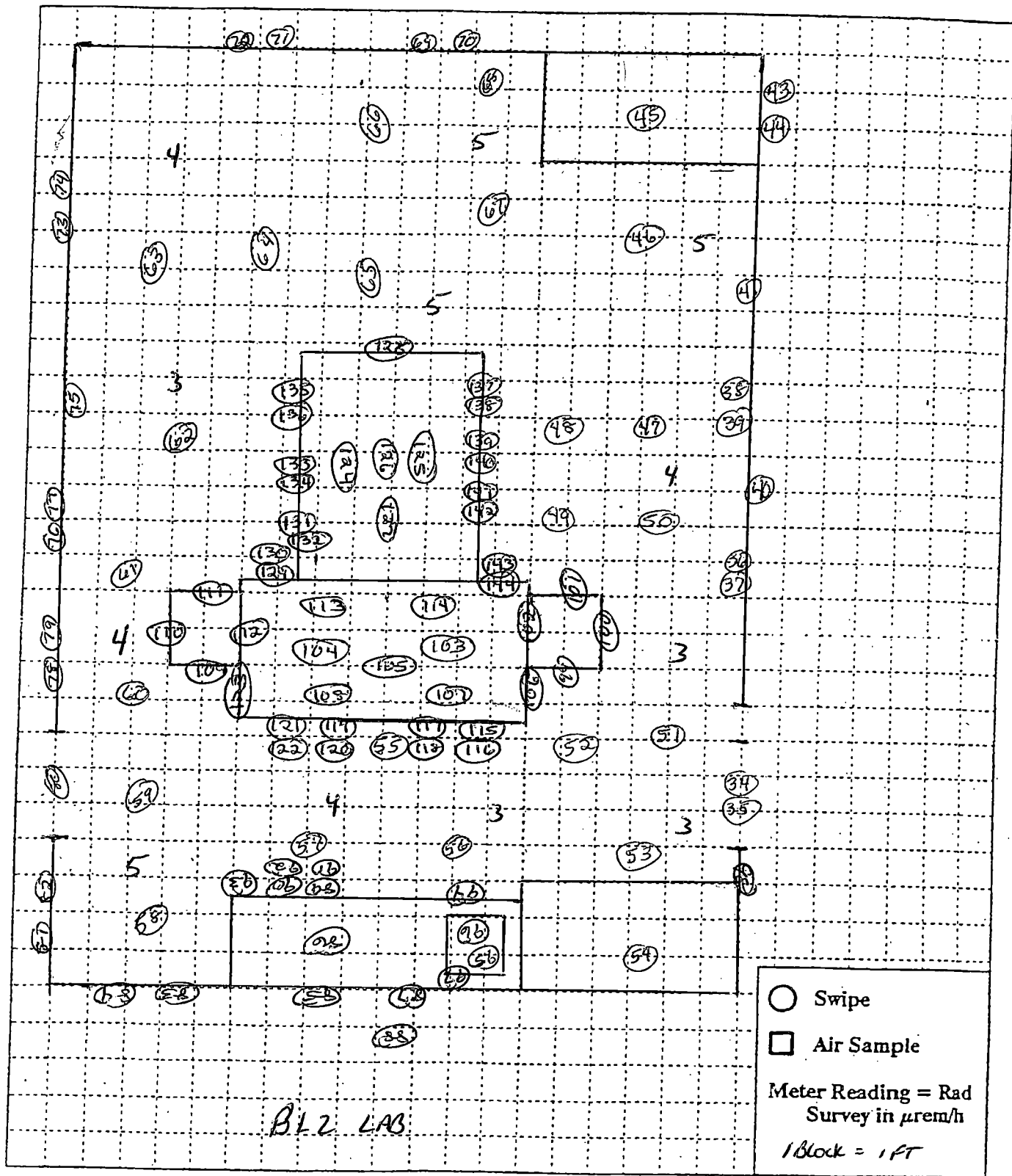
Number	Time	Location	Inst. Used	H-3 Activity (dpm/100 cm2)	14C Activity (dpm/100 cm2)
69		Upper Wall	1	7.5	2.7
70		Lower Wall	1	17.5	10.7
71		Upper Wall	1	-2.5	-13.3
72		Lower Wall	1	-7.5	0.0
73		Upper Wall	1	17.5	13.3
74		Lower Wall	1	2.5	0.0
75		Outlet	1	-7.5	-18.7
76		Upper Wall	1	42.5	34.7
77		Lower Wall	1	-2.5	-2.7
78		Upper Wall	1	17.5	2.7
79		Lower Wall	1	7.5	16.0
80		Door	1	7.5	2.7
81		Upper Wall	1	-17.5	-13.3
82		Lower Wall	1	37.5	16.0
83		Upper Wall	1	27.5	13.3
84		Lower Wall	1	17.5	5.3
85		Upper Wall	1	7.5	10.7
86		Countertop	1	-2.5	5.3
87		Outlets	1	37.5	26.7
88		Shelves	1	42.5	18.7
89		Outside Drawers	1	-2.5	-8.0
90		Outside Cab Doors	1	17.5	18.7
91		Inside Drawers	1	7.5	8.0
92		Shelves Inside Cabinets	1	-12.5	-10.7
93		Inside Cabinet Doors	1	17.5	10.7
94		Front of Sink	1	12.5	21.3
95		Sink	1	12.5	16.0
96		Sink Drain	1	2.5	5.3
97		Sink Faucets	1	-2.5	0.0
98		Wall	1	2.5	-5.3
99		Wall	1	17.5	2.7
100		Wall	1	12.5	8.0
101		Wall	1	-7.5	-5.3
102		Wall	1	2.5	-8.0
103		Shelves top/bottom	1	2.5	2.7
104		Shelves top/bottom	1	12.5	0.0
105		Outlet	1	-2.5	10.7
106		Side Cabinet	1	-7.5	-5.3
107		Countertop	1	17.5	8.0
108		Countertop	1	2.5	8.0

**Job Location:** Achillion Pharmaceuticals, Inc. New Haven, CT  
**Survey Purpose:** Decommissioning Waste Storage and BL2

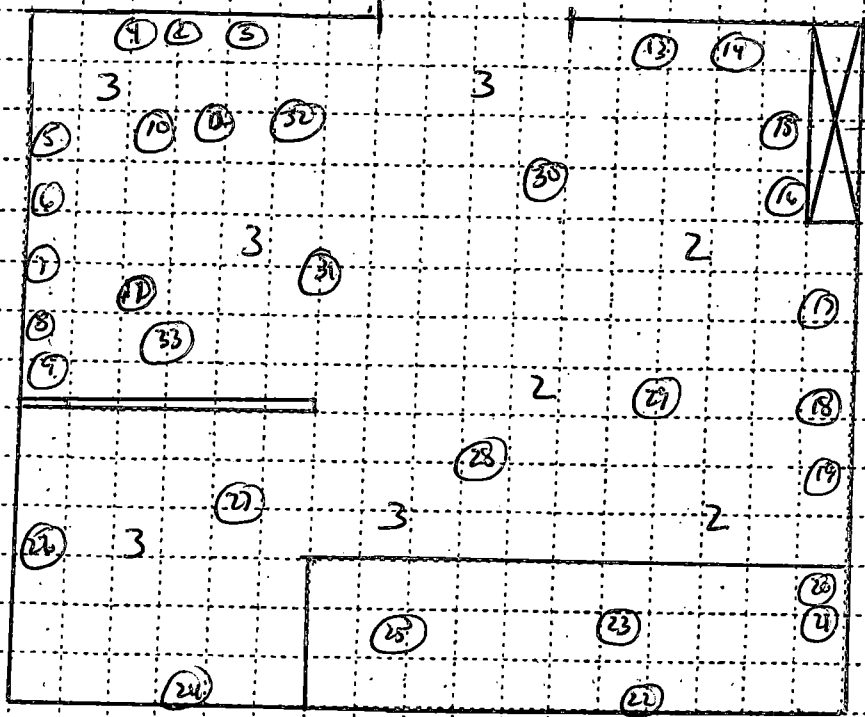
**Page:** 4 of 6  
**Date:** 10/14/19

Number	Time	Location	Inst. Used	H-3 Activity (dpm/100 cm2)	14C Activity (dpm/100 cm2)
109		Wall	1	-12.5	-8.0
110		Wall	1	7.5	2.7
111		Wall	1	-12.5	-2.7
112		Wall	1	-7.5	-10.7
113		Countertop	1	17.5	21.3
114		Countertop	1	22.5	16.0
115		Outside Drawers	1	22.5	5.3
116		Inside Drawers	1	12.5	-2.7
117		Outside Drawers	1	-2.5	8.0
118		Inside Drawers	1	7.5	2.7
119		Outside Drawers	1	17.5	8.0
120		Inside Drawers	1	7.5	0.0
121		Outside Drawers	1	7.5	-8.0
122		Inside Drawers	1	-2.5	-2.7
123		Side Cabinet	1	32.5	42.7
124		Countertop	1	22.5	13.3
125		Countertop	1	7.5	10.7
126		Shelves	1	-2.5	-2.7
127		Outlets	1	2.5	-10.7
128		Side Cabinet	1	-7.5	5.3
129		Outside Drawers	1	2.5	-8.0
130		Inside Drawers	1	22.5	10.7
131		Outside Drawers	1	57.5	24.0
132		Inside Drawers	1	-2.5	-5.3
133		Outside Drawers	1	2.5	0.0
134		Inside Drawers	1	-2.5	10.7
135		Outside Drawers	1	-17.5	-5.3
136		Inside Drawers	1	27.5	18.7
137		Outside Drawers	1	-17.5	-5.3
138		Inside Drawers	1	2.5	-5.3
139		Outside Drawers	1	17.5	8.0
140		Inside Drawers	1	42.5	16.0
141		Outside Drawers	1	7.5	0.0
142		Inside Drawers	1	7.5	2.7
143		Outside Drawers	1	17.5	21.3
144		Inside Drawers	1	7.5	2.7
145	↓	Poles and Hoses	1	-2.5	10.7

Job Location: ACHILLION PHARMACEUTICALS INC. NEW HAVEN, CT Page: 5 of 6  
 Survey Purpose: DECOMMISSIONING BL2 Date: 10/14/19  
 Performed By: DAVID DURAKO



Job Location: ACHILLION PHARMACEUTICALS INC. NEW HAVEN, CT Page: 6 of 6  
Survey Purpose: DECOMMISSIONING RAD WASTE STORAGE AREA Date: 10/14/19  
Performed By: DAVID DUKLOS



Job Location: Achillion Pharmaceuticals, Inc. New Haven, CT  
 Survey Purpose: Decommissioning Biochemistry Lab  
 Performed By: David Durkee

Page: 1 of 12  
 Date: 10/14/19

<b>Inst. No. 1 (Model/SN)</b> PE Microbeta 2450 #04130262	<b>Inst. No. 2 (Model/SN)</b> Ludlum 2241-2 #137751	<b>Inst. No. 3 (Model/SN)</b> Bicron uRem LE B466Y
<b>Detector (Model/SN)</b> Internal	<b>Detector (Model/SN)</b> Ludlum 43-68 #140899/ Ludlum 43-37 #143616	<b>Detector (Model/SN)</b> Internal
<b>Efficiency:</b> $\approx$ 40% 3H / 75% 14C	<b>Efficiency:</b> 8.6%/8.69% C-14	<b>Efficiency:</b> 100%
<b>Type Rad.:</b> $\beta$	<b>Type Rad:</b> $\beta$	<b>Type Rad.:</b> $\gamma$
<b>Bkgd.:</b> See #1 Below	<b>Bkgd.:</b> 256 cpm / 864 cpm	<b>Bkgd.:</b> 4 - 8 uRem/hour
<b>Cal. Due:</b> 04/01/20	<b>Cal. Due:</b> 01/07/20	<b>Cal. Due:</b> 01/15/20

Number	Time	Location	Inst. Used	3H Activity (dpm/100 cm <sup>2</sup> )	14C Activity (dpm/100 cm <sup>2</sup> )
1	1530	Background	1	10 cpm	29 cpm
2		Upper Wall	1	10.0	4.0
3		Lower Wall	1	22.5	-1.3
4		Upper Wall	1	15.0	2.7
5		Left Sink	1	10.0	9.3
6		Left Sink Drain	1	27.5	5.3
7		Right Sink	1	40.0	13.3
8		Right Sink Drain	1	10.0	5.3
9		Counter	1	22.5	4.0
10		Upper Wall	1	25.0	2.7
11		Lower Wall	1	0.0	-14.7
12		Upper Wall	1	5.0	-2.7
13		Lower Wall	1	2.5	-9.3
14		Upper Wall	1	22.5	13.3
15		Counter	1	12.5	-5.3
16		Top Shelf	1	7.5	-4.0
17		Shelf	1	12.5	-4.0
18		Front of Drawers	1	-2.5	-2.7
19		Front of Drawers	1	-5.0	-38.7
20		Top Drawer	1	27.5	9.3
21		Second Drawer	1	0.0	-14.7
22		Third Drawer	1	15.0	8.0
23		Fourth Drawer	1	22.5	20.0
24		Top Drawer	1	20.0	6.7
25		Second Drawer	1	-2.5	-4.0
26		Third Drawer	1	20.0	4.0
27		Fourth Drawer	1	15.0	-2.7
28		Side of Drawers	1	12.5	9.3
29		Upper Wall	1	15.0	-1.3
30		Lower Wall	1	7.5	-5.3

**Job Location:** Achillion Pharmaceuticals, Inc. New Haven, CT  
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Number	Time	Location	Inst. Used	H-3 Activity (dpm/100 cm2)	14C Activity (dpm/100 cm2)
31		Upper Wall	1	22.5	14.7
32		Lower Wall	1	20.0	-4.0
33		Upper Wall	1	15.0	-4.0
34		Lower Wall	1	2.5	8.0
35		Upper Wall	1	10.0	9.3
36		Lower Wall	1	12.5	-2.7
37		Shelf	1	17.5	12.0
38		Counter	1	-10.0	-14.7
39		Shelf	1	0.0	-1.3
40		Shelf	1	-2.5	-2.7
41		Counter	1	30.0	5.3
42		Front of Drawers	1	-2.5	-2.7
43		Top Drawer	1	32.5	22.7
44		Second Drawer	1	7.5	9.3
45		Third Drawer	1	-5.0	-4.0
46		Fourth Drawer	1	2.5	5.3
47		Front of Drawers	1	-5.0	-17.3
48		Top Drawer	1	7.5	-1.3
49		Second Drawer	1	5.0	-5.3
50		Third Drawer	1	10.0	10.7
51		Fourth Drawer	1	7.5	2.7
52		Front of Drawers	1	5.0	-12.0
53		Top Drawer	1	7.5	1.3
54		Second Drawer	1	10.0	4.0
55		Third Drawer	1	20.0	5.3
56		Fourth Drawer	1	-12.5	-16.0
57		Cubby	1	15.0	4.0
58		Front of Drawers	1	12.5	6.7
59		Left Drawer	1	10.0	17.3
60		Right Drawer	1	10.0	0.0
61		Top Drawer	1	10.0	0.0
62		Second Drawer	1	15.0	-2.7
63		Third Drawer	1	5.0	1.3
64		Side of Cabinet	1	7.5	0.0
65		Side of Cabinet	1	15.0	4.0
66		Counter	1	-2.5	-4.0
67		Counter	1	10.0	5.3
68		Front of Drawers	1	7.5	6.7

Job Location: Achillion Pharmaceuticals, Inc. New Haven, CT  
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Number	Time	Location	Inst. Used	H-3 Activity (dpm/100 cm2)	14C Activity (dpm/100 cm2)
69		Top Drawer	1	20.0	4.0
70		Second Drawer	1	2.5	-4.0
71		Third Drawer	1	17.5	-4.0
72		Fourth Drawer	1	2.5	-1.3
73		Front of Drawers	1	10.0	-2.7
74		Top Drawer	1	27.5	21.3
75		Second Drawer	1	22.5	9.3
76		Third Drawer	1	30.0	12.0
77		Fourth Drawer	1	7.5	-2.7
78		Cubby	1	10.0	-6.7
79		Front of Drawers	1	35.0	12.0
80		Top Drawer	1	20.0	13.3
81		Second Drawer	1	17.5	0.0
82		Third Drawer	1	12.5	6.7
83		Fourth Drawer	1	-2.5	-4.0
84		Front of Drawers	1	10.0	21.3
85		Top Drawer	1	5.0	-4.0
86		Second Drawer	1	20.0	12.0
87		Third Drawer	1	7.5	9.3
88		Fourth Drawer	1	0.0	-9.3
89		Front of Drawers	1	5.0	-6.7
90		Top Drawer	1	10.0	-9.3
91		Second Drawer	1	-5.0	-1.3
92		Third Drawer	1	-5.0	-10.7
93		Fourth Drawer	1	5.0	10.7
94		Side of Drawers	1	2.5	-4.0
95		Upper Wall	1	15.0	5.3
96		Lower Wall	1	15.0	10.7
97		Upper Wall	1	2.5	-4.0
98		Lower Wall	1	20.0	8.0
99		Upper Wall	1	15.0	10.7
100		Lower Wall	1	7.5	-6.7
101		Upper Wall	1	25.0	6.7
102		Lower Wall	1	12.5	-2.7
103		Upper Wall	1	10.0	-5.3
104		Lower Wall	1	25.0	12.0
105		Upper Wall	1	22.5	1.3
106		Lower Wall	1	7.5	-1.3
107		Upper Wall	1	7.5	0.0
108	↓	Lower Wall	1	20.0	12.0

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Number	Time	Location	Inst. Used	H-3 Activity (dpm/100 cm2)	14C Activity (dpm/100 cm2)
109		Floor	1	2.5	8.0
110		Floor	1	12.5	4.0
111		Floor	1	2.5	0.0
112		Floor	1	10.0	1.3
113		Floor	1	0.0	-5.3
114		Floor	1	0.0	-2.7
115		Floor	1	12.5	1.3
116		Floor	1	-2.5	-2.7
117		Floor	1	7.5	-21.3
118		Floor	1	10.0	5.3
119		Floor	1	30.0	12.0
120		Floor	1	12.5	2.7
121		Floor	1	10.0	5.3
122		Floor	1	22.5	10.7
123		Floor	1	-5.0	-14.7
124		Floor	1	15.0	2.7
125		Floor	1	27.5	2.7
126		Floor	1	15.0	0.0
127		Floor	1	10.0	1.3
128		Floor	1	-5.0	-16.0
129		Floor	1	5.0	5.3
130		Floor	1	-5.0	-5.3
131		Floor	1	5.0	-5.3
132		Floor	1	5.0	1.3
133		Floor	1	35.0	6.7
134		Floor	1	2.5	-5.3
135		Shelf	1	15.0	8.0
136		Shelf	1	7.5	2.7
137		Shelf	1	32.5	18.7
138		Shelf	1	20.0	-2.7
139		Counter	1	15.0	8.0
140		Counter	1	15.0	12.0
141		Counter	1	2.5	-8.0
142		Counter	1	17.5	12.0
143		Wall	1	7.5	1.3
144		Wall	1	15.0	-2.7
145		Wall	1	35.0	9.3
146		Wall	1	17.5	8.0
147		Counter	1	20.0	0.0
148		Counter	1	2.5	4.0

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Number	Time	Location	Inst. Used	H-3 Activity (dpm/100 cm2)	14C Activity (dpm/100 cm2)
149		Counter	1	2.5	0.0
150		Side of Cabinets	1	17.5	5.3
151		Front of Drawers	1	17.5	4.0
152		Top Drawer	1	2.5	0.0
153		Second Drawer	1	2.5	9.3
154		Third Drawer	1	12.5	2.7
155		Fourth Drawer	1	20.0	9.3
156		Front of Drawers	1	20.0	1.3
157		Top Drawer	1	27.5	12.0
158		Second Drawer	1	15.0	5.3
159		Third Drawer	1	20.0	9.3
160		Fourth Drawer	1	2.5	-6.7
161		Front of Drawers	1	5.0	-5.3
162		Top Drawer	1	17.5	8.0
163		Second Drawer	1	5.0	2.7
164		Third Drawer	1	-5.0	-2.7
165		Fourth Drawer	1	17.5	13.3
166		Front of Drawers	1	5.0	-2.7
167		Top Drawer	1	-2.5	-6.7
168		Second Drawer	1	7.5	-12.0
169		Third Drawer	1	22.5	2.7
170		Fourth Drawer	1	40.0	20.0
171		Drawer	1	-12.5	-18.7
172		Cubby	1	5.0	-10.7
173		Front of Drawers	1	15.0	0.0
174		Top Drawer	1	15.0	18.7
175		Second Drawer	1	7.5	-10.7
176		Third Drawer	1	12.5	-4.0
177		Fourth Drawer	1	7.5	-6.7
178		Front of Drawers	1	5.0	-6.7
179		Front of Drawers	1	5.0	-1.3
180		Top Drawer	1	5.0	-6.7
181		Second Drawer	1	10.0	-2.7
182		Third Drawer	1	7.5	-9.3
183		Fourth Drawer	1	10.0	1.3
184		Top Drawer	1	12.5	-4.0
185		Second Drawer	1	10.0	6.7
186		Third Drawer	1	15.0	-6.7
187		Fourth Drawer	1	0.0	2.7
188		Side of Cabinet	1	5.0	-5.3

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Number	Time	Location	Inst. Used	H-3 Activity (dpm/100 cm2)	14C Activity (dpm/100 cm2)
189		Front of Drawers	1	5.0	6.7
190		Front of Drawers	1	17.5	10.7
191		Drawer	1	-2.5	-2.7
192		Cubby	1	15.0	8.0
193		Front of Drawers	1	7.5	-1.3
194		Front of Drawers	1	10.0	-2.7
195		Front of Drawers	1	27.5	17.3
196		Front of Drawers	1	42.5	12.0
197		Top Drawer	1	25.0	20.0
198		Second Drawer	1	12.5	-2.7
199		Third Drawer	1	15.0	6.7
200		Fourth Drawer	1	7.5	-5.3
201		Top Drawer	1	7.5	-5.3
202		Second Drawer	1	27.5	4.0
203		Third Drawer	1	7.5	5.3
204		Fourth Drawer	1	12.5	-2.7
205		Left Drawer	1	25.0	14.7
206		Right Drawer	1	-5.0	-1.3
207		Top Drawer	1	7.5	0.0
208		Second Drawer	1	0.0	-5.3
209		Third Drawer	1	12.5	-10.7
210		Top Drawer	1	-7.5	-16.0
211		Second Drawer	1	10.0	8.0
212		Third Drawer	1	30.0	9.3
213		Fourth Drawer	1	5.0	-8.0
214		Top Drawer	1	7.5	4.0
215		Second Drawer	1	5.0	-8.0
216		Third Drawer	1	0.0	-9.3
217		Third Drawer	1	15.0	2.7
218		Shelf	1	10.0	2.7
219		Shelf	1	-2.5	-8.0
220		Shelf	1	10.0	2.7
221		Side of Cabinet	1	7.5	-2.7
222		Counter	1	12.5	5.3
223		Counter	1	22.5	20.0
224		Counter	1	15.0	12.0
225		Side of Cabinet	1	0.0	-1.3
226		Counter	1	7.5	-2.7
227		Counter	1	-5.0	-14.7

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Number	Time	Location	Inst. Used	H-3 Activity (dpm/100 cm2)	14C Activity (dpm/100 cm2)
228		Counter	1	15.0	0.0
229		Front of Drawers	1	2.5	0.0
230		Front of Drawers	1	22.5	1.3
231		Front of Drawers	1	7.5	9.3
232		Front of Drawers	1	10.0	6.7
233		Front of Drawers	1	2.5	-4.0
234		Front of Drawers	1	-2.5	-10.7
235		Cubby	1	15.0	5.3
236		Front of Drawers	1	12.5	6.7
237		Front of Drawers	1	7.5	4.0
238		Front of Drawers	1	17.5	6.7
239		Top Drawer	1	17.5	-5.3
240		Second Drawer	1	5.0	1.3
241		Third Drawer	1	15.0	1.3
242		Fourth Drawer	1	15.0	2.7
243		Top Drawer	1	12.5	-5.3
244		Second Drawer	1	22.5	9.3
245		Third Drawer	1	-5.0	-8.0
246		Fourth Drawer	1	7.5	2.7
247		Top Drawer	1	17.5	10.7
248		Second Drawer	1	35.0	4.0
249		Third Drawer	1	0.0	6.7
250		Fourth Drawer	1	2.5	5.3
251		Inside Cabinet	1	2.5	-2.7
252		Top Drawer	1	7.5	5.3
253		Second Drawer	1	2.5	-16.0
254		Third Drawer	1	5.0	4.0
255		Fourth Drawer	1	30.0	6.7
256		Top Drawer	1	22.5	6.7
257		Second Drawer	1	7.5	-1.3
258		Third Drawer	1	-2.5	-6.7
259		Fourth Drawer	1	2.5	2.7
260		Top Drawer	1	12.5	-1.3
261		Second Drawer	1	22.5	16.0
262		Third Drawer	1	10.0	-16.0
263		Fourth Drawer	1	12.5	1.3
264		Top Drawer	1	2.5	8.0
265		Second Drawer	1	15.0	-6.7
266	↓	Third Drawer	1	20.0	5.3

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Number	Time	Location	Inst. Used	H-3 Activity (dpm/100 cm2)	14C Activity (dpm/100 cm2)
267		Fourth Drawer	1	10.0	8.0
268		Top Drawer	1	-5.0	-1.3
269		Second Drawer	1	7.5	-1.3
270		Third Drawer	1	-2.5	-13.3
271		Fourth Drawer	1	-2.5	-5.3
272		Front of Drawers	1	30.0	9.3
273		Front Cabinet	1	7.5	-8.0
274		Front Cabinet	1	25.0	6.7
275		Front of Drawers	1	2.5	-1.3
276		Front of Drawers	1	17.5	-1.3
277		Front of Drawers	1	15.0	2.7
278		Front of Drawers	1	10.0	1.3
279		Left Drawer	1	10.0	-4.0
280		Right Drawer	1	10.0	2.7
281		Top Drawer	1	10.0	6.7
282		Second Drawer	1	15.0	4.0
283		Third Drawer	1	20.0	0.0
284		Inside Cabinet	1	17.5	4.0
285		Inside Cabinet	1	-5.0	-4.0
286		Top Drawer	1	2.5	-4.0
287		Second Drawer	1	12.5	-8.0
288		Third Drawer	1	35.0	18.7
289		Fourth Drawer	1	32.5	13.3
290		Top Drawer	1	12.5	-6.7
291		Second Drawer	1	17.5	2.7
292		Third Drawer	1	22.5	6.7
293		Fourth Drawer	1	2.5	-8.0
294		Top Drawer	1	17.5	1.3
295		Second Drawer	1	2.5	5.3
296		Third Drawer	1	17.5	6.7
297		Fourth Drawer	1	7.5	-4.0
298		Top Drawer	1	27.5	0.0
299		Second Drawer	1	7.5	0.0
300		Third Drawer	1	-7.5	-9.3
301		Fourth Drawer	1	20.0	9.3
302		Counter	1	-2.5	-10.7
303		Counter	1	0.0	-8.0
304		Front Cabinet	1	27.5	18.7
305	↓	Front Cabinet	1	15.0	-2.7

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Number	Time	Location	Inst. Used	H-3 Activity (dpm/100 cm2)	14C Activity (dpm/100 cm2)
306		Front of Drawers	1	7.5	-12.0
307		Front of Drawers	1	-7.5	-6.7
308		Inside Cabinet	1	10.0	2.7
309		Left Drawer	1	-5.0	-12.0
310		Right Drawer	1	15.0	10.7
311		Top Drawer	1	20.0	4.0
312		Second Drawer	1	0.0	-2.7
313		Third Drawer	1	37.5	8.0
314		Fourth Drawer	1	12.5	10.7
315		Top Drawer	1	15.0	-6.7
316		Second Drawer	1	5.0	1.3
317		Third Drawer	1	15.0	-10.7
318		Fourth Drawer	1	15.0	1.3
319		Counter	1	30.0	16.0
320		Sink	1	22.5	0.0
321		Sink Drain	1	10.0	-1.3
322		Front of Drawers	1	10.0	-5.3
323		Front of Drawers	1	20.0	6.7
324		Front of Drawers	1	15.0	9.3
325		Cabinet	1	12.5	-12.0
326		Cabinet	1	10.0	-2.7
327		Cabinet	1	12.5	2.7
328		Side of Cabinet	1	15.0	1.3
329		Wall	1	20.0	5.3
330		Upper Wall	1	10.0	2.7
331		Upper Wall	1	10.0	2.7
332		Lower Wall	1	20.0	2.7
333		Upper Wall	1	-2.5	-4.0
334		Lower Wall	1	7.5	-1.3
335		Upper Wall	1	17.5	0.0
336		Lower Wall	1	2.5	1.3
337		Upper Wall	1	12.5	-4.0
338		Lower Wall	1	2.5	-6.7
339		Upper Wall	1	5.0	-5.3
340		Lower Wall	1	22.5	21.3
341		Upper Wall	1	7.5	1.3
342		Lower Wall	1	7.5	-5.3
343		Upper Wall	1	27.5	4.0
344		Lower Wall	1	0.0	-9.3

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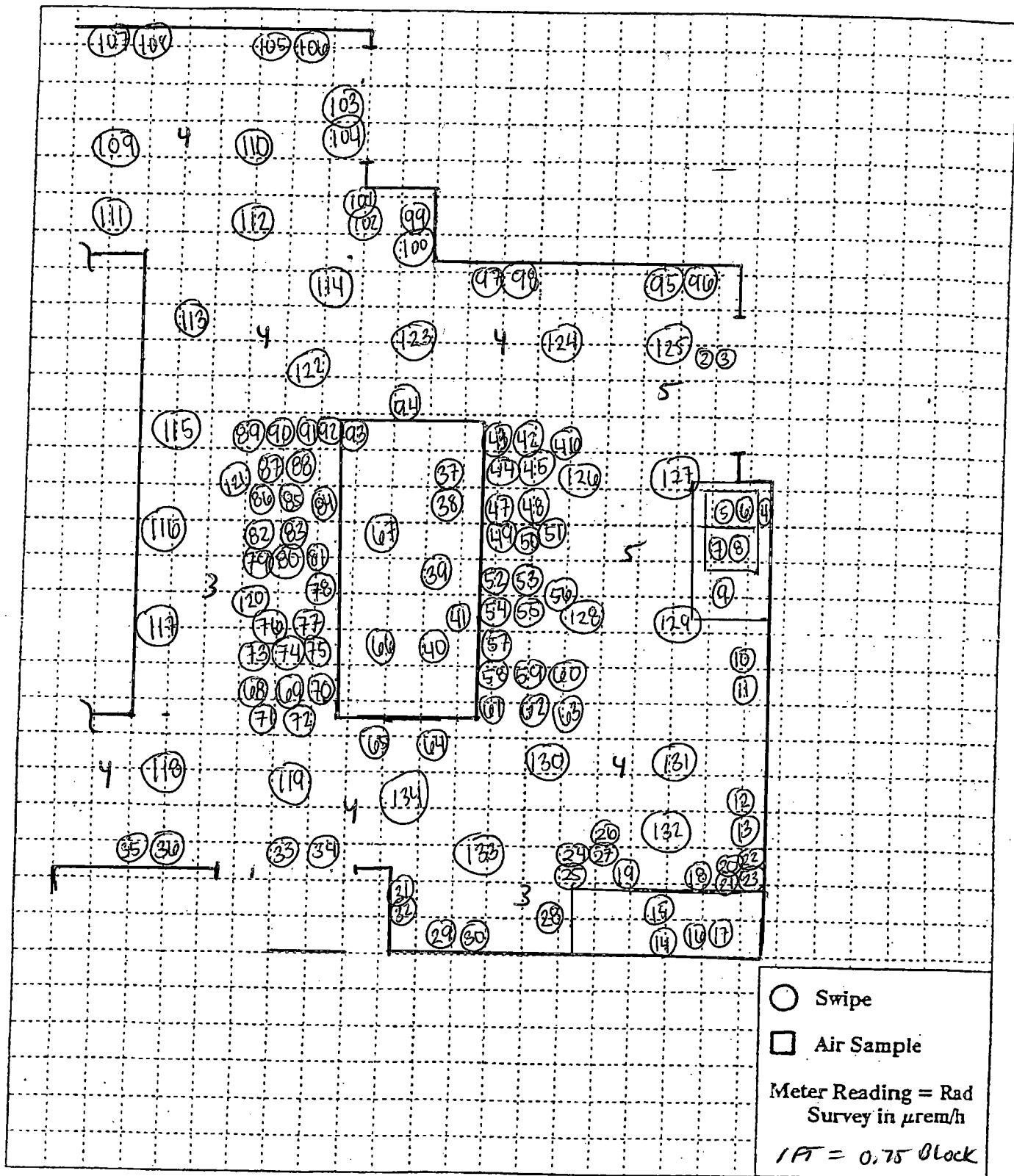
Survey Purpose: Decommissioning Biochemistry Lab

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Number	Time	Location	Inst. Used	H-3 Activity (dpm/100 cm2)	14C Activity (dpm/100 cm2)
345		Upper Wall	1	10.0	0.0
346		Lower Wall	1	12.5	1.3
347		Upper Wall	1	0.0	-13.3
348		Lower Wall	1	5.0	-5.3
349		Upper Wall	1	15.0	-5.3
350		Upper Wall	1	20.0	8.0
351		Upper Door	1	27.5	14.7
352		Lower Door	1	5.0	2.7
353		Upper Wall	1	25.0	12.0
354		Lower Wall	1	12.5	-5.3
355		Upper Wall	1	17.5	-1.3
356		Lower Wall	1	17.5	4.0
357		Upper Wall	1	5.0	1.3
358		Lower Wall	1	12.5	5.3
359		Floor	1	22.5	14.7
360		Floor	1	0.0	-10.7
361		Floor	1	-10.0	-6.7
362		Floor	1	27.5	8.0
363		Floor	1	15.0	0.0
364		Floor	1	-10.0	-10.7
365		Floor	1	12.5	-12.0
366		Floor	1	5.0	-14.7
367		Floor	1	12.5	0.0
368		Floor	1	32.5	5.3
369		Floor	1	10.0	2.7
370		Floor	1	15.0	-2.7
371		Floor	1	12.5	-10.7
372		Floor	1	12.5	9.3
373		Floor	1	20.0	4.0
374		Floor	1	42.5	4.0
375		Floor	1	25.0	1.3
376		Floor	1	12.5	12.0
377		Floor	1	7.5	6.7
378		Floor	1	12.5	2.7
379		Floor	1	-2.5	-8.0
380		Floor	1	22.5	2.7
381		Floor	1	2.5	-4.0
382		Floor	1	17.5	0.0

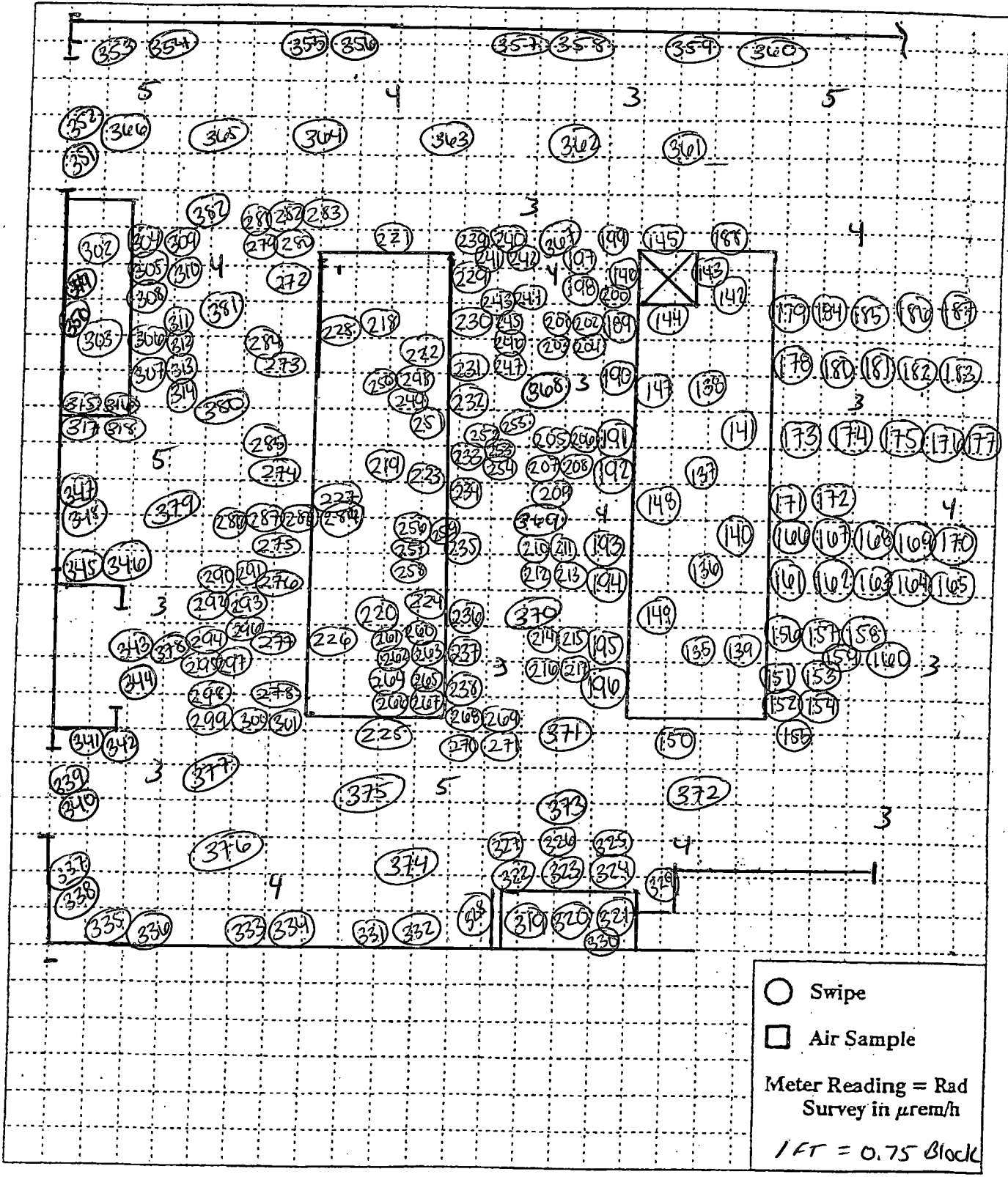
Job Location: ACHILLIS PHARMACEUTICALS INC. NEW HAVEN CT Page: 11 of 12  
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 Performed By: DAVID DURKOS Date: 10/14/19

MAP "A"



Job Location: ACHILLION PHARMACEUTICALS INC. NEW HAVEN CT Page: 12 of 12  
 Survey Purpose: DECOMMISSIONING BIOCHEMISTRY LABS Date: 10/14/19  
 Performed By: DAVID DUKKOT

MAP "B"



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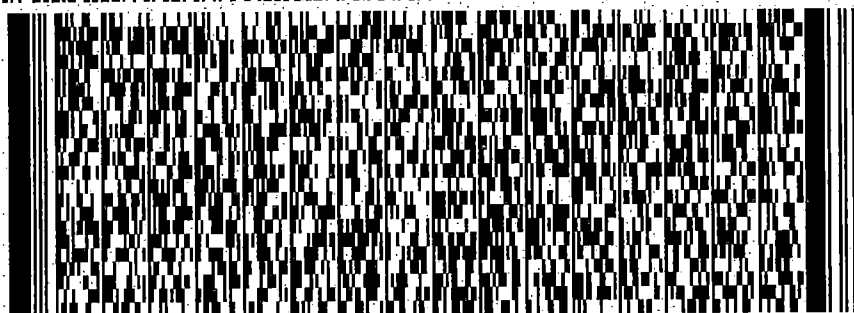
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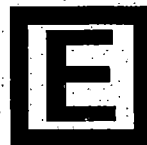
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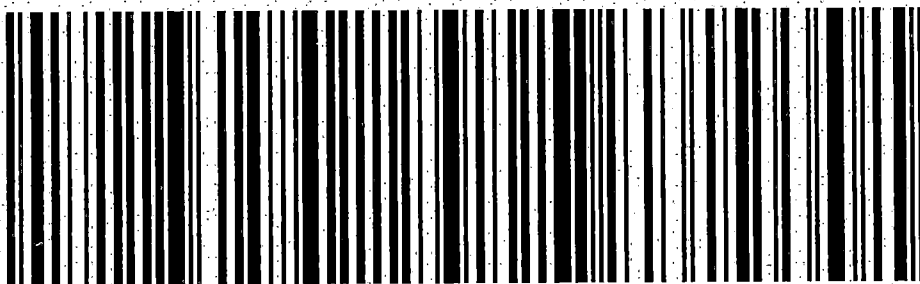
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