

*RFK*



GlaxoSmithKline

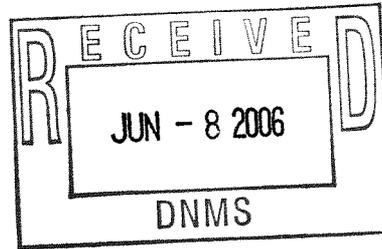
**GlaxoSmithKline  
Biologicals North America**

553 Old Corvallis Road  
Hamilton, MT 59840  
USA

www.gsk-bio.com

June 8, 2006

Colleen Murnahan  
U.S. NRC Region IV  
Texas Health Resources Tower  
611 Ryan Plaza, Suite 400  
Arlington, TX 76011-4005



RE: NRC License No. 25-19852-01

Dear Colleen Murnahan,

This letter is to amend the GlaxoSmithKline Biologicals- Hamilton (formerly Corixa Corporation) NRC radioactive materials license, No. 25-19852-01.

GSK Bio- Hamilton wishes to formerly apprise the NRC of management's intent to decommission and demolish the licensed outdoor facility listed as Building 7. The licensed room located in Building 7 was previously used for storage and decay of radioactive isotopes. No materials are currently present in this room or in Building 7. Pacific Health Physics performed decommissioning, under the supervision of Michael Simmons and GSK Bio- Hamilton personnel. All appropriate NRC, federal, state and local regulations and guidelines will be followed. Please find the attached site map and decommission report for your review.

We are currently undergoing a facility expansion. The demolition of Building 7 is critical to the established project timeline. If possible, an expedited assessment of this amendment would be greatly appreciated.

If you have any questions, please feel free to contact me directly at 406-375-2129 or [brian.j.poletti@gskbio.com](mailto:brian.j.poletti@gskbio.com).

Sincerely,

Brian Poletti  
EH&S Associate/RSO  
GlaxoSmithKline Biologicals- Hamilton

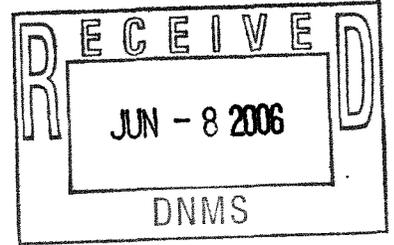
# Decommissioning Survey Report

Prepared for:

**GlaxoSmithKline Biologicals  
Formerly Corixa Montana**

**Locations of Use:  
Hamilton, MT**

**June 6, 2006**



**GlaxoSmithKline Biologicals  
Formerly Corixa Montana**

**Decommissioning Survey – Building 7**

**Historical Site Assessment and Building Description:** Building 7 was used as a chemical storage building to store solvents, hazardous waste materials and low level radioactive waste. The building was designed to release explosive forces vertically in the event of a catastrophe. It is constructed as a primary containment area, with concrete slab floor, filled concrete block walls, no floor drains or other fixtures such as sinks with plumbing, and dirt bunkers on three sides. The building contains two rooms. The east room was the only area licensed for storage and decay of low level radioactive materials. Prior to the survey, all radioactive materials were removed from the building. A one square meter grid was applied to the floors, door, and lower walls, (see attached images). Each grid was assigned a number that corresponds to individual survey locations. Grid diagrams and survey maps are attached to this report. Pertinent information related to the survey is as follows:

1. List of isotopes, quantities, and dates of last use for radioactive materials: Building 7 was used for the storage of radioactive waste, as noted above. The waste drums were moved to this location during 2004 from another building where they had been stored. The radioactive waste was contained in lined UN 55 gallon steel drums. A table below indicates the contents of the drums. At the time the drums were removed from building 7, the isotopic activity of the <sup>51</sup>Cr had decayed to background. The remaining radioactive waste was either dry-solid, liquid scintillation vials, or bulk liquid in sealed heavy plastic carboys. The drums and radioactive waste packages were never opened while stored in the room. There were no volatile radioactive materials among the waste packages.

<b>Building 7 Radioactive Waste Storage Drum Contents</b>		
<b>Isotope</b>	<b>Current Quantity</b>	<b>Drum Storage Dates</b>
I-125	80 uCi	4/5/2005
Cr-51	0.0 uCi	
C-14	29 uCi	3/24/2000
H-3	13.06 mCi	6/28/2002, 3/24/2000
Ca-45	0.83 mCi	3/24/2000

2. The physical form for the isotopes is solid and liquid as noted above.
3. History of major spills or possible spread of contamination to inaccessible areas: No spills whatsoever, including major spills or radiologic contamination.
4. Sealed source information: Sealed sources were never stored in this room.
5. The survey methods are as follows:
- a. Dose rate surveys were performed at each numbered location on the attached survey maps. The survey results were obtained by holding the detector one meter above work surfaces, allowing the meter to stabilize, and noting the exposure rate. Representative background readings were obtained from a non-radioactive materials use area. Dose rate survey results did not locate any radiation above background readings, (0.02 mR/hour).

b. Scanning surveys were performed over 100% of the floor, door, and lower walls by moving the detector slowly back and forth at a speed of about one detector width per second and at a distance of less than 1 centimeter. Representative background readings were obtained from a non-radioactive materials use area. Scanning survey results did not locate any radioactive contamination above background readings, (100 counts per minute).

c. Wipe surveys were taken from each numbered grid location. Removable activity levels were determined using numbered thin soft absorbent paper squares, approximately 2 x 2 cm. Moderate pressure was applied to the smear with two or three fingers during surface wipe sampling. Wipe sampling occurred as a repeated "S" pattern over the entire grid area. The smears were then placed in counting vials with 7 ml of counting solution and identified with the numbered location or other pertinent information. One smear sample for removable contamination was obtained from each measurement location.

**Wipe Sample Assay Results:**

LSC report (see attached), contains 49 samples:

Samples 1-45: Correspond to survey areas.

Sample 46: Swipe with scintillation fluid for background.

Sample 47: Standard background.

Sample 48: <sup>3</sup>H Standard

Sample 49: <sup>14</sup>C Standard

Sample 50: Representative background wipe sample from a non-radioactive materials use area

**LSC**

Mfr.: Packard	Model: Tri-Carb 2900TR	
Std: <sup>3</sup> H Mfr: Packard	Activity: 240,100 DPM 04JAN99 <0.2µCi	Serial No: 98( <sup>3</sup> H)
Std: <sup>14</sup> C Mfr: Packard	Activity: 142,300 DPM 04JAN99 <0.1µCi	Serial No: 98( <sup>14</sup> C)

The counting system analysis used three channels, (windows) – 0-20 kev, 20-200 kev, and 200-2000 kev. A representative background wipe sample was taken from a non-radioactive materials use area. Wipe survey results did not locate any radioactive contamination above background readings, (15-18 counts per minute). Instrument Minimum Detectable Contamination is 25 dpm for <sup>3</sup>H and <sup>14</sup>C. The instrument MDA is based on the Sorenson Formula and a background rate of 18 counts per minute. The MDA is calculated as 1.1 e-5 uCi.

6. Portable survey instrument calibration data and the liquid scintillation counter wipe sample assay printouts are appended to this report.

7. Images of the survey grids and scale drawing maps indicating the dose-rate, scanning and wipe survey results and locations are attached to this report. An example of the grid pattern established for building 7 is shown below.



8. Decontamination of the room was unnecessary since the survey results did not identify any radioactive contamination in excess of background radiation or guideline release limits.

9. GlaxoSmithKline Biologicals will retain ownership and control of building 7. Based on the survey results, it is reasonable to conclude the building may be released for unrestricted use.

## **Section A – Decommissioning Survey Narrative**

**GlaxoSmithKline Biologicals  
Formerly Corixa Montana  
Hamilton, MT**

GlaxoSmithKline Biologicals  
Decommissioning Survey  
Instrument Sensitivity Information

1. The following calculations are for surveys in a research location of use. The survey instrument is a Ludlum meter with a Ludlum Model 44-9 pancake detector. The calibration data for the survey instrument are for a model 44-9 pancake detector.

2. NUREG 1556, Volume 11, Table S.5, has release criteria for the radionuclides commonly used in research. A Historical Site Analysis or appropriate surveys results should be used to determine the % contribution for each radionuclide. A typical % contribution for three radionuclides is shown in the table below. Since the radiation safety practices for the three radionuclides are equivalent, one method for surveys in research is to use results for  $^{14}\text{C}$  as a basis to conclude whether the other two radionuclides are likely to exceed a limit.

Radionuclide	Release Limit Maximum (dpm/100 cm <sup>2</sup> )	% Contribution
$^{14}\text{C}$	15,000	35 %
$^3\text{H}$	15,000	40 %
$^{35}\text{S}$	15,000	25 %

3. The sample calculations below are based on NUREG-1575, "Multi-Agency Radiation Survey and Site Investigation Manual."

4. The survey instrument used for surface scans for fixed radioactivity (either scanning or direct measurement surveys) must be sufficiently sensitive to detect the radionuclides present. The total efficiency for a survey instrument is the sum of the efficiencies for individual radionuclides. The total efficiency was calculated using the manufacturer's calibration data.

$$\text{Efficiency}_{\text{total}} = (0.05) (0.25) = \underline{0.012} \text{ or about } 1\% \text{ total efficiency.}$$

Where 5 % is the  $2\pi$   $^{14}\text{C}$  efficiency and 25 % is the  $\beta$  energy efficiency in ISO 7503.

5. The  $\text{MDC}_{\text{static}}$  for a survey instrument should be less than 50% of the RLw. The expression for  $\text{MDC}_{\text{static}}$  is below where  $b$  is the usual background counting rate (e.g., 35 cpm for the survey instrument):

$$\text{MDC}_{\text{static}} = \frac{3 + 4.65 \sqrt{b}}{\text{Efficiency}_{\text{total}}} = 435 \text{ dpm}$$

$$\text{and } 435 \text{ dpm} / 15,000 \text{ dpm} = \underline{\leq 3\% \text{ of the RLw}}$$

6. The minimum detectable count rate (MDCR) and scan MDC are calculated as follows.

$$MDCR = d' \frac{\sqrt{b_i}}{i \sqrt{P}}$$

Where

$b_i$  = Background counts in the observations interval (35 cpm X 2 s ÷ 60 s = 1.16 counts)

$d'$  = Detectability index (2.32 from MARSSIM)

$P$  = Surveyor efficiency relative to the ideal observer (0.5 from MARSSIM)

$i$  = Survey observation interval of 2 seconds<sup>1</sup>

$$MDCR = (2.32) (\sqrt{1.16}) / (\sqrt{0.5}) (2s) = 1.75 \text{ cps}$$

$$(1.75 \text{ cps}) (60 \text{ s} / \text{m}) = 105 \text{ cpm}$$

$$\text{Scan MDC} = MDCR / \text{Efficiency}_{\text{total}} = \text{dpm} / 100 \text{ cm}^2$$

$$\text{Scan MDC} = 105 \text{ cpm} / 0.012 = \underline{8750 \text{ dpm} / 100 \text{ cm}^2}$$

8. Conclusion: The model 44-9 pancake detector is adequate to use for surface scans for fixed radioactivity for a typical research survey scenario as described above. Surface scan results that do not exceed 105 cpm using acceptable methods and techniques are less than the weighted release limits.

---

## Section B – Locator Maps and Grid Coordinates

**GlaxoSmithKline Biologicals  
Formerly Corixa Montana  
Hamilton, MT**

GSKB-Hamilton  
Site map removed  
from public version

**GlaxoSmithKline Biologicals- Hamilton (formerly Corixa Montana)**  
**Building 7 Radioactive Waste Storage Decommission Survey**  
 Performed by: Brian Poletti  
 Survey Date: 05/31/06

**Survey Location Map**  
 Survey Description: Floor



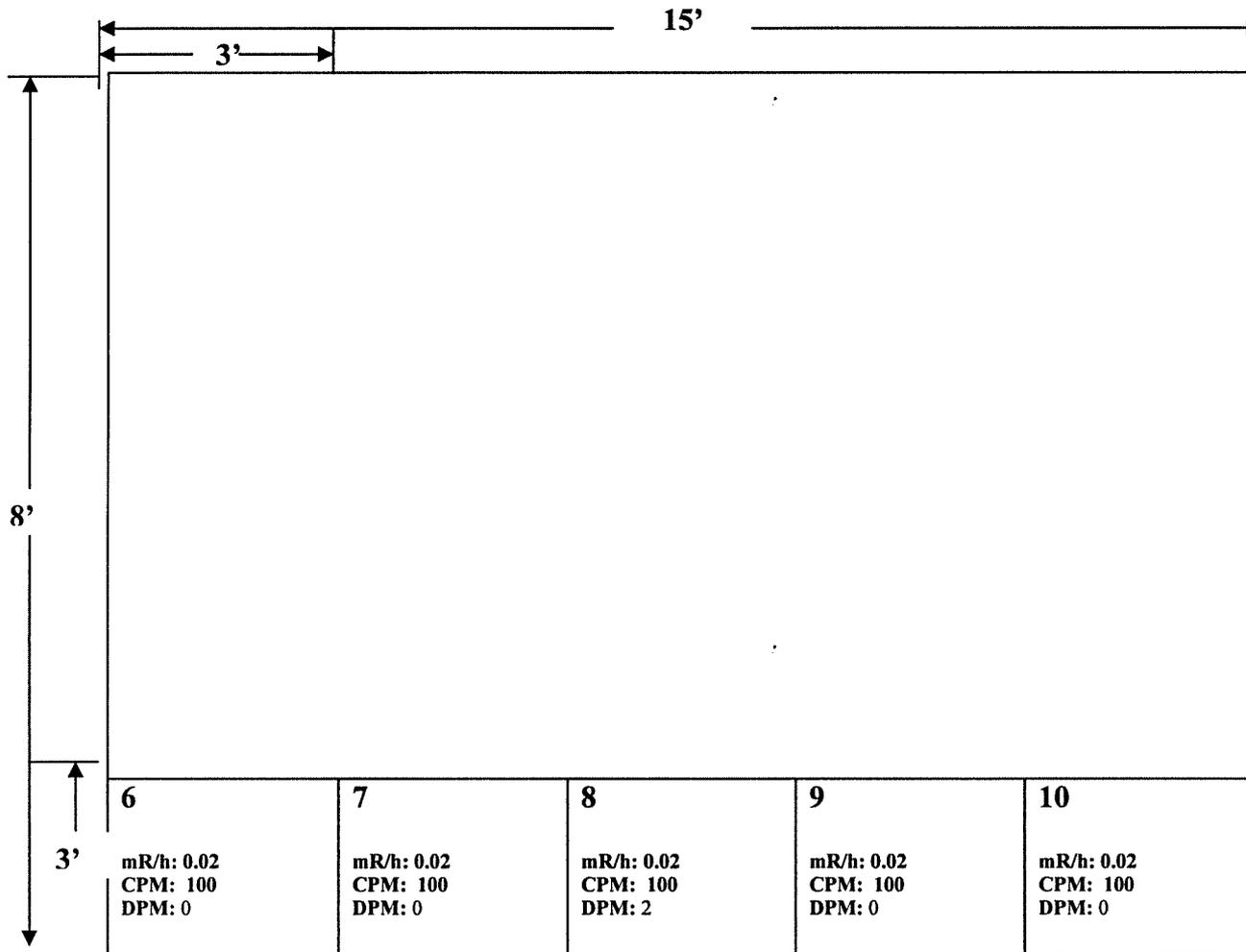
3'		13'				
3'	21 mR/h: 0.02 CPM: 100 DPM: 0	22 mR/h: 0.02 CPM: 100 DPM: 1	23 mR/h: 0.02 CPM: 100 DPM: 0	24 mR/h: 0.02 CPM: 100 DPM: 2	25 mR/h: 0.02 CPM: 100 DPM: 2	
	26 mR/h: 0.02 CPM: 100 DPM: 0	27 mR/h: 0.02 CPM: 100 DPM: 1	28 mR/h: 0.02 CPM: 100 DPM: 1	29 mR/h: 0.02 CPM: 100 DPM: 0	30 mR/h: 0.02 CPM: 100 DPM: 11	
	31 mR/h: 0.02 CPM: 100 DPM: 6	32 mR/h: 0.02 CPM: 100 DPM: 8	33 mR/h: 0.02 CPM: 100 DPM: 0	34 mR/h: 0.02 CPM: 100 DPM: 6	35 mR/h: 0.02 CPM: 100 DPM: 9	
	36 mR/h: 0.02 CPM: 100 DPM: 1	37 mR/h: 0.02 CPM: 100 DPM: 3	38 mR/h: 0.02 CPM: 100 DPM: 3	39 mR/h: 0.02 CPM: 100 DPM: 6	40 mR/h: 0.02 CPM: 100 DPM: 0	
	41 mR/h: 0.02 CPM: 100 DPM: 3	42 mR/h: 0.02 CPM: 100 DPM: 0	43 mR/h: 0.02 CPM: 100 DPM: 0	44 mR/h: 0.02 CPM: 100 DPM: 9	45 mR/h: 0.02 CPM: 100 DPM: 1	

**Background**

**mR: 0.02**  
**CPM: 100**

**GlaxoSmithKline Biologicals- Hamilton (formerly Corixa Montana)**  
**Building 7 Radioactive Waste Storage Decommission Survey**  
**Performed by: Brian Poletti**  
**Survey Date: 05/31/06**

**Survey Location Map**  
**Survey Description: East Wall**

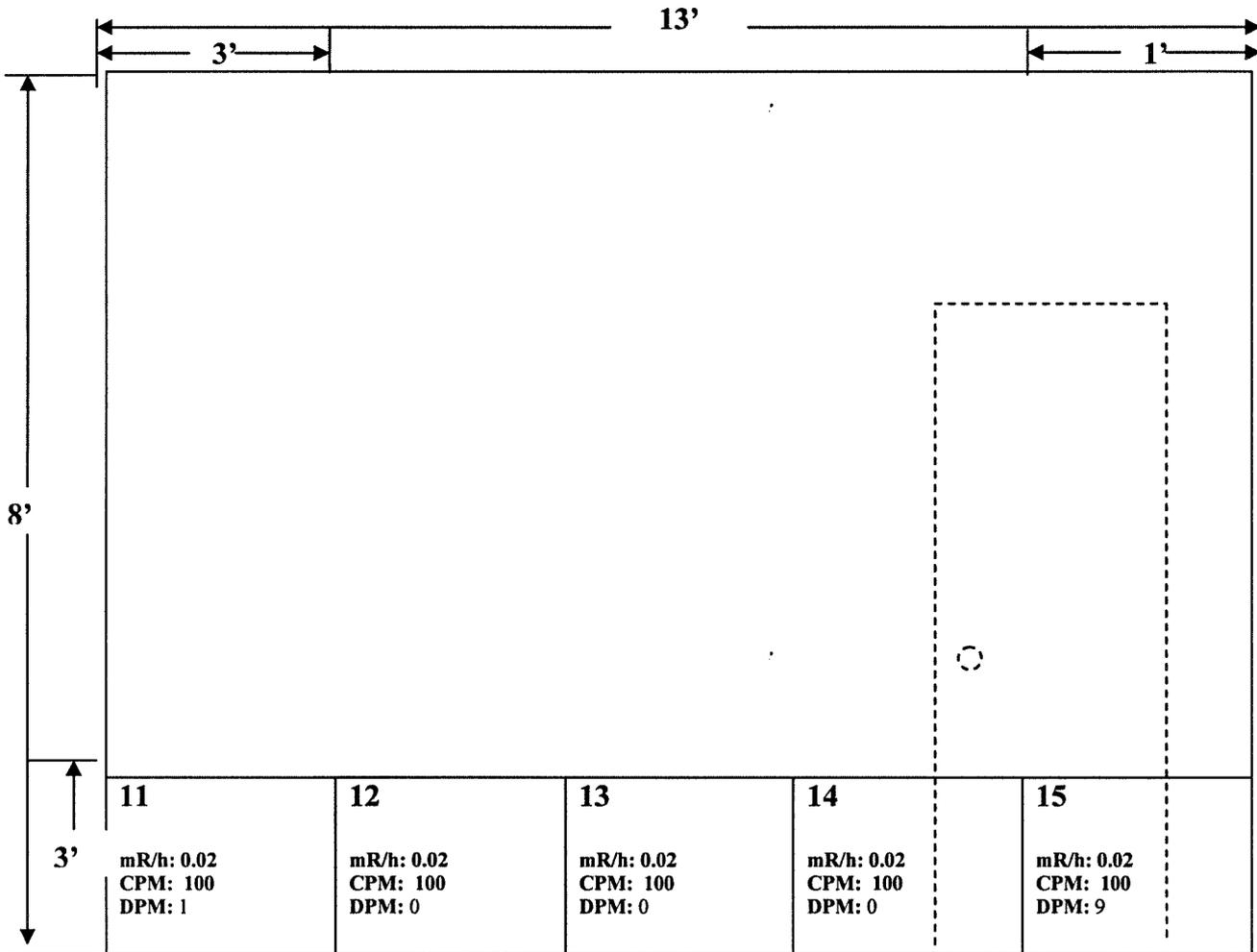


**Background**

**mR: 0.02**  
**CPM: 100**

**GlaxoSmithKline Biologicals- Hamilton (formerly Corixa Montana)**  
**Building 7 Radioactive Waste Storage Decommission Survey**  
 Performed by: Brian Poletti  
 Survey Date: 05/31/06

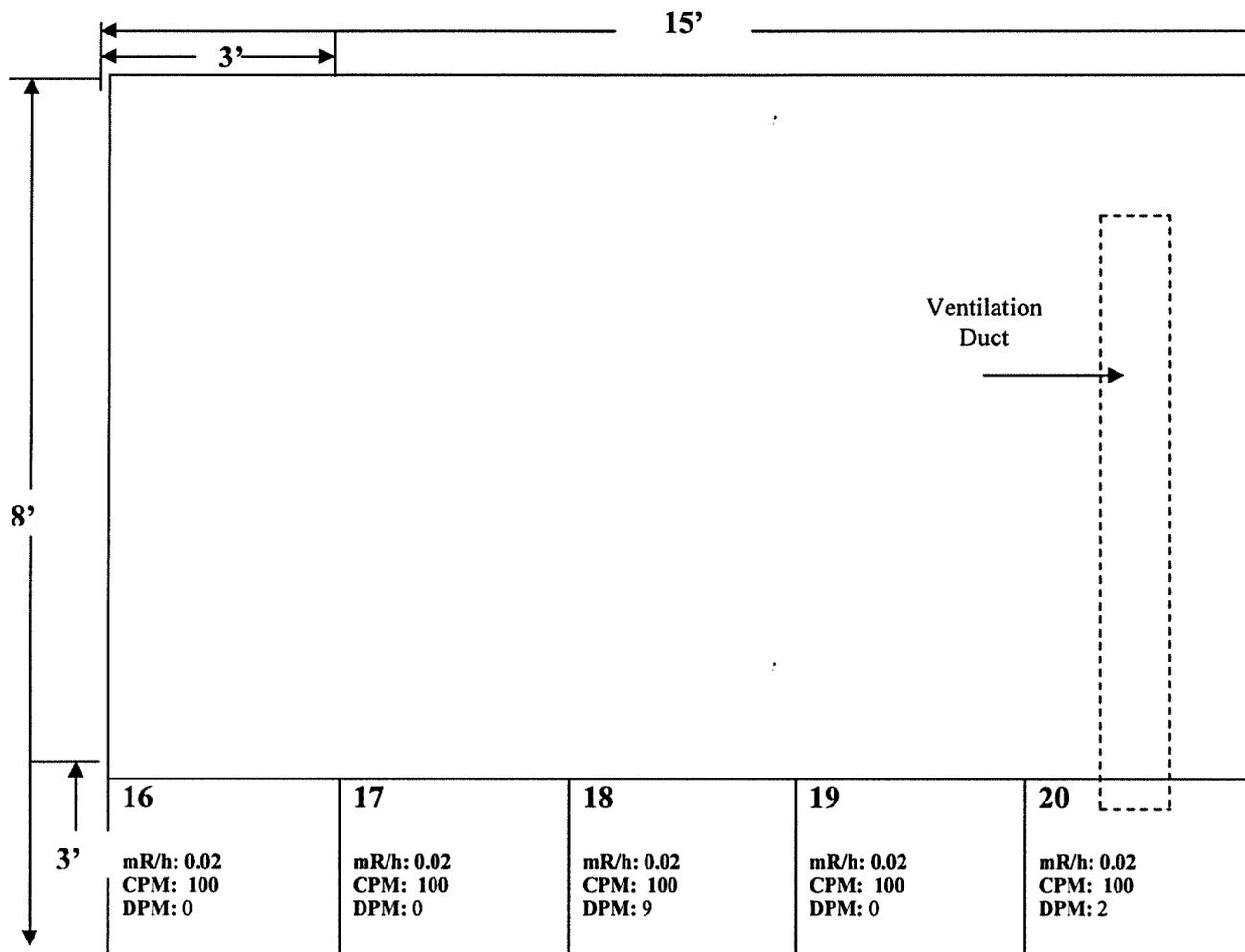
**Survey Location Map**  
 Survey Description: South Wall



**Background**

**mR: 0.02**  
**CPM: 100**

**Survey Location Map**  
**Survey Description: East Wall**

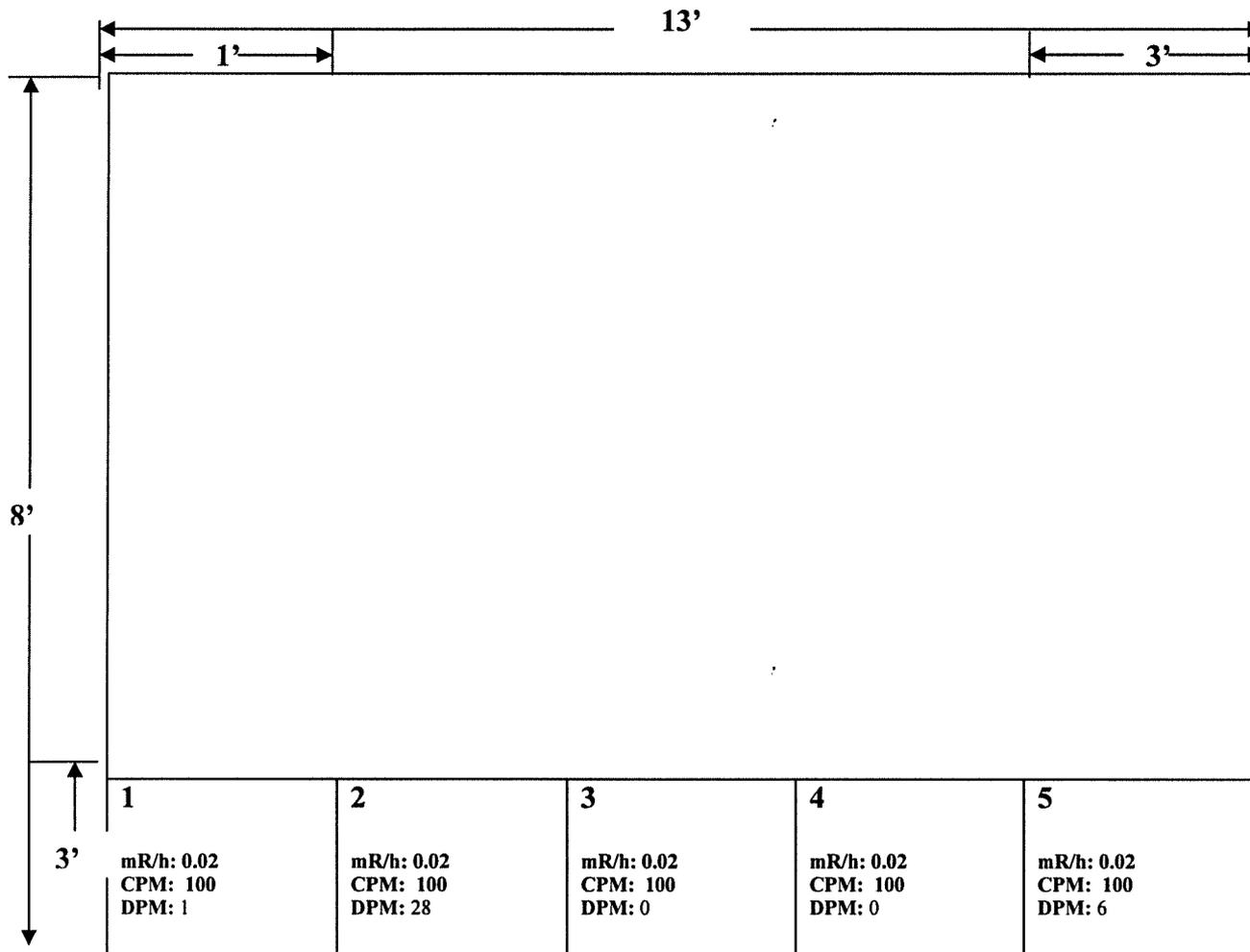


**Background**

**mR: 0.02**  
**CPM: 100**

**GlaxoSmithKline Biologicals- Hamilton (formerly Corixa Montana)**  
**Building 7 Radioactive Waste Storage Decommission Survey**  
**Performed by: Brian Poletti**  
**Survey Date: 05/31/06**

**Survey Location Map**  
**Survey Description: North Wall**



**Background**

**mR: 0.02**  
**CPM: 100**

## **Section C – Radiological Survey Instrumentation and Sensitivity**

**GlaxoSmithKline Biologicals  
Formerly Corixa Montana  
Hamilton, MT**

# Pacific Health Physics

14603 SE 173rd St  
Renton, WA 98056

Phone (425) 228-2932 - Fax (425) 271-6698

## Survey Instrument Calibration Certificate

Customer: <u>GSK Biologicals</u>	Detector: <u>GM Pancake</u>
Manufacturer: <u>Ludlum</u>	Model: <u>44-9</u>
Model: <u>3</u>	Serial Number: <u>PR158497</u>
Serial Number: <u>161222</u>	H.V. set: <u>900 V</u>

Count Calibration

Exposure Rate Calibration

Range Multiplier	Calibration Ref. Point	Observed Reading	Adjusted Reading
X 0.1	200	200	
X 0.1	400	400	
X 1	2k	2k	
X 1	4k	4k	
X 10	20k	20k	
X 10	40k	40k	
X 100	200k	200k	
X 100	400k	400k	
X			
X			
X			

Calibrated within +/- 10%  Within 20%, C.F. \_\_\_\_\_  Battery Check OK

Pacific Health Physics certifies that this instrument has been calibrated using equipment and radiation sources traceable to the National Bureau of Standards. The calibration procedure is certified by the Washington State Dept. of Health, Division of Radiation Protection, and is referenced in license WN-L0167-1.

Efficiency Calibration: The percent efficiency indicates the number of photons detected for each atomic disintegration and illustrates instrument sensitivity for the various isotope energy ranges.

<u>0.101</u> uCi <sup>129</sup> I	<u>224,220</u> cpm	<u>        </u> %
	dpm	
<u>0.104</u> uCi <sup>14</sup> C	<u>10,000</u> cpm	<u>4.5</u> %
	220,880 dpm	
<u>0.0103</u> uCi <sup>36</sup> Cl	<u>6,000</u> cpm	<u>26</u> %
	22,866 dpm	

<sup>137</sup>Cs check source reading

Equipment:

Oscilloscope SN: \_\_\_\_\_  M-500 Pulser SN: 121027  <sup>137</sup>Cs Source SN \_\_\_\_\_

Cal'd By: Michael C. Aron Cal. Date: 4/18/06



Designer and Manufacturer  
of  
Scientific and Industrial  
Instruments

# CERTIFICATE OF CALIBRATION

**LUDLUM MEASUREMENTS, INC.**  
POST OFFICE BOX 810 PH. 325-235-5494  
501 OAK STREET FAX NO. 325-235-4672  
SWEETWATER, TEXAS 79556, U.S.A.

CUSTOMER CORIXA CORPORATION ORDER NO. 237311/292562

Mfg. William B. Johnson Model GSM-110 Serial No. 6302

Mfg. William B. Johnson Model 44-9TYPE Serial No. RN014986

Cal. Date 20-Jun-05 Cal Due Date 20-Jun-06 Cal. Interval 1 Year Meterface .2mR/hr

Check mark  applies to applicable instr. and/or detector IAW mfg. spec. T. 72 °F RH 47 % Alt 701.8 mm Hg

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

Mechanical ck.  Meter Zeroed  Background Subtract  Input Sens. Linearity

F/S Resp. ck.  Reset ck.  Window Operation  Geotropism

Audio ck.  Alarm Setting ck.  Batt. ck. (Min. Volt) \_\_\_\_\_ VDC

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

Instrument Volt Set 900 V Input Sens. 60 mV Det. Oper. 900 V at 60 mV Threshold Dial Ratio \_\_\_\_\_ = \_\_\_\_\_ mV

HV Readout (2 points) Ref./Inst. \_\_\_\_\_ / \_\_\_\_\_ V Ref./Inst. \_\_\_\_\_ / \_\_\_\_\_ V

## COMMENTS:

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

RANGE/MULTIPLIER	REFERENCE CAL. POINT	INSTRUMENT REC'D "AS FOUND READING"	INSTRUMENT METER READING*
X 100	16 mR/hr	0.19	0.16
X 100	4 mR/hr	0.05	0.04
X 10	1.6 mR/hr = 5090 cpm	0.19	0.16
X 10	400 µR/hr	0.05	MTT 0.05 0.04
X 1	509 cpm	0.19	0.16
X 1	127 cpm	0.05	0.04

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

X1 Range(s) Calibrated Electronically

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

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

### Reference Instruments and/or Sources:

Cs-137 Gamma S/N  1162  G112  M565  5105  T1008  T879  E552  E551  720  734  1616  Neutron Am-241 Be S/N T-304

Alpha S/N \_\_\_\_\_  Beta S/N \_\_\_\_\_  Other \_\_\_\_\_

m 500 S/N 57881  Oscilloscope S/N \_\_\_\_\_  Multimeter S/N 80040300

Calibrated By: Michael J Shows Date 20-June-05

Reviewed By: [Signature] Date 21 June 05

This certificate shall not be reproduced except in full, without the written approval of Ludlum Measurements, Inc.

AC Inst.  Passed Dielectric (Hi-Pot) and Continuity Test

Protocol# 2 - Swipe.lsa

Serial# 421372

User: Kirk

## Swipe Test

## Assay Definition-

## Assay Description:

Building 7 Decommission Swipe Survey

Assay Type: DPM (Single)

Report Name: Report1

Output Data Path: C:\Packard\Tricarb\Results\Kirk\Swipe

Raw Results Path: C:\Packard\Tricarb\Results\Kirk\Swipe

RTF File Name: C:\Packard\Tricarb\Results\Kirk\Swipe\Report1.rtf

Comma-Delimited File Name: C:\Packard\Tricarb\Results\Kirk\Swipe\Report1.txt

## Count Conditions-

Nuclide: Open survey

Quench Indicator: SIS

External Std Terminator (sec): n/a

Pre-Count Delay (min): 0.00

Quench Set:

Low Energy: 3H

Count Time (min): 1.00

Count Mode: Normal

Assay Count Cycles: 1

Repeat Sample Count: 1

#Vials/Sample: 1

Calculate % Reference: Off

Background Subtract: Off

Low CPM Threshold: Off

2 Sigma % Terminator: On - Any Region

Regions	LL	UL	2Sigma % Terminator
A	0.0	20.0	0.00
B	20.0	200.0	0.00
C	200.0	2000.0	0.00

## Count Corrections-

Static Controller: On

Luminescence Correction: n/a

Colored Samples: Off

Heterogeneity Monitor: n/a

Coincidence Time (nsec): 18

Delay Before Burst (nsec): 75

## Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

## Cycle 1 Results

S#	Count	Time	CPMA	DPM1	A:2S%	CPMB	B:2S%	Uci	CPMC	C:2S%
1	1.00	16	8	50.00	26	39.22	0	8	70.71	
2	1.00	19	10	45.88	18	47.14	0	9	66.67	
3	1.00	17	9	48.51	25	40.00	0	9	66.67	
4	1.00	20	12	44.72	14	53.45	0	13	55.47	
5	1.00	24	11	40.82	20	44.72	0	11	60.30	
6	1.00	23	13	41.70	21	43.64	0	6	81.65	
7	1.00	18	10	47.14	21	43.64	0	8	70.71	
8	1.00	24	14	40.82	20	44.72	0	8	70.71	
9	1.00	16	6	50.00	34	34.30	0	9	66.67	
10	1.00	33	18	34.82	21	43.64	0	12	57.74	
11	1.00	20	12	44.72	15	51.64	0	9	66.67	
12	1.00	20	10	44.72	12	57.74	0	6	81.65	

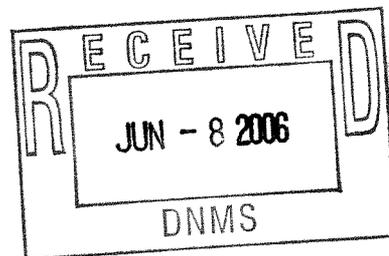
Protocol# 2 - Swipe.lsa

Serial# 421372

User: Kirk

## Swipe Test

13	1.00	13	5	55.47	28	37.80	0	11	60.30
14	1.00	16	9	50.00	9	66.67	0	8	70.71
15	1.00	17	8	48.51	18	47.14	0	11	60.30
16	1.00	23	12	41.70	25	40.00	0	8	70.71
17	1.00	13	7	55.47	14	53.45	0	4	*****
18	1.00	14	9	53.45	6	81.65	0	7	75.59
19	1.00	16	7	50.00	23	41.70	0	9	66.67
20	1.00	13	6	55.47	16	50.00	0	10	63.25
21	1.00	31	22	35.92	18	47.14	0	9	66.67
22	1.00	11	6	60.30	8	70.71	0	5	89.44
23	1.00	22	16	42.64	14	53.45	0	3	*****
24	1.00	11	4	60.30	16	50.00	0	7	75.59
25	1.00	23	12	41.70	18	47.14	0	3	*****
26	1.00	28	17	37.80	18	47.14	0	8	70.71
27	1.00	14	7	53.45	14	53.45	0	4	*****
28	1.00	20	15	44.72	5	89.44	0	5	89.44
29	1.00	15	8	51.64	24	40.82	0	8	70.71
30	1.00	23	12	41.70	13	55.47	0	5	89.44
31	1.00	18	8	47.14	22	42.64	0	8	70.71
32	1.00	19	13	45.88	14	53.45	0	8	70.71
33	1.00	24	18	40.82	13	55.47	0	5	89.44
34	1.00	29	19	37.14	21	43.64	0	7	75.59
35	1.00	17	10	48.51	20	44.72	0	5	89.44
36	1.00	22	12	42.64	19	45.88	0	7	75.59
37	1.00	15	7	51.64	17	48.51	0	4	*****
38	1.00	13	7	55.47	15	51.64	0	8	70.71
39	1.00	17	11	48.51	18	47.14	0	5	89.44
40	1.00	12	5	57.74	22	42.64	0	6	81.65
41	1.00	10	5	63.25	13	55.47	0	5	89.44
42	1.00	27	17	38.49	14	53.45	0	3	*****
43	1.00	24	13	40.82	22	42.64	0	8	70.71
44	1.00	11	6	60.30	21	43.64	0	2	*****
45	1.00	17	12	48.51	12	57.74	0	7	75.59
46	1.00	17	8	48.51	20	44.72	0	10	63.25
47	1.00	21	11	43.64	16	50.00	0	16	50.00
48	1.00	99988	152162	0.63	260	12.40	0	16	50.00
49	1.00	31194	12945	1.13	106126	0.61	0	19	45.88
50	1.00	15	8	51.64	18	47.14	0	9	66.67



**SECTION D**

WAC 246-232-140 SCHEDULE D

ACCEPTABLE SURFACE CONTAMINATION LEVELS FOR UNCONTROLLED RELEASE OF FACILITIES AND EQUIPMENT \*

Nuclide [A]	Average [B,C]	Maximum [B,D]	Removable [B,E]
U-nat, U-235, U-238 and associated decay products	5,000 dpm /100 cm <sup>2</sup>	15,000 dpm /100 cm <sup>2</sup>	1,000 dpm /100 cm <sup>2</sup>
Transuranics, Ra-226 Ra-228, Th-230, Th-228, Pa-231, Ac-227, 1-125,1-129	100 dpm /100 cm <sup>2</sup>	300 dpm /100 cm <sup>2</sup>	20 dpm /100 cm <sup>2</sup>
Th-nat, Th-232, Sr-90, Ra-223, Ra-224, U-232, 1-126,1-131,1-133	1,000 dpm /100 cm <sup>2</sup>	3,000 dpm /100 cm <sup>2</sup>	200 dpm /100 cm <sup>2</sup>
Beta-gamma emitters (nuclides with decay modes by other than alpha emission or spontaneous fission) except Sr-90 and others noted above.	5,000 dpm /100 cm <sup>2</sup>	15,000 dpm /100 cm <sup>2</sup>	1,000 dpm /100 cm <sup>2</sup>

\*Also Regulatory Guide 8.23 and 1.86.

- [A] Where surface contamination by both alpha- and beta-gamma-emitting nuclides exists, the limits established for alpha- and beta-gamma- emitting nuclides should apply independently.
- [B] As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.
- [C] Measurements of average contaminate should not be averaged over more than 1 square meter. For objects of less surface area, the average should be derived for each such object.
- [D] The maximum contamination level applies to an area of not more than 100 cm<sup>2</sup>.
- [E] The amount of removable radioactive material per 100 cm<sup>2</sup> of surface area should be determined by wiping that area with dry filter or soft absorbent paper, applying moderate pressure, and assessing the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. When removable contamination on objects of less surface area is determined, the pertinent levels should be reduced proportionately and the entire surface should be wiped.

JUN 21 2006

This is to acknowledge the receipt of your letter/application dated  
06-21-06, and to inform you that the initial processing,  
which includes an administrative review, has been performed.

\_\_\_\_\_  
DATE

There were no administrative omissions. Your application will be assigned to a technical reviewer. Please note that the technical review may identify additional omissions or require additional information.

Please provide to this office within 30 days of your receipt of this card:

\_\_\_\_\_

The action you requested is normally processed within   —   days.

A copy of your action has been forwarded to our License Fee & Accounts Receivable Branch, who will contact you separately if there is a fee issue involved.

Your action has been assigned Mail Control Number 471003.  
When calling to inquire about this action, please refer to this mail control number.  
You may call me at 817-860-8103.

Sincerely,



Licensing Assistant

BETWEEN:

License Fee Management Branch, ARM  
and  
Regional Licensing Sections

LICENSE FEE TRANSMITTAL

(FOR LFMS USE)  
-----  
INFORMATION FROM LTS  
-----

Program Code: 03620  
Status Code: 0  
Fee Category: 3M  
Exp. Date: 20150630  
Fee Comments:  
Decom Fin Assur Regd: N

A. REGION

1. APPLICATION ATTACHED  
Applicant/Licensee: CORIXA CORPORATION  
Received Date: 20060608  
Docket No: 3019324  
Control No.: 471003  
License No.: 25-19852-01  
Action Type: Amendment

2. FEE ATTACHED

Amount: \_\_\_\_\_  
Check No.: \_\_\_\_\_

3. COMMENTS

Signed \_\_\_\_\_  
Date 6/21/06

B. LICENSE FEE MANAGEMENT BRANCH (Check when milestone 03 is entered / \_\_/)

1. Fee Category and Amount: \_\_\_\_\_

2. Correct Fee Paid. Application may be processed for:

Amendment \_\_\_\_\_  
Renewal \_\_\_\_\_  
License \_\_\_\_\_

3. OTHER

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Signed \_\_\_\_\_  
Date \_\_\_\_\_

Align top of FedEx Shipping Label here

ORIGIN ID: MS0A (406) 375-2256  
JESSICA BAIN  
GSK BIO  
553 OLD CORVALLIS RD

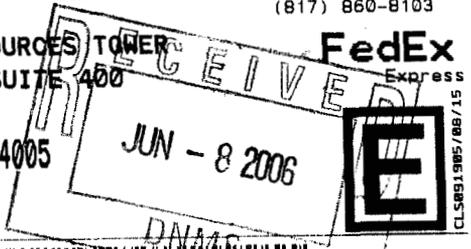
Ship Date: 08JUN06  
Actual Wgt: 0.3 LB  
System#: 137661/CAFE2285  
Account: S 121434288

HAMILTON, MT 59840  
UNITED STATES US

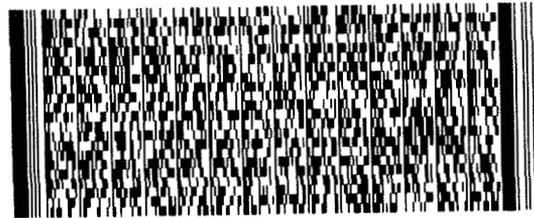
(817) 860-8103

TO COLLEEN MURNAHAN

TEXAS HEALTH RESOURCES TOWER  
611 RYAN PLAZA SUITE 400  
US NRC REGION IV  
ARLINGTON, TX 760114005



REF:



Delivery Address  
Barcode

BILL SENDER

STANDARD OVERNIGHT

FRI

Deliver By:  
09JUN06

TRK# 7274 6185 2074 Form 0201

DFW A1

: 76011 -TX-US

XH FWHA



Part # 156148-434 NRIT 11-05



GlaxoSmithKline

GlaxoSmithKline  
Biologicals North America  
553 Old Corvallis Road  
Hamilton, MT 59840  
USA  
[www.gsk-bio.com](http://www.gsk-bio.com)

COLEEN MURKATHAN  
U.S. NRC REGION IV  
TEXAS HEALTH RESOURCES TOWER  
611 RYAN PLAZA, SUITE 400  
ARLINGTON, TX 76011-4005

RECEIVED  
JUN 08 2006  
DNMS