Drexel
UNIVERSITY

Radiation Safety Office

August 28, 2006

Br.2

U.S. Nuclear Regulatory Commission
Region 1
475 Allendale Road
King of Prussia, PA 19406

RECEIVED
REGION 1
2006 SEP -7 PM 2:01

re: License No.37-07438-15 03012998

Dear Sir or Madam:

Please amend the above referenced license to remove Delaware Valley College of Agriculture and Science, Mandell Science Building, 700 E. Butler Avenue, Doylestown, PA as a use location for licensed activities. Philadelphia Health and Education Corporation d.b.a. Drexel University College of Medicine has ceased licensed activities at this facility.

In support of this request, a final status survey report for the facility showing that the facility is free of radioactivity is enclosed for your review.

If you have any questions regarding this request, please contact Kent Lambert, radiation safety officer, at 215-762-8768 or kent.lambert@drexel.edu. If I can be of assistance, please do not hesitate to contact me.

Sincerely,

Sreekant Murthy. Ph.D.

Sreekant Murthy, Ph.D.
Vice Provost for Research Compliance

cc: K. Lambert

139371

Mail Stop 444, Suite 2105, NCB, 245 N. 15th Street, Philadelphia, PA 19102-1192 ▪ TEL 215.762.4050 FAX 215.762.3722

www.drexel.edu

NMSS/RGN1 MATERIALS-002

Final Status Survey Report

for

Delaware Valley College of Agriculture and Science
Mandell Science Building
700 East Butler Avenue
Doylestown

a use location listed on NRC License No. 37-07438-15
Philadelphia Health and Education Corporation
d/b/a
Drexel University College of Medicine

Prepared by: Kent Lambert, M.S., CHP

Table of Contents

A. Executive Summary

The Mandell Science Building at 700 East Butler Avenue is licensed by the U.S. Nuclear Regulatory Commission (37-07438-15) as a use location for Philadelphia Health and Education Corporation, d/b/a Drexel University College of Medicine (DUCoM).

Certain research laboratories and office space within the Mandell Science Building were leased by DUCoM from Delaware Valley College of Agriculture and Science (DVC); therefore, the final status survey for DUCoM is limited to these leased areas. Only phosphorus 32 and sulfur 35 have been used at this location under DUCoM's license.

All research laboratory spaces in the Mandell Building leased to DUCoM, regardless of whether radioactive materials were used, are included in the final status survey. All laboratory areas were surveyed with thin window GM survey meters regardless of whether or not there was a history of radioactive material use. Removable contamination surveys were performed where radioactive materials were known to be used or there was evidence that radioactive materials were used in the room in the past. The maximum activity found on any wipe sample was 20 dpm per 100 cm^2. No fixed contamination was discovered.

B. Background and History

Portions of the Delaware Valley College of Agriculture and Science (DVC) Mandell Science Building were leased to Thomas Jefferson University and were included on NRC license # 37-00148-06 as a use location. Thomas Jefferson University ceased licensed activities at DVC on July 30, 2004. Surveys of the facility conducted by Thomas Jefferson University on July 30, 2004 were submitted to the NRC to demonstrate that there was no radioactive material (including contamination) present.

Concurrent with the cessation of licensed activities at DVC by Thomas Jefferson University, Philadelphia Health and Education Corporation d.b.a. Drexel University College of Medicine (DUCoM) began licensed activities at DVC. The specific rooms / areas of the building that DUCoM controlled are indicated in the amendment request dated July 21, 2004.

Licensed activities at this location have been under a broad scope license which permitted the use of certain long lived (half life >120 days) isotopes including tritium and carbon 14; however, long lived isotopes have not been used at this location while under DUCoM control.

C. Methods and Materials

Surveys were conducted by the following individuals under the general supervision of Kent Lambert, M.S., CHP.

Kendall Berry, M.S.P.H.
Jennifer Noll, B.S.
Edward Yeager
Andrew Giangnacova, B.S.

Table 1. Individuals Performing Surveys

The final status survey of the Mandell Science Building was performed August 15, 2006. All laboratories were surveyed using thin window GM survey meters; no contamination or radiation

levels above background were identified. All drawers and cabinets were opened in a search for the presence of radioactive materials and for evidence that radioactive materials were used or stored in the area unbeknownst to the Radiation Safety Office. Any evidence, e.g., NRC Form 3, can of Radcon, acrylic or lead shielding, radioactive tape, etc. would trigger a full survey in the room; however, no such evidence was found. The record of a previously conducted (May 10, 2005) closeout survey of room 029 is included as a part of this report. Rooms where surveys were performed are listed in Table 2.

Room Number	Date Performed	Wipe Survey	Instrument Survey
010	08/15/06	✓	✓
011	08/15/06		✓
012	08/15/06		✓
029	08/15/06		✓
029	05/10/05	✓	✓
030	08/15/06		✓
032	08/15/06		✓
118	08/15/06	✓	✓
118A	08/15/06	✓	✓
118B	08/15/06	✓	✓
119	08/15/06		✓
120	08/15/06		✓
120A	08/15/06		✓
121	08/15/06		✓
122	08/15/06	✓	✓
123	08/15/06		✓
123A	08/15/06		✓
125	08/15/06		✓
125A	08/15/06		✓
126	08/15/06		✓
126A	08/15/06		✓
127	08/15/06	✓	✓
128	08/15/06	✓	✓
129	08/15/06		✓
129A	08/15/06		✓

Table 2. Survey Locations and Type

Wipe samples were taken using dry filter papers and applying moderate pressure to workbenches, floors, and other surfaces. To assess the potential for residual radioactivity in air ducts, wipe samples were taken of the upper interior surfaces of chemical fume hoods where airflow would exhaust into ducts. To assess the potential for residual radioactivity in drain pipes, wipe samples were taken with cotton swabs inserted into sink drains.

Only phosphorus 32 and sulfur 35 were used in the Mandell Science Building while under DUCoM control (See Appendix A). Wipe samples were assayed using a liquid scintillation counter. Table 3 indicates the analytical equipment used for these assays and their efficiencies.

Make, Model and Serial Number	Survey Date Used	Efficiencies*
Wallac 1409-001, S/N: 4091214	05/10/05	^{3}H – 69%; ^{14}C – 98%
Beckman LS6500, S/N: 7068451	08/16/06	^{3}H - 57%; ^{14}C - 78%

Table 3. Analytical Equipment Used

* Detection efficiency for ^{35}S is slightly higher than ^{14}C. Detection efficiency for ^{32}P is significantly higher than ^{14}C. When counting for unknowns, an efficiency of 50% is assumed (lowest efficiency of commonly encountered isotopes).

The equipment used to analyze wipe samples was/is capable of detecting a wide range of isotopes in addition to those used at the facility.

The radiation detection survey instruments indicated in Table 4 were used to detect fixed contamination.

Ratemeter Make & Model #	Ratemeter Serial #	Probe Model #	Probe Serial #	Date Used	Prior Calibration	^{14}C / ^{36}Cl Detection Efficiency*
Ludlum 3	76331	44-7	070192	05/10/05	11/12/04	5% / 9 %
Victoreen 190	580	489-110D	621	08/15/06	11/21/05	10% / 19%
Ludlum 14C	126857	44-9	128688	08/15/06	11/21/05	9% / 20%
Ludlum 3	88936	44-9	083493	08/15/06	1/30/06	6% / 18%
Ludlum 3	14241	44-7	010614	08/15/06	6/23/06	5% / 22%

Table 4. Survey instruments

* Measured 1 cm from window face. Detection efficiency for ^{35}S would be slightly higher than that for ^{14}C. Detection efficiency for ^{32}P would be higher than that for ^{36}Cl.

D. Results

The following pages show the results for each room or area surveyed and includes:

- a map of the room;
- checklist of closeout activities performed;
- summary of contamination survey results;
- the locations where wipes were taken;
- survey meter instrument readings;
- lower limit of detection for LSC counter;
- background measurements for LSC counter; and
- removable contamination levels as measured by LSC.

Closeout Survey Report

Building & Room No.: Mandell 010	Department: DIBVIR
Contact Person: Dr. Block	Phone Number and Address: 215-489-4948
Surveyor:. Kendall Berry + Andrew Giangnacova	Survey Date: 8/15/06

Completed	Not Completed	Not Applicable	Closeout Checklist
■	☐	☐	Radioactive material removed. Cabinets, freezers, refrigerators, drawers, etc. checked.
■	☐	☐	Thorough contamination survey performed for fixed and removable contamination throughout facility, including workbenches, floors, remaining equipment, glassware, pigs, refrigerators, freezers, etc.
☐	☐	■	Contaminated items decontaminated or disposed as radioactive waste
☐	☐	■	Radioactive waste removed.
☐	☐	■	Radiation labels removed/obliterated from radioactive material containers, pigs, etc.
■	☐	☐	Radiation warning signs removed from doors, hoods, work areas, equipment, etc.
☐	☐	■	Radioactive sources removed from equipment such as gamma and /or beta counters
■	☐	☐	Department notified

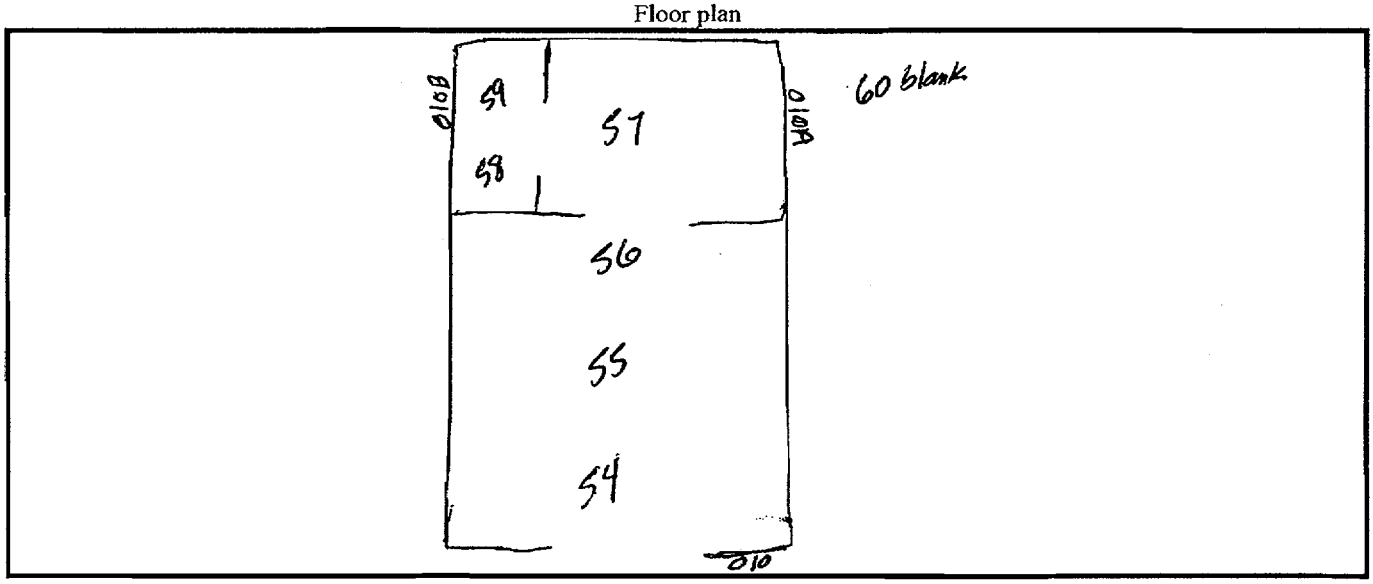
Closeout Contamination Survey Results Summary

■ No contamination above 200 dpm/100 cm^2
☐ Contamination above 200 dpm/100 cm^2

■ No radiation levels above background found
☐ Radiation levels above background found

Contamination Survey Results

Floor plan



54-59 floor wipes

No shelves, bench tops, or cabinets in 010 on 8/15/06.

Ludlum M14C 126857 11/21/05

Survey meter used: Mfg & model: Ludlum M3 Serial No.: 88936 Date of Calibration: 1/30/06

Survey meter locations	Survey meter reading (mR/hr)
BKG	M14C: 0.04 mR/hr M3: 0.04 mR/hr
Thorough readings taken throughout the laboratory (including floors, shelves, cabinets, etc.)	M14C: 0.04 mR/hr M3: 0.04 mR/hr

Survey notes/comments:

Drexel University Radiation Safety Office
Wipe Test Results

Date Counted	8/16/2006
Counter Used	LSC
Efficiency %	50
Efficiency	0.5
LLD	25
Count Time (min)	2

Wipe Number	Total cpm	net cpm (total cpm for background)	dpm	total area wiped (x100cm^2)	dpm/100cm^2	
Background	28.5	28.5	NA	NA	NA	
54	19.0	0	0	3	0	
55	26.5	0	0	3	0	
56	22.5	0	0	3	0	
57	33.0	5	9	3	3	
58	26.5	0	0	3	0	
59	22.5	0	0	3	0	
60	21.5	0	0			blank sample

Closeout Survey Report

Building & Room No.: Mandell 029	Department: Biotechnology and Virology /DIBVIR
Contact Person: Dr. Steel	Phone Number and Address: 489-4946
Surveyor: Kendall Berry KB	Survey Date: 5/10/05

Completed	Not Completed	Not Applicable	Closeout Checklist
☑	☐	☐	Radioactive material removed. Cabinets, freezers, refrigerators, drawers, etc. checked.
☑	☐	☐	Thorough contamination survey performed for fixed and removable contamination throughout facility, including workbenches, floors, remaining equipment, glassware, pigs, refrigerators, freezers, etc.
☐	☐	☑	Contaminated items decontaminated or disposed as radioactive waste
☑	☐	☐	Radioactive waste removed. completed prior to 5/10/05.
☑	☐	☐	Radiation labels removed/obliterated from radioactive material containers, pigs, etc.
☑	☐	☐	Radiation warning signs removed from doors, ~~hoods~~ N/A, work areas, equipment, etc.
☐	☐	☑	Radioactive sources removed from equipment such as gamma and /or beta counters
☑	☐	☐	Department notified

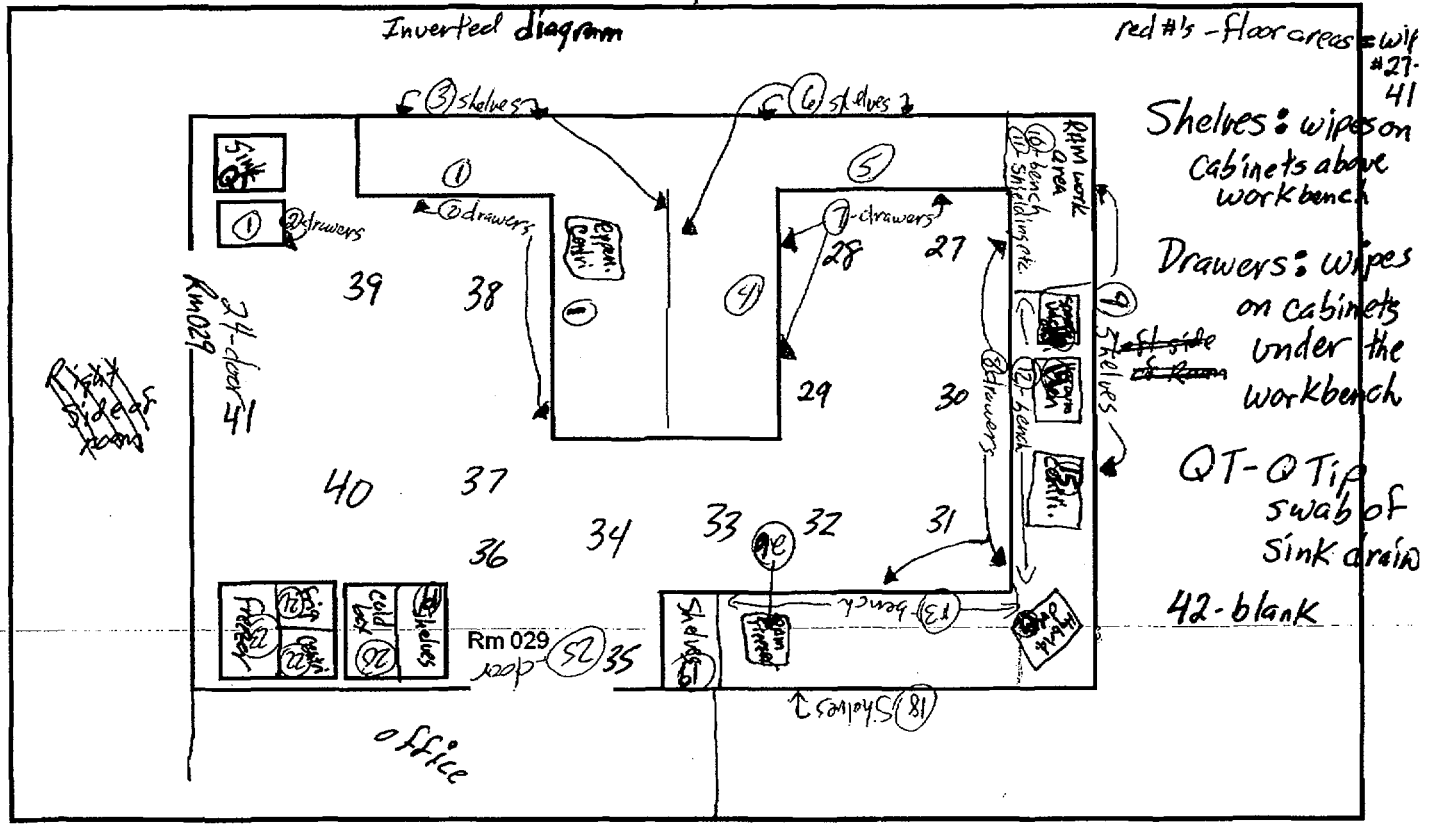
Closeout Contamination Survey Results Summary

☑ No contamination above 200 dpm/100 cm^2
☐ Contamination above 200 dpm/100 cm^2

☑ No radiation levels above background found
☐ Radiation levels above background found

Contamination Survey Results

Floor plan



Survey meter used: Mfg & model: Ludlum M3 Serial No.: 76331 Date of Calibration: 11/12/04

Survey meter locations	Survey meter reading (mR/hr)
BKG	0.04 mR/hr
Through readings taken throughout the laboratory (including floors, shelves, cabinets, etc.)	$\leq$ 0.04 mR/hr

Survey notes/comments:

Drexel University Radiation Safety Office
Wipe Test Results

Date Counted	5/10/2005
Counter Used	LSC
Efficiency %	50
Efficiency	0.5
LLD	21
Count Time (min)	2

Wipe Number	Total cpm	net cpm (total cpm for background)	dpm	total area wiped (x100cm^2)	dpm/100cm^2	
Background	20.8	20.8	NA	NA	NA	
1	42.9	22	44	3	15	
2	31.3	11	21	3	7	
3	34.9	14	28	3	9	
4	27.7	7	14	3	5	
5	21.9	1	2	3	1	
6	37.6	17	34	3	11	
7	31.8	11	22	3	7	
8	39.7	19	38	3	13	
9	35.4	15	29	3	10	
10	24.0	3	6	3	2	
11	35.5	15	29	3	10	
12	28.7	8	16	3	5	
13	46.0	25	50	3	17	
14	38.0	17	34	2	17	
15	39.0	18	36	3	12	
16	31.0	10	20	2	10	
17	38.0	17	34	3	11	
18	34.3	14	27	3	9	
19	49.1	28	57	3	19	
20	37.9	17	34	3	11	
21	29.2	8	17	3	6	
22	29.7	9	18	3	6	
23	32.8	12	24	3	8	
24	33.4	13	25	3	8	
25	38.6	18	36	3	12	
26	22.9	2	4	3	1	
27	28.2	7	15	3	5	
28	43.8	23	46	3	15	
29	17.7	0	0	3	0	
30	35.5	15	29	3	10	
31	28.2	7	15	3	5	
32	18.8	0	0	3	0	
33	31.3	11	21	3	7	
34	33.4	13	25	3	8	
35	22.9	2	4	3	1	
36	45.9	25	50	3	17	
37	29.2	8	17	3	6	
38	36.9	16.1	32	3	11	
39	38.6	17.8	36	3	12	
40	33.4	12.6	25	3	8	
41	31.3	10.5	21	3	7	
42	33.4	12.6	25			blank sample
Q Tip of drain	27.7	6.9	14	1	14	

Closeout Survey Report

Building & Room No.: Mendell 118	Department: DIBVIR
Contact Person: Dr. Block	Phone Number and Address: 215-489-4948
Surveyor:. Kendall Berry + Andrew Giangnacova	Survey Date: 8/15/06

Completed	Not Completed	Not Applicable	Closeout Checklist
■	☐	☐	Radioactive material removed. Cabinets, freezers, refrigerators, drawers, etc. checked.
■	☐	☐	Thorough contamination survey performed for fixed and removable contamination throughout facility, including workbenches, floors, remaining equipment, glassware, pigs, refrigerators, freezers, etc.
☐	☐	■	Contaminated items decontaminated or disposed as radioactive waste
☐	☐	■	Radioactive waste removed.
☐	☐	■	Radiation labels removed/obliterated from radioactive material containers, pigs, etc.
■	☐	☐	Radiation warning signs removed from doors, hoods, work areas, equipment, etc.
☐	☐	■	Radioactive sources removed from equipment such as gamma and /or beta counters
■	☐	☐	Department notified

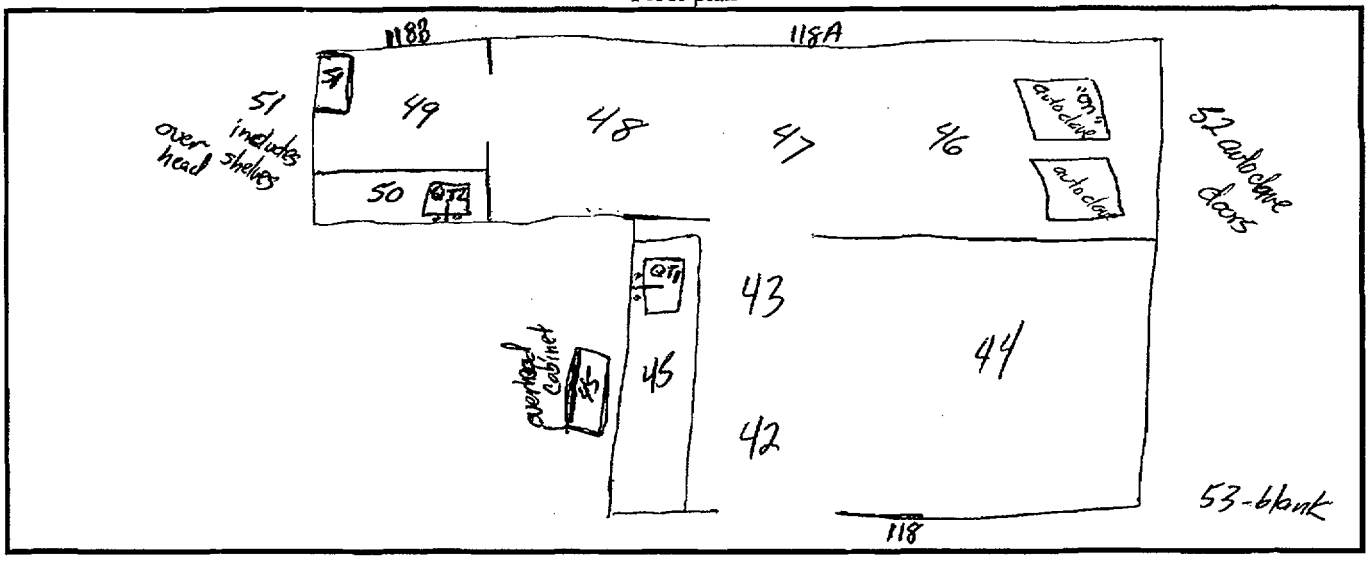
Closeout Contamination Survey Results Summary

■ No contamination above 200 dpm/100 cm^2
☐ Contamination above 200 dpm/100 cm^2

■ No radiation levels above background found
☐ Radiation levels above background found

Contamination Survey Results

Floor plan



42-44 and 46-49 floor wipes
45 +51 counter top and overhead shelves
50- counter top and under sink cabinet
52- inside of non-functioning autoclave and door of functioning autoclave

Survey meter used: Mfg & model: Ludlum M3 / Ludlum M14C Serial No.: 88936 / 126857 Date of Calibration: 1/30/06 / 11/21/05

Survey meter locations	Survey meter reading (mR/hr)
BKG	M3: 0.04 mR/hr M14C: 0.04 mR/hr
Thorough readings taken throughout the laboratory (including floors, shelves, cabinets, etc.)	M3: 0.04 mR/hr M14C: 0.04 mR/hr

Survey notes/comments:

Drexel University Radiation Safety Office
Wipe Test Results

Date Counted	8/16/2006
Counter Used	LSC
Efficiency %	50
Efficiency	0.5
LLD	25
Count Time (min)	2

Wipe Number	Total cpm	net cpm (total cpm for background)	dpm	total area wiped (x100cm^2)	dpm/100cm^2	
Background	28.5	28.5	NA	NA	NA	
42	19.0	0	0	3	0	
43	26.5	0	0	3	0	
44	22.5	0	0	3	0	
45	33.0	5	9	3	3	
46	26.5	0	0	3	0	
47	22.5	0	0	3	0	
48	22.5	0	0	3	0	
49	23.5	0	0	3	0	
50	29.5	1	2	3	1	
51	25.5	0	0	3	0	
52	28.0	0	0	3	0	
53	20.5	0	0			blank sample
Q Tip 1	23.0	0	0	1	0	
Q Tip 2	27.5	0	0	1	0	

Closeout Survey Report

Building & Room No.:122 Mandell Bldg	Department:Microbiology / DIBVIR
Contact Person: Dr. Block	Phone Number and Address:Del Val College 215-489-4948
Surveyor:.Radiation Safety team: Edward Yeager + Niki Nell	Survey Date: August 15, 2006

Completed	Not Completed	Not Applicable	Closeout Checklist
■	☐	☐	Radioactive material removed. Cabinets, freezers, refrigerators, drawers, etc. checked.
■	☐	☐	Thorough contamination survey performed for fixed and removable contamination throughout facility, including workbenches, floors, remaining equipment, glassware, pigs, refrigerators, freezers, etc.
☐	☐	■	Contaminated items decontaminated or disposed as radioactive waste
☐	☐	■	Radioactive waste removed.
☐	☐	■	Radiation labels removed/obliterated from radioactive material containers, pigs, etc.
■	☐	☐	Radiation warning signs removed from doors, hoods, work areas, equipment, etc.
☐	☐	■	Radioactive sources removed from equipment such as gamma and /or beta counters
■	☐	☐	Department notified

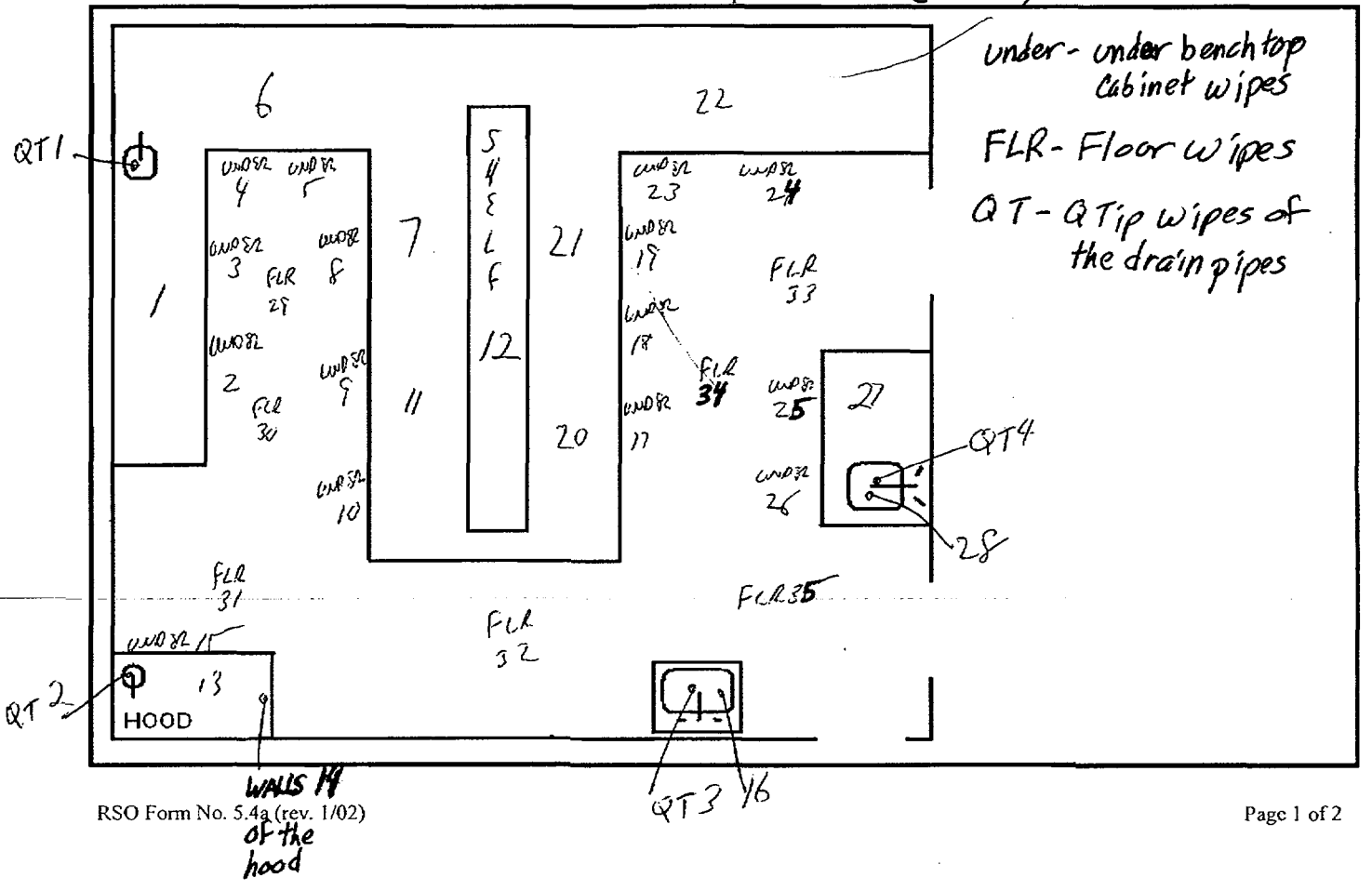
Closeout Contamination Survey Results Summary

■ No contamination above 200 dpm/100 cm^2
☐ Contamination above 200 dpm/100 cm^2

■ No radiation levels above background found
☐ Radiation levels above background found

Contamination Survey Results wipes # (1–35)

Floor plan



Survey meter used: Mfg & model: VICTOREEN 190 Serial No.: 850 Date of Calibration: 11/21/05

Survey meter locations	Survey meter reading (mR/hr)
BKG	0,008
Thorough readings taken throughout the laboratory (including floors, shelves, cabinets, etc.)	0.008

Survey notes/comments:

DUC 122 Mandell

Drexel University Radiation Safety Office
Wipe Test Results

Date Counted	8/16/2006
Counter Used	LSC
Efficiency %	50
Efficiency	0.5
LLD	22
Count Time (min)	2

Wipe Number	Total cpm	net cpm (total cpm for background)	dpm	total area wiped (x100cm^2)	dpm/100cm^2
Background	23.0	23.0	NA	NA	NA
1	30.5	8	15	3	5
2	32.5	10	19	3	6
3	24.0	1	2	3	1
4	25.5	3	5	3	2
5	26.5	4	7	3	2
6	22.0	0	0	3	0
7	25.5	3	5	3	2
8	30.5	8	15	3	5
9	27.0	4	8	3	3
10	26.5	4	7	3	2
11	23.5	1	1	3	0
12	26.0	3	6	3	2
13	25.5	3	5	3	2
14	29.5	7	13	3	4
15	30.0	7	14	3	5
16	25.0	2	4	3	1
17	34.5	12	23	3	8
18	23.5	1	1	3	0
19	28.5	6	11	3	4
20	16.0	0	0	3	0
21	28.5	6	11	3	4
22	29.0	6	12	3	4
23	27.5	5	9	3	3
24	24.0	1	2	3	1
25	17.5	0	0	3	0
26	24.5	2	3	3	1
27	22.5	0	0	3	0
28	28.0	5	10	3	3
29	26.0	3	6	3	2
30	23.5	1	1	3	0
31	22.5	0	0	3	0
32	27.0	4	8	3	3
33	22.0	0	0	3	0
34	23.5	1	1	3	0
35	17.5	0	0	3	0
Q Tip 1	22.0	0	0	1	0
Q Tip 2	30.0	7	14	1	14
Q Tip 3	31.0	8	16	1	16
Q Tip 4	20.5	0	0	1	0

Closeout Survey Report

Building & Room No.:127 Mandell Bldg	Department:Microbiology / IDIBVIR
Contact Person: Dr. Block	Phone Number and Address:Del.Val.College 215-489-4940
Surveyor:.Radiation Safety team: Edward Yeager + Niki Noll	Survey Date: August 15, 2006

Completed	Not Completed	Not Applicable	Closeout Checklist
■	☐	☐	Radioactive material removed. Cabinets, freezers, refrigerators, drawers, etc. checked.
■	☐	☐	Thorough contamination survey performed for fixed and removable contamination throughout facility, including workbenches, floors, remaining equipment, glassware, pigs, refrigerators, freezers, etc.
☐	☐	■	Contaminated items decontaminated or disposed as radioactive waste
☐	☐	■	Radioactive waste removed.
☐	☐	■	Radiation labels removed/obliterated from radioactive material containers, pigs, etc.
■	☐	☐	Radiation warning signs removed from doors, hoods, work areas, equipment, etc.
☐	☐	■	Radioactive sources removed from equipment such as gamma and /or beta counters
■	☐	☐	Department notified

Closeout Contamination Survey Results Summary

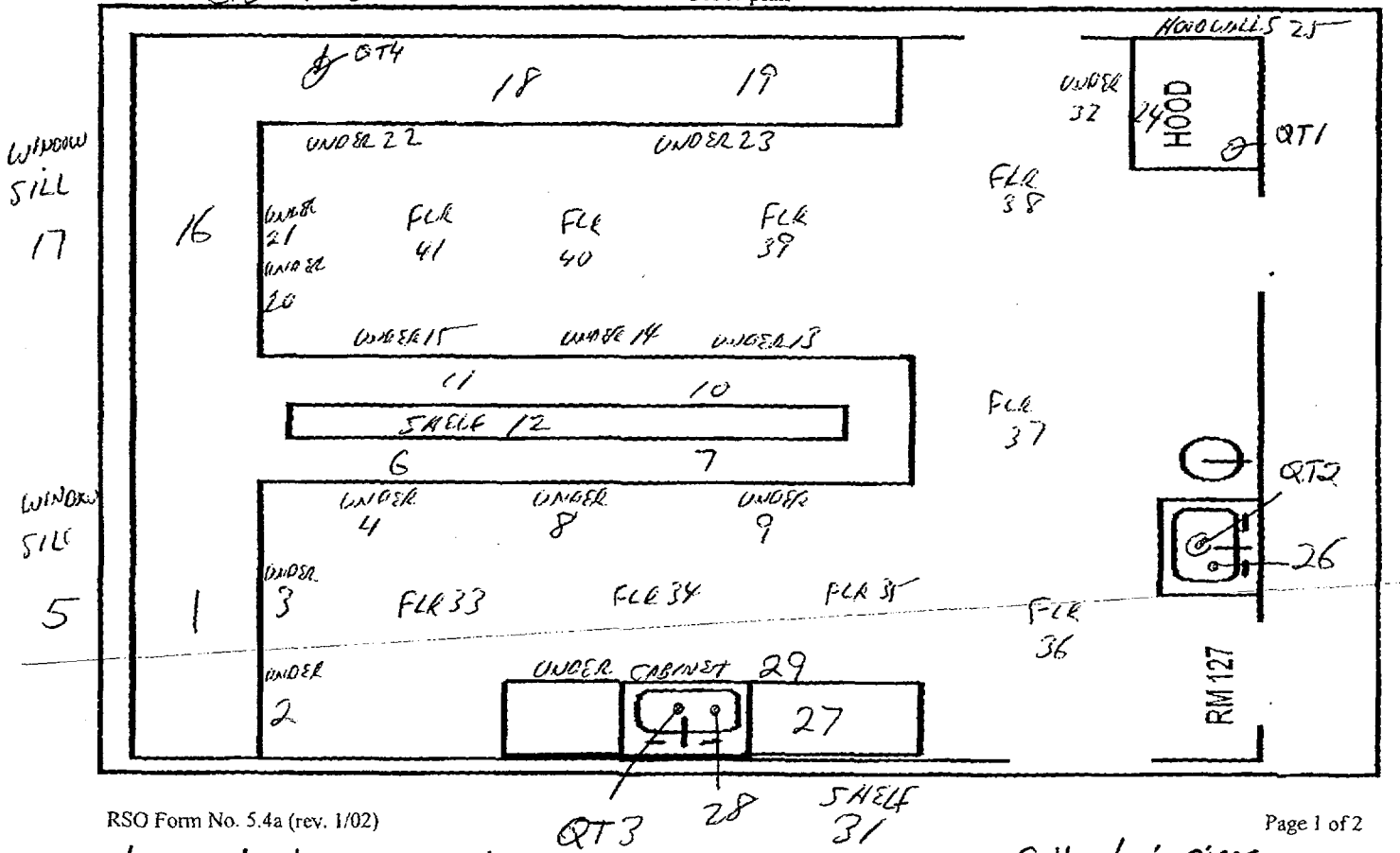
■ No contamination above 200 dpm/100 cm^2
☐ Contamination above 200 dpm/100 cm^2

■ No radiation levels above background found
☐ Radiation levels above background found

Contamination Survey Results

Wipes # (1-41)

Floor plan



under - under bench top cabinet wipes

QT - Q Tip wipes of the drain pipes

Survey meter used: Mfg & model: VICTOREEN 190 Serial No.: 850 Date of Calibration: 11/21/05

Survey meter locations	Survey meter reading (mR/hr)
BKG	0.008
Thorough readings taken throughout the laboratory (including floors, shelves, cabinets, etc.)	0.008

Survey notes/comments:

DVC 127 MANDEL B206 8/15/06

Drexel University Radiation Safety Office
Wipe Test Results

Date Counted	8/16/2006
Counter Used	LSC
Efficiency %	50
Efficiency	0.5
LLD	25
Count Time (min)	2

Wipe Number	Total cpm	net cpm (total cpm for background)	dpm	total area wiped (x100cm^2)	dpm/100cm^2	
Background	28.5	28.5	NA	NA	NA	
1	24.5	0	0	3	0	
2	26.0	0	0	3	0	
3	22.0	0	0	3	0	
4	24.5	0	0	3	0	
5	21.0	0	0	3	0	
6	28.5	0	0	3	0	
7	35.5	7	14	3	5	
8	24.0	0	0	3	0	
9	27.0	0	0	3	0	
10	25.5	0	0	3	0	
11	27.0	0	0	3	0	
12	30.0	2	3	3	1	
13	28.5	0	0	3	0	
14	24.0	0	0	3	0	
15	22.5	0	0	3	0	
16	30.5	2	4	3	1	
17	16.0	0	0	3	0	
18	31.5	3	6	3	2	
19	33.5	5	10	3	3	
20	20.5	0	0	3	0	
*21	531.5	503	1006	3	335	*Sample recounted approx. 5 hours later
22	29.5	1	2	3	1	
23	29.5	1	2	3	1	
24	26.5	0	0	3	0	
25	26.5	0	0	3	0	
26	29.0	1	1	3	0	
27	33.5	5	10	3	3	
28	25.5	0	0	3	0	
29	27.0	0	0	3	0	
30	18.5	0	0	3	0	
31	23.5	0	0	3	0	
32	26.0	0	0	3	0	
33	21.5	0	0	3	0	
34	27.0	0	0	3	0	
35	19.0	0	0	3	0	
36	28.5	0	0	3	0	
37	27.0	0	0	3	0	
38	27.5	0	0	3	0	
39	21.5	0	0	3	0	
40	25.0	0	0	3	0	
41	23.5	0	0	3	0	
Q Tip 1	23.0	0	0	1	0	
Q Tip 2	30.5	2	4	1	4	
Q Tip 3	29.0	1	1	1	1	
Q Tip 4	32.0	4	7	1	7	
Recount of #21	28.5	0	0	3	0	

Closeout Survey Report

Building & Room No.: Mandell 128	Department: DIBVIR
Contact Person: Dr. Block	Phone Number and Address: 215-489-4948
Surveyor:. Kendall Berry + Andrew Giangnacova	Survey Date: 8/15/06

Completed	Not Completed	Not Applicable	Closeout Checklist
■	☐	☐	Radioactive material removed. Cabinets, freezers, refrigerators, drawers, etc. checked.
■	☐	☐	Thorough contamination survey performed for fixed and removable contamination throughout facility, including workbenches, floors, remaining equipment, glassware, pigs, refrigerators, freezers, etc.
☐	☐	■	Contaminated items decontaminated or disposed as radioactive waste
☐	☐	■	Radioactive waste removed.
☐	☐	■	Radiation labels removed/obliterated from radioactive material containers, pigs, etc.
■	☐	☐	Radiation warning signs removed from doors, hoods, work areas, equipment, etc.
☐	☐	■	Radioactive sources removed from equipment such as gamma and /or beta counters
■	☐	☐	Department notified

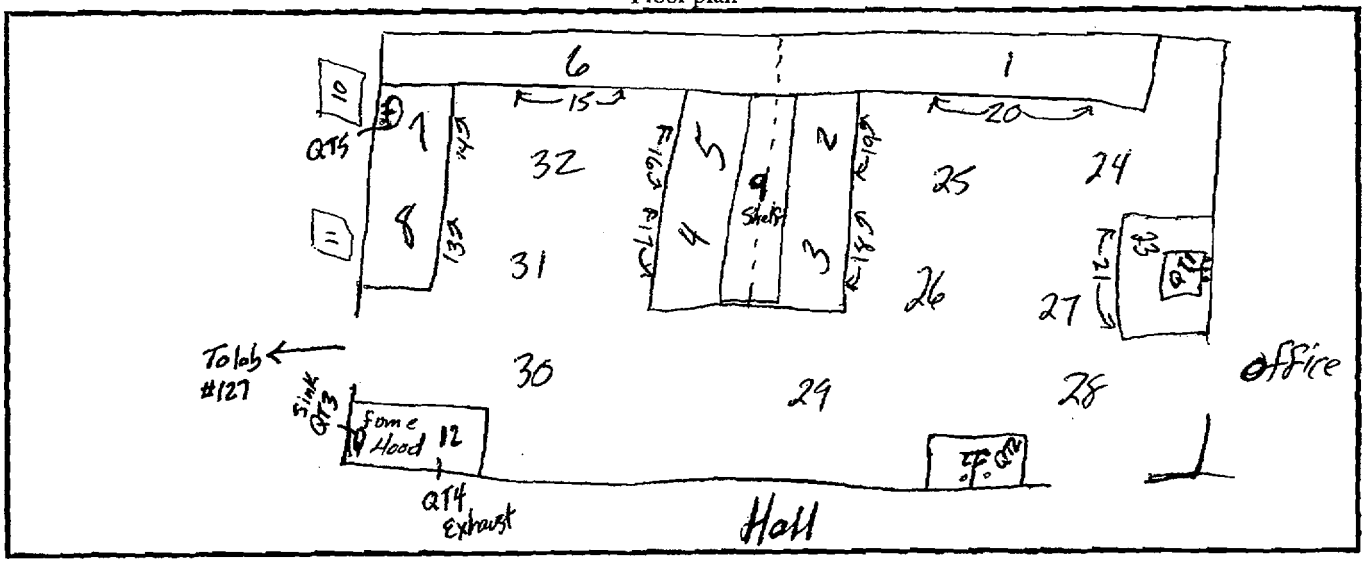
Closeout Contamination Survey Results Summary

■ No contamination above 200 dpm/100 cm^2
☐ Contamination above 200 dpm/100 cm^2

■ No radiation levels above background found
☐ Radiation levels above background found

Contamination Survey Results

Floor plan



10-11 overhead cabinets
13-21 under bench top cabinets
24-32 Floor wipes
1-9 bench top surfaces
33-blank

Survey meter used: Mfg & model: Victoreen RO Ludlum m3 #4 Serial No.: 850 14241 Ludlum m14c 126857 Date of Calibration: 11/21/05 6/23/06 11/21/05

Survey meter locations	Survey meter reading (mR/hr)
BKG	m3 = 0.04 mR/hr 190: 0.008 mR/hr 14c: 0.04 mR/hr
Thorough readings taken throughout the laboratory (including floors, shelves, cabinets, etc.)	m3: 0.04 mR/hr 190: 0.008 mR/hr m14c: 0.04 mR/hr

Survey notes/comments:

Drexel University Radiation Safety Office
Wipe Test Results

Date Counted	8/16/2006
Counter Used	LSC
Efficiency %	50
Efficiency	0.5
LLD	22
Count Time (min)	2

Wipe Number	Total cpm	net cpm (total cpm for background)	dpm	total area wiped (x100cm^2)	dpm/100cm^2	
Background	23.0	23.0	NA	NA	NA	
1	33.0	10	20	3	7	
2	24.0	1	2	3	1	
3	23.0	0	0	3	0	
4	27.0	4	8	3	3	
5	21.5	0	0	3	0	
6	20.0	0	0	3	0	
7	24.5	2	3	3	1	
8	26.0	3	6	3	2	
9	28.5	6	11	3	4	
10	27.0	4	8	3	3	
11	23.0	0	0	3	0	
12	25.5	3	5	3	2	
13	28.0	5	10	3	3	
14	29.5	7	13	3	4	
15	26.5	4	7	3	2	
16	24.5	2	3	3	1	
17	49.5	27	53	3	18	
18	27.5	5	9	3	3	
19	26.0	3	6	3	2	
20	31.5	9	17	3	6	
21	24.0	1	2	3	1	
22	27.0	4	8	3	3	
23	24.0	1	2	3	1	
24	27.5	5	9	3	3	
25	19.0	0	0	3	0	
26	29.0	6	12	3	4	
27	22.5	0	0	3	0	
28	27.0	4	8	3	3	
29	24.5	2	3	3	1	
30	27.5	5	9	3	3	
31	31.5	9	17	3	6	
32	21.5	0	0	3	0	
33	26.0	3	6			blank sample
Q Tip 1	25.0	2	4	1	4	
Q Tip 2	27.0	4	8	1	8	
Q Tip 3	21.0	0	0	1	0	
Q Tip 4	25.5	3	5	1	5	
Q Tip 5	18.5	0	0	1	0	

Appendix A
Radioactive Materials Receipts at DVC

Isotope	Chemical Form	Authorized User #	Authorized User Name	Quantity (mCi)	Date Rcvd
P-32	DCTP	UNIV260	Lu	0.50	09/09/04
P-32	DCTP	UNIV260	Lu	0.50	10/20/04
P-32	DCTP	UNIV260	Lu	0.50	11/09/04
P-32	dCTP	UNIV260	Lu	0.50	12/08/04
P-32	DCTP	UNIV260	Lu	0.50	12/21/04
P-32	dCTP	UNIV260	Lu	0.50	01/11/05
P-32	DCTP	UNIV260	Lu	0.50	01/14/05
P-32	DCTP	UNIV260	Lu	0.50	01/28/05
P-32	GTP	UNIV260	Lu	0.25	02/01/05
P-32	dCTP	UNIV260	Lu	0.50	02/17/05
P-32	DCTP	UNIV260	Lu	0.50	02/25/05
P-32	dCTP	UNIV260	Lu	0.50	03/08/05
P-32	UTP	UNIV260	Lu	0.50	03/18/05
P-32	dCTP	UNIV260	Lu	0.50	03/30/05
P-32	dCTP	UNIV260	Lu	0.50	04/08/05
P-32	dCTP	UNIV260	Lu	0.50	04/21/05
P-32	dCTP	UNIV260	Lu	0.50	04/26/05
P-32	dCTP	UNIV260	Lu	0.50	05/24/05
P-32	UTP	UNIV260	Lu	0.25	05/25/05
P-32	dCTP	UNIV260	Lu	0.50	06/10/05
P-32	UTP	UNIV260	Lu	0.25	06/23/05
P-32	UTP	UNIV260	Lu	0.25	06/23/05
P-32	UTP	UNIV260	Lu	0.25	06/29/05
P-32	dCTP	UNIV260	Lu	0.50	07/08/05
P-32	UTP	UNIV260	Lu	0.25	08/01/05
P-32	UTP	UNIV260	Lu	0.25	08/02/05
P-32	ATP	UNIV260	Lu	0.25	08/04/05
P-32	dCTP	UNIV260	Lu	0.50	08/05/05
P-32	dCTP	UNIV260	Lu	0.50	09/26/05
P-32	UTP	UNIV260	Lu	0.25	09/28/05
P-32	dCTP	UNIV260	Lu	0.50	10/12/05
P-32	dCTP	UNIV260	Lu	0.50	11/18/05
P-32	UTP	UNIV260	Lu	0.25	12/02/05
P-32	dCTP	UNIV260	Lu	0.50	12/13/05
P-32	dCTP	UNIV260	Lu	0.25	12/14/05
P-32	ATP	UNIV260	Lu	0.25	12/15/05
P-32	dCTP	UNIV260	Lu	0.50	01/10/06
P-32	dCTP	UNIV260	Lu	0.50	01/20/06
P-32	UTP	UNIV260	Lu	0.25	01/27/06
P-32	dCTP	UNIV260	Lu	0.50	01/31/06
P-32	ATP	UNIV260	Lu	0.25	02/07/06
P-32	DCTP	UNIV260	Lu	0.50	02/14/06
P-32	UTP	UNIV260	Lu	0.25	02/21/06
P-32	UTP	UNIV260	Lu	0.25	02/23/06
P-32	DCTP	UNIV260	Lu	0.50	03/07/06
P-32	UTP	UNIV260	Lu	0.25	03/09/06
P-32	ATP	UNIV260	Lu	0.25	03/21/06
P-32	DCTP	UNIV260	Lu	0.50	03/21/06
P-32	UTP	UNIV260	Lu	0.25	03/28/06
P-32	DCTP	UNIV260	Lu	0.50	04/04/06
P-32	UTP	UNIV260	Lu	0.25	04/25/06
p-32	UTP	UNIV260	Lu	0.25	05/09/06
P-32	ATP	UNIV260	Lu	0.25	05/10/06
P-32	UTP	UNIV260	Lu	0.25	05/16/06

Isotope	Chemical Form	Authorized User #	Authorized User Name	Quantity (mCi)	Date Rcvd
P-32	DCTP	UNIV260	Lu	0.50	05/16/06
P-32	DCTP	UNIV260	Lu	0.50	05/31/06
P-32	UTP	UNIV260	Lu	0.25	06/13/06
p-32	DCTP	UNIV260	Lu	0.50	06/13/06
P-32	DCTP	UNIV260	Lu	0.25	06/28/06
P-32	dCTP	UNIV260	Lu	0.50	07/03/06
P-32	dCTP	UNIV260	Lu	0.50	07/24/06
S-35	Protein Labeling	UNIV260	Lu	7.00	01/20/05
P-32	ATP	UNIV259	Mehta	1.00	03/08/05
P-32	UTP	UNIV259	Mehta	0.25	08/17/05
P-32	dCTP	UNIV259	Mehta	0.50	08/30/05
P-32	UTP	UNIV259	Mehta	0.25	11/01/05
P-32	UTP	UNIV259	Mehta	0.25	11/30/05
S-35	Protein Labeling Mix	UNIV259	Mehta	7.00	09/17/04
S-35	protein labelling	UNIV259	Mehta	7.00	12/10/04
S-35	Labeling Mix	UNIV259	Mehta	7.00	06/14/05
S-35	Labeling Mix	UNIV259	Mehta	7.00	06/29/05
S-35	Protein Labeling Mix	UNIV259	Mehta	7.00	08/12/05
S-35	Protein labeling mix	UNIV259	Mehta	7.00	10/28/05
S-35	Protein labeling mix	UNIV259	Mehta	7.00	03/07/06
S-35	Protein Labeling Mix	UNIV259	Mehta	7.00	07/03/06
P-32	ATP	UNIV257	Steele	0.25	10/15/04
P-32	UTP	UNIV257	Steele	0.25	12/08/04
P-32	ATP	UNIV257	Steele	0.25	01/06/05
P-32	ATP	UNIV257	Steele	0.25	02/15/05
P-32	ATP	UNIV257	Steele	0.25	03/30/05
P-32	dCTP	UNIV257	Steele	0.50	04/05/05

This is to acknowledge the receipt of your letter/application dated

8/28/2006, and to inform you that the initial processing which includes an administrative review has been performed.

Amendment 37-07438-15

[X] There were no administrative omissions. Your application was 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

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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** 139371.
When calling to inquire about this action, please refer to this control number.
You may call us on (610) 337-5398, or 337-5260.

NRC FORM 532 (RI)
(6-96)

Sincerely,
Licensing Assistance Team Leader