Bristol-Myers Squibb Company

P.O. Box 191 New Brunswick, NJ 08903-0191 732-227-5000

Br. 2

April 21, 2006

Ms. Betsy Ullrich
US NRC Region I
475 Allendale Road
King of Prussia, PA 19406

RE: DOCKET 03-005222
UPDATED DECOMMISSIONING COST ESTIMATE FOR LICENSE #29-00139-02

Dear Ms. Ullrich:

E. R. Squibb & Sons LLC, a division of Bristol-Myers Squibb Company, has been granted radioactive material license #29-00139-02 which authorizes possession and use of radioactive materials at four New Jersey facilities: the New Brunswick facility (at One Squibb Drive, New Brunswick, NJ), the Lawrenceville facility (at Route 206 and Provinceline Road, Lawrenceville, NJ), and the Hopewell facility (at 311 Pennington-Rocky Hill Road, Pennington, NJ).

In accordance with the requirements of 10CFR 30, E.R. Squibb & Sons is submitting an updated Decommissioning Cost Estimate (DCE) for our licensed activities our three facilities. Upon acceptance of this DCE by the Commission, updated Financial Assurance documentation will be submitted.

If you require additional information, please contact Michael Vala at Michael.vala@bms.com or (732) 227-5096.

Thank you for your assistance.

Sincerely,

Michael J. Vala

Michael J. Vala, CHP
Radiation Safety Officer/Manager, EHS

Enclosure

Cc: L. Fedele*
M. Koza*
R. McLaughlin*

* - cover only

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REGION 1

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Exemptions 6,7F
FOIA/PA 2011-0063

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NMSS/RGNI MATERIALS-002

DECOMMISSIONING COST ESTIMATE

NRC LICENSE #29-00139-02

Bristol-Myers Squibb
One Squibb Drive
New Brunswick, NJ

Prepared by

March, 2006

Table of Contents

I. Executive Summary

This report documents the basis, assumptions, and results of a decommissioning cost estimate prepared on behalf of Bristol-Myers Squibb by Philotechnics, Ltd. for three pharmaceutical research and development sites in New Jersey. The three sites are licensed under U.S. Nuclear Regulatory Commission (NRC) license number 29-00132-02 and include facilities located at:

- One Squibb Drive, New Brunswick, NJ
- 311 Pennington-Rocky Hill Road, Pennington, NJ
- Route 206 and Provinceline Road, Lawrenceville, NJ

The decommissioning cost estimate was prepared in accordance with the guidance provided in Section 3, Appendix F of NUREG 1727, *NMSS Decommissioning Standard Review Plan* dated September 2000.

Philotechnics previously performed a similar estimate for these facilities in 2002. That estimate, inspection of the current facilities, and interviews with knowledgeable individuals formed the basis for this estimate. Facility features were inventoried for each area. Cost estimates were prepared for each site based on the number of laboratories and the summed features of each building using the format contained in NUREG 1727.

The estimated decommissioning costs are:

Site	Estimate	25% Contingency	Total Cost Estimate
Pennington	$2,509,580	$627,395	$3,136,975
Lawrenceville	$3,537,740	$884,435	$4,422,175
New Brunswick	$852,196	$213,049	$1,065,245
Total	$6,899,516	$1,724,879	$8,624,395

The 25% contingency is required by the U.S. NRC for decommissioning cost estimates.

- Quantities of materials or wastes accumulated prior to shipping or disposal

The cost estimates account for all phases of the decommissioning process and distinguish between labor and non-labor costs. Labor costs are broken out for:

- Planning and preparation
- D&D of facility components
- Facility restoration, as needed
- Final radiation survey

Non-labor costs are broken out for:

- Packing materials
- Shipping costs
- Equipment and supplies
- Disposal costs
- Laboratory costs
- Miscellaneous expenses

Consistent with NRC guidance, a 25% contingency factor is provided for unforeseen circumstances that could increase decommissioning costs.

III. General Assumptions

General assumptions are those that were used to estimate decommissioning costs for all buildings. The following general assumptions were made:

Inventories of materials and wastes at the time of decommissioning are in amounts consistent with routine facility conditions over time.

It is estimated that 10% of installed equipment, cabinets, ventilation ducts, sinks, and drains will be disposed of as radioactive waste, except in radiosynthesis labs. In those areas, the estimate is 50%.

Costs will be incurred to clean up areas where contamination has built up over time but gone undetected due to accumulation of small spills. Experience indicates contaminated surfaces will be discovered as equipment is removed.

Decommissioning activities begin immediately after cessation of operations without multi-year storage-for-decay periods. The cost estimate reflects expected conditions during routine research operations and does not rely on radioactive decay to meet license termination criteria.

Work is performed by an independent third party contractor.

The cost estimate neglects credit for salvage value or the sale of assets during or after decommissioning.

The radionuclides present are those authorized by the radioactive materials license and identified by the radiation safety staff. The predominant radionuclides are ^{3}H, ^{14}C, ^{125}I, ^{32}P, ^{33}P, and ^{35}S. ^{63}N is present in the form of sources and foils in analytical equipment. Other byproduct material is authorized in limited quantities (b)(7)(F)

(b)(7)(F)

The decontamination endpoint for facility structures and installed fixtures and equipment is the derived concentration guideline (DCGL) associated with license termination criterion of 25 mrem per year.

The decontamination endpoint for removable equipment is the applicable value in NRC Regulatory Guide 1.86. Material that cannot be decontaminated to that level will be disposed of as radioactive waste.

Number and Dimensions of Facility Components

Glove boxes are assumed to be 4 ft. wide, 3 ft. deep and 3 ft. tall.

Fume hoods are assumed to be 5 ft. wide, 3 ft. deep and 8 ft. tall.

Lab benches are assumed to be 4 ft. deep and 8 ft. tall. Total length was estimated from photographs, drawings, and facility walkdowns.

Cabinets are assumed to be 3 ft. deep and 3 ft. tall. Total length was determined by a ratio to lab bench length. This ratio was typically between 0.1 and 1.0.

Sinks are assumed to be 4ft. wide, 4ft. deep and 3ft. tall.

Length of drain piping is estimated as 20 linear feet per sink per room plus 20 linear feet per room for floor elevation. For example, a basement room containing two sinks would be estimated as 20 linear feet per sink plus 20 linear feet for a first floor elevation for a total of 60 linear feet. A floor drain is considered as an additional sink.

Drain lines are assumed to be 3" in diameter. Drain line is not collapsed during decommissioning. Waste volume per linear foot of drain line is equal to:

$$1 \text{ foot} \times (3.14) \times (.125)^2 \approx 0.05 \text{ ft}^3$$

Length of glove box and hood ventilation ducts is estimated as 20 linear feet per hood or glove box plus 20 linear feet per lab for floor elevation plus roof. For example, a laboratory containing one hood on the second floor of a four story building would be estimated as 20 linear feet for the hood plus 60 linear feet for floor elevation plus roof for a total of 80 linear feet.

Ventilation ducting is assumed to be 18" in diameter unless specified otherwise (e.g., New Brunswick Facility). During decommissioning ventilation ducting is collapsed to one half its original volume. Waste volume per linear foot of ducting is equal to:

$$0.5 \times 1 \text{ foot} \times (3.14) \times (.75)^2 \approx 0.88 \text{ ft}^3$$

Equipment volume is estimated as a number of 50 cubic foot units. For example, a piece of equipment 3.5 ft deep, 3.5 ft tall and 4ft wide would be considered one 50 cubic foot unit.

Floors, Walls and Ceilings

Survey units are defined as:

Class 1 Area: Impacted areas with concentrations of residual activity, prior to remediation, that exceed the $DCGL_W$

Class 2 Area: Impacted areas for which concentrations of residual activity that exceed the $DCGL_W$ are not expected.

Class 3 Area: Impacted areas that have a low probability of containing areas with residual radioactivity.

Laboratory and radioactive material storage areas are considered MARSSIM class 1 survey areas.

Ceiling areas are equivalent to floor areas but are considered MARSSIM class 2 survey areas.

Walls are generally taken to be 15 ft. tall except where noted. For labs and radioactive materials areas the lower half is considered MARSSIM class 1 survey area. For 20 foot walls the lower 8 ft. is considered class 1.

Building floor areas outside labs and radioactive material storage areas are assigned 25% to MARSSIM class 2 and 75% to MARSSIM class 3 survey units.

Roof Areas are considered class 3 survey units. Ventilation fans, filter housings, and ducting installed on roof tops are assigned as a class 1 survey unit in the area immediately under and around the ventilation components. The remainder of the roof is divided 25% to class 2 survey units and 75% to class 3.

For determination of number of survey units the following limits were used:

Classification	Suggested Area
Class 1	
Structures	Up to 100 m^2
Land Areas	Up to 2000 m^2
Class 2	
Structures	100 to 1,000 m^2
Land Areas	2,000 to 10,000 m^2
Class 3	
Structures	No limit
Land Areas	No limit

Using the conversion of approximately 10 ft^2 per square meter, class 1 survey units were limited to 1,000 ft^2 and class 2 structure survey units were limited to 10,000 ft^2.

Labor Costs

The cost estimates are based on fully burdened market place wage rates for all personnel. An overhead rate equal to 100% of base salary and fringe benefits was assumed. In addition, the Project Manager, Supervisors, Shipper, Health Physicist, and Health Physics technicians are assumed to be non-local hires. Consequently their wage rate also reflects a daily living allowance of $160. This is the approximate government per diem rate for central New Jersey. Skilled, Non-skilled and Clerical workers are assumed to be local hires.

Packaging, Shipping and Disposal of Radioactive Wastes

The radioactive waste generated from facility D&D activities is assumed to be metal waste at a density of 20 pounds per cubic foot. This waste is shipped in 40 foot cargo vans with each van holding 2000 ft^3 of waste.

Dry active waste (DAW) volumes include both those assumed to be in facility operational inventory and those generated in the process of facility D&D. DAW is packaged in B-25 boxes consistent with standard industry practice.

Waste processing and disposal costs are based on those available in the industry for large facility decommissioning projects. Mileage and shipping expenses are included.

Miscellaneous Costs

Insurance includes General Liability Insurance at a rate of $7.00 per $1,000 of project price.

Since work is assumed to be provided by an independent third party cost estimates also include an allowance for sales tax (professional services) taken as 10% of project costs, minus miscellaneous costs. The tax allowance is listed as a miscellaneous cost.

Lawrenceville Site

The Lawrenceville site estimate is based on the following buildings and areas.

Building/Module	Elevation	Area (ft^2)
F1	First Floor (Basement)	21,500
	Second Floor	21,500
	Third Floor	21,500
	Fourth Floor	21,500
G1	Second Floor	34,000
	Fourth Floor	15,200
H	First Floor (Basement)	27,100
	Third Floor	30,000
	Fourth Floor	30,000
K	Second Floor	39,400
	Third Floor	39,400
	Fourth Floor	39,400
L	First Floor (Basement)	33,100
	Fourth Floor	33,100

The onsite D&D crew varies with the building being decommissioned and the number of crews working in parallel at one time. It is assumed that a laboratory takes a crew of one health physics technician, two skilled radiation workers and three unskilled radiation workers one week to D&D. The D&D crews are supported proportionately by the project manager, supervisors, the project shipper, and clerical support.

A new radiosynthesis suite has been added to building H4. A waste fraction of 50% was applied to all installed and movable equipment located in this suite.

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New Brunswick Site

The New Brunswick site estimate is based on the following buildings and areas. There is also one small laboratory in building 134.

Building	Elevation	Area (ft^2)
107	Second Floor	54,000
	Roof	54,000
105	First Floor	50,500
81	First Floor	13,500

The onsite D&D crew varies with the building being decommissioned and the number of crews working in parallel at one time. It is assumed that a laboratory takes a crew of one health physics technician, two skilled radiation workers and three unskilled radiation workers one week to D&D. The D&D crews are supported proportionately by the project manager, supervisors, the project shipper, and clerical support.

The floors, walls, and ceilings of all laboratories in the radio-synthesis suite and the adjacent ventilation equipment room located in Building 107 are considered to be MARSSIM Class 1 survey units. A waste fraction of 50% was applied to all installed and movable equipment located in this suite.

3.4 FACILITY DECOMMISSIONING SUMMARY

Radioactive Material license numbers and types (i.e., Byproduct, Source):
The Bristol-Myers Squibb facility located at One Squibb Drive, New Brunswick, NJ is licensed under USNRC Byproduct Materials license number 29-00139-02.
Types and quantities of materials authorized under the licenses listed above:
Byproduct Material atomic number 1 through 83, except Sr-90, 100 mCi per radionuclide, 2 Ci total; H-3 150 Ci; C-14 20 Ci; Sr-90 2 mCi; Tc-99m 750 mCi; Byproduct Material aomic number 84 through 103 1 mCi; Ni-63 Sources per registration IAW 10 CFR 32.210.
Description of how licensed materials are used:
Radionuclides are used in pharmaceutical research and development. This facility synthesizes radioactive compounds for use and distributes them to other research and development facilities. Synthesis activities primarily involve the use of large quantities of H-3 and C-14. Research and development activities are also conducted on a limited basis at this site. Research activities include new discovery, applications testing, and animal studies.
Description of facility, including buildings, rooms, grounds, and description of where particular types of materials are used:
Radio-synthesis activities are conducted in a laboratory suite located on the second floor of Building 107. This is a self-contained unit with a dedicated ventilation system located in an adjoining equipment space. Limited research and development activites are performed in laboratories in Building 105. Waste is primarily stored in Building 81. A detailed listing of laboratories and storage areas is attached to this estimate.
Quantities of materials or waste accumulated before shipping or disposal
The primary waste collection and storage area is located in Building 81.

3.5 Number and Dimensions of Facilities Components

Use this table to summarize relevant features of the facility. Copy and complete the table as necessary for each room, laboratory, or area. Rooms laboratories, or areas with similar levels of contamination may be consolidated into one table.

Name of room, laboratory, or area:	New Brunswick Building 107 Synthesis Suite				
Level of Contamination:	≈1,000 -500,000 dpm/100 cm^2				
Component	Quantity of Component	Unit	Dimensions of Component (specify units)	Total Dimensions (specify units)	
Glove Boxes	0	Each	4'w x 3'd x 3't	0	ft^3
Fume Hoods	16	Each	5'w x 4'd x 8't	2,560	ft^3
Lab Benches (Casework)	367	Linear Feet	4'd x 3't	4,404	ft^3
Sinks	9	Each	4'w x 4'd x 3't	432	ft^3
Drains	460	Linear Feet	3" diameter	23	ft^3
Floors	*See Listing*	Class 1 Sq. Feet	Includes Ceilings	4,145	ft^2
Walls (Class1)	See Listing	Class 1 Sq. Feet		14,460	ft^2
Walls (Class 2)	See Listing	Class 2 Sq. Feet		0	ft^2
Ceilings	See Listing	Class 2 Sq. Feet		4,145	ft^2
Ventilation/Ductwork	740	Linear Feet	18" diameter	651	ft^3
Cabinets	204	Linear Feet	3'd x 3't	1,836	ft^3
Hot Cells	0	Each		0	ea
Equipment/Materials	36	50 Ft^3 Units		1,800	ft^3
Soil Plots	0	Sq. Feet		0	ea
Storage Tanks	0	Each		0	ea
Storage Areas	0	Each		0	ft^2
Radwaste Areas	0	Each		0	ea
Scrap Recovery Areas	0	Each		0	ft^2
Maintenance Shop	0	Each		0	ft^2
Equipment Decontamination	0	Each		0	ft^2
Other Class 2 Areas	See Listing	Class 2 Sq. Feet		13,464	ft^2
Other Class 3 Areas	See Listing	Class 3 Sq. Feet		41,391	ft^2
Other (Specify)	150	Linear Feet	Roof Top Vent Duct	600	ft^3
Other (Specify)		Each		0	ea
			Features/Equipment Volume	12,306	ft^3
			Waste Fraction	0.50	
			Waste Volume	6,153	ft^3
			Waste Density (lb/ft3)	20	
			Waste Mass	123,062	lb

Name of room, laboratory, or area:	New Brunswick Building 105				
Level of Contamination:	≈1,000 -10,000 dpm/100 cm^2				
Component	Quantity of Component	Unit	Dimensions of Component (specify units)	Total Dimensions (specify units)	
Glove Boxes	0	Each	4'w x 3'd x 3'l	0	ft^3
Fume Hoods	8	Each	5'w x 4'd x 8'l	1,280	ft^3
Lab Benches (Casework)	200	Linear Feet	4'd x 3'l	2,400	ft^3
Sinks	5	Each	4'w x 4'd x 3'l	240	ft^3
Drains	140	Linear Feet	3" diameter	7	ft^3
Floors	See Listing	Class 1 Sq. Feet		1,760	ft^2
Walls (Class1)	See Listing	Class 1 Sq. Feet		2,040	ft^2
Walls (Class 2)	See Listing	Class 2 Sq. Feet		2,040	ft^2
Ceilings	See Listing	Class 2 Sq. Feet		1,760	ft^2
Ventilation/Ductwork	320	Linear Feet	18" diameter	282	ft^3
Cabinets	128	Linear Feet	3'd x 3'l	1,152	ft^3
Hot Cells	0	Each		0	ea
Equipment/Materials	6	50 Ft^3 Units		300	ft^3
Soil Plots	0	Sq. Feet		0	ea
Storage Tanks	0	Each		0	ea
Storage Areas	0	Each		0	ft^2
Radwaste Areas	0	Each		0	ea
Scrap Recovery Areas	0	Each		0	ft^2
Maintenance Shop	0	Each		0	ft^2
Equipment Decontamination	0	Each		0	ft^2
Other Class 2 Areas	See Listing	Class 2 Sq. Feet		648	ft^2
Other Class 3 Areas	See Listing	Class 3 Sq. Feet		2,592	ft^2
Other (Specify)		Each		0	ea
Other (Specify)		Each		0	ea

Features/Equipment Volume	5,661	ft^3
Waste Fraction	0.10	
Waste Volume	566	ft^3
Waste Density (lb/ft3)	20	
Waste Mass	11,321	lb

Name of room, laboratory, or area:	New Brunswick Building 81				
Level of Contamination:	≈1,000 -10,000 dpm/100 cm^2				
Component	Quantity of Component	Unit	Dimensions of Component (specify units)	Total Dimensions (specify units)	
Glove Boxes	0	Each	4'w x 3'd x 3't	0	ft^3
Fume Hoods	0	Each	5'w x 4'd x 8't	0	ft^3
Lab Benches (Casework)	0	Linear Feet	4'd x 3't	0	ft^3
Sinks	0	Each	4'w x 4'd x 3't	0	ft^3
Drains	0	Linear Feet	3" diameter	0	ft^3
Floors	See Listing	Class 1 Sq. Feet		1,150	ft^2
Walls (Class1)	See Listing	Class 1 Sq. Feet		2,220	ft^2
Walls (Class 2)	See Listing	Class 2 Sq. Feet		2,220	ft^2
Ceilings	See Listing	Class 2 Sq. Feet		1,150	ft^2
Ventilation/Ductwork	40	Linear Feet	18" diameter	35	ft^3
Cabinets	0	Linear Feet	3'd x 3't	0	ft^3
Hot Cells	0	Each		0	ea
Equipment/Materials	5	50 Ft^3 Units		250	ft^3
Soil Plots	0	Sq. Feet		0	ea
Storage Tanks	0	Each		0	ea
Storage Areas	0	Each		0	ft^2
Radwaste Areas	1	Each		1	ea
Scrap Recovery Areas	0	Each		0	ft^2
Maintenance Shop	0	Each		0	ft^2
Equipment Decontamination	0	Each		0	ft^2
Other Class 2 Areas	See Listing	Class 2 Sq. Feet		3,089	ft^2
Other Class 3 Areas	See Listing	Class 3 Sq. Feet		9,266	ft^2
Other (Specify)		Each		0	ea
Other (Specify)		Each		0	ea
			Features/Equipment Volume	285	ft^3
			Waste Fraction	0.25	
			Waste Volume	71	ft^3
			Waste Density (lb/ft3)	20	
			Waste Mass	1,426	lb

3.6 PLANNING AND PREPARATION (Work Days)

Estimate the number of workdays, by specific labor category, that will be required to complete planning and preparation activities. Include all labor categories, including Supervisor, Foreman, Craftsman, Technician, Health Physicist, Laborer, Clerical, and others as needed.

Activity	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
Preparation of Documentation for Regulatory Agencies	7	5	5	3	0	0	10
Submittal of Decommissioning Plan to NRC when required by 10 CFR 30.36(g)(1), 40.42(g)(1), or 70.38(g)(1)	2	2	2	0	0	0	2
Development of Work Plans	5	7	5	0	0	0	10
Procurement of Special Equipment	2	5	0	0	0	0	2
Staff Training	1	2	2	3	2	6	1
Characterization of Radiological Condition (including sampling, soil and tailings analysis, or groundwater analysis, if applicable)	5	5	5	15	0	0	2
Other (specify) Mobilization	1	2	2	3	2	6	1
TOTALS	23	28	21	24	4	12	28

3.7 DECONTAMINATION OR DISMANTLING OF RADIOACTIVE FACILITY COMPONENTS
(Work Days)

Estimate the number of workdays, by specific labor category, that will be required to complete decontamination and/or dismantling activities for each facility component. Copy and complete this table as necessary for each room, laboratory, or area. Rooms, laboratories, or areas with similar levels of contamination may be consolidated in one table.

Name of room, laboratory, or area:		New Brunswick Building 107 Synthesis Suite						
Level of Contamination:		≈1,000 -500,000 dpm/100 cm2						
Component	Action	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
Glove Boxes	Remove/Disp							
Fume Hoods	Remove/Disp	2	2	1	3	4	6	2
Lab Benches	Decon/Remove	2	2	1	3	4	6	2
Sinks	Decon/Remove	2	2		3	4	6	2
Drains	Remove/Disp	2	2		3	4	6	2
Floors	Decon/Wipe	1	1		2	2	3	1
Walls	Decon/Wipe	1	1		2	2	3	1
Ceilings	Decon/Wipe	2	2	1	3	4	6	2
Ventilation/Ductwork	Remove/Disp	4	4	2	6	8	12	4
Cabinets	Decon/Remove							
Hot Cells	Remove/Disp							
Equipment/Materials	Sur/Rem/Disp	4	4	2	6	8	12	4
Soil Plots	Sample							
Storage Tanks	N/A							
Storage Areas	Remove/Disp							
Radwaste Areas	Remove/Disp							
Scrap Recovery Areas	N/A							
Maintenance Shop	Remove/Disp							
Equipment Decontamination	Remove/Disp							
Other (specify)	Remove/Disp							
Other (specify)	Remove/Disp							
TOTALS		20	20	7	31	40	60	20

Name of room, laboratory, or area:		New Brunswick Building 105						
Level of Contamination:		≈1,000 -10,000 dpm/100 cm2						
Component	Action	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
Glove Boxes	Remove/Disp							
Fume Hoods	Remove/Disp	1	1	2	1	1	1.5	1
Lab Benches	Decon/Remove	1	1		1	1	1.5	1
Sinks	Decon/Remove	1	1		1	1	1.5	1
Drains	Remove/Disp	1	1		1	1	1.5	1
Floors	Decon/Wipe	1	0.5		1	1	1.5	1
Walls	Decon/Wipe	0.5	0.5		0.5	0.5	1	0.5
Ceilings	Decon/Wipe	0.5	1		1	1	1.5	0.5
Ventilation/Ductwork	Remove/Disp	1	1		1	1	1.5	1
Cabinets	Decon/Remove	0.5	0.5		0.5	0.5	1	0.5
Hot Cells	Remove/Disp							
Equipment/Materials	Sur/Rem/Disp	0.5	0.5	2	2	1	1.5	0.5
Soil Plots	Sample							
Storage Tanks	N/A							
Storage Areas	Remove/Disp							
Radwaste Areas	Remove/Disp							
Scrap Recovery Areas	N/A							
Maintenance Shop	Remove/Disp							
Equipment Decontamination	Remove/Disp							
Other (specify)	Remove/Disp							
Other (specify)	Remove/Disp							
TOTALS		8	8	4	10	9	14	8

Name of room, laboratory, or area:		New Brunswick Building 81						
Level of Contamination:		≈1,000 -10,000 dpm/100 cm2						
Component	Action	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
Glove Boxes	Remove/Disp							
Fume Hoods	Remove/Disp							
Lab Benches	Decon/Remove							
Sinks	Decon/Remove							
Drains	Remove/Disp							
Floors	Decon/Wipe							
Walls	Decon/Wipe							
Ceilings	Decon/Wipe							
Ventilation/Ductwork	Remove/Disp							
Cabinets	Decon/Remove							
Hot Cells	Remove/Disp							
Equipment/Materials	Sur/Rem/Disp							
Soil Plots	Sample							
Storage Tanks	N/A							
Storage Areas	Remove/Disp							
Radwaste Areas	Remove/Disp	1	1	5	0	0	5	1
Scrap Recovery Areas	N/A							
Maintenance Shop	Remove/Disp							
Equipment Decontamination	Remove/Disp							
Other (specify)	Remove/Disp							
Other (specify)	Remove/Disp							
TOTALS		1	1	5	0	0	5	1

Name of room, laboratory, or area:		#REF!						
Level of Contamination:		#REF!						
Component	Action	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
Glove Boxes	Remove/Disp							
Fume Hoods	Remove/Disp	0.1	0.2	0.2	0.2	0.2	0.3	0.1
Lab Benches	Decon/Remove	0.1	0.2	0.2	0.2	0.2	0.3	0.1
Sinks	Decon/Remove	0.1	0.2		0.2	0.2	0.3	0.1
Drains	Remove/Disp	0.1	0.2		0.2	0.2	0.3	0.1
Floors	Decon/Wipe	0.1	0.2		0.2	0.2	0.3	0.1
Walls	Decon/Wipe	0.1	0.2		0.2	0.2	0.3	0.1
Ceilings	Decon/Wipe	0.1	0.2		0.2	0.2	0.3	0.1
Ventilation/Ductwork	Remove/Disp	0.1	0.2	0.2	0.2	0.2	0.3	0.1
Cabinets	Decon/Remove	0.1	0.2	0.2	0.2	0.2	0.3	0.1
Hot Cells	Remove/Disp							
Equipment/Materials	Sur/Rem/Disp	0.1	0.2	0.2	0.2	0.2	0.3	0.1
Soil Plots	Sample							
Storage Tanks	N/A							
Storage Areas	Remove/Disp							
Radwaste Areas	Remove/Disp							
Scrap Recovery Areas	N/A							
Maintenance Shop	Remove/Disp							
Equipment Decontamination	Remove/Disp							
Other (specify)	Remove/Disp							
Other (specify)	Remove/Disp							
TOTALS		1	2	1	2	2	3	1

3.8 RESTORATION OF CONTAMINATED AREAS ON FACILITY GROUNDS
(Work Days)

Estimate the number of work days, by specific labor category, that will be required to restore contaminated areas on the facility grounds.

Name of room, laboratory, or area:	New Brunswick Building 107 Synthesis Suite						
Activity	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
Restore Floors	2	2	0	0	2	3	1
Restore Walls	1	1	0	0	1	2	1
Restore Roof	2	2	0	0	2	3	1
Restore Utilites	2	2	0	0	2	3	1
TOTALS	7	7	0	0	7	11	4

Name of room, laboratory, or area:	New Brunswick Building 105						
Activity	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
Restore Floors	0	0.2	0	0	0.2	0.3	0
Restore Walls	0	0.2	0	0	0.2	0.3	0
Restore Roof	0	0.2	0	0	0.2	0.3	0
Restore Utilites	0	0.4	0	0	0.4	0.3	0
TOTALS	0	1	0	0	1	1.2	0

Name of room, laboratory, or area:	New Brunswick Building 81						
Activity	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
Restore Floors	0	0	0	0	0	0	0
Restore Walls	0	0	0	0	0	0	0
Restore Roof	0	0	0	0	0	0	0
Restore Utilites	0	0	0	0	0	0	0
TOTALS	0	0	0	0	0	0	0

3.9 FINAL RADIATION SURVEY

(Work Days)

Estimate the number of work days, by specific labor category, that will be required to conduct a final radiation survey.

Name of room, laboratory, or area:	New Brunswick Building 107 Synthesis Suite						
Activity	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
FSS Setup	3	3	3	2	0	0	3
Survey Packages	3	3	3	2	0	0	3
Class 1	5	5	3	42	0	0	5
Class 2	3	3	1	5	0	0	3
Class 3	1	1	1	3	0	0	1
TOTALS	15	15	11	54	0	0	15

Estimate the number of work days, by specific labor category, that will be required to conduct a final radiation survey.

Name of room, laboratory, or area:	New Brunswick Building 105						
Activity	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
FSS Setup	1	2	2	1.5	0	0	0.5
Survey Packages	1	2	1	1.5	0	0	0.5
Class 1	0.2	0.4	0	6	0	0	0.5
Class 2	0.2	0.4	0	3	0	0	0
Class 3	0.2	0.4	0	3	0	0	0
TOTALS	2.6	5.2	3	15	0	0	1.5

Estimate the number of work days, by specific labor category, that will be required to conduct a final radiation survey.							
Name of room, laboratory, or area:		New Brunswick Building 81					
Activity	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
FSS Setup	0.5	1	1	0.5	0	0	0.3
Survey Packages	0.5	1	0	0.5	0	0	0.3
Class 1	0.1	0.2	0	3	0	0	0.3
Class 2	0.1	0.2	0	2	0	0	0.1
Class 3	0.1	0.2	0	2	0	0	0
TOTALS	1.3	2.6	1	8	0	0	1

3.10 SITE STABILIZATION AND LONG-TERM SURVEILLANCE
(Work Days)

Estimate the number of work days, by specific labor category, that will be required to complete site stabilization and long-term surveillance activities.

Activity	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
No Site Stabilization or							
Long Term Maintenance							
TOTALS	0	0	0	0	0	0	0

3.11 TOTAL WORK DAYS BY LABOR CATEGORY

Enter the total work days for each specific labor category from the applicable table above (i.e., from the bottom rows of Tables 3.6 through 3.10).

Task	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
Planning and Preparation (TOTALS from Table 3.6)	23	28	21	24	4	12	28
Decontamination and/or Dismantling of Radioactive Facility Components (Sum of TOTALS from all copies of Table 3.7)	29	29	16	41	49	79	29
Restoration of Contaminated Areas on Facility Grounds (TOTALS from Table 3.8)	7	8	0	0	8	12.2	4
Final Radiation Survey (TOTALS from Table 3.9)	18.9	22.8	15	77	0	0	17.5
Site Stabilization and Long-Term Surveillance (TOTALS from Table 3.10)	0	0	0	0	0	0	0

3.12 WORKER UNIT COST SCHEDULE

Estimate labor costs (including salary, fringe benefits, and corporate overhead). Include all appropriate labor categories, including Supervisor, Foreman, Craftsman, Technician, Health Physicist, Laborer, Clerical, and others as needed.

Labor Cost Component	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
Salary & Fringe ($/year)	$96,000	$67,000	$67,000	$45,000	$50,000	$34,000	$25,000
Overhead Rate (%)	100%	100%	100%	100%	100%	100%	100%
Total Cost Per Year	$192,000	$134,000	$134,000	$90,000	$100,000	$68,000	$50,000
Living Expenses (PD*7/5)[1]	$224	$224	$224	$224	$0	0	0
Total Cost Per Work Day[2]	$962	$739	$739	$570	$385	$262	$192

[1] Per Diem Rate: $160 per day.

[2] Based on 260 work days per year (e.g., 260).

3.13 TOTAL LABOR COSTS BY MAJOR DECOMMISSIONING TASK

Multiply the estimated work days for each specific labor category (from Table 3.11) by the total cost per work day for the corresponding labor category (from Table 3.12), and enter the results in the table below. Then, add across all labor categories to determine the total labor costs for each major decommissioning task.

Labor Cost Component	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical	Total Labor Cost
Planning and Preparation	$22,137	$20,703	$15,527	$13,684	$1,538	$3,138	$5,385	$82,112
Decontamination and/or Dismantling of Radioactive Facility Components	$27,911	$21,442	$11,830	$23,376	$18,846	$20,662	$5,577	$129,645
Restoration of Contaminated Areas on Facility Grounds	$6,737	$5,915	$0	$0	$3,077	$3,191	$769	$19,689
Final Radiation Survey	$18,191	$16,858	$11,091	$43,902	$0	$0	$3,365	$93,406
Site Stabilization and Long-Term Surveillance	$0	$0	$0	$0	$0	$0	$0	$0

3.14 PACKAGING, SHIPPING, AND DISPOSAL OF RADIOACTIVE WASTES (Excluding Labor Costs)

(a) Packing Material Costs

Estimate the types and volumes of waste expected to be generated, along with the number and types of containers required for packaging the waste. Multiply the number of containers required by the unit cost per container.

Waste Type	Volume (ft3)	Number of Containers	Type of Containers	Unit Cost of Container	Total Packaging Costs
DAW	800	9	B-25	$700	$6,300
Metal	6,790	3	40' Sea-Land	$1,000	$3,000
Liquids	0	0	55 gal. inner 85 gal.overpack	$200	$0
Biological	0	0	55 gal. inner 85 gal.overpack	$200	$0
TOTAL					$9,300

(b) Shipping Costs

Estimate the types and volumes of waste expected to be generated, along with the number and types of containers required for packaging the waste. Multiply the number of containers required by the unit cost per container.

Waste Type	Number of Truckloads	Unit Cost ($/mile/truckload)	Surcharges ($/mile)	Overweight Charges($/mile)	Distance Shipped (miles)	Total Shipping Costs
DAW	1	$0.00	1	1	800	$0
Metal	5	$0.00	1	1	800	$0
Liquids	0	$0.00	1	1	1	$0
Biological	0	$0.00	1	1	1	$0
TOTAL	6					$0

(c) Waste Disposal Costs

Estimate the volume of waste to be disposed. Multiply the volume of waste disposed by the unite\disposal cost (including any volume based surcharges). Add any surcharges that are based on the number of containers of waste. along with the number and types of containers required for packaging the waste. Multiply the number of containers required by the unit cost per container.

Waste Type	Disposal Volume (ft3)	Density (lb/ft3)	Disposal Mass (lbs)	Unit Cost	Surcharges ($/ft3 or $/container)	Total Disposal Costs
DAW	800	15	12000	7.50	1	$90,000
Metal	6790	20	135809	2.50	1	$339,523
Liquids	0	60	0	4.00	1	$0
Biological	0	20	0	25.00	1	$0
TOTAL	7590					$429,523

3.15 EQUIPMENT/SUPPLY COSTS (Excluding Containers)

Estimate the quantity of equipment and supplies required for decommissioning and multiply that quantity by the appropriate unit costs.			
Equipment/Supplies	Quantity	Unit Cost	Total Equipment/Supply Cost
Protective Clothing	0	$15,000	$0
Respirators	0		$0
Misc Tools	0	$5,000	$0
Consumables	0	$15,000	$0
TOTAL			$0

3.16 LABORATORY COSTS

If applicable, estimate the costs for analyses to be performed by an independent third party laboratory.

Activity	Quantity	Unit Cost	Total Item Cost
Sampling	30	$100	$3,000
Transport of Samples	3	$50	$150
Testing and Analysis	30	$100	$3,000
Other (specify)			
TOTAL			$6,150

3.17 MISCELLANEOUS COSTS

Estimate any other applicable costs.	
Activity	Total Cost
License Fees	---
Insurance	$5,389
Taxes	$76,983
Other (specify):	---
TOTAL	$82,371

3.18 TOTAL DECOMMISSIONING COSTS

Enter the total costs reported in Tables 3.13, 3.14(a)-(c), 3.15, 3.16, and 3.17 into the appropriate cells below, and add then to obtain a subtotal. Add to the subtotal a contingency allowance in the amount of 25 percent of the total decommissioning cost estimate. Also, calculate for each task/component the percentage it represents of the total.

Task/Component	Cost	Percentage
Planning and Preparation (from Table 3.13)	$82,112	9.6%
Decontamination and/or Dismantling of Radioactive Facility (From Table 3.13)	$129,645	15.2%
Restoration of Contaminated Areas on Facility Grounds (From Table 3.13)	$19,689	2.3%
Final Radiation Survey (From Table 3.13)	$93,406	11.0%
Packing Material Costs (TOTAL from Table 3.14(a))	$9,300	1.1%
Shipping Costs (TOTAL from Table 3.14(b))	$0	0.0%
Waste Disposal Costs (TOTAL from Table 3.14(c))	$429,523	50.4%
Equipment/Supply Costs (TOTAL from Table 3.15)	$0	0.0%
Laboratory Costs (TOTAL from Table 3.16)	$6,150	0.7%
Miscellaneous Costs (TOTAL from Table 3.17)	$82,371	9.7%
SUBTOTAL	$852,196	100.0%
25% Contingency	$213,049	25.0%
TOTAL DECOMMISSIONING COST ESTIMATE	$1,065,245	125.0%

Laboratory	Features											
		Casework (linear ft.)	Sinks (ea.)	Drains (ft.)	Hoods (ea.)	Glove Boxes (ea.)	Ventilation Ducting (ft.)	Cabinets/Shelves		Equipment (50 ft3 - ea.)		Comments
								Factor	(ft.)	(3.5 x 3.5 x 4)	(ft3)	
Bldg. 107												
2556	2	0	0	0	0	0	0	0	0	0	0	
Synth. Ste.												
2557	2	0	0	0	0	0	0	0	0	0	0	
Synth. Ste.												
2558	2	48	1	60	1	0	80	0.3	14	1	50	
Synth. Ste.												
2559	2	24	1	60	2	0	100	0.8	19	3	150	
Synth. Ste.												
2560	2	79	1	60	1	0	80	0.8	63	4	200	
Synth. Ste.												
2561	2	80	2	80	4	0	140	0.6	48	4	200	
Synth. Ste.												
2562	2	0	0	0	0	0	0	0	0	4	200	
Synth. Ste.												
2563	2	0	0	0	0	0	0	0	0	1	50	
Synth. Ste.												
2564	2	28	1	60	2	0	100	0.2	6	1	50	
Synth. Ste.												
2565	2	0	0	0	0	0	0	0	0	0	0	
Synth. Ste.												
2566	2	28	1	60	2	0	100	0.2	6	1	50	
Synth. Ste.												
2567	2	0	0	0	0	0	0	0	0	0	0	
Synth. Ste.												
2568	2	80	2	80	4	0	140	0.6	48	4	200	
Synth. Ste.												
2555	Roof	0	0	0	0	0	0	0	0	13	650	6 filter banks
(Vent. Filters)												~80 ft3 ea
		367	9	460	16	0	740		204	36	1800	
Total Facilty	54000											
Class 1	4145		Class 1 Walls	14460								
Class 2	12464	25%	Class 2 Walls									
Class 3	37391	75%										
Non-Impacted	0											
Bldg. 107 Roof							150		0	1	50	4 Fans
(Vent Duct/Fans)												
Total Facilty	54000											
Class 1	0											
Class 2	1000	20%										
Class 3	4000	80%										
Non-Impacted	49000											

Floors					Walls					Ceilings					Waste			
Number	Length (ft.)	Width (ft.)	Area (ft2)	Comments	Number	Width (ft.)	Height (ft.)	Area (ft2)	Comments	Number	Length (ft.)	Width (ft.)	Area (ft2)	Comments	Type	Volume (ft3)	Comments	
1	7	8	56		2	7	15	210		1	7	8	56		DAW	0		
					2	8	15	240							Biological			
1	7	55	385		2	7	15	210		1	7	55	385		DAW	0		
					2	55	15	1650							Biological			
1	24	10	240		2	24	15	720		1	24	10	240		DAW	74		
					2	10	15	300							Biological			
1	24	10	240		2	24	15	720		1	24	10	240		DAW	60		
					2	10	15	300							Biological			
1	27	20	540		2	27	15	810		1	27	20	540		DAW	131		
					2	20	15	600							Biological			
1	27	20	540		2	27	15	810		1	27	20	540		DAW	143		
					2	20	15	600							Biological			
1	24	14	336		2	24	15	720		1	24	14	336		DAW	20		
					2	14	15	420							Biological			
1	7	9	63		2	7	15	210		1	7	9	63		DAW	5		
					2	9	15	270							Biological			
1	17	13	221		2	17	15	510		1	17	13	221		DAW	53		
					2	13	15	390							Biological			
1	7	7	49		2	7	15	210		1	7	7	49		DAW	0		
					2	7	15	210							Biological			
1	17	13	221		2	17	15	510		1	17	13	221		DAW	53		
					2	13	15	390							Biological			
1	7	9	63		2	7	15	210		1	7	9	63		DAW	0		
					2	9	15	270							Biological			
1	27	20	540		2	27	15	810		1	27	20	540		DAW	143		
					2	20	15	600							Biological			
1	21	31	651		2	21	15	630		1	21	31	651		DAW	65		
					2	31	15	930							Biological			
			4145					14460					4145			748		
								0							DAW			
								0							Biological			

Laboratory	Features											
		Casework (linear ft.)	Sinks (ea.)	Drains (ft.)	Hoods (ea.)	Glove Boxes (ea.)	Ventilation Ducting (ft.)	Cabinets/Shelves		Equipment (50 ft3 - ea.)		Comments
Bldg 105												
1155	1	160	3	80	4	0	160	0.0	96	4	200	
1149	1	40	2	60	4	0	160	0.8	32	2	100	
		200	5	140	8	0	320		128	6	300	
Total Facility	54000											
Class 1	1760		Class 1 Walls	2040								
Class 2	648	20%	Class 2 Walls	2040								
Class 3	2592	60%										
Non-Impacted	49000											
[redacted] Bldg 81	[redacted]								0		0	
1090/91	1	0	0	0	0	0	0	0	0	3	150	
1070	1	0	0	0	0	0	40	0	0	2	100	
Total Facility	13505											
Class 1	1150		Class 1 Walls	2220								
Class 2	3089	25%	Class 2 Walls	2220								
Class 3	9266	75%										
Non-Impacted	0											

Floors					Walls					Ceilings					Waste			
Number	Length (ft.)	Width (ft.)	Area (ft2)	Comments	Number	Width (ft.)	Height (ft.)	Area (ft2)	Comments	Number	Length (ft.)	Width (ft.)	Area (ft2)	Comments	Type	Volume (ft3)	Comments	
1	40	32	1280		2	32	15	960		1	40	32	1280		DAW	246		
					2	40	15	1200							Biological			
1	20	24	480		2	24	15	720		1	20	24	480		DAW	85		
					4	20	15	1200							Biological			
			1760					4080					1760			331		
			0					0										
1	30	20	600		2	20	20	800		1	30	20	600		DAW			
					2	30	20	1200							Biological			
1	11	50	550		2	50	20	2000		1	11	50	550		DAW			
					2	11	20	440							Biological			
								4440										

NRC FORM 374A U.S. NUCLEAR REGULATORY COMMISSION

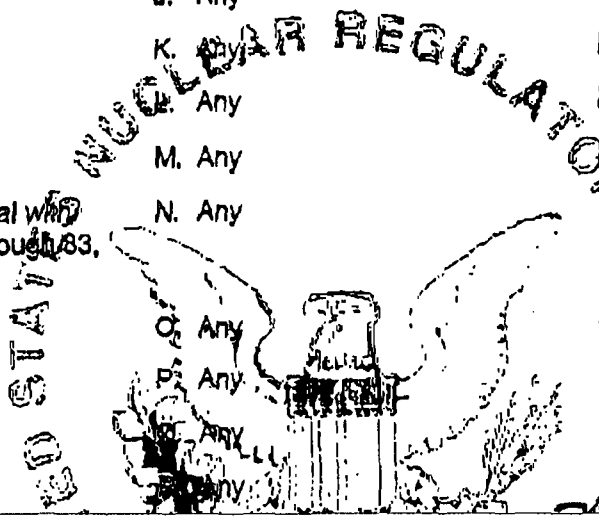
License Number
29-00139-02

Docket or Reference Number
030-05222

Amendment No. 109

MATERIALS LICENSE
SUPPLEMENTARY SHEET

6. Byproduct, source, and/or special nuclear material	7. Chemical and/or physical form	8. Maximum amount that licensee may possess at any one time under this license
I. Hydrogen 3	I. Any	I. 250 curies
J. Carbon 14	J. Any	J. 25 curies
K. Phosphorus 33	K. Any	K. 1 curie
L. Sulfur 35	L. Any	L. 10 curies
M. Iodine 125	M. Any	M. 500 millicuries
N. Any byproduct material with atomic numbers 1 through 83, except, Strontium 90	N. Any	N. 200 millicuries per radionuclide and 6 curies total
O. Hydrogen 3	O. Any	O. 1 curie
P. Carbon 14	P. Any	P. 1 curie
Q. Sulfur 35	Q. Any	Q. 100 millicuries
R. Calcium 45	R. Any	R. 300 millicuries



(b)(7)(F)

9. Authorized use:

A. through F. and H. through R. Research and development as defined in 10 CFR 30.4; animal studies; and calibration and checking of the licensee's instruments.

B. and C. Preparation and distribution of radioactive drugs to authorized recipients in accordance with 10 CFR 32.72.

G. To be used for sample analysis in compatible gas chromatography devices that have been registered either with the U.S. Nuclear Regulatory Commission under 10 CFR 32.210 or with an Agreement State and have been distributed in accordance with a Commission or Agreement State specific license authorizing distribution to persons specifically authorized by a Commission or Agreement State license to receive, possess, and use the devices.

3.4 FACILITY DECOMMISSIONING SUMMARY

Radioactive Material license numbers and types (i.e., Byproduct, Source):
The Bristol-Myers Squibb located at Route 206 and Provinceline Rd, Lawrenceville, NJ is licensed under USNRC Byproduct Materials license number 29-00139-02.
Types and quantities of materials authorized under the licenses listed above:
Byproduct Material atomic number 1 through 83, except Sr-90 200 mCi per radionuclide, 6 Ci total; H-3 250 Ci; C-14 25 Ci; P-33 1 Ci; S-35 20 Ci; I-125 500 mCi; Ni-63 sources per registration IAW 10 CFR 32.210; (b)(7)(F) (b)(7)(F)
Description of how licensed materials are used:
Low energy beta emitting radonuclides and radioiodine are used in pharmaceutical research and development. This work involves both labeling compounds and use of labeled compounds. Research includes new discovery, applications testing, metabolic studies, and biological testing involving animal studies.The radioactive materials are used in laboratory facilities on a research and development scale.
Description of facility, including buildings, rooms, grounds, and description of where particular types of materials are used:
The Lawrenceville facility consists of several multi-story laboratory buildings connected by a series of corridors
Quantities of materials or waste accumulated before shipping or disposal
The basement of Building F contains two waste storage areas. Space is limited. For purposes of this cost estimate, 800 ft^3 of DAW and 200 ft^3 of biological waste is assumed to be present.

3.5 Number and Dimensions of Facilities Components

Use this table to summarize relevant features of the facility. Copy and complete the table as necessary for each room, laboratory, or area. Rooms laboratories, or areas with similar levels of contamination may be consolidated into one table.

Name of room, laboratory, or area:	Pennington Building 3
Level of Contamination:	≈1,000 -10,000 dpm/100 cm^2

Component	Quantity of Component	Unit	Dimensions of Component (specify units)	Total Dimensions (specify units)	
Glove Boxes	1	Each	4'w x 3'd x 3'	36	ft^3
Fume Hoods	6	Each	6'w x 4'd x 6'	960	ft^3
Lab Benches (Casework)	97	Linear Feet	4'd x 3'	1,164	ft^3
Sinks	5	Each	4'w x 4'd x 3'	240	ft^3
Drains	220	Linear Feet	3" diameter	11	ft^3
Floors	See Listing	Class 1 Sq. Feet		1,790	ft^2
Walls (Class1)	See Listing	Class 1 Sq. Feet		3,794	ft^2
Walls (Class 2)	See Listing	Class 2 Sq. Feet		3,794	ft^2
Ceilings	See Listing	Class 2 Sq. Feet		1,790	ft^2
Ventilation/Ductwork	240	Linear Feet	18" diameter	211	ft^3
Cabinets	71	Linear Feet	3'd x 3'	639	ft^3
Hot Cells	0	Each		0	ea
Equipment/Materials	11	50 Ft^3 Units		550	ft^3
Soil Plots	0	Sq. Feet		0	ea
Storage Tanks	0	Each		0	ea
Storage Areas	0	Each		0	ft^2
Radwaste Areas	1	Each		1	ea
Scrap Recovery Areas		Each		0	ft^2
Maintenance Shop		Each		0	ft^2
Equipment Decontamination		Each		0	ft^2
Other Class 2 Areas	See Listing	Class 2 Sq. Feet		24,853	ft^2
Other Class 3 Areas	See Listing	Class 3 Sq. Feet	Includes 33,000 ft^2 for roof	107,558	ft^2
Other (Specify)		Each		0	ea
Other (Specify)		Each		0	ea
			Features/Equipment Volume	3,811	ft^3
			Waste Fraction	0.10	
			Waste Volume	381	ft^3
			Waste Density (lb/ft3)	20	
			Waste Mass	7,622	lb

Name of room, laboratory, or area:	Pennington Building 17				
Level of Contamination:	≈1,000 -10,000 dpm/100 cm^2				
Component	Quantity of Component	Unit	Dimensions of Component (specify units)	Total Dimensions (specify units)	
Glove Boxes	0	Each	4'w x 3'd x 3'l	0	ft^3
Fume Hoods	11	Each	5'w x 4'd x 8'l	1,760	ft^3
Lab Benches (Casework)	851	Linear Feet	4'd x 3'l	10,212	ft^3
Sinks	7	Each	4'w x 4'd x 3'l	336	ft^3
Drains	420	Linear Feet	3" diameter	21	ft^3
Floors	See Listing	Class 1 Sq. Feet		6,830	ft^2
Walls (Class1)	See Listing	Class 1 Sq. Feet		6,780	ft^2
Walls (Class 2)	See Listing	Class 2 Sq. Feet		6,780	ft^2
Ceilings	See Listing	Class 2 Sq. Feet		6,830	ft^2
Ventilation/Ductwork	540	Linear Feet	18" diameter	475	ft^3
Cabinets	340	Linear Feet	3'd x 3'l	3,060	ft^3
Hot Cells	0	Each			ea
Equipment/Materials	30	50 Ft^3 Units		1,500	ft^3
Soil Plots	0	Sq. Feet		0	ea
Storage Tanks	0	Each		0	ea
Storage Areas	0	Each		0	ft^2
Radwaste Areas	1	Each		1	ea
Scrap Recovery Areas	0	Each		0	ft^2
Maintenance Shop	0	Each		0	ft^2
Equipment Decontamination	0	Each		0	ft^2
Other Class 2 Areas	See Listing	Class 2 Sq. Feet		20,118	ft^2
Other Class 3 Areas	See Listing	Class 3 Sq. Feet	Includes 87,300 ft^2 for roof	147,553	ft^2
Other (Specify)		Each		0	ea
Other (Specify)		Each		0	ea

Features/Equipment Volume	17,364	ft^3
Waste Fraction	0.10	
Waste Volume	1,736	ft^3
Waste Density (lb/ft3)	20	
Waste Mass	34,728	lb

Name of room, laboratory, or area:	Pennington Building 21				
Level of Contamination:	≈1,000 -10,000 dpm/100 cm^2				
Component	Quantity of Component	Unit	Dimensions of Component (specify units)	Total Dimensions (specify units)	
Glove Boxes	5	Each	4'w x 3'd x 3'l	180	ft^3
Fume Hoods	70	Each	5'w x 4'd x 6'l	11,200	ft^3
Lab Benches (Casework)	3206	Linear Feet	4'd x 3'l	38,472	ft^3
Sinks	68	Each	4'w x 4'd x 3'l	3,264	ft^3
Drains	2320	Linear Feet	3" diameter	116	ft^3
Floors	See Listing	Class 1 Sq. Feet		63,548	ft^2
Walls (Class1)	See Listing	Class 1 Sq. Feet		40,230	ft^2
Walls (Class 2)	See Listing	Class 2 Sq. Feet		40,230	ft^2
Ceilings	See Listing	Class 2 Sq. Feet		63,548	ft^2
Ventilation/Ductwork	2460	Linear Feet	18" diameter	2,165	ft^3
Cabinets	1943	Linear Feet	3'd x 3'l	17,487	ft^3
Hot Cells	0	Each			ea
Equipment/Materials	212	50 Ft^3 Units		10,600	ft^3
Soil Plots	0	Sq. Feet		0	ea
Storage Tanks	0	Each		0	ea
Storage Areas	0	Each		0	ft^2
Radwaste Areas	0	Each		0	ea
Scrap Recovery Areas	0	Each		0	ft^2
Maintenance Shop	0	Each		0	ft^2
Equipment Decontamination		Each		0	ft^2
Other Class 2 Areas	See Listing	Class 2 Sq. Feet		13,713	ft^2
Other Class 3 Areas	See Listing	Class 3 Sq. Feet	Includes 89,200 ft^2 for roof	100,339	ft^2
Other (Specify)		Each		0	ea
Other (Specify)		Each		0	ea
			Features/Equipment Volume	83,484	ft^3
			Waste Fraction	0.10	
			Waste Volume	8,348	ft^3
			Waste Density (lb/ft3)	20	
			Waste Mass	166,968	lb

3.6 PLANNING AND PREPARATION
(Work Days)

Estimate the number of workdays, by specific labor category, that will be required to complete planning and preparation activities. Include all labor categories, including Supervisor, Foreman, Craftsman, Technician, Health Physicist, Laborer, Clerical, and others as needed.

Activity	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
Preparation of Documentation for Regulatory Agencies	14	9	9	4.5	0	0	18
Submittal of Decommissioning Plan to NRC when required by 10 CFR 30.36(g)(1), 40.42(g)(1), or 70.38(g)(1)	2	2	2	0	0	0	2
Development of Work Plans	9	14	9	0	0	0	18
Procurement of Special Equipment	3	9	0	0	0	0	4
Staff Training	1	3	2	5	4	11	2
Characterization of Radiological Condition (including sampling, soil and tailings analysis, or groundwater analysis, if applicable)	14	14	14	54	0	0	2
Other (specify) Mobilization	1	3	2	5.5	4	11	2
TOTALS	44	54	38	69	8	22	48

3.7 DECONTAMINATION OR DISMANTLING OF RADIOACTIVE FACILITY COMPONENTS (Work Days)

Estimate the number of workdays, by specific labor category, that will be required to complete decontamination and/or dismantling activities for each facility component. Copy and complete this table as necessary for each room, laboratory, or area. Rooms, laboratories, or areas with similar levels of contamination may be consolidated in one table.

Name of room, laboratory, or area:		Pennington Building 3						
Level of Contamination:		≈1,000 -10,000 dpm/100 cm2						
Component	Action	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
Glove Boxes	Remove/Disp		0.5		0.2		1	
Fume Hoods	Remove/Disp	0.5	0.5		0.5	0.5	1.5	0.5
Lab Benches	Decon/Remove	0.5	0.5		0.5	0.5	1	0.5
Sinks	Decon/Remove	0.5	0.5		0.5	0.5	0.5	0.5
Drains	Remove/Disp	0.5	0.5		0.5	0.5	0.5	
Floors	Decon/Wipe	0.5	0.5		0.5	0.5	1	0.5
Walls	Decon/Wipe	0.5	0.5		0.5	0.5	1	0.5
Ceilings	Decon/Wipe	0.5	0.5		0.5	0.5	1	0.5
Ventilation/Ductwork	Remove/Disp	0.5	0.5		0.5	0.5	1	0.5
Cabinets	Decon/Remove	0.5	0.5		0.5	0.5	1	0.5
Hot Cells	Remove/Disp							
Equipment/Materials	Sur/Rem/Disp		1	2	1	0.5	1.5	0.5
Soil Plots	Sample							
Storage Tanks	N/A							
Storage Areas	Remove/Disp							
Radwaste Areas	Remove/Disp	0.5	1		1	1	1	0.5
Scrap Recovery Areas	N/A							
Maintenance Shop	Remove/Disp							
Equipment Decontamination	Remove/Disp							
Other (specify)	Remove/Disp							
Other (specify)	Remove/Disp							
TOTALS		5	7	2	6.7	6	12	5

Name of room, laboratory, or area:		Pennington Building 17						
Level of Contamination:		≈1,000 -10,000 dpm/100 cm2						
Component	Action	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
Glove Boxes	Remove/Disp	1	1	1	1	1	3	1
Fume Hoods	Remove/Disp	3	4		4	4	12	3
Lab Benches	Decon/Remove	3	3		2	2	6	3
Sinks	Decon/Remove	2	1		2	2	6	2
Drains	Remove/Disp	2	1	1	2	2	6	2
Floors	Decon/Wipe	1	1		1	1	3	1
Walls	Decon/Wipe	1	1		1	1	3	1
Ceilings	Decon/Wipe	1	1		1	1	3	1
Ventilation/Ductwork	Remove/Disp	2	2		2	2	6	2
Cabinets	Decon/Remove	1	1		2	2	6	1
Hot Cells	Remove/Disp							
Equipment/Materials	Sur/Rem/Disp	3	4	1	2	2	6	3
Soil Plots	Sample							
Storage Tanks	N/A							
Storage Areas	Remove/Disp							
Radwaste Areas	Remove/Disp							
Scrap Recovery Areas	N/A							
Maintenance Shop	Remove/Disp							
Equipment Decontamination	Remove/Disp							
Other (specify)	Remove/Disp							
Other (specify)	Remove/Disp							
TOTALS		20	20	3	20	20	60	20

Name of room, laboratory, or area:		Pennington Building 21						
Level of Contamination:		≈1,000 -10,000 dpm/100 cm2						
Component	Action	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
Glove Boxes	Remove/Disp	2	6	4	12	8	24	4
Fume Hoods	Remove/Disp	12	36	10	72	48	144	24
Lab Benches	Decon/Remove	10	30	5	60	40	120	20
Sinks	Decon/Remove	5	15	5	30	20	60	10
Drains	Remove/Disp	5	15	5	30	20	60	10
Floors	Decon/Wipe	10	30	10	60	40	120	20
Walls	Decon/Wipe	5	15	5	30	20	60	10
Ceilings	Decon/Wipe	3	9	4	18	12	36	6
Ventilation/Ductwork	Remove/Disp	10	30	10	60	40	120	20
Cabinets	Decon/Remove	5	15	4	30	20	60	10
Hot Cells	Remove/Disp							
Equipment/Materials	Sur/Rem/Disp	10	30	15	60	40	120	20
Soil Plots	Sample							
Storage Tanks	N/A							
Storage Areas	Remove/Disp							
Radwaste Areas	Remove/Disp	3	9	3	18	12	36	6
Scrap Recovery Areas	N/A							
Maintenance Shop	Remove/Disp							
Equipment Decontamination	Remove/Disp							
Other (specify)	Remove/Disp							
Other (specify)	Remove/Disp							
TOTALS		80	240	80	480	320	960	160

3.8 RESTORATION OF CONTAMINATED AREAS ON FACILITY GROUNDS
(Work Days)

Estimate the number of work days, by specific labor category, that will be required to restore contaminated areas on the facility grounds.

Name of room, laboratory, or area:	Pennington Building 3						
Activity	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
Restore Floors	0	0.2	0	0	0.2	0.3	0
Restore Walls	0	0.2	0	0	0.2	0.3	0
Restore Roof	0	0.2	0	0	0.2	0.3	0
Restore Utilites	0	0.4	0	0	0.4	0.1	0
TOTALS	0	1	0	0	1	1	0

Name of room, laboratory, or area:	Pennington Building 17						
Activity	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
Restore Floors	0.5	0.5	0	0	1	1	
Restore Walls	0.5	0.5	0	0	1	1	
Restore Roof	0.5	0.5	0	0	1	1	
Restore Utilites	0.5	0.5	0	0	1	1	
TOTALS	2	2	0	0	4	4	0

Name of room, laboratory, or area:		Pennington Building 21					
Activity	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
Restore Floors	2	2	0	0	4	6	2
Restore Walls	1	1	0	0	2	3	1
Restore Roof	2	2	0	0	4	6	2
Restore Utilites	3	3	0	0	6	9	3
TOTALS	8	8	0	0	16	24	8

3.9 FINAL RADIATION SURVEY
(Work Days)

Estimate the number of work days, by specific labor category, that will be required to conduct a final radiation survey.							
Name of room, laboratory, or area:		Pennington Building 3					
Activity	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
FSS Setup	1	1	1	1	0	0	0.5
Survey Packages	1	1	0	1	0	0	0.5
Class 1	0.2	0.2	0	3	0	0	0.1
Class 2	0.2	0.2	0	3	0	0	0.1
Class 3	0.2	0.2	0	3	0	0	0.1
TOTALS	2.6	2.6	1	11	0	0	1.3

Estimate the number of work days, by specific labor category, that will be required to conduct a final radiation survey.							
Name of room, laboratory, or area:	Pennington Building 17						
Activity	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
FSS Setup	2	2	2	2	0	0	2
Survey Packages	2	2	2	2	0	0	2
Class 1	3	3	2	18	0	0	3
Class 2	2	2	2	5	0	0	2
Class 3	1	1	2	3	0	0	1
TOTALS	10	10	10	30	0	0	10

Estimate the number of work days, by specific labor category, that will be required to conduct a final radiation survey.							
Name of room, laboratory, or area:	Pennington Building 21						
Activity	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
FSS Setup	5	5	5	5	0	0	5
Survey Packages	5	5	5	5	0	0	5
Class 1	12	12	12	113	0	0	12
Class 2	2	2	2	15	0	0	2
Class 3	2	2	2	5	0	0	2
TOTALS	26	26	26	143	0	0	26

3.10 SITE STABILIZATION AND LONG-TERM SURVEILLANCE
(Work Days)

Estimate the number of work days, by specific labor category, that will be required to complete site stabilization and long-term surveillance activities.

Activity	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
No Site Stabilization or							
Long Term Maintenance							
TOTALS	0	0	0	0	0	0	0

3.11 TOTAL WORK DAYS BY LABOR CATEGORY

Enter the total work days for each specific labor category from the applicable table above (i.e., from the bottom rows of Tables 3.6 through 3.10).							
Task	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
Planning and Preparation (TOTALS from Table 3.6)	44	54	38	69	8	22	48
Decontamination and/or Dismantling of Radioactive Facility Components (Sum of TOTALS from all copies of Table 3.7)	105	267	85	506.7	346	1032	185
Restoration of Contaminated Areas on Facility Grounds (TOTALS from Table 3.8)	10	11	0	0	21	29	8
Final Radiation Survey (TOTALS from Table 3.9)	38.6	38.6	37	184	0	0	37.3
Site Stabilization and Long-Term Surveillance (TOTALS from Table 3.10)	0	0	0	0	0	0	0

3.12 WORKER UNIT COST SCHEDULE

Estimate labor costs (including salary, fringe benefits, and corporate overhead). Include all appropriate labor categories, including Supervisor, Foreman, Craftsman, Technician, Health Physicist, Laborer, Clerical, and others as needed.							
Labor Cost Component	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
Salary & Fringe ($/year)	$96,000	$67,000	$67,000	$45,000	$50,000	$34,000	$25,000
Overhead Rate (%)	100%	100%	100%	100%	100%	100%	100%
Total Cost Per Year	$192,000	$134,000	$134,000	$90,000	$100,000	$68,000	$50,000
Living Expenses (PD*7/5)[1]	$224	$224	$224	$224	$0	0	0
Total Cost Per Work Day[2]	$962	$739	$739	$570	$385	$262	$192

[1] Per Diem Rate: $160 per day.

[2] Based on 260 work days per year (e.g., 260).

3.13 TOTAL LABOR COSTS BY MAJOR DECOMMISSIONING TASK

Multiply the estimated work days for each specific labor category (from Table 3.11) by the total cost per work day for the corresponding labor category (from Table 3.12), and enter the results in the table below. Then, add across all labor categories to determine the total labor costs for each major decommissioning task.

Labor Cost Component	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical	Total Labor Cost
Planning and Preparation	$42,348	$39,927	$28,097	$39,341	$3,077	$5,754	$9,231	$167,774
Decontamination and/or Dismantling of Radioactive Facility Components	$101,058	$197,416	$62,848	$288,897	$133,077	$269,908	$35,577	$1,088,780
Restoration of Contaminated Areas on Facility Grounds	$9,625	$8,133	$0	$0	$8,077	$7,585	$1,538	$34,958
Final Radiation Survey	$37,151	$28,540	$27,357	$104,908	$0	$0	$7,173	$205,130
Site Stabilization and Long-Term Surveillance	$0	$0	$0	$0	$0	$0	$0	$0

3.14 PACKAGING, SHIPPING, AND DISPOSAL OF RADIOACTIVE WASTES (Excluding Labor Costs)

(a) Packing Material Costs

Estimate the types and volumes of waste expected to be generated, along with the number and types of containers required for packaging the waste. Multiply the number of containers required by the unit cost per container.

Waste Type	Volume (ft3)	Number of Containers	Type of Containers	Unit Cost of Container	Total Packaging Costs
DAW	1000	11	B-25	$700	$7,700
Metal	10,466	5	40' Sea-Land	$1,000	$5,000
Liquids	5	1	55 gal. inner 85 gal.overpack	$200	$200
Biological	65	9	55 gal. inner 85 gal.overpack	$200	$1,800
TOTAL					$14,700

(b) Shipping Costs

Estimate the types and volumes of waste expected to be generated, along with the number and types of containers required for packaging the waste. Multiply the number of containers required by the unit cost per container.

Waste Type	Number of Truckloads	Unit Cost ($/mile/truckload)	Surcharges ($/mile)	Overweight Charges($/mile)	Distance Shipped (miles)	Total Shipping Costs
DAW	2	$0.00	1	1	800	$0
Metal	14	$0.00	1	1	800	$0
Liquids	0	$0.00	1	1	1	$0
Biological	0	$0.00	1	1	1	$0
TOTAL	16					$0

(c) Waste Disposal Costs

Estimate the volume of waste to be disposed. Multiply the volume of waste disposed by the unite\disposal cost (including any volume based surcharges). Add any surcharges that are based on the number of containers of waste. along with the number and types of containers required for packaging the waste. Multiply the number of containers required by the unit cost per container.

Waste Type	Disposal Volume (ft3)	Density (lb/ft3)	Disposal Mass (lbs)	Unit Cost	Surcharges ($/ft3 or $/container)	Total Disposal Costs
DAW	1000	15	15000	7.25	1	$108,750
Metal	10466	20	209318	2.50	1	$523,296
Liquids	5	60	300	4.00	1	$1,200
Biological	65	20	1300	25.00	1	$32,500
TOTAL	11536					$665,746

3.15 EQUIPMENT/SUPPLY COSTS (Excluding Containers)

Estimate the quantity of equipment and supplies required for decommissioning and multiply that quantity by the appropriate unit costs.			
Equipment/Supplies	*Quantity*	*Unit Cost*	*Total Equipment/Supply Cost*
Protective Clothing	1	$20,000	$20,000
Respirators	0		$0
Misc Tools	1	$10,000	$10,000
Consumables	1	$20,000	$20,000
TOTAL			$50,000

3.16 LABORATORY COSTS

If applicable, estimate the costs for analyses to be performed by an independent third party laboratory.			
Activity	Quantity	Unit Cost	Total Item Cost
Sampling	100	$100	$10,000
Transport of Samples	10	$50	$500
Testing and Analysis	100	$100	$10,000
Other (specify)			
TOTAL			$20,500

3.17 MISCELLANEOUS COSTS

Estimate any other applicable costs.	
Activity	Total Cost
License Fees	$20,000
Insurance	$15,733
Taxes	$224,759
Other (specify): Disposal Access Fee	$1,500
TOTAL	$261,992

3.18 TOTAL DECOMMISSIONING COSTS

Enter the total costs reported in Tables 3.13, 3.14(a)-(c), 3.15, 3.16, and 3.17 into the appropriate cells below, and add then to obtain a subtotal. Add to the subtotal a contingency allowance in the amount of 25 percent of the total decommissioning cost estimate. Also, calculate for each task/component the percentage it represents of the total.		
Task/Component	Cost	Percentage
Planning and Preparation (from Table 3.13)	$167,774	6.7%
Decontamination and/or Dismantling of Radioactive Facility (From Table 3.13)	$1,088,780	43.4%
Restoration of Contaminated Areas on Facility Grounds (From Table 3.13)	$34,958	1.4%
Final Radiation Survey (From Table 3.13)	$205,130	8.2%
Packing Material Costs (TOTAL from Table 3.14(a))	$14,700	0.6%
Shipping Costs (TOTAL from Table 3.14(b))	$0	0.0%
Waste Disposal Costs (TOTAL from Table 3.14(c))	$665,746	26.5%
Equipment/Supply Costs (TOTAL from Table 3.15)	$50,000	2.0%
Laboratory Costs (TOTAL from Table 3.16)	$20,500	0.8%
Miscellaneous Costs (TOTAL from Table 3.17)	$261,992	10.4%
SUBTOTAL	$2,509,580	100.0%
25% Contingency	$627,395	25.0%
TOTAL DECOMMISSIONING COST ESTIMATE	$3,136,975	125.0%

Laboratory	Features											
		Casework (linear ft.)	Sinks (ea.)	Drains (ft.)	Hoods (ea.)	Glove Boxes (ea.)	Ventilation Ducting (ft.)	Cabinets/Shelves		Equipment (50 ft3 - ea.)		Comments
Bldg. #	Floor							Factor	(ft.)	(3.5 x 3.5 x 4)	(ft3)	
3A-000	1	6	1	40	1	1	60	0	0	3	150	
Waste Stg.												
3A-175	2	20	1	40	1	0	40	0.4	8	2	100	
3A-156	2	8	1	40	3	0	60	2	12	1	50	
3A-128	2	35	1	60	1	0	40	0.6	21	1	50	
3B-125	2	30	1	40	0	0	0	1	30	4	200	
		97	5	220	6	1	240		71		550	
Total Facility	101200											
Class 1	1780		Class 1 Walls	3794								
Class 2	24853	25%	Class 2 Walls	3794								
Class 3	74558	75%										
Non-Impacted	0											

Laboratory	Features											
		Casework (linear ft.)	Sinks (ea.)	Drains (ft.)	Hoods (ea.)	Glove Boxes (ea.)	Ventilation Ducting (ft.)	Cabinets/Shelves		Equipment (50 ft3 - ea.)		Comments
Bldg 17	Floor							Factor	(ft.)	(3.5 x 3.5 x 4)	(ft3)	
265	1	640	2	220	1	0	60	0.4	256	10	500	
244	1	26	1	40	1	0	60	0.4	10	2	100	
903	1	40	1	40	1	0	60	0.4	16	2	100	
923	1	40	1	40	1	0	60	0.4	16	1	50	
925	1	0	0	0	0	0	0	0	0	1	50	
406	1	0	0	0	0	0	0	0	0	2	100	
No Waste Freezer												
301	1	0	0	0	2	0	80	0	0	4	200	
246	1	40	1	40	3	0	100	0.4	16	6	300	
260	1	25	0	0	1	0	60	0.4	10	1	50	
262	1	40	1	40	1	0	60	0.4	16	1	50	
		851	7	420	11	0	540		340.4	30	1500	
Facility Total	87300											
Class 1	6830		Class 1 Walls	6780								
Class 2	20118	25%	Class 2 Walls	6780								
Class 3	60353	75%										
Non-Impacted	0											

3.4 FACILITY DECOMMISSIONING SUMMARY

Radioactive Material license numbers and types (i.e., Byproduct, Source):
The Bristol-Myers Squibb located at Route 206 and Provinceline Rd, Lawrenceville, NJ is licensed under USNRC Byproduct Materials license number 29-00139-02.
Types and quantities of materials authorized under the licenses listed above:
Byproduct Material atomic number 1 through 83, except Sr-90 200 mCi per radionuclide, 6 Ci total; H-3 250 Ci; C-14 25 Ci; P-33 1 Ci; S-35 20 Ci; I-125 500 mCi; Ni-63 sources per registration IAW 10 CFR 32.210; (b)(7)(F) (b)(7)(F)
Description of how licensed materials are used:
Low energy beta emitting radonuclides and radioiodine are used in pharmaceutical research and development. This work involves both labeling compounds and use of labeled compounds. Research includes new discovery, applications testing, metabolic studies, and biological testing involving animal studies.The radioactive materials are used in laboratory facilities on a research and development scale.
Description of facility, including buildings, rooms, grounds, and description of where particular types of materials are used:
The Lawrenceville facility consists of several multi-story laboratory buildings connected by a series of corridors
Quantities of materials or waste accumulated before shipping or disposal
The basement of Building F contains two waste storage areas. Space is limited. For purposes of this cost estimate, 800 ft^3 of DAW and 200 ft^3 of biological waste is assumed to be present.

3.5 Number and Dimensions of Facilities Components

Use this table to summarize relevant features of the facility. Copy and complete the table as necessary for each room, laboratory, or area. Rooms laboratories, or areas with similar levels of contamination may be consolidated into one table.

Name of room, laboratory, or area:	Lawrenceville Building F1
Level of Contamination:	≈1,000 -10,000 dpm/100 cm^2

Component	Quantity of Component	Unit	Dimensions of Component (specify units)	Total Dimensions (specify units)	
Glove Boxes	2	Each	4'w x 3'd x 3't	72	ft^3
Fume Hoods	35	Each	5'w x 4'd x 8't	5,600	ft^3
Lab Benches (Casework)	1502	Linear Feet	4'd x 3't	18,024	ft^3
Sinks	43	Each	4'w x 4'd x 3't	2,064	ft^3
Drains	2580	Linear Feet	3" diameter	129	ft^3
Floors	See Listing	Class 1 Sq. Feet		16,293	ft^2
Walls (Class1)	See Listing	Class 1 Sq. Feet		24,349	ft^2
Walls (Class 2)	See Listing	Class 2 Sq. Feet		21,305	ft^2
Ceilings	See Listing	Class 2 Sq. Feet		16,239	ft^2
Ventilation/Ductwork	1600	Linear Feet	18" diameter	1,408	ft^3
Cabinets	601	Linear Feet	3'd x 3't	5,409	ft^3
Hot Cells	0	Each		0	ea
Equipment/Materials	53	50 Ft^3 Units		2,650	ft^3
Soil Plots	0	Sq. Feet		0	ea
Storage Tanks	0	Each		0	ea
Storage Areas	0	Each		0	ft^2
Radwaste Areas	2	Each		2	ea
Scrap Recovery Areas	0	Each		0	ft^2
Maintenance Shop	0	Each		0	ft^2
Equipment Decontamination	0	Each		0	ft^2
Other Class 2 Areas	See Listing	Class 2 Sq. Feet		17,427	ft^2
Other Class 3 Areas	See Listing	Class 3 Sq. Feet	Includes 21,400 ft^2 for roof	73,680	ft^2
Other (Specify)		Each		0	ea
Other (Specify)		Each		0	ea
			Features/Equipment Volume	35,356	ft^3
			Waste Fraction	0.10	
			Waste Volume	3,536	ft^3
			Waste Density (lb/ft3)	20	
			Waste Mass	70,712	lb

Name of room, laboratory, or area:	Lawrenceville Building H				
Level of Contamination:	≈1,000 -10,000 dpm/100 cm^2				
Component	Quantity of Component	Unit	Dimensions of Component (specify units)	Total Dimensions (specify units)	
Glove Boxes	0	Each	4'w x 3'd x 3't	0	ft^3
Fume Hoods	15	Each	5'w x 4'd x 6't	2,400	ft^3
Lab Benches (Casework)	473	Linear Feet	4'd x 3't	5,676	ft^3
Sinks	21	Each	4'w x 4'd x 3't	1,008	ft^3
Drains	880	Linear Feet	3" diameter	44	ft^3
Floors	See Listing	Class 1 Sq. Feet		6,380	ft^2
Walls (Class1)	See Listing	Class 1 Sq. Feet		10,107	ft^2
Walls (Class 2)	See Listing	Class 2 Sq. Feet		8,843	ft^2
Ceilings	See Listing	Class 2 Sq. Feet		6,380	
Ventilation/Ductwork	400	Linear Feet	18" diameter	352	ft^3
Cabinets	173	Linear Feet	3'd x 3't	1,557	ft^3
Hot Cells	0	Each		0	ea
Equipment/Materials	46	50 Ft^3 Units		2,300	ft^3
Soil Plots	0	Sq. Feet		0	ea
Storage Tanks	0	Each		0	ea
Storage Areas	0	Each		0	ft^2
Radwaste Areas	0	Each		0	ea
Scrap Recovery Areas	0	Each		0	ft^2
Maintenance Shop	0	Each		0	ft^2
Equipment Decontamination	0	Each		0	ft^2
Other Class 2 Areas	See Listing	Class 2 Sq. Feet		20,180	ft^2
Other Class 3 Areas	See Listing	Class 3 Sq. Feet	Includes 30,000 ft^2 for roof	90,540	ft^2
Other (Specify)		Each		0	ea
Other (Specify)		Each		0	ea
			Features/Equipment Volume	13,337	ft^3
			Waste Fraction	0.20	
			Waste Volume	2,667	ft^3
			Waste Density (lb/ft3)	20	
			Waste Mass	53,348	lb

Name of room, laboratory, or area:	Lawrenceville Building K				
Level of Contamination:	≈1,000 -10,000 dpm/100 cm^2				
Component	Quantity of Component	Unit	Dimensions of Component (specify units)	Total Dimensions (specify units)	
Glove Boxes	3	Each	4'w x 3'd x 3'l	108	ft^3
Fume Hoods	56	Each	5'w x 4'd x 8'l	8,960	ft^3
Lab Benches (Casework)	1936	Linear Feet	4'd x 3'l	23,232	ft^3
Sinks	49	Each	4'w x 4'd x 3'l	2,352	ft^3
Drains	2800	Linear Feet	3" diameter	140	ft^3
Floors	See Listing	Class 1 Sq. Feet		22,788	ft^2
Walls (Class1)	See Listing	Class 1 Sq. Feet		25,504	ft^2
Walls (Class 2)	See Listing	Class 2 Sq. Feet		31,066	ft^2
Ceilings	See Listing	Class 2 Sq. Feet		22,788	ft^2
Ventilation/Ductwork	2100	Linear Feet	18" diameter	1,848	ft^3
Cabinets	948	Linear Feet	3'd x 3'l	8,532	ft^3
Hot Cells	0	Each			ea
Equipment/Materials	85.5	50 Ft^3 Units		4,275	ft^3
Soil Plots	0	Sq. Feet		0	ea
Storage Tanks	0	Each		0	ea
Storage Areas	0	Each		0	ft^2
Radwaste Areas	0	Each		0	ea
Scrap Recovery Areas	0	Each		0	ft^2
Maintenance Shop	0	Each		0	ft^2
Equipment Decontamination	0	Each		0	ft^2
Other Class 2 Areas	See Listing	Class 2 Sq. Feet		23,853	ft^2
Other Class 3 Areas	See Listing	Class 3 Sq. Feet	Includes 33,000 ft^2 for roof	104,559	ft^2
Other (Specify)	1	Each	Self Shielded Irradiator	1	ea
Other (Specify)		Each		0	ea
			Features/Equipment Volume	49,447	ft^3
			Waste Fraction	0.10	
			Waste Volume	4,945	ft^3
			Waste Density (lb/ft3)	20	
			Waste Mass	98,894	lb

Name of room, laboratory, or area:	Lawrenceville Building G1				
Level of Contamination:	≈1,000 -10,000 dpm/100 cm^2				
Component	Quantity of Component	Unit	Dimensions of Component (specify units)	Total Dimensions (specify units)	
Glove Boxes	1	Each	4'w x 3'd x 3't	36	ft^3
Fume Hoods	0	Each	5'w x 4'd x 8't	0	ft^3
Lab Benches (Casework)	38	Linear Feet	4'd x 3't	456	ft^3
Sinks	1	Each	4'w x 4'd x 3't	48	ft^3
Drains	100	Linear Feet	3" diameter	5	ft^3
Floors	See Listing	Class 1 Sq. Feet		927	ft^2
Walls (Class1)	See Listing	Class 1 Sq. Feet		2,016	ft^2
Walls (Class 2)	See Listing	Class 2 Sq. Feet		1,764	ft^2
Ceilings	See Listing	Class 2 Sq. Feet		927	ft^2
Ventilation/Ductwork	40	Linear Feet	18" diameter	35	ft^3
Cabinets	6	Linear Feet	3'd x 3't	54	ft^3
Hot Cells	0	Each		0	ea
Equipment/Materials	5	50 Ft^3 Units		250	ft^3
Soil Plots	0	Sq. Feet		0	ea
Storage Tanks	0	Each		0	ea
Storage Areas	0	Each		0	ft^2
Radwaste Areas	0	Each		0	ea
Scrap Recovery Areas	0	Each		0	ft^2
Maintenance Shop	0	Each		0	ft^2
Equipment Decontamination	0	Each		0	ft^2
Other Class 2 Areas	See Listing	Class 2 Sq. Feet		12,068	ft^2
Other Class 3 Areas	See Listing	Class 3 Sq. Feet		36,205	ft^2
Other (Specify)	1	Each	Self Shielded Irradiator	1	ea
Other (Specify)		Each		0	ea
			Features/Equipment Volume	884	ft^3
			Waste Fraction	0.10	
			Waste Volume	88	ft^3
			Waste Density (lb/ft3)	20	
			Waste Mass	1,768	lb

3.6 PLANNING AND PREPARATION
(Work Days)

Estimate the number of workdays, by specific labor category, that will be required to complete planning and preparation activities. Include all labor categories, including Supervisor, Foreman, Craftsman, Technician, Health Physicist, Laborer, Clerical, and others as needed

Activity	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
Preparation of Documentation for Regulatory Agencies	15	10	10	5	0	0	20
Submittal of Decommissioning Plan to NRC when required by 10 CFR 30.36(g)(1), 40.42(g)(1), or 70.38(g)(1)	2	2	2	0	0	0	2
Development of Work Plans	10	15	10	0	0	0	20
Procurement of Special Equipment	3	10	0	0	0	0	4
Staff Training	1	3	2	6	4	12	2
Characterization of Radiological Condition (including sampling, soil and tailings analysis, or groundwater analysis, if applicable)	15	15	15	60	0	0	2
Other (specify) Mobilization	1	3	2	6	4	12	2
TOTALS	47	58	41	77	8	24	52

3.7 DECONTAMINATION OR DISMANTLING OF RADIOACTIVE FACILITY COMPONENTS

(Work Days)

Estimate the number of workdays, by specific labor category, that will be required to complete decontamination and/or dismantling activities for each facility component. Copy and complete this table as necessary for each room, laboratory, or area. Rooms, laboratories, or areas with similar levels of contamination may be consolidated in one table.

Name of room, laboratory, or area:	Lawrenceville Building F1
Level of Contamination:	≈1,000 -10,000 dpm/100 cm2

Component	Action	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
Glove Boxes	Remove/Disp	1	2	2	4	3	8	2
Fume Hoods	Remove/Disp	8	24	8	48	32	96	16
Lab Benches	Decon/Remove	6	20	6	39	26	78	13
Sinks	Decon/Remove	3	9	3	18	12	36	6
Drains	Remove/Disp	4	12	3	24	16	48	8
Floors	Decon/Wipe	8	24	6	48	32	96	16
Walls	Decon/Wipe	4	12	4	24	16	48	8
Ceilings	Decon/Wipe	3	9	4	18	12	36	6
Ventilation/Ductwork	Remove/Disp	7	22	7	44	28	90	15
Cabinets	Decon/Remove	4	12	4	24	16	48	8
Hot Cells	Remove/Disp							
Equipment/Materials	Sur/Rem/Disp	7	20	7	40	28	88	14
Soil Plots	Sample							
Storage Tanks	N/A							
Storage Areas	Remove/Disp							
Radwaste Areas	Remove/Disp	2	6	3	12	8	24	4
Scrap Recovery Areas	N/A							
Maintenance Shop	Remove/Disp							
Equipment Decontamination	Remove/Disp							
Other (specify)	Remove/Disp							
Other (specify)	Remove/Disp							
TOTALS		57	172	57	343	229	696	116

Name of room, laboratory, or area:		Lawrenceville Building H						
Level of Contamination:		≈1,000 -10,000 dpm/100 cm2						
Component	Action	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
Glove Boxes	Remove/Disp							
Fume Hoods	Remove/Disp	5	10	5	15	10	30	6
Lab Benches	Decon/Remove	1.5	5	1.5	8	6	18	3
Sinks	Decon/Remove	1	2	1	4	4	10	2
Drains	Remove/Disp	0.5	2		3	2	6	1
Floors	Decon/Wipe	1	3	1	6	4	13	2
Walls	Decon/Wipe	0.5	2	1	3	2	6	1
Ceilings	Decon/Wipe	0.5	1		2	2	5	1
Ventilation/Ductwork	Remove/Disp	2	6	2	12	8	26	4
Cabinets	Decon/Remove	1	4	2	6	4	12	2
Hot Cells	Remove/Disp							
Equipment/Materials	Sur/Rem/Disp	2	5	2	10	7	22	4
Soil Plots	Sample							
Storage Tanks	N/A							
Storage Areas	Remove/Disp							
Radwaste Areas	Remove/Disp	0.5	1	1	2	1	3	1
Scrap Recovery Areas	N/A							
Maintenance Shop	Remove/Disp							
Equipment Decontamination	Remove/Disp							
Other (specify)	Remove/Disp							
Other (specify)	Remove/Disp							
TOTALS		15.5	41	16.5	71	50	151	27

Name of room, laboratory, or area:		Lawrenceville Building K						
Level of Contamination:		≈1,000 -10,000 dpm/100 cm2						
Component	Action	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
Glove Boxes	Remove/Disp	1	3	3	6	4	12	2
Fume Hoods	Remove/Disp	8	24	8	48	32	96	16
Lab Benches	Decon/Remove	7	21	6	42	28	84	14
Sinks	Decon/Remove	2	6	2	14	9	27	4
Drains	Remove/Disp	4	12	3	24	16	48	8
Floors	Decon/Wipe	8	24	6	48	32	96	16
Walls	Decon/Wipe	4	12	4	24	16	48	8
Ceilings	Decon/Wipe	3	9	4	18	12	36	6
Ventilation/Ductwork	Remove/Disp	8	24	8	48	32	96	16
Cabinets	Decon/Remove	4	12	4	24	16	48	8
Hot Cells	Remove/Disp							
Equipment/Materials	Sur/Rem/Disp	8	24	8	48	32	96	16
Soil Plots	Sample							
Storage Tanks	N/A							
Storage Areas	Remove/Disp							
Radwaste Areas	Remove/Disp	2	6	3	12	8	24	4
Scrap Recovery Areas	N/A							
Maintenance Shop	Remove/Disp							
Equipment Decontamination	Remove/Disp							
Other (specify) Irradiator	Remove/Disp	1	2	2	2	0	0	0
Other (specify)	Remove/Disp							
TOTALS		60	179	61	358	237	711	118

Name of room, laboratory, or area:		Lawrenceville Building G1						
Level of Contamination:		≈1,000 -10,000 dpm/100 cm2						
Component	Action	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
Glove Boxes	Remove/Disp		0.1		0.1	0.2	0.2	0.1
Fume Hoods	Remove/Disp				0.2	0.4	0.4	0.1
Lab Benches	Decon/Remove		0.1		0.1	0.2	0.2	0.1
Sinks	Decon/Remove				0.1	0.2	0.2	0.1
Drains	Remove/Disp		0.1		0.2	0.4	0.4	0.1
Floors	Decon/Wipe		0.1		0.1	0.2	0.2	0.1
Walls	Decon/Wipe		0.1		0.1	0.2	0.2	0.1
Ceilings	Decon/Wipe		0.1		0.1	0.2	0.2	0.1
Ventilation/Ductwork	Remove/Disp		0.2		0.3	0.6	0.6	0.1
Cabinets	Decon/Remove		0.1		0.1	0.2	0.2	0.1
Hot Cells	Remove/Disp							
Equipment/Materials	Sur/Rem/Disp		0.1		0.1	0.2	0.2	
Soil Plots	Sample							
Storage Tanks	N/A							
Storage Areas	Remove/Disp							
Radwaste Areas	Remove/Disp							
Scrap Recovery Areas	N/A							
Maintenance Shop	Remove/Disp							
Equipment Decontamination	Remove/Disp							
Other (specify) Irradiator	Remove/Disp		1		1	1		
Other (specify)	Remove/Disp							
TOTALS		0	2	0	2.5	4	3	1

3.8 RESTORATION OF CONTAMINATED AREAS ON FACILITY GROUNDS
(Work Days)

Estimate the number of work days, by specific labor category, that will be required to restore contaminated areas on the facility grounds.

Name of room, laboratory, or area:	Lawrenceville Building F1						
Activity	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
Restore Floors	1.5	1.5	0	0	3	4.5	1.5
Restore Walls	1	1	0	0	2	3	1
Restore Roof	1.5	1.5	0	0	3	4.5	1.5
Restore Utilites	2	2	0	0	4	6	2
TOTALS	6	6	0	0	12	18	6

Name of room, laboratory, or area:	Lawrenceville Building H						
Activity	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
Restore Floors	0.2	0.2	0	0	0.5	0.5	0
Restore Walls	0.3	0.3	0	0	0.5	0.5	0
Restore Roof	0.2	0.2	0	0	0.5	0.5	0
Restore Utilites	0.3	0.3	0	0	0.5	0.5	0
TOTALS	1	1	0	0	2	2	0

Name of room, laboratory, or area:		Lawrenceville Building K					
Activity	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
Restore Floors	1.5	1.5	0	0	3	4.5	1.5
Restore Walls	1	1	0	0	2	3	1
Restore Roof	1.5	1.5	0	0	3	4.5	1.5
Restore Utilites	2	2	0	0	4	6	2
TOTALS	6	6	0	0	12	18	6

Name of room, laboratory, or area:		Lawrenceville Building G1					
Activity	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
Restore Floors	0	0.2	0	0	0.2	0.3	0
Restore Walls	0	0.2	0	0	0.2	0.3	0
Restore Roof	0	0.2	0	0	0.2	0.3	0
Restore Utilites	0	0.4	0	0	0.4	0.1	0
TOTALS	0	1	0	0	1	1	0

3.9 FINAL RADIATION SURVEY
(Work Days)

Estimate the number of work days, by specific labor category, that will be required to conduct a final radiation survey.

Name of room, laboratory, or area:	Lawrenceville Building F1						
Activity	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
FSS Setup	4	4	4	4	0	0	4
Survey Packages	4	4	4	4	0	0	4
Class 1	10	10	10	63	0	0	10
Class 2	1.5	1.5	1	9	0	0	1.5
Class 3	1.5	1.5	1	6	0	0	1.5
TOTALS	21	21	20	86	0	0	21

Estimate the number of work days, by specific labor category, that will be required to conduct a final radiation survey.

Name of room, laboratory, or area:	Lawrenceville Building H						
Activity	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
FSS Setup	0.5	0.5	0.5	1	0	0	0.5
Survey Packages	0.5	0.5	0.5	1	0	0	0.5
Class 1	1	1	1	18	0	0	1
Class 2	0.5	0.5	0.5	5	0	0	0.5
Class 3	0.5	0.5	0.5	3	0	0	0.5
TOTALS	3	3	3	28	0	0	3

Estimate the number of work days, by specific labor category, that will be required to conduct a final radiation survey.							
Name of room, laboratory, or area:	Lawrenceville Building K						
Activity	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
FSS Setup	4	4	4	4	0	0	4
Survey Packages	4	4	4	4	0	0	4
Class 1	10	10	10	84	0	0	10
Class 2	1.5	1.5	1.5	12	0	0	1.5
Class 3	1.5	1.5	1.5	6	0	0	1.5
TOTALS	21	21	21	110	0	0	21

Estimate the number of work days, by specific labor category, that will be required to conduct a final radiation survey.							
Name of room, laboratory, or area:	Lawrenceville Building G1						
Activity	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
FSS Setup	0.5	0.5	0.5	0.5	0	0	0.2
Survey Packages	0.5	0.5	0	0.5	0	0	0.2
Class 1	0.1	0.1	0	3	0	0	0.2
Class 2	0.1	0.1	0	3	0	0	0.2
Class 3	0.1	0.1	0	3	0	0	0.2
TOTALS	1.3	1.3	0.5	10	0	0	1

3.10 SITE STABILIZATION AND LONG-TERM SURVEILLANCE
(Work Days)

Estimate the number of work days, by specific labor category, that will be required to complete site stabilization and long-term surveillance activities.

Activity	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
No Site Stabilization or							
Long Term Maintenance							
TOTALS	0	0	0	0	0	0	0

3.11 TOTAL WORK DAYS BY LABOR CATEGORY

Enter the total work days for each specific labor category from the applicable table above (i.e., from the bottom rows of Tables 3.6 through 3.10).

Task	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
Planning and Preparation (TOTALS from Table 3.6)	47	58	41	77	8	24	52
Decontamination and/or Dismantling of Radioactive Facility Components (Sum of TOTALS from all copies of Table 3.7)	132.5	394	134.5	774.5	520	1561	262
Restoration of Contaminated Areas on Facility Grounds (TOTALS from Table 3.8)	13	15	0	0	28	40	12
Final Radiation Survey (TOTALS from Table 3.9)	48.9	48.9	45.5	252	0	0	48.6
Site Stabilization and Long-Term Surveillance (TOTALS from Table 3.10)	0	0	0	0	0	0	0

3.12 WORKER UNIT COST SCHEDULE

Estimate labor costs (including salary, fringe benefits, and corporate overhead). Include all appropriate labor categories, including Supervisor, Foreman, Craftsman, Technician, Health Physicist, Laborer, Clerical, and others as needed.

Labor Cost Component	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
Salary & Fringe ($/year)	$96,000	$67,000	$67,000	$45,000	$50,000	$34,000	$25,000
Overhead Rate (%)	100%	100%	100%	100%	100%	100%	100%
Total Cost Per Year	$192,000	$134,000	$134,000	$90,000	$100,000	$68,000	$50,000
Living Expenses (PD*7/5)[1]	$224	$224	$224	$224	$0	0	0
Total Cost Per Work Day[2]	$962	$739	$739	$570	$385	$262	$192

[1] Per Diem Rate: $160 per day.

[2] Based on 260 work days per year (e.g., 260).

3.13 TOTAL LABOR COSTS BY MAJOR DECOMMISSIONING TASK

Multiply the estimated work days for each specific labor category (from Table 3.11) by the total cost per work day for the corresponding labor category (from Table 3.12), and enter the results in the table below. Then, add across all labor categories to determine the total labor costs for each major decommissioning task.

Labor Cost Component	Project Mgr	Supervisor	Health Physicist/ Shipper	HPT's/Drafting	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical	Total Labor Cost
Planning and Preparation	$45,236	$42,884	$30,315	$43,902	$3,077	$6,277	$10,000	$181,690
Decontamination and/or Dismantling of Radioactive Facility Components	$127,526	$291,318	$99,447	$441,584	$200,000	$408,262	$50,385	$1,618,521
Restoration of Contaminated Areas on Facility Grounds	$12,512	$11,091	$0	$0	$10,769	$10,462	$2,308	$47,141
Final Radiation Survey	$47,064	$36,156	$33,642	$143,679	$0	$0	$9,346	$269,887
Site Stabilization and Long-Term Surveillance	$0	$0	$0	$0	$0	$0	$0	$0

3.14 PACKAGING, SHIPPING, AND DISPOSAL OF RADIOACTIVE WASTES (Excluding Labor Costs)

(a) Packing Material Costs

Estimate the types and volumes of waste expected to be generated, along with the number and types of containers required for packaging the waste. Multiply the number of containers required by the unit cost per container.

Waste Type	Volume (ft3)	Number of Containers	Type of Containers	Unit Cost of Container	Total Packaging Costs
DAW	1,600	17	B-25	$700	$11,900
Metal	11,236	5	40' Sea-Land	$1,000	$5,000
Liquids	64	9	55 gal. inner 85 gal.overpack	$200	$1,800
Biological	275	36	55 gal. inner 85 gal.overpack	$200	$7,200
TOTAL					$25,900

(b) Shipping Costs

Estimate the types and volumes of waste expected to be generated, along with the number and types of containers required for packaging the waste. Multiply the number of containers required by the unit cost per container.

Waste Type	Number of Truckloads	Unit Cost ($/mile/truckload)	Surcharges ($/mile)	Overweight Charges($/mile)	Distance Shipped (miles)	Total Shipping Costs
DAW	1	$0.00	1	1	800	$0
Metal	6	$0.00	1	1	800	$0
Liquids	0	$0.00	1	1	1	$0
Biological	0	$0.00	1	1	1	$0
TOTAL	7					$0

(c) Waste Disposal Costs

Estimate the volume of waste to be disposed. Multiply the volume of waste disposed by the unite\disposal cost (including any volume based surcharges). Add any surcharges that are based on the number of containers of waste. along with the number and types of containers required for packaging the waste. Multiply the number of containers required by the unit cost per container.

Waste Type	Disposal Volume (ft3)	Density (lb/ft3)	Disposal Mass (lbs)	Unit Cost	Surcharges ($/ft3 or $/container)	Total Disposal Costs
DAW	1,600	15	24000	7.25	1	$174,000
Metal	11236	20	224722	2.50	1	$561,806
Liquids	64	60	3840	4.00	1	$15,360
Biological	275	20	5500	25.00	1	$137,500
TOTAL	13175					$888,666

3.15 EQUIPMENT/SUPPLY COSTS (Excluding Containers)

Estimate the quantity of equipment and supplies required for decommissioning and multiply that quantity by the appropriate unit costs.			
Equipment/Supplies	Quantity	Unit Cost	Total Equipment/Supply Cost
Protective Clothing	1	$30,000	$30,000
Respirators	0		$0
Misc Tools	1	$10,000	$10,000
Consumables	1	$30,000	$30,000
TOTAL			$70,000

3.16 LABORATORY COSTS

If applicable, estimate the costs for analyses to be performed by an independent third party laboratory.

Activity	Quantity	Unit Cost	Total Item Cost
Sampling	150	$100	$15,000
Transport of Samples	15	$50	$750
Testing and Analysis	150	$100	$15,000
Other (specify)			
TOTAL			$30,750

3.17 MISCELLANEOUS COSTS

Estimate any other applicable costs.	
Activity	Total Cost
License Fees	---
Insurance	$21,928
Taxes	$313,256
Irradiator Disposal (JL Shepherd)	$70,000
TOTAL	$405,184

3.18 TOTAL DECOMMISSIONING COSTS

Enter the total costs reported in Tables 3.13, 3.14(a)-(c), 3.15, 3.16, and 3.17 into the appropriate cells below, and add then to obtain a subtotal. Add to the subtotal a contingency allowance in the amount of 25 percent of the total decommissioning cost estimate. Also, calculate for each task/component the percentage it represents of the total.

Task/Component	Cost	Percentage
Planning and Preparation (from Table 3.13)	$181,690	5.1%
Decontamination and/or Dismantling of Radioactive Facility (From Table 3.13)	$1,618,521	45.8%
Restoration of Contaminated Areas on Facility Grounds (From Table 3.13)	$47,141	1.3%
Final Radiation Survey (From Table 3.13)	$269,887	7.6%
Packing Material Costs (TOTAL from Table 3.14(a))	$25,900	0.7%
Shipping Costs (TOTAL from Table 3.14(b))	$0	0.0%
Waste Disposal Costs (TOTAL from Table 3.14(c))	$888,666	25.1%
Equipment/Supply Costs (TOTAL from Table 3.15)	$70,000	2.0%
Laboratory Costs (TOTAL from Table 3.16)	$30,750	0.9%
Miscellaneous Costs (TOTAL from Table 3.17)	$405,184	11.5%
SUBTOTAL	$3,537,740	100.0%
25% Contingency	$884,435	25.0%
TOTAL DECOMMISSIONING COST ESTIMATE	$4,422,175	125.0%

Laboratory	Features											
	Floor	Casework (linear ft.)	Sinks (ea.)	Drains (ft.)	Hoods (ea.)	Glove Boxes (ea.)	Ventilation Ducting (ft.)	Cabinets/Shelves		Equipment (50 ft3 - ea.)		Comments
								Factor	(ft.)	(3.5 x 3.5 x 4)	(ft3)	
Cage	1	0	0	0	0	0	0	0	0	0	0	
F Bldg Basement												
Cage F50	1	0		0	0	0	0	0	0	0	0	
F Bldg Basement												
F1.4111	4	12	1	100	1	0	40	0.2	2	2	100	
F1.2406	2	10	1	60	0	0	0	0.2	2	1	50	
F1.2309	2	20	1	60	0	0	0	0	0	8	400	
F1.2308	2	14	1	60	0	0	0	0	0	0	0	
Cold Room												
F1.2307	2	35	1	60	0	0	0	0.1	4	1	50	
F1.2800	2	60	2	80	1	0	80	0.2	12	4	200	
F1.3100	3	120	2	100	2	0	80	0.3	36		0	
F1.3103	3	60	2	100	2	0	80	0.3	18	2	100	
F1.3105	3	60	2	100	2	0	80	0.3	18	2	100	
F1.3107	3	90	2	100	2	0	80	0.3	27	3	150	
F1.3110	3	60	0	0	1	1	80	0.2	12	3	150	
F1.3112	3	60	2	100	1	0	60	0.3	18	3	150	
F1.3813	3	60	1	80	1	0	60	0.8	48	1	50	
F1.3811	3	60	1	80	1	0	60	0.8	48	1	50	
F1.3809	3	60	2	100	2	0	80	0.8	48	1	50	
F1.3806	3	60	2	100	2	0	80	0.6	36	2	100	
F1.3804	3	60	2	100	2	0	80	0.6	36	2	100	
F1.3802	3	60	2	100	2	0	80	0.4	24	2	100	
F1.3800	3	60	2	100	3	0	100	0.5	30	2	100	
F1.3601	3	30	1	80	0	0	0	0.3	9	0.5	25	
F1.3603	3	20	1	80	0	0	0	0.2	4	0	0	
F1.3603A	3	0	0	0	0	0	0	0	0	0	0	
F1.3605	3	20	1	60	2	0	80	1	20	1	50	
F1.3305	3	0	0	0	0	0	0	0	0	1	50	
CAGO Lab												
F1.3609	3	20	1	80	0	0	0	0.3	6	0.5	25	
Cold Room												
F1.3609A	3	0	0	0	0	0	0		20	0.5	25	
Freezer												
F1.3309	3	60	1	80	1	0	60	0.2	12	1	50	

Laboratory	Floors					Walls					Ceilings					Waste			
	Number	Length (ft.)	Width (ft.)	Area (ft2)	Comments	Number	Width (ft.)	Height (ft.)	Area (ft2)	Comments	Number	Length (ft.)	Width (ft.)	Area (ft2)	Comments	Type	Volume (ft3)	Comments	
Cage	1	43	33	1419		2	43	15	1290		1	43	33	1419		DAW	500		
F Bldg Basement						2	33	15	990							Biological	100		
Cage F50	1	35	11	385		2	35	15	1050		1	35	11	385		DAW	300		
F Bldg Basement						2	11	15	330							Biological	100		
F1.4111	1	12	12	144		2	12	15	360		1	12	12	144		DAW	31		
						2	12	15	360							Biological			
F1.2406	1	10	15	150		2	10	15	300		1	10	15	150		DAW	18		
						2	15	15	450							Biological			
F1.2309	1	25	21	525		2	25	15	750		1	25	21	525		DAW	64		
						2	21	15	630							Biological			
F1.2306	1	8	14	112		2	8	8	128		1	8	14	112		DAW	17		
Cold Room						2	14	8	224							Biological			
F1.2307	1	12	15	180		2	12	15	360		1	12	15	180		DAW	48		
						2	15	15	450							Biological			
F1.2600	1	27	21	567		2	27	15	810		1	27	21	567		DAW	103		
						2	21	15	630							Biological			
F1.3100	1	26	31	806		2	26	15	780		1	26	31	806		DAW	160		
						2	31	15	930							Biological			
F1.3103	1	26	21	546		2	26	15	780		1	26	21	546		DAW	96		
						2	21	15	630							Biological			
F1.3105	1	26	21	546		2	26	15	780		1	26	21	546		DAW	96		
						2	21	15	630							Biological			
F1.3107	1	26	31	806		2	26	15	780		1	26	31	806		DAW	138		
						2	31	15	930							Biological			
F1.3110	1	26	21	546		2	26	15	780		1	26	21	546		DAW	99		
						2	21	15	630							Biological			
F1.3112	1	26	21	546		2	26	15	780		1	26	21	546		DAW	97		
						2	21	15	630							Biological			
F1.3813	1	24	21	504		2	24	15	720		1	24	21	504		DAW	90		
						2	21	15	630							Biological			
F1.3811	1	24	21	504		2	24	15	720		1	24	21	504		DAW	90		
						2	21	15	630							Biological			
F1.3809	1	26	21	546		2	26	15	780		1	26	21	546		DAW	84		
						2	21	15	630							Biological			
F1.3806	1	26	21	546		2	26	15	780		1	26	21	546		DAW	98		
						2	21	15	630							Biological			
F1.3804	1	26	21	546		2	26	15	780		1	26	21	546		DAW	98		
						2	21	15	630							Biological			
F1.3802	1	26	21	546		2	26	15	780		1	26	21	546		DAW	97		
						2	21	15	630							Biological			
F1.3800	1	26	21	546		2	26	15	780		1	26	21	546		DAW	102		
						2	21	15	630							Biological			
F1.3801	1	21	15	315		2	21	15	630		1	21	15	315		DAW	40		
						2	15	15	450							Biological			
F1.3603	1	15	13	195		2	15	8	240		1	15	13	195		DAW	25		
						2	13	8	208							Biological			
F1.3603A	1	10	13	130		2	10	8	160		1	10	13	130		DAW	0		
						2	13	8	208							Biological			
F1.3605	1	21	22	462		2	21	15	630		1	21	22	462		DAW	43		
						2	22	15	660							Biological			
F1.3305	1	20	22	440		4	20	15	1200		1	20	22	440		DAW	5		
CACO Lab						4	22	15	1320							Biological			
F1.3609	1	11	19	209		2	11	8	176		1	11	19	209		DAW	28		
Cold Room						2	19	8	304							Biological			
F1.3609A	1	7	19	133		2	7	8	112		1	7	19	133		DAW	5		
Freezer						2	19	8	304							Biological			
F1.3309	1	21	21	441		2	21	15	630		1	21	21	441		DAW	86		
						2	21	15	630							Biological			

Laboratory	Features											
	Floor	Casework (linear ft.)	Sinks (ea.)	Drains (ft.)	Hoods (ea.)	Glove Boxes (ea.)	Ventilation Ducting (ft.)	Cabinets/Shelves		Equipment (50 ft3 - ea.)		Comments
								Factor	(ft.)	(3.5 x 3.5 x 4)	(ft3)	
F1.3301	3	45	0	0	0	0	0	0	0	1	50	
F1.3300	3	24	1	80	1	0	60	0.2	4.8	1	50	
F1.3307	3	15	1	80	1	0	60	0.2	3	1	50	
F1.3507	3	45	1	80	1	0	60	0.3	13.5	1	50	
F1.4100	4	30	1	100	1	0	40	0.3	9	2	100	
Dark Room												
F1.4600	4	128	4	160	3	0	80	0.5	64	0	0	
F1.4600A	4	6	0	0	0	0	0	0.5	3	0.5	25	
F1.4600B	4	6	0	0	0	0	0	0.5	3	1	50	
F1.4600C	4	6	0	0	0	0	0	0.5	3	0.5	25	
F1.4600D	4	26	1	100	0	1	40	0.3	7.8	0.5	25	
		1502	43	2580	35	2	1600		601	53	2650	
Total Facility	86000											
Class 1	16293		Class 1 Walls	24348.6								
Class 2	17427	25%	Class 2 Walls	21305.2								
Class 3	52280	75%										
Non-Impacted	0											

G (Animal)

Laboratory	Features											
		Casework (linear ft.)	Sinks (ea.)	Drains (ft.)	Hoods (ea.)	Glove Boxes (ea.)	Ventilation Ducting (ft.)	Cabinets/Shelves		Equipment (50 ft3 - ea.)		Comments
								Factor	(ft.)	(3.5 x 3.5 x 4)	(ft3)	
G1.2712A	2	8	0	0	0	0	0	0		3	150	
G2.4614/4614A	4	0	0	0	0	0	0	0	0	0	0	
Irradiator												
G1.4804	4	30	1	100		1	40	0.2	6	2	100	
G1-4107	4	0	0	0	0	0	0		0	0	0	
		38	1	100	0	1	40		6	5	250	
Total Facility	49200											
Class 1	927		Class 1 Walls	2016								
Class 2	12068	25%	Class 2 Walls	1764								
Class 3	36205	75%										
Non-Impacted	0											

Laboratory	Floors					Walls					Ceilings					Waste			
	Number	Length (ft.)	Width (ft.)	Area (ft2)	Comments	Number	Width (ft.)	Height (ft.)	Area (ft2)	Comments	Number	Length (ft.)	Width (ft.)	Area (ft2)	Comments	Type	Volume (ft3)	Comments	
F1.3301	1	21	15	315		2	21	15	630		1	21	15	315		DAW	59		
						2	15	15	450							Biological			
F1.3300	1	24	17	408		2	24	15	720		1	24	17	408		DAW	42		
						2	17	15	510							Biological			
F1.3307	1	10	15	150		2	10	15	300		1	10	15	150		DAW	31		
						2	15	15	450							Biological			
F1.3507	1	28	15	420		2	28	15	840		1	28	15	420		DAW	69		
						2	15	15	450							Biological			
F1.4100	1	10	21	210		2	10	15	300		1	10	21	210		DAW	53		
Dark Room						2	21	15	630							Biological			
F1.4600	1	30	32	960		2	30	15	900		1	30	32	960		DAW	176		
						2	32	15	960							Biological			
F1.4600A	1	12	6	72		2	12	15	360		1	12	6	72		DAW	10		
						2	6	15	180							Biological			
F1.4600B	1	12	13	156		2	12	15	360		1	12	13	156		DAW	13		
						2	13	15	390							Biological			
F1.4600C	1	12	6	72		2	12	15	360		1	12	6	72		DAW	10		
						2	6	15	180							Biological			
F1.4600D	1	21	9	189		2	21	15	630		1	21	9	189		DAW	40		
						2	9	15	270							Biological			
									45654								2372		
Total Facility																			
Class 1																			
Class 2																			
Class 3																			
Non-Impacted																			

G (Animal)

Laboratory	Floors					Walls					Ceilings					Waste			
	Number	Length (ft.)	Width (ft.)	Area (ft2)	Comments	Number	Width (ft.)	Height (ft.)	Area (ft2)	Comments	Number	Length (ft.)	Width (ft.)	Area (ft2)	Comments	Type	Volume (ft3)	Comments	
G1.2712A	1	17	19	323		2	17	15	510		1	17	19	323			25		
						2	19	15	570								25		
G2.4614/4614A	1	6	9	54		2	6	15	180		1	6	9	54		DAW	0		
Irradiator						2	9	15	270							Biological			
G1.4804	1	30	10	300		2	30	15	900		1	30	10	300		DAW	52		
						2	10	15	300							Biological			
G1.4107	1	10	25	250		2	10	15	300		1	10	25	250		DAW	0		
						2	25	15	750							Biological	25		
				927					3780					927			126.32		
Total Facility																			
Class 1																			
Class 2																			
Class 3																			
Non-Impacted																			

H

Laboratory	Features											
		Casework (linear ft.)	Sinks (ea.)	Drains (ft.)	Hoods (ea.)	Glove Boxes (ea.)	Ventilation Ducting (ft.)	Cabinets/Shelves		Equipment (50 ft3 - ea.)		Comments
								Factor	(ft.)	(3.5 x 3.5 x 4)	(ft3)	
H-4000	4	220	14	360	12	0	260	0.4	88	10	500	Empty Room
Radiosynth Suite												
H.3315 &	3	10	1	80	0	0	0	0.2	2	1	50	
H.3315A												
H.3319	3	30	1	80	0	0	0	0.2	6	1	50	
H.3324	3	90	1	80	1	0	60	0.3	27	6	300	
H.3322	3	20	1	80	0	0	0	0	0	1	50	
H.3619	3	16	1	80	0	0	0	0.2	3.2	1	50	
H 1305	1	37	0	0	0	0	0	1	37	2	100	
H Penthouse	5	0	0	0	0	0	200	0	0	20	1000	
H-4106	4	60	2	120	2	0	60	0.2	10	4	200	
		473	21	880	15	0	400		173.2	46	2300	
Total Facility	87100											
Class 1	6380		Class 1 Walls	10107								
Class 2	20180	25%	Class 2 Walls	8843								
Class 3	60540	75%										
Non-Impacted	0											

H

Laboratory	Floors					Walls					Ceilings					Waste			
	Number	Length (ft.)	Width (ft.)	Area (ft2)	Comments	Number	Width (ft.)	Height (ft.)	Area (ft2)	Comments	Number	Length (ft.)	Width (ft.)	Area (ft2)	Comments	Type	Volume (ft3)	Comments	
H-4000	1	80	30	2400		6	80	15	7200		1	80	30	2400		DAW	378		
Radiosynth Suite						6	30	15	2700							Biological			
H.3315 &	1	20	10	200		2	20	8	320	Cold Room	1	20	10	200		DAW	18		
H 3315A						4	10	8	320	3315A						Biological			
H.3319	1	15	10	150		2	15	8	240	Cold Room	1	15	10	150		DAW	42		
						2	10	8	160							Biological			
H.3324	1	30	30	900		2	30	15	900		1	30	30	900		DAW	149		
						2	30	15	900							Biological			
H.3322	1	10	10	100		2	10	15	300		1	10	10	100		DAW	30		
						2	10	15	300							Biological			
H.3619	1	10	10	100		2	10	15	300		1	10	10	100		DAW	25		
						2	10	15	300							Biological			
H.1305	1	15	22	330		2	15	15	450		1	15	22	330		DAW	58		
						2	22	15	660							Biological			
H Penthouse	1	40	40	1600		2	40	15	1200		1	40	40	1600		DAW	118		
						2	40	15	1200							Biological			
H-4106	1	20	30	600		2	20	15	600		1	20	30	600		DAW	92		
						2	30	15	900							Biological			
				6380			0	15	16950			0	0	6380		DAW	893		
							0	15	0							Biological			
Total Facility																			
Class 1																			
Class 2																			
Class 3																			
Non-Impacted																			

K

Laboratory	Features											
		Casework (linear ft.)	Sinks (ea.)	Drains (ft.)	Hoods (ea.)	Glove Boxes (ea.)	Ventilation Ducting (ft.)	Cabinets/Shelves		Equipment (50 ft3 - ea.)		Comments
								Factor	(ft.)	(3.5 x 3.5 x 4)	(ft3)	
K Basement Irradiator	1	0	0	0	0	0	0	0	0	0	0	
K-4312	4	36	1	100	3	0	80	0.5	15	2	100	
K.4107	4	140	3	140	1	0	40	0.7	98	5	250	
K.4122	4	72	2	120	7	0	160	0.7	50.4	8	400	
K.4614	4	20	1	100	1	0	40	0.3	6	2	100	
K.4422	4	16	1	100	0	0	0	0.6	9.6	0.5	25	
K.4324	4	32	0	0	7	0	160	0.5	16	8	400	
K.4318	4	30	0	0	0	1	40	0.1	3	0.5	25	
K.4318	4	35	1	100	0	0	0	0.2	7	1	50	
K.4306	4	10	1	100	2	0	60	0.2	2	1	50	
K-4810	4	20	2	120	3	0	80	0.7	14	2	100	
K.3625 & K.3325	3	30	1	80	1	0	60	0.2	6	1	50	
K.3326	3	20	0	0	0	0	0	0.2	4	1	50	
K.3622	3	20	1	80	0	0	0	0.1	2	0.5	25	
K.3315	3	20	1	80	2	0	80	0.2	4	1	50	
K.3615	3	10	1	80	0	0	0	0	0	0.5	25	
K.3314	3	20	1	80	1	0	60	0.2	4	2	100	
K.3310	3	18	1	80	0	0	0	1	18	0.5	25	
K.3310A	3	0	0	0	0	0	0	0	0	0.5	25	
K.3610	3	18	1	80	0	0	0	1	18	0.5	25	
K.3 Waste Stg.	3	0	0	0	0	0	0	0	0	0	0	
K.3308	3	20	0	0	0	0	0	0.3	6	1	50	
K.2607	2	80	2	80	1	0	80	0.5	40	1	50	
K.2809	2	280	6	160	4	1	160	0.6	168	6	300	
K.2819	2	190	4	120	3	0	120	0.5	95	4	200	
K.2826	2	240	2	80	2	0	100	0.5	120	3	150	
K.2123	2	0	0	0	0	0	0	0	0	0	0	
K.2119	2	240	4	120	5	0	160	0.6	144	3	150	
K.2307	2	26	1	60	0	0	0	0.5	13	6	300	

K

Laboratory	Floors					Walls					Ceilings					Waste			
	Number	Length (ft)	Width (ft.)	Area (ft2)	Comments	Number	Width (ft.)	Height (ft.)	Area (ft2)	Comments	Number	Length (ft.)	Width (ft.)	Area (ft2)	Comments	Type	Volume (ft3)	Comments	
																	#VALUE!		
K Basement	1	10	8	80		2	10	15	300		1	10	8	80		DAW	0		
Irradiator						2	8	15	240							Biological			
K-4312	1	15	20	300		2	15	15	450		1	15	20	300		DAW	82		
						2	20	15	600							Biological			
K.4107	1	36	42	1512		2	36	15	1080		1	36	42	1512		DAW	210		
						2	42	15	1260							Biological			
K.4122	1	36	21	756		2	36	15	1080		1	36	21	756		DAW	163		
						2	21	15	630							Biological			
K.4614	1	15	11	165		2	15	15	450		1	15	11	165		DAW	41		
						2	11	15	330							Biological			
K.4422	1	9	16	144		2	9	15	270		1	9	16	144		DAW	23		
						2	16	15	480							Biological			
K.4324	1	31	19	589		2	31	15	930		1	31	19	589		DAW	111		
						2	19	15	570							Biological			
K.4319	1	15	10	150		2	15	15	450		1	15	10	150		DAW	43		
						2	10	15	300							Biological			
K.4316	1	15	16	240		2	15	15	450		1	15	16	240		DAW	48		
						2	16	15	480							Biological			
K.4306	1	15	10	150		2	15	15	450		1	15	10	150		DAW	28		
						2	10	15	300							Biological			
K-4810	1	25	12	300		2	25	15	750		1	25	12	300		DAW	58		
						2	12	15	360							Biological			
K.3625 &	1	30	10	300		2	30	15	900		1	30	10	300		DAW	50		
K.3325						4	10	15	600							Biological			
K.3326	1	15	10	150		2	15	15	450		1	15	10	150		DAW	29		
						2	10	15	300							Biological			
K.3622	1	10	10	100		2	10	15	300		1	10	10	100		DAW	27		
						2	10	15	300							Biological	5		
K.3313	1	20	10	200		2	20	15	600		1	20	10	200		DAW	42		
						2	10	15	300							Biological			
K.3615	1	10	10	100		2	10	15	300		1	10	10	100		DAW	15		
						2	10	15	300							Biological			
K.3314	1	20	15	300		2	20	15	600		1	20	15	300		DAW	43		
						2	15	15	450							Biological			
K.3310	1	10	12	120		2	10	15	300		1	10	12	120		DAW	26		
						2	12	15	360							Biological			
K.3310A	1	10	12	120		2	10	15	300		1	10	12	120		DAW	3		
						2	12	15	360							Biological			
K.3610	1	10	12	120		2	10	15	300		1	10	12	120		DAW	26		
						2	12	15	360							Biological			
K.3 Waste Stg	1	3	8	24		2	3	15	90		1	3	8	24		DAW	0		
						2	8	15	240							Biological	0		
K.3308	1	30	20	600		2	20	15	600		1	30	20	600		DAW	30		
						2	20	15	600							Biological			
K.2807	1	40	32	1280	2807 Overall	4	40	15	2400		1	40	32	1280		DAW	115		
					Suite	2	32	15	960							Biological			
K.2809	1	40	73	2920	2809 Overall	4	40	15	2400		1	40	73	2920		DAW	409		
					Suite	4	73	15	4380							Biological			
K.2819	1	40	52	2080	2819 Overall	4	40	15	2400		1	40	52	2080		DAW	276		
					Suite	4	52	15	3120							Biological			
K.2826	1	40	52	2080	2826 Overall	4	40	15	2400		1	40	52	2080		DAW	329		
					Suite	4	52	15	3120							Biological			
K.2123	1	40	52	2080	2123 Overall	4	40	15	2400		1	40	52	2080		DAW	0		
					Suite	4	52	15	3120							Biological			
K.2119	1	40	52	2080	2119 Overall	4	40	15	2400		1	40	52	2080		DAW	344		
					Suite	4	52	15	3120							Biological			
K.2307	1	30	15	450		2	30	15	900		1	30	15	450		DAW	63		
						2	15	15	450							Biological			

Laboratory	Features											
		Casework (linear ft.)	Sinks (ea.)	Drains (ft.)	Hoods (ea.)	Glove Boxes (ea.)	Ventilation Ducting (ft.)	Cabinets/Shelves		Equipment (50 ft3 - ea.)		Comments
								Factor	(ft.)	(3.5 x 3.5 x 4)	(ft3)	
K.2309	2	15	1	60	2	0	100	0.3	4.5	3	150	
K-2623	2	28	1	60	2	0	100	0.2	5.6	1	50	
K.2315	2	20	1	60	1	0	80	0.2	4	0.5	25	
K.2323	2	25	1	60	2	0	100	0.4	10	1	50	
K.2324	2	18	1	60	0	0	0	0.1	1.8	0.5	25	
K.2324A	2	0	0	0	0	0	0	0	0	0.5	25	
K.2326	2	42	1	60	0	0	0	0.3	12.6	4	200	
K.2624	2	18	1	60	0	0	0	0.1	1.8	0.5	25	
K.2619	2	0	0	0	0	0	0	0	0	0	0	
K-4612	4	30	1	100	3	0	80	0.4	12	4	200	
K.2610	2	25	1	60	3	0	120	0.2	5	4	200	
K.2608	2	18	1	60	0	0	0	0.2	3.6	0.5	25	
K.2608A	2	0	0	0	0	0	0	0	0	0.5	25	
K-4313	4	20	1	100	0	0	0	0.4	8	2	100	
K-4326	4	40	0	0	0	1	40	0.4	16	2	100	
		1938	49	2800	56	3	2100		947.9	85.5	4275	
Total Facility	118200											
Class 1	22788		Class 1 Walls	35504								
Class 2	23853	25%	Class 2 Walls	31066								
Class 3	71559	75%										
Non-Impacted	0											

Laboratory	Floors					Walls					Ceilings					Waste			
	Number	Length (ft.)	Width (ft.)	Area (ft2)	Comments	Number	Width (ft.)	Height (ft.)	Area (ft2)	Comments	Number	Length (ft.)	Width (ft.)	Area (ft2)	Comments	Type	Volume (ft3)	Comments	
																	#VALUE!		
K.2309	1	20	10	200		2	20	15	600		1	20	10	200		DAW	47		
						2	10	15	300							Biological			
K-2623	1	22	14	308		2	22	15	660		1	22	14	308		DAW	53		
						2	14	15	420							Biological			
K.2315	1	15	10	150		2	15	15	450		1	15	10	150		DAW	37		
						2	10	15	300							Biological			
K.2323	1	15	21	315		2	15	15	450		1	15	21	315		DAW	50		
						2	21	15	630							Biological			
K.2324	1	8	13	104		2	8	8	128		1	8	13	104		DAW	25		
						2	13	8	208							Biological			
K.2324A	1	8	13	104		2	8	8	128		1	8	13	104		DAW	3		
						2	13	8	208							Biological			
K.2326	1	30	19	570		2	30	15	900		1	30	19	570		DAW	72		
						2	19	15	570							Biological			
K.2624	1	8	13	104		2	8	8	128		1	8	13	104		DAW	25		
						2	13	8	208							Biological			
K.2619	1	20	10	200		2	20	15	600		1	20	10	200		DAW	0		
						2	10	15	300							Biological			
K-4612	1	20	15	300		2	20	15	600		1	20	15	300		DAW	72		
						2	15	15	450							Biological			
K.2610	1	15	19	285		2	15	15	450		1	15	19	285		DAW	69		
						2	19	15	570							Biological			
K.2608	1	8	13	104		2	8	8	128		1	8	13	104		DAW	25		
						2	13	8	208							Biological			
K.2608A	1	8	13	104		2	8	8	128		1	8	13	104		DAW	3		
						2	13	8	208							Biological			
K-4313	1	10	15	150		2	10	15	300		1	10	15	150		DAW	35		
						2	15	15	450							Biological			
K-4326	1	30	10	300		2	30	15	900		1	30	10	300		DAW	64		
						2	10	15	300							Biological			
				22788			0	15	66570			0	0	22788		DAW	3187		
Total Facility																			
Class 1																			
Class 2																			
Class 3																			
Non-Impacted																			

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Amendment No. 109

MATERIALS LICENSE

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 36, 39, 40, and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations, and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

Licensee	In accordance with the letter dated August 29, 2005,
1. E. R. Squibb & Sons, Inc.	3. License number 29-00139-02 is amended in its entirety to read as follows:
2. 311 Pennington-Rocky Hill Road Mail Stop HW8T-1.12 Pennington, New Jersey 08534-2130	4. Expiration date September 30, 2008 5. Docket No. 030-06222 Reference No.

6. Byproduct, source, and/or special nuclear material	7. Chemical and/or physical form	8. Maximum amount that licensee may possess at any one time under this license
A. Any byproduct material with atomic numbers 1 through 83, except Strontium 90	A. Any	A. 100 millicuries per radionuclide and 2 curies total
B. Hydrogen 3	B. Any	B. 150 curies
C. Carbon 14	C. Any	C. 20 curies
D. Strontium 90	D. Any	D. 2 millicuries
E. Technetium 99m	E. Any	E. 750 millicuries
F. Any byproduct material with atomic numbers 84 through 103	F. Any	F. 1 millicurie
G. Nickel 63	G. Foil or plated sources registered either with the U.S. Nuclear Regulatory Commission under 10 CFR 32.210 or with an Agreement State.	G. No single source to exceed the maximum activity specified in the certificate of registration issued by the U.S. Nuclear Regulatory Commission or an Agreement State
H. Any byproduct material with atomic numbers 1 through 83, except Strontium 90	H. Any	H. 200 millicuries per radionuclide and 6 curies total

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6. Byproduct, source, and/or special nuclear material	7. Chemical and/or physical form	8. Maximum amount that licensee may possess at any one time under this license
I. Hydrogen 3	I. Any	I. 250 curies
J. Carbon 14	J. Any	J. 25 curies
K. Phosphorus 33	K. Any	K. 1 curie
L. Sulfur 35	L. Any	L. 10 curies
M. Iodine 125	M. Any	M. 500 millicuries
N. Any byproduct material with atomic numbers 1 through 83, except, Strontium 90	N. Any	N. 200 millicuries per radionuclide and 6 curies total
O. Hydrogen 3	O. Any	O. 1 curie
P. Carbon 14	P. Any	P. 1 curie
Q. Sulfur 35	Q. Any	Q. 300 millicuries
R. Calcium 45	R. Any	R. 300 millicuries

(b)(4),(b)(7)(F)

9. Authorized use:

A. through F. and H. through R. Research and development as defined in 10 CFR 30.4; animal studies; and calibration and checking of the licensee's instruments.

B. and C. Preparation and distribution of radioactive drugs to authorized recipients in accordance with 10 CFR 32.72.

G. To be used for sample analysis in compatible gas chromatography devices that have been registered either with the U.S. Nuclear Regulatory Commission under 10 CFR 32.210 or with an Agreement State and have been distributed in accordance with a Commission or Agreement State specific license authorizing distribution to persons specifically authorized by a Commission or Agreement State license to receive, possess, and use the devices.

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(b)(7)(F)

10. A. Licensed material in Items 6.A. through 6.G. may only be used at the licensee's facilities located at One Squibb Drive, New Brunswick, New Jersey.

    B. Licensed material in Items 6.G., 6.H. through 6.M. (b)(7)(F) may only be used at the licensee's facilities located at Route 206 and Provinceline Road, Lawrenceville, New Jersey.

    C. Licensed material in Items 6.G. and 6.N. through 6.R. may only be used at the licensee's facilities located at 311 Pennington-Rocky Hill Road, Pennington, New Jersey.

11. A. Licensed material shall be used by, or under the supervision of, individuals designated by the licensee's Radiation Safety Committee.

    B. The Radiation Safety Officer for this license is Michael J. Vala, CHP.

12. The licensee shall not use licensed material in or on human beings except as provided otherwise by specific condition of this license.

13. The licensee shall not use licensed material in field applications where it is released except as provided otherwise by specific condition of this license.

14. Experimental animals administered licensed materials or their products shall not be used for human consumption.

15. This license does not authorize commercial distribution of licensed material to persons generally licensed pursuant to 10 CFR Part 31 or equivalent regulations of any Agreement State or to persons exempt from licensing pursuant to 10 CFR 30.14 through 30.20 inclusive, or equivalent regulations of any Agreement State.

16. This license does not authorize commercial distribution of licensed material.

17. A. Sealed sources shall be tested for leakage and/or contamination at intervals not to exceed the intervals specified in the certificate of registration issued by the U.S. Nuclear Regulatory Commission under 10 CFR 32.210 or under equivalent regulations of an Agreement State.

    B. Notwithstanding Paragraph A of this Condition, sealed sources designed to primarily emit alpha particles shall be tested for leakage and/or contamination at intervals not to exceed 3 months.

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C. Each sealed source fabricated by the licensee shall be inspected and tested for construction defects, leakage, and contamination prior to any use or transfer as a sealed source.

D. In the absence of a certificate from a transferor indicating that a leak test has been made within the intervals specified in the certificate of registration issued by the U.S. Nuclear Regulatory Commission under 10 CFR 32.210 or under equivalent regulations of an Agreement State, prior to the transfer, a sealed source received from another person shall not be put into use until tested and the test results received.

E. Sealed sources need not be tested if they contain only hydrogen-3; or they contain only a radioactive gas; or the half-life of the isotope is 30 days or less; or they contain not more than 100 microcuries of beta- and/or gamma-emitting material or not more than 10 microcuries of alpha-emitting material.

F. Sealed sources need not be tested if they are in storage and are not being used; however, when they are removed from storage for use or transferred to another person and have not been tested within the required leak test interval, they shall be tested before use or transfer. No sealed source shall be stored for a period of more than 10 years without being tested for leakage and/or contamination.

G. The leak test shall be capable of detecting the presence of 0.005 microcurie (185 becquerels) of radioactive material on the test sample. If the test reveals the presence of 0.005 microcurie (185 becquerels) or more of removable contamination, a report shall be filed with the U.S. Nuclear Regulatory Commission in accordance with 10 CFR 30.50(c)(2), and the source shall be removed immediately from service and decontaminated, repaired, or disposed of in accordance with Commission regulations.

H. Tests for leakage and/or contamination, including leak test sample collection and analysis, shall be performed by the licensee or by other persons specifically licensed by the U.S. Nuclear Regulatory Commission or an Agreement State to perform such services.

18. The licensee shall conduct a physical inventory every six months, or at other interval approved by the U.S. Nuclear Regulatory Commission, to account for all sealed sources and/or devices received and possessed under the license.

19. Sealed sources or detector cells containing licensed material shall not be opened or sources removed from source holders by the licensee,

(b)(7)(F)

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21. A. Detector cells containing a titanium tritide foil or a scandium tritide foil shall only be used in conjunction with a properly operating temperature control mechanism which prevents the foil temperatures from exceeding that specified in the certificate of registration referred to in 10 CFR 32.210.

    B. When in use, detector cells containing a titanium tritide foil or a scandium tritide foil shall be vented to the outside.

22. The licensee is authorized to hold byproduct material with a physical half-life of less than or equal to 120 days for decay-in-storage before disposal without regard to its radioactivity if the licensee:

    A. Monitors byproduct material at the surface before disposal and determines that its radioactivity cannot be distinguished from the background radiation level with an appropriate radiation detection survey meter set on its most sensitive scale and with no interposed shielding; and

    B. Removes or obliterates all radiation labels, except for radiation labels on materials that are within containers and that will be managed as biomedical waste after they have been released from the licensee; and

    C. Maintains records of the disposal of licensed materials for 5 years. The record must include the date of disposal, the survey instrument used, the background radiation level, the radiation level measured at the surface of each waste container, and the name of the individual who performed the disposal.

23. The licensee may transport licensed material in accordance with the provisions of 10 CFR Part 71, "Packaging and Transportation of Radioactive Material."

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24. Except as specifically provided otherwise in this license, the licensee shall conduct its program in accordance with the statements, representations, and procedures contained in the documents, including any enclosures, listed below. The U.S. Nuclear Regulatory Commission's regulations shall govern unless the statements, representations and procedures in the licensee's application and correspondence are more restrictive than the regulations.

A. Letter dated June 20, 1994
B. Application dated February 18, 1997
C. Letter dated August 19, 1998
D. Letter dated October 2, 2001 [ML012840012]
E. Letter dated October 15, 2001 [ML012920254]
F. Letter dated February 6, 2002 [ML020390283]
G. Letter dated April 24, 2002 [ML021220488]
H. Letter dated March 19, 2003 [ML030900805]
I. Letter dated November 22, 2004 [ML043380281]

For the U.S. Nuclear Regulatory Commission

Date March 3, 2006

By

Elizabeth Ullrich
Commercial and R&D Branch
Region I
King of Prussia, Pennsylvania 19406
Friday, March 03, 2006 2:32:55 PM

Glenn R. Marshall

From: Annette Hansen
Sent: Tuesday, March 21, 2006 4:53 PM
To: Glenn R. Marshall
Subject: FW: (b)(7)(F)

It is everything!

Annette Hansen
Philotechnics, Ltd.
118 Mitchell Road
Oak Ridge, TN 37830

865-285-3009 direct
865-220-0686 fax
(b)(6) *cell*

www.philotechnics.com

-----Original Message-----
From: Mary Shepherd [mailto:mary.f.shepherd@gte.net]
Sent: Tuesday, March 21, 2006 4:56 PM
To: Annette Hansen
Subject: RE: (b)(7)(F)

(b)(7)(F)

From: Annette Hansen [mailto:ahansen@philotechnics.com]
Sent: Tuesday, March 21, 2006 1:31 PM
To: Mary Shepherd
Subject: RE: (b)(7)(F)

(b)(7)(F)

Annette Hansen
Philotechnics, Ltd.
118 Mitchell Road
Oak Ridge, TN 37830

865-285-3009 direct
865-220-0686 fax
(b)(6) *cell*

www.philotechnics.com

-----Original Message-----
From: Mary Shepherd [mailto:mary.f.shepherd@gte.net]
Sent: Tuesday, March 21, 2006 4:22 PM
To: Annette Hansen
Subject: RE: (b)(7)(F)

Dear Annette,
Mary is out of the office until Thursday, March 23. Per JL, (b)(7)(F)
Regards,
Diana Shepherd for JL

From: Annette Hansen [mailto:ahansen@philotechnics.com]
Sent: Tuesday, March 21, 2006 8:31 AM
To: mary.f.shepherd@gte.net
Subject: FW: (b)(7)(F)

Hi Mary,

Can you help with the request below?

Thanks, Annette

Annette Hansen
Philotechnics, Ltd.
118 Mitchell Road
Oak Ridge, TN 37830

865-285-3009 direct
865-220-0686 fax
(b)(6) *cell*

www.philotechnics.com

-----Original Message-----
From: Glenn R. Marshall
Sent: Tuesday, March 21, 2006 11:00 AM
To: Annette Hansen
Subject: (b)(7)(F)

Annette,

Bristol-Myers Squibb in NJ has (b)(7)(F)
(b)(7)(F) Can you get me a current estimate for disposal? (b)(7)(F)

Thanks,

Glenn Marshall, CHP
Health Physicist
Radiation Safety Officer

Philotechnics, Ltd.
(865) 285-3018
Cell: (b)(6)
Fax: (865) 220-0686
www.philotechnics.com

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

4/21/2006, and to inform you that the initial processing which includes an administrative review has been performed.

Financial Assurance 29-00139-02

☒ 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** 138761.
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