

E48



Bristol-Myers Squibb Company

P. O. Box 5400 Princeton, NJ 08543-5400 609-818-3000

July 28, 2009

Mr. Dennis Lawyer
Division of Nuclear Material Safety
U.S. Nuclear Regulatory Commission, Region 1
475 Allendale Road
King of Prussia, PA 19406-1415

J-6

MS-16

03005222

Re: Decommissioning Cost Estimate for E.R. Squibb & Sons, LLC, New Jersey
Facilities - License No. 29-00139-02

Dear Mr. Lawyer,

Enclosed is a copy of the Decommissioning Cost Estimate for the New Jersey E.R. Squibb & Sons LLC facilities. A revised financial assurance guarantee will be submitted following NRC approval of the revised decommissioning cost estimate.

Please contact me at 609-818-5611 if you have any questions.

Sincerely,

James R. Owens
Radiation Safety Officer

RECEIVED
REGION 1
2009 JUL 30 AM 5:23

Information in this record was deleted in
accordance with the Freedom of Information Act.
Exemptions: 7F
FOIA/PA 2011-0063

F/5

143616
NRC/REGIONAL MATERIALS-002

Decommissioning Cost Estimate for

E.R. Squibb & Sons, LLC

New Jersey Facilities

Prepared by:



**Philotechnics, Ltd.
201 Renovare Boulevard
Oak Ridge, TN 37830**

April 15, 2009

E.R. Squibb & Sons, LLC, a wholly owned subsidiary of Bristol Myers Squibb Company (BMS) contracted Philotechnics, Ltd. to update facility decommissioning cost estimates for three New Jersey facilities licensed under U.S. Nuclear Regulatory Commission license number 29-00132-02:

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

Philotechnics had previously developed detailed "bottom-up" cost estimates in 2006 for each location; this report and its attachments contain the necessary information to update the decommissioning cost estimate. As such, this report should be considered an addendum to the original report dated March, 2006. The original report contains a detailed description of the methodology used to perform the cost estimate; such detail is not repeated here.

Cost estimates were prepared in accordance with and in the format of NUREG 1757 "Consolidated NMSS Decommissioning Guidance"¹. This NUREG and 10 CFR 30.35 require decommissioning cost estimates to be updated periodically – approximately every three years – to account for inflation, changes in facilities or processes, radionuclide inventory changes, and variations in waste disposal costs.

Per NUREG 1757 a contingency of 25% is required to be added to decommissioning estimates to address unidentified and unanticipated conditions. For the New Jersey facilities the contingency is \$1,967,487. Consequently, the total amount of financial assurance that is necessary for decommissioning is \$9,837,436.

The overall estimated costs for each building are:

Site	Estimate	25% Contingency	Subtotal
Lawrenceville	\$3,935,281	\$983,820	\$4,919,102
Pennington	\$2,818,135	\$704,534	\$3,522,669
New Brunswick	\$1,116,532	\$279,133	\$1,395,665
Total	\$7,869,948	\$1,967,487	\$9,837,436

¹ "Consolidated NMSS Decommissioning Guidance", NUREG-1757, US Nuclear Regulatory Commission, September 2003, Washington, DC.

This represents an increase of approximately 14% over the previous estimate. The major factors influencing the increased cost of decommissioning are increases in labor rates, per diem allowance, and fuel costs related to transportation of radioactive waste.

Method of Updating the Decommissioning Cost Estimate

The total labor load for decommissioning was reviewed in light of recent experience on jobs of similar scope and magnitude. Consequently, the overall labor hours decreased slightly. To ensure the cost estimate reflects the true projected costs to be incurred during decommissioning, the following information was used:

- Labor costs for each job category were taken directly from the most recently published data from the U.S. Department of Labor, Bureau of Labor Statistics (BLS). Because an out-of-state contractor is assumed to be used, nationwide average salaries are used in the estimate.
- Benefits were added to salaries assuming the base pay rate comprises 82% of the total compensation.
- Labor overhead rate of 75% was assumed.
- Per diem rates are those published by the General Services Administration for government per diem; for the Princeton area, this is \$256 per day.
- Waste processing, transportation, and packaging market costs at the time of the report's preparation were used.
- Because processes and facility uses are essentially unchanged since 2006, no modifications were considered in formulating the estimate.

This decommissioning Cost Estimate should be reviewed in approximately three years to account for inflation, facility or process changes, or changes in radioactive waste management costs.

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 radionuclides 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 ft³ of DAW and 200 ft³ 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' x 3' d x 3' l	72	ft ³
Fume Hoods	35	Each	5' x 4' d x 8' l	5,600	ft ³
Lab Benches (Casework)	1502	Linear Feet	4' d x 3' l	18,024	ft ³
Sinks	43	Each	4' x 4' d x 3' l	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 (Class 1)	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	8" diameter	1,408	ft ³
Cabinets	601	Linear Feet	3' d x 3' l	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/ft ³)				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'h	0	ft ³
Fume Hoods	15	Each	5'w x 4'd x 8'h	2,400	ft ³
Lab Benches (Casework)	473	Linear Feet	4'd x 3'h	5,676	ft ³
Sinks	21	Each	2'w x 4'd x 3'h	1,008	ft ³
Drains	880	Linear Feet	2" diameter	44	ft ³
Floors	See Listing	Class 1 Sq. Feet		6,380	ft ²
Walls (Class 1)	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'h	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/ft ³)				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' x 3' x 3'	108	ft ³
Fume Hoods	56	Each	5' x 4' x 8'	8,960	ft ³
Lab Benches (Casework)	1936	Linear Feet	4' x 3' x 0'	23,232	ft ³
Sinks	49	Each	4' x 2' x 3'	2,352	ft ³
Drains	2800	Linear Feet	1/3" diameter	140	ft ³
Floors	See Listing	Class 1 Sq. Feet		22,788	ft ²
Walls (Class 1)	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' x 3' x 0'	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/ft ³)				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 38" x 31"	36	ft ³
Fume Hoods	0	Each	5'w x 49" x 81"	0	ft ³
Lab Benches (Casework)	38	Linear Feet	2' x 49" x 81"	456	ft ³
Sinks	1	Each	4'w x 49" x 31"	48	ft ³
Drains	100	Linear Feet	1/3" diameter	5	ft ³
Floors	See Listing	Class 1 Sq. Feet		927	ft ²
Walls (Class 1)	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	1/3" diameter	35	ft ³
Cabinets	6	Linear Feet	2' x 31" x 31"	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/ft ³)				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 Manager	Supervisor	Shipper	HP Technician	Radiation Workers (Craftsmen)	Radiation workers (Non-skilled)	Clerical
Preparation of Documentation for Regulatory Agencies	15	10	5	0	0	0	15
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	0	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	16	72	8	24	47

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 cm ²						
Component	Action	Project Manager	Supervisor	Shipper	HP Technician	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 Manager	Supervisor	Shipper	HP Technician	Radiation Workers (Craftsmen)	Radiation workers (Non-skilled)	Clenical
Glove Boxes	Remove/Disp							
Fume Hoods	Remove/Disp	5	5	5	15	10	30	6
Lab Benches	Decon/Remove	1.5	1.5	1.5	8	6	18	3
Sinks	Decon/Remove	1	1	1	4	4	10	2
Drains	Remove/Disp	0.5	0.5		3	2	6	1
Floors	Decon/Wipe	1	1	1	6	4	13	2
Walls	Decon/Wipe	0.5	0.5	1	3	2	6	1
Cellings	Decon/Wipe	0.5	0.5		2	2	5	1
Ventilation/Ductwork	Remove/Disp	2	2	2	12	8	26	4
Cabinets	Decon/Remove	1	1	2	6	4	12	2
Hot Cells	Remove/Disp							
Equipment/Materials	Surf/Rem/Disp	2	2	2	10	7	22	4
Soil Plots	Sample							
Storage Tanks	N/A							
Storage Areas	Remove/Disp							
Radwaste Areas	Remove/Disp	0.5	0.5	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	15.5	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 Manager	Supervisor	Shipper	HP Technician	Radiation Workers (Craftsmen)	Radiation workers (Non-skilled)	Clerical
Glove Boxes	Remove/Disp	1	1	3	6	4	12	2
Fume Hoods	Remove/Disp	8	8	8	48	32	96	16
Lab Benches	Decon/Remove	7	7	6	42	28	84	14
Sinks	Decon/Remove	2	2	2	14	9	27	4
Drains	Remove/Disp	4	4	3	24	16	48	8
Floors	Decon/Wipe	8	8	6	48	32	96	16
Walls	Decon/Wipe	4	4	4	24	16	48	8
Ceilings	Decon/Wipe	3	3	4	18	12	36	6
Ventilation/Ductwork	Remove/Disp	8	8	8	48	32	96	16
Cabinets	Decon/Remove	4	4	4	24	16	48	8
Hot Cells	Remove/Disp							
Equipment/Materials	Sur/Rem/Disp	8	8	8	48	32	96	16
Soil Plots	Sample							
Storage Tanks	N/A							
Storage Areas	Remove/Disp							
Radwaste Areas	Remove/Disp	2	2	3	12	8	24	4
Scrap Recovery Areas	N/A							
Maintenance Shop	Remove/Disp							
Equipment Decontamination	Remove/Disp							
Other (specify): Irradiator	Remove/Disp	1	1	2	2	0	0	0
Other (specify)	Remove/Disp							
TOTALS		60	60	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 Manager	Supervisor	Shipper	HP Technician	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 Manager	Supervisor	Shipper	HP Technician	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 Utilities	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 Manager	Supervisor	Shipper	HP Technician	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 Utilities	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 Manager	Supervisor	Shipper	HP Technician	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 Utilities	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 Manager	Supervisor	Shipper	HF Technician	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 Utilities	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 Manager	Supervisor	Shipper	HP Technician	Radiation Workers (Craftsmen)	Radiation workers (Non-skilled)	Clerical
FSS Setup	4	4	0	4	0	0	4
Survey Packages	4	4	0	4	0	0	4
Class 1	10	10	0	70	0	0	10
Class 2	1.5	1.5	0	9	0	0	1.5
Class 3	1.5	1.5	0	6	0	0	1.5
TOTALS	21	21	0	93	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 Manager	Supervisor	Shipper	HP Technician	Radiation Workers (Craftsmen)	Radiation workers (Non-skilled)	Clerical
FSS Setup	0.5	0.5	0	1	0	0	0.5
Survey Packages	0.5	0.5	0	1	0	0	0.5
Class 1	1	1	0	18	0	0	1
Class 2	0.5	0.5	0	5	0	0	0.5
Class 3	0.5	0.5	0	3	0	0	0.5
TOTALS	3	3	0	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 Manager	Supervisor	Shipper	HP Technician	Radiation Workers (Craftsmen)	Radiation workers (Non-skilled)	Clerical
FSS Setup	4	4	0	8	0	0	4
Survey Packages	4	4	0	8	0	0	4
Class 1	10	10	0	90	0	0	10
Class 2	1.5	1.5	0	12	0	0	1.5
Class 3	1.5	1.5	0	7	0	0	1.5
TOTALS	21	21	0	125	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 Manager	Supervisor	Shipper	HP Technician	Radiation Workers (Craftsmen)	Radiation workers (Non-skilled)	Clerical
FSS Setup	0.5	0.5	0	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	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 Manager	Supervisor	Shipper	HP Technician	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 Manager	Supervisor	Shipper	HP Technician	Radiation Workers (Craftsmen)	Radiation workers (Non-skilled)	Clerical
Planning and Preparation (TOTALS from Table 3.6)	47	58	36	72	8	24	47
Decontamination and/or Dismantling of Radioactive Facility Components (Sum of TOTALS from all copies of Table 3.7)	132.5	249.5	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	1	274	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 Manager	Supervisor	Shipper	HP Technician	Radiation Workers (Craftsmen)	Radiation workers (Non-skilled)	Clerical
Salary & Fringe (\$/year)	\$102,996	\$71,232	\$68,460	\$79,020	\$37,140	\$27,120	\$41,700
Overhead Rate (%)	75%	75%	75%	75%	75%	75%	75%
Total Cost Per Year	\$180,243	\$124,656	\$119,805	\$133,285	\$64,995	\$47,460	\$72,975
Living Expenses (PD*7/5) ¹	\$358	\$358	\$358	\$358	\$0	0	0
Total Cost Per Work Day ²	\$1,052	\$838	\$819	\$890	\$250	\$183	\$281

¹ Per Diem Rate: \$256 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 Manager	Supervisor	Shipper	HP Technician	Radiation Workers (Craftsmen)	Radiation workers (Non-skilled)	Clerical	Total Labor Cost
Planning and Preparation	\$49,427	\$48,595	\$29,491	\$64,099	\$2,000	\$4,381	\$13,192	\$211,185
Decontamination and/or Dismantling of Radioactive Facility Components	\$139,343	\$209,043	\$110,181	\$689,511	\$129,990	\$284,943	\$73,536	\$1,936,545
Restoration of Contaminated Areas on Facility Grounds	\$13,671	\$12,568	\$0	\$0	\$6,999	\$7,302	\$3,368	\$43,908
Final Radiation Survey	\$51,425	\$40,971	\$819	\$243,933	\$0	\$0	\$13,641	\$350,789
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 (ft ³)	Number of Containers	Type of Containers	Unit Cost of Container	Total Packaging Costs
DAW	2,809	1	40' Sea-Land	\$1,500	\$1,633
Metal	8,427	3	40' Sea-Land	\$1,500	\$4,899
Liquids	64	9	55 gal. Inner 85 gal. overpack	\$200	\$1,707
Biological	275	3	B-25	\$200	\$573
TOTAL					\$8,812

(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	3	\$1.75	1	1	800	\$4,200
Metal	8	\$1.75	1	1	800	\$11,200
Liquids	0.5	\$1.75	1	1	800	\$700
Biological	0.5	\$1.75	1	1	800	\$700
TOTAL	12					\$16,800

(c) Waste Disposal Costs

Estimate the volume of waste to be disposed. Multiply the volume of waste disposed by the unit 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	10	16000	7.25	1	\$116,000
Metal	8427	20	168542	4.50	1	\$758,438
Liquids	64	60	3840	5.00	1	\$19,200
Biological	275	20	5500	25.00	1	\$137,500
TOTAL	10366					\$1,031,138

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		\$23,799
Taxes		\$339,993
(b)(7)(F)		
Licensed material security		\$101,562
TOTAL		\$535,354

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)	\$211,185	5.4%
Decontamination and/or Dismantling of Radioactive Facility (From Table 3.13)	\$1,636,545	41.6%
Restoration of Contaminated Areas on Facility Grounds (From Table 3.13)	\$43,908	1.1%
Final Radiation Survey (From Table 3.13)	\$350,789	8.9%
Packing Material Costs (TOTAL from Table 3.14(a))	\$8,812	0.2%
Shipping Costs (TOTAL from Table 3.14(b))	\$16,800	0.4%
Waste Disposal Costs (TOTAL from Table 3.14(c))	\$1,031,138	26.2%
Equipment/Supply Costs (TOTAL from Table 3.15)	\$70,000	1.8%
Laboratory Costs (TOTAL from Table 3.16)	\$30,750	0.8%
Miscellaneous Costs (TOTAL from Table 3.17)	\$535,354	13.6%
SUBTOTAL	\$3,935,281	100.0%
25% Contingency	\$983,820	25.0%
TOTAL DECOMMISSIONING COST ESTIMATE	\$4,919,102	125.0%

3.4 FACILITY DECOMMISSIONING SUMMARY

Radioactive Material license numbers and types (i.e., Byproduct, Source):
The Bristol-Myers Squibb facility located at 311 Pennington-Rocky Hill Road, Pennington, 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 1 Ci; C-14 1 Ci; S-35 300 mCi; Ca-45 300 mCi; Ni-63 Sources per registration IAW 10 CFR 32.210.
Description of how licensed materials are used:
Low energy beta emitting radionuclides and radioiodines are used in pharmaceutical research and development. This work involves the use of labeled compounds for research activities including 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 Pennington Facility consists of several single and multi-story laboratory buildings. Radionuclides are used extensively in Building 21. Radioactive materials are also used in Building 17 laboratories. Building 17 provides radioactive waste storage for both Building 17 and 21. Radionuclides are used and stored on a limited basis in Building 3. A complete listing of laboratories in by building is attached to this cost estimate.
Quantities of materials or waste accumulated before shipping or disposal
The principal waste collection and storage areas for the Pennington facility are rooms 3A-009 in Building 3 and 17.301 in Building 17. Waste storage areas are limited, consequently large volumes of waste are not accumulated. For purposes of this estimate, a waste inventory of 250 cubic feet of DAW and 65 cubic feet of biological waste was assumed.

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	35'W x 4'd x 8'10"	960	ft ³
Lab Benches (Casework)	97	Linear Feet	1'd x 3'1"	1,164	ft ³
Sinks	5	Each	4'W x 1'd x 3'	240	ft ³
Drains	220	Linear Feet	3" diameter	11	ft ³
Floors		Class 1 Sq. Feet		1,790	ft ²
Walls (Class 1)		Class 1 Sq. Feet		3,794	ft ²
Walls (Class 2)		Class 2 Sq. Feet		3,794	ft ²
Ceilings		Class 2 Sq. Feet		1,790	ft ²
Ventilation/Ductwork	240	Linear Feet	2" diameter	211	ft ³
Cabinets	71	Linear Feet	3'd x 3'1"	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		Class 2 Sq. Feet		24,853	ft ²
Other Class 3 Areas		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/ft ³)				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'h	0	ft ³
Fume Hoods	11	Each	5'w x 4'd x 8'h	1,760	ft ³
Lab Benches (Casework)	851	Linear Feet	4'd x 3'h	10,212	ft ³
Sinks	7	Each	4'w x 4'd x 3'h	336	ft ³
Drains	420	Linear Feet	3" diameter	21	ft ³
Floors		Class 1 Sq. Feet		6,830	ft ²
Walls (Class 1)		Class 1 Sq. Feet		6,780	ft ²
Walls (Class 2)		Class 2 Sq. Feet		6,780	ft ²
Ceilings		Class 2 Sq. Feet		6,830	ft ²
Ventilation/Ductwork	540	Linear Feet	12" diameter	475	ft ³
Cabinets	340	Linear Feet	4'w x 3'd x 3'h	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		Class 2 Sq. Feet		20,118	ft ²
Other Class 3 Areas		Class 3 Sq. Feet	Includes 87,500 ft ² of 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/ft ³)				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 h	180	ft ³
Fume Hoods	70	Each	5 w x 4 d x 6 h	11,200	ft ³
Lab Benches (Casework)	3206	Linear Feet	4 d x 3 h	38,472	ft ³
Sinks	68	Each	4 w x 4 d x 2 h	3,264	ft ³
Drains	2320	Linear Feet	3" diameter	116	ft ³
Floors		Class 1 Sq. Feet		31,774	ft ²
Walls (Class 1)		Class 1 Sq. Feet		40,230	ft ²
Walls (Class 2)		Class 2 Sq. Feet		40,230	ft ²
Ceilings		Class 2 Sq. Feet		31,774	ft ²
Ventilation/Ductwork	2460	Linear Feet	18" diameter	2,165	ft ³
Cabinets	1943	Linear Feet	35 d x 3 h	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		Class 2 Sq. Feet		13,713	ft ²
Other Class 3 Areas		Class 3 Sq. Feet	includes 59,200 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/ft ³)	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 Manager	Supervisor	Shipper	HP Technician	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
Preparation of Documentation for Regulatory Agencies	14	9	0	0	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	0	0	0	0	2
Development of Work Plans	9	14	0	0	0	0	18
Procurement of Special Equipment	3	9	0	0	0	0	4
Staff Training	1	3	0	0	0	11	2
Characterization of Radiological Condition (including sampling, soil and tailings analysis, or groundwater analysis, if applicable)	14	14	0	0	0	0	2
Other (specify) Mobilization	1	3	0	0	4	11	2
TOTALS	44	54	0	0	4	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 cm ²						
Component	Action	Project Manager	Supervisor	Shipper	HP Technician	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			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	6	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 Manager	Supervisor	Shipper	HP Technician	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 Manager	Supervisor	Shipper	HP Technician	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
Glove Boxes	Remove/Disp	2	2	4	12	8	24	4
Fume Hoods	Remove/Disp	12	12	10	72	48	144	24
Lab Benches	Decon/Remove	10	10	5	60	40	120	20
Sinks	Decon/Remove	5	5	5	30	20	60	10
Drains	Remove/Disp	5	5	5	30	20	60	10
Floors	Decon/Wipe	10	10	10	60	40	120	20
Walls	Decon/Wipe	5	5	5	30	20	60	10
Ceilings	Decon/Wipe	3	3	4	18	12	36	6
Ventilation/Ductwork	Remove/Disp	10	10	10	60	40	120	20
Cabinets	Decon/Remove	5	5	4	30	20	60	10
Hot Cells	Remove/Disp							
Equipment/Materials	Surf/Rem/Disp	10	10	15	60	40	120	20
Soil Plots	Sample							
Storage Tanks	N/A							
Storage Areas	Remove/Disp							
Radwaste Areas	Remove/Disp	3	3	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	80	80	480	320	960	160

**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 Manager	Supervisor	Shipper	HP Technician	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 Utilities	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 Manager	Supervisor	Shipper	HP Technician	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 Utilities	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 Manager	Supervisor	Shipper	HP Technician	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 Utilities	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 Manager	Supervisor	Shipper	HP Technician	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
FSS Setup	1	1	0	2	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	0	12	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 Manager	Supervisor	Shipper	HP Technician	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
FSS Setup	2	2	0	4	0	0	2
Survey Packages	2	2	0	4	0	0	2
Class 1	3	3	0	20	0	0	3
Class 2	2	2	0	5	0	0	2
Class 3	1	1	0	5	0	0	1
TOTALS	10	10	0	38	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 Manager	Supervisor	Shipper	HP Technician	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
FSS Setup	5	5	0	10	0	0	5
Survey Packages	5	5	0	10	0	0	5
Class 1	12	12	0	113	0	0	12
Class 2	2	2	0	15	0	0	2
Class 3	2	2	0	5	0	0	2
TOTALS	26	26	0	153	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 Manager	Supervisor	Shipper	HP Technician	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 Manager	Supervisor	Shipper	HP Technician	Radiation Workers (Craftsmen)	Radiation Workers (Non skilled)	Clerical
Planning and Preparation (TOTALS from Table 3.6)	44	54	0	0	4	22	48
Decontamination and/or Dismantling of Radioactive Facility Components (Sum of TOTALS from all copies of Table 3.7)	105	106	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	0	203	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 Manager	Supervisor	Shipper	HP Technician	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
Salary & Fringe (\$/year)	\$102,996	\$71,232	\$68,460	\$73,020	\$37,140	\$27,120	\$41,700
Overhead Rate (%)	75%	75%	75%	75%	75%	75%	75%
Total Cost Per Year	\$180,243	\$124,656	\$119,805	\$138,285	\$64,995	\$47,460	\$72,975
Living Expenses (PD*7/5) ¹	\$358	\$358	\$358	\$358	\$0	0	0
Total Cost Per Work Day ²	\$1,052	\$838	\$819	\$390	\$250	\$183	\$281

¹ Per Diem Rate: \$256 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 Manager	Supervisor	Shipper	HP Technician	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical	Total Labor Cost
Planning and Preparation	\$46,272	\$45,244	\$0	\$0	\$1,000	\$4,016	\$13,472	\$110,004
Decontamination and/or Dismantling of Radioactive Facility Components	\$110,422	\$88,812	\$69,631	\$451,097	\$86,493	\$188,380	\$51,925	\$1,046,760
Restoration of Contaminated Areas on Facility Grounds	\$10,510	\$9,216	\$0	\$0	\$5,250	\$5,294	\$2,245	\$32,521
Final Radiation Survey	\$40,593	\$32,341	\$0	\$180,724	\$0	\$0	\$10,469	\$264,127
Site Stabilization and Long-Term Surveillance	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

1451

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	2616.48	1	40' Sea-Land	\$1,500	\$1,533
Metal	8,379	3	40' Sea-Land	\$1,500	\$4,909
Liquids	5	1	55 gal. inner 85 gal. overpack	\$200	\$200
Biological	65	9	55 gal. inner 85 gal. overpack	\$200	\$1,800
TOTAL					\$8,443

(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	\$1.75	1	1	800	\$1,400
Metal	3	\$1.75	1	1	800	\$4,200
Liquids	0	\$0.00	1	1	1	\$0
Biological	0	\$0.00	1	1	1	\$0
TOTAL	4					\$5,600

(c) Waste Disposal Costs

Estimate the volume of waste to be disposed. Multiply the volume of waste disposed by the unit 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	2616.48	10	26164.8	7.25	1	\$189,695
Metal	8378.825	20	167577	4.50	1	\$754,094
Liquids	5	60	300	5.00	1	\$1,500
Biological	65	20	1300	25.00	1	\$32,500
TOTAL	11065					\$977,789

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	\$17,610
Taxes	\$251,574
Licensed Material Security	\$13,206
Other (specify):	
TOTAL	\$302,391

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)	\$110,004	3.9%
Decontamination and/or Dismantling of Radioactive Facility (From Table 3.13)	\$1,046,760	37.1%
Restoration of Contaminated Areas on Facility Grounds (From Table 3.13)	\$32,521	1.2%
Final Radiation Survey (From Table 3.13)	\$264,127	9.4%
Packing Material Costs (TOTAL from Table 3.14(a))	\$8,443	0.3%
Shipping Costs (TOTAL from Table 3.14(b))	\$5,600	0.2%
Waste Disposal Costs (TOTAL from Table 3.14(c))	\$977,789	34.7%
Equipment/Supply Costs (TOTAL from Table 3.15)	\$50,000	1.8%
Laboratory Costs (TOTAL from Table 3.16)	\$20,500	0.7%
Miscellaneous Costs (TOTAL from Table 3.17)	\$302,391	10.7%
SUBTOTAL	\$2,618,135	100.0%
25% Contingency	\$704,534	25.0%
TOTAL DECOMMISSIONING COST ESTIMATE	\$3,522,669	125.0%

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 atomic 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 activities 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		0	ft ³
Fume Hoods	16	Each		2,560	ft ³
Lab Benches (Casework)	367	Linear Feet		4,404	ft ³
Sinks	9	Each		432	ft ³
Drains	460	Linear Feet		23	ft ³
Floors	See Listing	Class 1 Sq. Feet		4,145	ft ²
Walls (Class 1)	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		651	ft ³
Cabinets	204	Linear Feet		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		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/ft ³)				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 ft x 30 ft x 3 ft	0	ft ³
Fume Hoods	8	Each	15 ft x 4 ft x 6 ft	1,280	ft ³
Lab Benches (Casework)	200	Linear Feet	12 ft x 3 ft	2,400	ft ³
Sinks	5	Each	4 ft x 2 ft x 3 ft	240	ft ³
Drains	140	Linear Feet	2" diameter	7	ft ³
Floors	See Listing	Class 1 Sq. Feet		1,760	ft ²
Walls (Class 1)	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	16" diameter	282	ft ³
Cabinets	128	Linear Feet	9 ft x 3 ft	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/ft ³)				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	16 x 30 x 3	0	ft ³
Fume Hoods	0	Each	50 x 40 x 60	0	ft ³
Lab Benches (Casework)	0	Linear Feet	10 x 30	0	ft ³
Sinks	0	Each	27 x 18 x 15	0	ft ³
Drains	0	Linear Feet	18 x 1/2 diameter	0	ft ³
Floors	See Listing	Class 1 Sq. Feet		1,150	ft ²
Walls (Class 1)	See Listing	Class 1 Sq. Feet		2,220	ft ²
Walls (Class 2)	See Listing	Class 2 Sq. Feet		2,220	ft ²
Cellings	See Listing	Class 2 Sq. Feet		1,150	ft ²
Ventilation/Ductwork	40	Linear Feet	18 x 1/2 diameter	35	ft ³
Cabinets	0	Linear Feet	24 x 30	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/ft ³)	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	Shipper	HP Technician	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 cm ²						
Component	Action	Project Mgr	Supervisor	Shipper	HP Technician	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
Glove Boxes	Remove/Disp							
Fume Hoods	Remove/Disp	1.5	1.5	2.5	12.5	12.5		1.5
Lab Benches	Decon/Remove	2	2	4	16	16		2
Sinks	Decon/Remove	0.25	0.25	0.5	2	2		0.25
Drains	Remove/Disp	0.1	0.1	0.2	0.2	0.2	0.2	0.1
Floors	Decon/Wipe	1	1		2		1	1
Walls	Decon/Wipe	2	4		8		4	2
Ceilings	Decon/Wipe	1	1		2		1	1
Ventilation/Ductwork	Remove/Disp	0.25	0.25	0.5	3	2.5	2.5	0.25
Cabinets	Decon/Remove	1	1	2	8	8		1
Hot Cells	Remove/Disp							
Equipment/Materials	Sur/Rem/Disp	1	1	2	8	8		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		10.1	12.1	11.7	61.7	49.2	8.7	10.1

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	Shipper	HP Technician	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
Glove Boxes	Remove/Disp							
Fume Hoods	Remove/Disp	0.75	0.75	1.5	7.5	7.5	3	0.75
Lab Benches	Decon/Remove	1.25	1.25	2.5	10	10		1.25
Sinks	Decon/Remove	0.1	0.1	0.2	1	0.125		0.1
Drains	Remove/Disp				0.5	0.5		
Floors	Decon/Wipe	2	2		7	3.5	3.5	2
Walls	Decon/Wipe	2	2		8	4	4	2
Ceilings	Decon/Wipe	0.25	0.25		1	0.5	0.5	0.25
Ventilation/Ductwork	Remove/Disp	0.25	0.25	0.5	2	2.5	2.5	0.25
Cabinets	Decon/Remove	0.5	0.5	1	4	4		0.5
Hot Cells	Remove/Disp							
Equipment/Materials	Sur/Rem/Disp	0.25	0.25	0.5	2	2		0.25
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		7.35	7.35	6.2	43	34.625	13.5	7.35

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	Shipper	HP Technician	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	1	1		3	1.5	1.5	1
Walls	Decon/Wipe	1	1		5	2.5	2.5	1
Ceilings	Decon/Wipe	0.5	0.5		2	1	1	0.5
Ventilation/Ductwork	Remove/Disp							
Cabinets	Decon/Remove							
Hot Cells	Remove/Disp							
Equipment/Materials	Sur/Rem/Disp			0.25	0.25	0.5	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		2.5	2.5	0.25	10.25	5.5	5.5	2.5

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	Shipper	HP Technician	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
Restore Floors	2	2			2	3	1
Restore Walls	1	1			1	2	1
Restore Roof	2	2			2	3	1
Restore Utilites	2	2			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	Shipper	HP Technician	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
Restore Floors	0	0.2			0.2	0.3	0
Restore Walls	0	0.2			0.2	0.3	0
Restore Roof	0	0.2			0.2	0.3	0
Restore Utilites	0	0.4			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	Shipper	HP Technician	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
Restore Floors							
Restore Walls							
Restore Roof							
Restore Utilites							
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	Shipper	HP Technician	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
FSS Setup	3	3		3			3
Survey Packages	3	3		3			3
Class 1	5	5		30			5
Class 2	3	3		6			3
Class 3	1	1		3			1
TOTALS	15	15	0	45	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	Shipper	HP Technician	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
FSS Setup	2	2		2			2
Survey Packages	2	2		2			2
Class 1	0.4	0.4		2			0.4
Class 2	0.4	0.4		1			0.4
Class 3	0.4	0.4		1			0.4
TOTALS	5.2	5.2	0	8	0	0	5.2

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	Shipper	HF Technician	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
FSS Setup	1	1		1			1
Survey Packages	1	1		1			1
Class 1	0.2	0.2		1			0.2
Class 2	0.2	0.2		0.5			0.2
Class 3	0.2	0.2		0.5			0.2
TOTALS	2.6	2.6	0	4	0	0	2.6

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	Shipper	HIP Technician	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	Shipper	HP Technician	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)	19.95	21.95	18.15	114.95	89.325	27.7	19.95
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)	22.8	22.8	0	57	0	0	22.8
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	Shipper	H-P Technician	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical
Salary & Fringe (\$/year)	\$102,996	\$71,232	\$68,480	\$79,020	\$37,140	\$27,120	\$41,700
Overhead Rate (%)	75%	75%	75%	75%	75%	75%	75%
Total Cost Per Year	\$180,243	\$124,656	\$119,805	\$138,285	\$64,995	\$47,460	\$72,975
Living Expenses (PD*7/5) ¹	\$358	\$358	\$358	\$358	\$0	0	0
Total Cost Per Work Day ²	\$1,052	\$838	\$819	\$800	\$250	\$183	\$281

¹ Per Diem Rate: \$256 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	Shipper	HP Technician	Radiation Workers (Craftsmen)	Radiation Workers (Non-skilled)	Clerical	Total Labor Cost
Planning and Preparation	\$24,188	\$23,460	\$17,203	\$21,366	\$1,000	\$2,190	\$7,059	\$97,266
Decontamination and/or Dismantling of Radioactive Facility Components	\$20,980	\$18,391	\$14,868	\$102,336	\$22,330	\$5,056	\$5,599	\$189,561
Restoration of Contaminated Areas on Facility Grounds	\$7,361	\$6,703	\$0	\$0	\$2,000	\$2,227	\$1,123	\$19,414
Final Radiation Survey	\$23,977	\$19,103	\$0	\$50,745	\$0	\$0	\$6,399	\$100,225
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	1698	1	20' Sea-Land	\$1,100	\$1,459
Metal	5093	4	20' Sea-Land	\$1,100	\$4,377
Liquids	0	0	55 gal. inner 85 gal. overpack	\$200	\$0
Biological	0	0	55 gal. inner 85 gal. overpack	\$200	\$0
TOTAL					\$5,836

(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	\$1.75	1	1	800	\$1,400
Metal	2	\$1.75	1	1	800	\$2,800
Liquids	0	\$0.00	1	1	1	\$0
Biological	0	\$0.00	1	1	1	\$0
TOTAL	3					\$4,200

(c) Waste Disposal Costs

Estimate the volume of waste to be disposed. Multiply the volume of waste disposed by the unit 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	1698	10	16976	7.25	1	\$123,077
Metal	5093	20	101857	4.50	1	\$458,356
Liquids	0	60	0	5.00	1	\$0
Biological	0	20	0	25.00	1	\$0
TOTAL	6790					\$581,433

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	\$7,029
Taxes	\$100,408
Licensed Material Security	\$5,011
Other (specify):	---
TOTAL	\$112,448

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)	\$97,266	8.7%
Decontamination and/or Dismantling of Radioactive Facility (From Table 3.13)	\$189,561	17.0%
Restoration of Contaminated Areas on Facility Grounds (From Table 3.13)	\$19,414	1.7%
Final Radiation Survey (From Table 3.13)	\$100,225	9.0%
Packing Material Costs (TOTAL from Table 3.14(a))	\$5,836	0.5%
Shipping Costs (TOTAL from Table 3.14(b))	\$4,200	0.4%
Waste Disposal Costs (TOTAL from Table 3.14(c))	\$581,433	52.1%
Equipment/Supply Costs (TOTAL from Table 3.15)	\$0	0.0%
Laboratory Costs (TOTAL from Table 3.16)	\$6,150	0.6%
Miscellaneous Costs (TOTAL from Table 3.17)	\$112,448	10.1%
SUBTOTAL	\$1,116,532	100.0%
25% Contingency	\$279,133	25.0%
TOTAL DECOMMISSIONING COST ESTIMATE	\$1,395,665	125.0%