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Environmental Health & Safety
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Worldwide Research & Development

Environmental Health & Safety

December 16, 1013

Betsy Ullrich
USNRC – Region I
Division of Nuclear Materials Safety
2100 Renaissance Boulevard
Suite 100
King of Prussia, PA 19406-2713

RE: Mail Control Numbers 581610 and 581611

Dear Ms. Ullrich,

Enclosed is an updated Decommissioning Funding Plan for Radioactive Materials Licenses 06-05869-01 and 06-05869-03. This Plan was revised, at your request, to account for the costs associated with the decommissioning of the cyclotron facility.

Based upon these revisions, we estimate that the maximum cost to decommission the Pfizer Groton, Connecticut facilities would not exceed \$1,044,810. Pfizer currently has a Standby Trust Agreement in place with Deutsche Bank Trust Company Americas in the amount of \$1,737,138. This amount will remain in place to cover decommissioning costs.

If you have questions or require any additional information, please do not hesitate to contact us.

Sincerely,

Eric Watters
EHS Site Lead

David J. Durkee
Radiation Safety Officer

Enclosure

Revised

DECOMMISSIONING FUNDING PLAN

**PFIZER, INC
EASTERN POINT ROAD
GROTON, CT 06340**

LICENSE NUMBERS 06-05869-01 and 06-05869-03

December 16, 2013

DECOMMISSIONING FUNDING PLAN

1.0 SCOPE

The Scope of this Decommissioning Funding Plan (DFP) is to ensure that adequate funds are provided to cover the decommissioning of the Pfizer Inc.'s Worldwide Research and Development facility located in Groton, Connecticut. This DFP is being updated in order to account for current labor and radioactive waste disposal costs.

2.0 REFERENCES

- 2.1 Pfizer, Inc. radioactive materials licenses No. 06-05869-01 and 06-05869-03
- 2.2 Code of Federal Regulations, Title 10, Part 30, Section 35
- 2.3 NUREF 1757, Volume 3, Rev 1 entitled "Consolidated NMSS Decommissioning Guidance - Financial Assurance, Recordkeeping, and Timeliness," dated February 2012.

3.0 DECOMMISSIONING PROCEDURE

3.1 Radioactive Material Possessed

<u>Element and Mass Number</u>	<u>Chemical and/or Physical Form</u>	<u>Maximum Amount which will be Possessed at any one time</u>
(1) Any byproduct material with atomic numbers 1-83 inclusive, except as specified below	(1) Any	(1) 300 millicuries of each radionuclide with a total possession limit of 20 curies
(2) Hydrogen - 3	(2) Any	(2) 500 curies
(3) Carbon-11	(3) Any	(3) 10 curies
(4) Nitrogen-13	(4) Any	(4) 5 curies
(5) Carbon - 14	(5) Any	(5) 70 curies
(6) Oxygen-15	(6) Any	(6) 5 curies
(7) Fluorine-18	(7) Any	(7) 10 curies
(8) Phosphorus - 32	(8) Any	(8) 5 curies

<u>Element and Mass Number</u>		<u>Chemical and/or Physical Form</u>		<u>Maximum Amount which will be Possessed at any one time</u>	
(9)	Phosphorus – 33	(9)	Any	(9)	5 curies
(10)	Sulfur – 35	(10)	Any	(10)	5 curies
(11)	Calcium – 45	(11)	Any	(11)	1 curie
(12)	Chromium – 51	(12)	Any	(12)	1 curie
(13)	Copper-64	(13)	Any	(13)	100 millicuries
(14)	Rubidium – 86	(14)	Any	(14)	1 curie
(15)	Yttrium-90	(15)	Any	(15)	2 curies
(16)	Iodine-124	(16)	Any	(16)	100 millicuries
(17)	Iodine – 125	(17)	Any	(17)	5 curies
(18)	Iodine – 131	(18)	Any	(18)	1 curie
(19)	Nickel – 63	(19)	Plated sources or foils	(19)	Not to exceed 15 millicuries per source and 1 curie total

It will be assumed throughout this plan that the maximum amount of radioactive material that is authorized to be possessed by Pfizer, Inc. will in fact be on site at the time of decommissioning.

3.2 Facility Description

Pfizer, Inc. is a large multinational health-care company engaged in a diverse spectrum of biomedical research. There are a total of 190 areas within the Groton, Connecticut facility where licensed radioactive materials are authorized to be used and/or stored.

3.3 Facility Decontamination

Decontamination of the facility itself will be broken into seven parts.

3.3.1 Planning and preparation of the facility for decommissioning;

3.3.2 Assess and dispose of laboratory equipment

- 3.3.3 Characterization survey of the facility;
- 3.3.4 Development and submittal of a Decommissioning Plan (if necessary);
- 3.3.5 Decontamination and dismantling of radioactive facility components;
- 3.3.6 Packaging, shipment, and disposal of radioactive wastes;
- 3.3.7 Final radiation survey of the facility; and,
- 3.3.8 Preparing and forwarding proper documentation of decommissioning results to the Nuclear Regulatory Commission and appropriate state agencies.

4.0 DECOMMISSIONING COST ESTIMATE

The following are conservative cost estimates to perform the tasks described based on estimated time to complete the tasks and upon 2013 prices for services and equipment. These estimates are also made on the assumption that all operations at Pfizer, Inc. are performed in accordance with the requirements as specified in Materials License Numbers 06-05869-01 and 06-05869-03 and other supporting documentation.

4.1 Planning and Preparation of the Facility and Site for Decommissioning

- 4.1.1 Obtain and review documentation pertinent to the decommissioning such as:
 - Facility floor plans indicating laboratory and radioactive materials storage locations;
 - Radioisotopes and quantities used in each area; and,
 - Spills or unusual occurrences which involved the spread of contamination in and around the facility, equipment, or site.

This task is estimated to take 40 person-hours to complete. At an estimated cost of \$112 per hour for a health physicist's service, the total cost of this task is estimated to be \$4,480.

- 4.1.2 Remove all radioactive material from the laboratories and other locations throughout the facility, transfer to the waste storage area and prepare for transfer offsite.

This task is estimated to take 100 person-hours to complete. At an estimated cost of \$75 per hour for a health physics technician's service, the total cost of this task is estimated to be \$7,500.

- 4.1.3 Plan site characterization survey.

This task is estimated to take 24 person-hours to complete. At an estimated cost of \$112 per hour for a health physicist's service, the total cost of this task is estimated to be \$2,688.

4.2 Assess Potentially Contaminated Equipment

- 4.2.1 Assess potentially contaminated laboratory equipment and decontaminate and/or dispose of equipment as applicable.

This task is estimated to take 1,600 person-hours to complete. At an estimated cost of \$75 per hour for a health physics technician's service, the total cost of this task is estimated to be \$120,000.

4.3 Characterization Survey

- 4.2.1 Perform and document an extensive radiological survey of the 190 use and/or storage areas. It is assumed that the analytical survey instrumentation possessed by Pfizer, Inc. (i.e., liquid scintillation counters) will be able to be utilized in the performance of these surveys to minimize analysis costs.

This task is estimated to take 1,520 person-hours to complete. At an estimated cost of \$75 per hour for a health physics technician's service, the total cost of this task is estimated to be \$114,000.

4.3 Develop and Submit a Decommissioning Plan

- 4.3.1 Develop a Decommissioning Plan (if necessary) along with any pertinent procedures based upon the results of the characterization survey. This

plan will be forwarded to the NRC for approval.

This task is estimated to take 40 person-hours to complete. At an estimated cost of \$112 per hour for a health physicist's service, the total cost of this task is estimated to be \$4,480.

4.4 Decontamination and Dismantling of Radioactive Facility Components

- 4.4.1 Dismantle and/or decontaminate radioactive facility components identified in the characterization survey. These components may include fume hoods, glove boxes, sinks, drain lines, ventilation ducting, floors, walls, and work benches. It is estimated that a maximum of 1% of the areas surveyed will require corrective action and that decontamination will be used whenever feasible rather than straight disposal to help minimize radioactive waste volume.

In addition, the particle accelerator facility will have to be dismantled and decontaminated.

This task is estimated to take 1,120 person-hours to complete. At an estimated cost of \$75 per hour for a health physics technician's service, the total cost of this task is estimated to be \$84,000.

- 4.4.2 Obtain decontamination equipment such as HEPA-filtered ventilation units and vacuum cleaners, protective clothing, scabblers, saws, grinders etc. It is assumed that this equipment will be rented and not purchased.

The decontamination is estimated to take 4 weeks to complete. At a cost of \$1,500 per week, the total cost of this task is estimated to be \$6,000.

- 4.4.3 Obtain consumables and other materials used for the decontamination of the facility and also shipping containers for waste generated in the decommissioning process.

The cost of these materials is estimated to be \$5,000.

4.5 Packaging, Shipment, and Disposal of Radioactive Wastes

4.5.1 Package all radioactive waste at the facility and store in the LLRW storage area. Waste shipment and disposal will be handled by a waste brokerage and shipping company such as Energy Solutions. Total waste volume is estimated to be:

- 300 cu. ft. of low-level radioactive waste stored at facility due to normal facility operations.
- 300 cu. ft. of waste generated during the decommissioning process.
- 25 liters of mixed waste

The 25 liters of mixed waste will cost more to dispose of than normal radioactive waste. The estimated cost of mixed waste disposal is \$10,000 per liter, for a total estimated disposal cost of \$250,000.

Disposal of activated components for the particle accelerator facility is estimated to cost \$112,000.

The remainder of the estimated radioactive waste volume that will need to be disposed of is equivalent to 80 fifty-five gallon drums. At an estimated average cost of \$1,300 per drum, which includes shipping, processing, and/or burial, the cost of this task is estimated to be \$104,000.

Therefore, the total estimated cost for the disposal of all radioactive waste from the facility would be \$466,000.

4.6 Final Radiation Survey of Facility

4.6.1 Perform and document an extensive radiological survey of the areas that were decontaminated to ensure that the facility meets the limits for release for unrestricted use. It is assumed that the analytical instrumentation possessed by Pfizer, Inc. (i.e., liquid scintillation counters) will be able to be utilized in the performance of these surveys to minimize analysis costs.

This task is estimated to take 140 person-hours to complete. At an estimated cost of \$75 per hour for a health physics technician's service,

the total cost of this task is estimated to be \$10,500.

4.7 Prepare and Forward Proper Documentation of Decommissioning Results to the Nuclear Regulatory Commission and Appropriate State Agencies.

4.7.1 Obtain and review all documentation produced as a result of the decommissioning effort and develop a final report to be presented to the NRC.

This task is estimated to take 100 person-hours to complete. At an estimated cost of \$112 per hour for a health physicist's service, the total cost of this task is estimated to be \$11,200.

4.8 The updated estimated cost for the complete the decommissioning of Pfizer, Inc. is estimated to be \$835,848. Adding a 25% contingency factor to this estimate brings the total estimated cost to **\$1,044,810**.

5.0 FINANCIAL ASSURANCE MECHANISM

Pfizer, Inc. has chosen a Standby Trust Agreement issued by the Deutsche Bank Trust Company Americas to provide financial assurance. The agreement currently in place is in the amount of \$1,737,138. This amount will remain set aside for decommissioning.

6.0 COST ADJUSTMENTS

The Decommissioning Funding Plan at Pfizer, Inc. will be reviewed annually to determine the need for any possible cost adjustments. Adjustments may be required due to changes in waste disposal costs, to account for site-specific factors (such as contamination incidents) that may effect the decommissioning, or when the amounts and/or types of material possessed at the facility change.