



DATE: December 10, 2020

TO: Betsy Ullrich, Senior Health Physicist  
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U.S. Nuclear Regulatory Commission, Region I  
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FROM: Director, Laboratory Safety; Office of Laboratory Science and Safety

SUBJECT: CDC Response to Request for Additional Information (RAI) related to the December 30, 2019 DFP and the August 2018 FSSR for CDC's NRC Materials License No. 10-06772-01

This is in response to your letter dated June 18, 2020, requesting additional information in support of the CDC's updated DFP dated December 30, 2019, submitted by Narvaez Stinson, and the letter dated May 4, 2020, with the Final Status Survey Report dated August 6, 2018. Thank you for your review, and for the opportunity to address your inquiries. Mr. Ken Gavlik, VP of Radiological Services, Philotechnics, assisted us with the responses to additional information needed for the 2018 FSSR. Please see the following responses to your inquiries, as appropriate, and as it corresponds to the Item numbers in your RAI letter.

**Request for Additional Information for the Final Status Survey Report (FSSR) dated August 6, 2018**

**Item 1.a.i. Response (Philotechnics):**

This information was provided to Philotechnics, Ltd. by the United States Department of Health and Human Services, Centers for Disease Control and Prevention during the Historical Site Assessment and comments by Mr. Sam Keith "Both Th-nat and U-nat should be included. I reviewed the license last week and both were added in 2001 (Amendment #39) and removed in 2007 (Amendment #44)." In his reviews of ***CDC RAW Room #1 Decommissioning Plan*** December 11, 2014. If these were in fact never removed, they were surveyed for, as indicated in **Section 2.1 – Licensed Operations** "The quantities of Th-Nat and U-Nat that CDC possessed were exemptible from specific licensing during 2001-2007. Therefore, it is considered that they were not relevant to this decommissioning and were excluded from assessment; however, **for added conservatism in the survey design, they were included.**" The area in question was Building 110, Lab 4207C, with Authorized User Steve Pappas. Significant discussions with Mr. Steve Pappas and Mr. Sam Keith were conducted during the CDC RAW Room #1 decommissioning, as it pertained to alpha emitters. Based on this information, and the additional text provided by Mr. Steve Pappas for inclusion in the ***CDC 15 Labs Decommissioning Plan***, and subsequently included in the ***CDC 12 Labs Final Status Survey Report (FSSR)***; although according to CDC Th-Nat and U-Nat were not relevant to decommissioning of Lab 4207C, they were included. Survey



Unit 3 in the FSSR **Appendix F – Total Activity** includes 30 locations whereby alpha direct measurements were acquired using ISO-7503 efficiencies. In addition, alpha scan surveys were conducted within the Lab under observation and assessment of NRC Inspector Orysla Masnyk Bailey.

Previously approved survey design for these alpha emitters, the exact same alpha emitters of concern for the decommissioning of RAW Room #1, from the exact same Authorized User and location were acquired from approved **CDC RAW Room #1 Decommissioning Plan**, dated April 20, 2016 with NRC approval letter dated May 17, 2016, NRC Docket Number 03004001, NRC Control Number 588982, and approved **CDC RAW Room #1, Final Status Survey Report**, dated August 10, 2016 with NRC approval through CDC Materials License Amendment Number 51.

The approach contained within these two documents were based on **Section 5 – Derived Concentration Guideline Level (DCGL) Development** of the **CDC 12 Labs Final Status Survey Report** in which dose modeling was performed to develop site specific DCGLs for unrestricted release of building structural surfaces, and to determine the final Total Effective Dose Equivalent (TEDE) based on two models. A site-specific dose model was used primarily because DandD does not include dose modeling for some of the ROC present at the CDC. **Section 5.3.1 – RAW Room #1 Model Description** includes all model assumptions, parameters, inputs, uncertainties, and dose details. Table 5-7 – RESRAD BUILD Limiting Radionuclides provides the output. Based on the models, Th-232 was the limiting alpha emitter, and the gross DCGL in dpm/100 cm<sup>2</sup> was established at 150 dpm/100 cm<sup>2</sup>, and the removable activity was established at 10% of the gross DCGL or 15 dpm/100 cm<sup>2</sup>. These established levels, and the overall approach for the **CDC RAW Room #1 Decommissioning Plan**, dated April 20, 2016 was subsequently approved through NRC approval letter dated May 17, 2016, NRC Docket Number 03004001, NRC Control Number 588982.

#### **Item 1.a.ii. Response (CDC)**

CDC believes that the discrepancy regarding the use of uranium and thorium in B110/4207C may have occurred because these were exempt quantities of radioactive materials obtained and possessed by researcher under a General License of 10 CFR 40.22. We may have inadvertently misunderstood the requirements for including and properly reporting the above material in the previous DFP submissions you referenced.

#### **Item 1.a.iii Response (Philotechnics)**

See response to question 1.a.i above. All calculations and release criteria, including survey design and approach, were acquired from RAW Room #1 decommissioning documents as discussed with Mr. Narvaez Stinson prior to and during development of **CDC 15 Labs Decommissioning Plan** (CDC RAW Room #1 Decommissioning Plan, dated April 20, 2016 with NRC approval letter dated May 17, 2016, NRC Docket Number 03004001, NRC Control Number 588982, and approved CDC RAW Room #1, Final Status Survey Report, dated August 10, 2016 with NRC approval through CDC Materials License Amendment Number 51).

#### **Item 1.a.iv. Response (Philotechnics)**

Statements were provided by Mr. Narvaez Stinson and Mr. Steve Pappas as to leak tests and routine radiological surveys. Philotechnics was not privy, nor did it review the information for accuracy. Therefore,



Philotechnics does not have adequate information to answer the question as stated. Response to 1.a.1 does however provide the detail of the criteria used to indicate that residual alpha contamination is less than the previously established and NRC approved release criteria.

**Item 1.b. Response (Philotechnics)**

Section 2.3 error corrected and provided in ***CDC 12 Labs FSSR Rev. 1***, dated 26 August 2020.

**Item 1.c. Response (Philotechnics)**

Section 2.6 revised and provided in ***CDC 12 Labs FSSR Rev. 1***, dated 26 August 2020. No burials on either campus.

**Item 2. Response (CDC)**

The facilities are currently owned by CDC, and these facilities containing the impacted laboratories for decommissioning will Not be demolished after unrestricted release. The statement in Section 3.1 of the FSSR has been updated and corrected.

**Item 3 Response (Philotechnics)**

Based on information provided by Mr. Narvaez Stinson, Mr. Sam Keith and Mr. Steve Pappas contained in Section 2.1 of the FSSR; although surveyed for, uranium and thorium were not relevant to decommissioning, and were therefore not included as radionuclides of concern. Special nuclear materials were not included in the information provided on radionuclides used within any impacted laboratories of concern. However, the survey design and approach utilized from RAW Room #1 decommissioning did include and address not only uranium and thorium, but also special nuclear materials.

Therefore, although not specifically addressed they were adequately surveyed for as observed and assessed by NRC Inspector NRC Inspector Orysla Masnyk Bailey during actual surveys of Building 110, Lab 4207C.

**Item 4. Response (Philotechnics)**

H-3 is typically evaluated by removable activity only, as it cannot be adequately surveyed using direct field measurements. Therefore, to verify residual removable H-3 was not present in excess of the established release criteria, Philotechnics analyzed removable smears on its calibrated Liquid Scintillation Counter at its San Diego, CA facility.

**Item 5. Response (Philotechnics)**

The value utilized for unity was based on the previously approved criteria from ***CDC RAW Room #1 Decommissioning Plan***. Thorium-232 was considered the limiting radionuclide and was considered for unity.

**Item 6.a Response (Philotechnics)**

The 43-37-1 Large Area Probe Alpha is the one listed in Table 8-1. This probe was used for both uranium and thorium based on the established and approved criteria of gross DCGL in dpm/100 cm<sup>2</sup> of the limiting



alpha emitter, Th-232 at 150 dpm/100 cm<sup>2</sup> contained in ***CDC RAW Room #1 Decommissioning Plan***. The established level was based on a Minimum Detectable Concentration – Scan of 50% of the DCGL for the most limiting radionuclide Th-232 of 150 dpm/100 cm<sup>2</sup> or 75 dpm/100 cm<sup>2</sup>.

**Item 6.b. Response (Philotechnics)**

See response to Item 6.a.

**Item 6.c. Response (Philotechnics)**

See response to Item 6.a.

**Item 6.d. Response (Philotechnics)**

The survey design included SNM and surveys were performed for SNM based on the design, approach and criteria contained within the approved ***CDC RAW Room #1 Decommissioning Plan***.

**Item 6.e. Response (Philotechnics)**

The large area probe detector was utilized for all alpha scans surveys, and the small area probe detector was utilized for direct static total activity measurements. The Survey Unit-3 location map has been updated to include the 43-37-1 utilized for the Building 110, Lab 4207C scan surveys observed and assessed by NRC Inspector Orysla Masnyk Bailey.

**Item 7. Response (Philotechnics)**

***CDC 15 Labs Decommissioning Plan*** and ***CDC 12 Labs FSSR Rev. 1***, dated 26 August 2020, revised to include explanation in **Section 5 – DCGL Development**.

**Item 8. Response (Philotechnics)**

**Section 18.4 and 18.5 of *CDC 12 Labs FSSR Rev. 1***, utilizing instrumentation capable of detecting uranium, thorium, and SNM at the requisite established criteria for release for unrestricted use with no further comment indicate no removable alpha emitters from the planchet counter, scan surveys conducted at the prescribed coverage, or total activity indicated elevated activity when compared directly to the DCGLs.

**Item 9. Response (Philotechnics)**

**Appendix G of *CDC 12 Labs FSSR Rev. 1***, dated 26 August 2020 revised.

**Item 10.a. Response (CDC)**

Completed a detailed review of the radiation safety program management inspection summary reports, surveys, historical records/documents of the laboratories located in Building 15, Roybal campus, where radioactive materials were authorized for use. Identified a total of 9 laboratories, which includes the 6 laboratories referenced in the previous CDC DFP submissions. A review of the Philotechnics FSSR confirms that the 9 laboratories identified were included in the 2018 decommissioning surveys. Please refer to the Attachment 1 for the status and more details on the following laboratories in Building 15: B15/SB401, B15/SB401B, B15/SB401C, B15/SSB401, B15/SSB401B, B15/SSB401C, B15/SB101C, B15/SB101E and B15/SB101F.



CDC believes that the discrepancy may have arisen because some individuals refer to the space as one laboratory while others refer to the individual rooms. The building did indeed open in 1988.

**Item 10.b. Response (CDC)**

Completed a detailed review, same as above, of the laboratories located in Building 17, Roybal campus, where radioactive materials were authorized for use. Identified a total of 7 laboratories as were referenced in the previous CDC DFP submissions. A review of the Philotechnics FSSR confirms that 2 of 7 laboratories identified were included in the 2018 decommissioning surveys. Please refer to Attachment 1 for the status and more details on the following laboratories in Building 17: B17/4085 (decon), B17/5130 (decon), B17/5052 (never used rad material), B17/2236, B17/2237, B17/6101 and B17/6102.

CDC did find reference to B17 in our copy of the 2013 DFP (pages 7-8). However, we believe the reference to Amendment 37 refers to B17 that was previously on the Chamblee campus. This building was decommissioned in 2005 and had 16 laboratories. It would be more consistent that these isotopes (U235, Pu239, and Pu242 in quantities of 0.01 microcuries each, as well as a variety of other radionuclides, for use in Building 17) were used at Chamblee B17 location, and not at the Roybal Campus B17. There is a history of frequent confusion between the two Buildings 17 on the two different campuses.

**Item 10.c. Response (CDC)**

Completed a detailed review, same as above, of the laboratories located in Building 18, Roybal campus, where radioactive materials were authorized for use. Identified a total of 6 laboratories as were referenced in the previous CDC DFP submissions. A review of the Philotechnics FSSR confirms that 2 of 6 laboratories identified were included in the 2018 decommissioning surveys. Please refer to the list in Attachment 1 for the status and more details on the following laboratories in Building 18: B18/5-412 (decon), B18/B703B.3 (decon), B18/5-408, B18/5-429, B18/6-429 (never used rad material) and B18/B705 (HCL).

**Item 10.d. Response (CDC)**

Completed a detailed review, same as above, of the laboratories located in Building 23, Roybal campus, where radioactive materials were authorized for use. Identified a total of 5 laboratories as were referenced in the previous CDC DFP submissions. A review of the Philotechnics FSSR confirms that 4 of 5 laboratories identified were included in the 2018 decommissioning surveys, and the 5<sup>th</sup> lab (B23/11-641) is still active. Please refer to the Attachment 1 for the status and more details on the following laboratories in Building 23: B23/10-439, B23/10-471, B23/10-624, and B23/10-654.

We confirm that the two Ni-63, 15 mCi sealed sources installed in the gas chromatographs and located in Building 23, are authorized for possession and use under the CDC's NRC radioactive material License No. 10-06772-01.





**Item 10.e. Response (CDC)**

Completed a detailed review, same as above, of the laboratories located in Building 110, Chamblee campus, where radioactive materials are/were authorized for use. Identified a total of 10 laboratories as were referenced in the previous DFP submissions. A review of the Philotechnics FSSR confirms that 1 of 10 laboratories (B110/4207C) identified were included in the 2018 decommissioning surveys. Please refer to Attachment 1 for the status and more details on the following laboratory in Building 110: B110/4207C laboratory was decommissioned.

Please refer to the above responses from by Philotechnics regarding the additional information required for Building 110/ Room 4207C in order to determine if it meets the NRC release criteria.

**Item 11. Response (CDC)**

Completed a detailed review of radiation safety program records to include inspection summary reports, radiological survey reports, isotope inventories, annual safety audits, rad safety database, and other historical records/documents to identify all laboratories where radioactive materials were used and/or stored in Buildings 15, 17, 18, and 23 at Roybal Campus, that we are requesting to be released. We understand that only B110/4207C laboratory is being decommissioned at Chamblee Campus, and are requesting release of the laboratory but not the entire Building 110. Please see Attachment 1 for a list of laboratories in each building for which release for unrestricted use is being requested for approval. CDC plans to modify the vendor contract agreement for the Lawrenceville Facility Decommissioning project to include the decommissioning of the additional laboratories identified in Building 17 and 18 at Roybal campus.

**Request for Additional Information for the Decommissioning Funding Plan (DFP) dated December 30, 2019**

**Item 1.a. Response (CDC)**

CDC confirms that we understand that, although the quantities of materials authorized on CDC License 10-06772-01 pursuant to Part 40 do not require provision of financial assurance, the facilities where the Part 40 materials (thorium 228, thorium 230, uranium 234 and uranium 236, as well as any use of source material under the general license of 10 CFR 40.22) are used and stored, will require final status surveys to be performed that demonstrate they meet NRC criteria prior to any release for unrestricted use.

**Item 1.b. Response (CDC)**

No response is required for this Item at this time. Upon NRC's complete review of the 2019 DFP submitted, CDC will provide new financial assurance documents (the Statement of Intent (SI) and the Certification of Financial Assurance (CFA) if the cost estimate is higher than that specified in the current document.

**Item 2.a. Response (CDC)**

This is addressed in the responses to the 2018 Lab Final Status Survey Report inquiries. The 2019 DFP will be updated to reflect the cost estimates for additional lab decommissioning as appropriate.



**Item 2.b. Response (CDC)**

CDC confirms that Building 34, Roybal Campus, includes the Radioactive Waste and this building will remain on the list of locations where radioactive materials are used or stored. We will update the 2019 DFP to continue to include this room as a potentially impacted area. This radioactive waste room is scheduled to be decommissioned in 2021 at the time of the Lawrenceville Waste Burial Site decommissioning project.

**Item 2.c. Response (CDC)**

CDC will revise the 2019 DFP to provide an updated description of Building 110 and the radionuclides currently used in the active laboratories and the formerly used in the inactive laboratory.

**Item 2.d. Response (CDC)**

The final status information for Building 110, Room 4207C is addressed in the responses to the 2018 Lab Final Status Survey Report inquiries.

**Item 2.e. Response (CDC)**

CDC has awarded a contract for a final status survey of the laboratory facility at the Lawrenceville Campus and the decommissioning of the Lawrenceville Waste Burial Site. Due to the impact of COVID-19 Pandemic the project has been delayed, and we anticipate it will be done in 2021. In review of the information provided, CDC will remove the statement from the 2019 DFP that refers to the Lawrenceville facility as being decommissioned, and will revise the cost estimate to obtain the necessary information to release the facility for unrestricted use. In addition, we will obtain the Final Status Survey Plan from the vendor, and submit it to NRC for review and approval prior to implementation.

**Item 3. Response (CDC)**

Regarding the section "Levels of contamination", CDC will update the 2019 DFP to address your request in Items 3.a., 3.b. and 3.c.

**Item 4.a Response (CDC)**

Regarding Section A.3.1.3. "Key Assumptions", and in review of the information provided, CDC confirms that we understand that the NRC does not approve the use of 42 dpm removable contamination as a generic release criterion for alpha emitters by its inclusion in the DFP, and if the 2019 DFP is accepted. For an actual decommissioning, CDC will submit a site-specific DCGLs for NRC review and approval prior to use.

**Item 4.b. Response (CDC)**

Regarding Section A.3.1.3. "Key Assumptions", and in review of the information provided, CDC confirms that we understand that scanning surveys as described are NOT approved as generic criteria for release of facilities for unrestricted use by the NRC by its inclusion in the 2019 DFP.

**Item 4.c Response (CDC)**

Regarding Section A.3.1.3. "Key Assumptions", and in review of the information provided, CDC confirms



that we understand that Ludlum Model 2241-2 ratemeter with a Ludlum ZnS alpha scintillator is not approved as suitable for surveys of all alpha emitters for release of facilities for unrestricted use.

**Item 5. Response (CDC)**

CDC will update Table A.3.15 "Equipment/Supply Costs (Excluding Containers) in 2019 DFP to correct the values for the total cost.

We will revise the 2019 DFP to include and address the above additional information requested. The DFP cost estimate will change and may require new financial assurance documents (the Statement of Intent (SI) and the Certification of Financial Assurance (CFA). We anticipate being able to provide the revised DFP to NRC for review and approval by March 31, 2021.

Again, we appreciate the opportunity to address your inquiries, and if you have further questions or need any additional information in support of the DFP approval request, please contact Cynthia Long, RSO, at (404) 639-3416 (office), (404) 772-8645 (wk cell) or [xgt6@cdc.gov](mailto:xgt6@cdc.gov) (email).

Sincerely,

Mary E. Brandt, Ph.D.  
Director, Office of Laboratory Safety  
Office of Laboratory Science and Safety

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Cynthia S. Long  
Radiation Safety Officer  
Office of Laboratory Safety

Enclosures:

- 1) CDC 12 Labs Final Status Survey Report Rev 1, dated August 26, 2020, prepared by Philotechnics, Ltd.
- 2) Appendix B SU Drawing Rev 2
- 3) Attachment 1- Updated list of Radiation Labs Identified for Decommissioning and Status