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Sent: Wednesday, August 24, 2022 12:59 PM

To: Masnyk Bailey, Orysia <Orysia.MasnykBailey@nrc.gov>

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Subject: [External_Sender] Executive Summary Memo for Bldg 164 RAW Room Decommissioning FSSR to NRC

Orysia,

The changes requested are below:

- According to the CDC Radiation Safety Officer, there was only one small spill of Am-241 during a radioactive waste pickup event in the RAW room that was remediated by Philotechnics.

Please let us know if these changes will suffice.

Thanks!

Very Respectfully,



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"A LIE DOESN'T BECOME TRUTH, WRONG DOESN'T BECOME RIGHT AND EVIL DOESN'T BECOME GOOD JUST BECAUSE IT'S ACCEPTED BY A MAJORITY." - BOOKER T. WASHINGTON

"IF YOU ARE NEUTRAL IN SITUATIONS OF INJUSTICE, YOU HAVE CHOSEN THE SIDE OF THE OPPRESSOR." - DESMOND TUTU

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Orysia Mansk Bailey
Health Physicist
Nuclear Regulatory Commission
Division of Nuclear Materials Safety

Dear Ms. Bailey,

The U.S. Department of Health and Human Services Centers for Disease Control and Prevention (CDC) decided to permanently decommission its Hazardous Material Handling Facility (HMHF) located in Building 164 at the CDC's Chamblee Campus site located at 4770 Buford Highway, Chamblee, Georgia, 30341. Radioactive Waste (RAW) Room 107 of the HMHF previously served as a facility for radioactive waste materials collection, storage, classification, and packaging prior to shipment for disposal. As part of their public health modernization program, the CDC relocated all radioactive waste activities in the former RAW room to a newly completed radioactive waste facility on the Chamblee campus Building 112A HMHF. As a result, Philotechnics, Ltd. (Philotechnics) was contracted to perform all decommissioning activities and attain release for unrestricted use of the RAW facility.

Upon release, the CDC will demolish Building 164 and dispose of the contents in an appropriate treatment, storage, and disposal facility (TSDF). The RAW room was vacated, and any unneeded and potentially contaminated items were surveyed; all waste transferred or disposed of; and all impacted areas demarcated. Surveyed items were found to be free of any residual contamination. Various facilities at the site have undergone decommissioning in the past, and the RAW was expected to meet release for unrestricted use without decontamination. However, minor decontamination was warranted to maintain the area As Low as Reasonably Achievable (ALARA).

The CDC and Philotechnics conducted several Historical Site Assessments (HSA)s over the course several decommissioning projects documenting radiological operations from the beginning of licensed operations in the RAW room from 2016 to present. Although the HMHF RAW Room was completed in 2013, it was not utilized until 2016. A thorough review of the historical utilization of the RAW room revealed that it was used to collect, store, classify, and process packaged CDC licensed radioactive materials (RAM) at the facility prior to disposal. RAM consisted of: Americium-241 (Am-241), Californium-252 (Cf-252), Hydrogen-3 (H-3), Iodine-125 (I-125), Potassium-40 (K-40), Neptunium-237 (Np-237), Phosphorous-32 (P-32), Plutonium-242 (Pu-242), Polonium-210 (Po-210), Radium-226 (Ra-226), Strontium-90 (Sr-90), Sulfur-35 (S-35), Thorium-232 (Th-232), and Uranium-238 (U-238).

Philotechnics performed scoping, characterization, and Final Status Surveys (FSS) on August 17 and 18, 2021, and a second mobilization on March 9, 2022. Scoping and characterization surveys included scans, direct/static measurements for total activity, and 100 cm² smears for removable activity. Elevated alpha activity above ALARA goal of >25% of the Derived Concentration Guideline Level (DCGL) with a mean Reference Background Area measurement result of 1.1 disintegrations per minute per 100 square centimeters (dpm/100 cm²) was identified in the RAW room, and elevated beta activity at the loading dock, as discussed in **Section 4.1 – Contaminated**

Structures of the CDC Building 164 Radioactive Waste Room FSSR. The elevated area within the loading dock was attributed to elevated background caused by naturally occurring radioactive materials within the high-density concrete, and was verified during the March 9, 2022, field activities.

The impacted areas identified to contain residual elevated alpha surface activity attributed to Americium-241 in RAW room in excess of ALARA Goals was remediated as discussed in **Section 9.9 – Remediation of Building Surfaces** of the CDC Building 164 Radioactive Waste Room FSSR.

After additional reviews by both the CDC and Philotechnics personnel, and in accordance with *NUREG 1575 Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)*, Appendix B and *NUREG 1757 Consolidated Decommissioning Guidance, Volume 2, Appendix B*, and calculations performed per **Section 3.3 – Insignificant Radionuclides and Exposure Pathways** of *NUREG 5512, Residual Radioactive Contamination from Decommissioning Parameter Analysis, Volume 3*, it was decided that radionuclides Cf-252, Np-237, Po-210, Pu-242, Ra-226, Sr-90, Th-232, and U-238 were insignificant contributors to the radiological dose potentially received by the public and were eliminated from further evaluation and discussion and the radiological material was below levels necessary for a Decommissioning Plan. Hence, a Final Status Survey Report (FSSR) was deemed appropriate. This was based on a risk-informed, performance-based paradigm based on the radiological controls for the RAW and total activity per radionuclide received and stored at the RAW as follows:

- All insignificant radionuclides accounted for less than ten percent of the total activity received at the facility;
- All waste packaged was sealed and leak tested upon delivery and prior to shipment; routine surveys of the room were performed each time waste was packaged;
- Wipe surveys were conducted minimally once every four months;
- Results of the CDC radiation meter readings and wipe surveys indicated all items were free from any residual contamination and at natural background levels; and
- According to the CDC Radiation Safety Officer, there was only one small spill of Am-241 during a radioactive waste pickup event in the RAW room that was remediated by Philotechnics.

The RAW facility was a one-story radiological designated and isolated waste room with a floor area of ~585 square feet (ft²) waste room and a ~110 ft² office located in Building 164. Building 164 had a total footprint of ~3,945 ft². Building 164 resided on 50.7 acres of property bounded by Buford Highway, Chamblee Tucker Road, West Hospital Avenue, and the DeKalb-Peachtree Airport. Chamblee Campus was ~14 miles Northeast of Atlanta, Georgia in a commercial and residential area of Chamblee, DeKalb County, Georgia. See Appendix A for site plan, facility layout and satellite photo.

Philotechnics conducted on-site decommissioning work under its Nuclear Regulatory Commission (NRC) Reciprocity License for 2022 under reciprocal agreement. Decommissioning activities were performed in accordance with the guidance and recommendations provided in *NUREG 1757* and *MARSSIM*.

FSS implemented the protocols and guidance provided in *MARSSIM* to demonstrate compliance with DCGLs developed utilizing *NUREG 5512, Residual Radioactive Contamination from Decommissioning Parameter Analysis, Volume 3 Table 5.19 – Concentration (dpm/100 cm²) Equivalent to 25 mrem/y for the Specified Value of P_{crit} 0.95* and *NUREG 1757 Volume 1, Rev 2, Table B.1*. This ensured technically defensible data of sufficient quality and quantity was generated to release the facility for unrestricted use in accordance with the criterion of 10 CFR § 20.1402, “A site will be considered acceptable for unrestricted use if the residual radioactivity that is distinguishable from background radiation results in a Total Effective Dose Equivalent (TEDE) to an average member of the critical group that does not exceed 25 mrem (0.25 mSv) per year, including that from groundwater sources of drinking water, and that the residual radioactivity has been reduced to levels that are ALARA. Determination of the levels which are ALARA must take into account consideration of any detriments, such as deaths from transportation accidents, expected to potentially result from decontamination and waste disposal”

Review of Radiological Records

A Certified Health Physicist (CHP) reviewed all radiological instrumentation paperwork and radiological surveys for completeness and accuracy.

Final Status Survey Implementation

FSS implemented the protocols and guidance provided in *MARSSIM* to ensure the generation of technically defensible data of sufficient quality and quantity to release the facility for unrestricted use, and to ensure residual radioactivity had been reduced to levels that were ALARA.

Findings

Prior to releasing the facility, the NRC required an appropriate survey and report be submitted for review and approval. The CDC Building 164 Radioactive Waste Room Final Status Survey Report provided the NRC with appropriate information to release the facility.

The survey and analytical data followed industry standard and NRC guidance and recommendations. The following summarizes the independent conclusions.

Assessment Review

Assessment Component	Acceptable	Unacceptable
License Review & Historical Use	X	
Radiation Surveys	Acceptable	Unacceptable
A) Static Measurements – Hand-held instruments	X	
B) Static Measurements – Scintillation Counter	X	
C) Scanning Measurements – Hand-held instruments	X	

Conclusions and Recommendations

A review of all data collected, and analysis supports the professional opinion; the surveyed impacted areas of concern can be released for unrestricted use is based upon the following:

- ***All scanning measurements were less than the established detection sensitivities to meet the release criteria and conservative ALARA goals in dpm/100 cm² and established using best industry practices.***
- ***All FSS total activity static measurement results were less than the conservative ALARA goals and the beta DCGL established for H-3 of 12,000,000 dpm/100 cm² from NUREG 1757 Volume 1, Rev 2, Table B.1 and the alpha DCGL established for Am-241 of 23.9 dpm/100 cm² from NUREG 5512, Volume 3, Table 5.19 – Concentration (dpm/100 cm²) Equivalent to 25 mrem/y for the Specified Value of $P_{crit} 0.95$ with unity applied to maintain 25 mrem/year TEDE.***
- ***All FSS removable activity wipe survey measurement results were less than the conservative removable release criteria in dpm/100 cm².***

Based upon FSS results, the facility is free of any residual radioactive contamination that would result in a TEDE to an average member of the Critical Group in excess of 25 mrem (0.25 mSv) per year; and the residual radioactivity had been reduced to levels that were ALARA. The facility may be released with no further action.

The CDC requests its NRC Radioactive Materials License (RML) Number 10-06772-01 be amended to incorporate removal of the RAW.