

STATE OF CONNECTICUT

DEPARTMENT OF PUBLIC HEALTH

Jewel Mullen, M.D., M.P.H., M.P.A.
Commissioner



P-7

MS-16

Dannel P. Malloy
Governor
Nancy Wyman
Lt. Governor

Thomas Thompson
US Nuclear Regulatory Commission
Via Fax (610-337-5269)

November 21, 2013

Control # 582357

03037847

Re: Request for Modification of Radioactive Materials License (# 06-27895-03)

Dear Mr. Thompson:

The Connecticut Department of Public Health Laboratory has moved our operations from our 10 Clinton Street (Hartford CT) facility to our 395 West Street (Rocky Hill CT) facility. We thus wish to modify our current license by removing the 10 Clinton Street address from Item #10.

To support the decommissioning of 10 Clinton St., we have completed a Historical Site Assessment for the impacted area. The document is included with this letter. Please review this proposal and get back to me with comments on the design of a scoping survey.

Regards,

Stewart Chute Ph.D.
Toxicologist & RSO
Connecticut Department of Public Health
860-509-7758 or 860-920-6512



Phone: (860) 509-8000 • Fax: (860) 509-7184 • VP: (860) 899-1611
410 Capitol Avenue, P.O. Box 340308
Hartford, Connecticut 06134-0308
www.ct.gov/dph

Affirmative Action/Equal Opportunity Employer

582357
NMSS/RGN1 MATERIALS-002

Historical Site Assessment (HSA) for the Connecticut Department of Public Health Laboratory:

To Support the Decommissioning of 10 Clinton St. Hartford CT

Compiled by Stewart Chute, Ph.D
November, 2013

Background

In January 2009, the Connecticut Department of Public Health Laboratory (CTDPHL) was awarded a Cooperative Agreement from the United States Environmental Protection Agency for a "Demonstration of Enhancing Radiological Incident Response and Recovery: Enhancing Capability and Capacity of Environmental Radioanalytical Laboratories Across the Nation" [RFA No:EPA-OAR-NAREL-07-10]. Within this grant, the CTDPHL has been participating in proficiency testing programs to verify that the capability to analyze samples is maintained. Additionally, the CTDPHL has been validating analytical methods against reference materials containing known amounts of contaminants. The purpose of this testing and validation work is to assure that sufficient surge capacity is in place for the testing of environmental samples from sites undergoing radiological evaluation and remediation.

The CTDPHL possess small, unimportant, quantities of source material under the general license requirements of 10 CFR 40.22 (a), and in accordance with CFR 40.13 (c)(1)(vi). The CTDPHL also possesses small, exempt, quantities of special nuclear materials as granted within 10 CFR 70.17, and calibration or reference sources under the general license requirements within 10 CFR 70.19 (a)(1).

The CTDPHL has also been providing radioanalytic testing services for other government agencies and continues to use exempt quantities of byproduct reference materials for radiological testing of drinking water under the Environmental Protection Agency (EPA) Safe Drinking Water Act. In addition, the CTDPHL conducts analyses for low-levels of alpha-, beta-, or gamma-emitting radionuclides in various media at the request of the Connecticut Department of Energy and Environmental Protection or local health directors.

Isotopes and Limits

Table 1 shows the limits endorsed on the CTDPHL's license, while Table 2 lists the isotopes and activity as of July 2013. The total activity in 2012 was approximately 2X that shown in Table 2.

Impacted Areas

All work with radionuclides was performed in two adjacent laboratories on the second floor of the 10 Clinton Street facility. Counting instrumentation was primarily done in room 152 and sample workup in room 153. A door provides a means for direct transfer of samples between rooms. Inventory was stored in a small locked room attached to room 153. The floor space within these two laboratories is approximately 2,700 ft². A schematic of the impacted area is shown in Figure 1.

Lab Operations

In addition to doing proficiency tests on low-level environmental samples, work under the cooperative agreement involves validating new methods by spiking blank water with various concentrations of isotopes. The maximum concentrations were; 120 pCi/L of uranium (as U-Nat), 24 pCi/l for Sr-89 and 90, 45 pCi/L of Plutonium isotopes, and 45 pCi/l of Am-241. Workup of samples was performed on the open bench top or in fume hoods before being transferred to a counting instrument. Water soluble liquid waste was disposed of in one sink designated for that purpose. Dry solid waste was disposed in a

receptacle designated for that purpose. Solid waste was composed of plastic disposables, glass containers, and environmental media. A waste contractor was hired to remove the solid waste, and RSA Laboratories (Hebron CT) was hired to transfer the inventoried RAM to the new location. Additionally, Perkin Elmer was contracted to relocate instrumentation containing sealed sources.

Site Assessment

Potential sources of residual radioactivity

Sources of residual radioactivity could include lost calibration/reference sources, leaking sealed sources, spilled standards, or solid waste and inventoried material not removed. Other possible sources of residual activity include; the disposal sink basin, fume hood vents, working surfaces in fume hoods and benches, and doorknobs within the impacted area.

Threats to human health and the environment

No threats to health or the environment are apparent, so the purpose of the proposed survey is to test the hypothesis that impacted area does not pose a threat to human health or the environment. If no residual radioactivity is found, the impacted area may be designated as Class 3.

Impacted vs. non-impacted areas

The impacted area is within the two rooms shown in Figure 1. The non-impacted area includes the hallways and other rooms at the 10 Clinton St address and the rest of the property. There is a remote possibility that some residual radioactivity remains in the drainpipes because the building's plumbing system was used for disposal of water soluble radioactive compounds.

Scoping and characterization survey design

The proposed scoping survey includes wipe test and gamma surveys of work surfaces, shelves in the room used for storage of inventory, fume hood vents, the disposal sink, and doorknobs within the impacted area. Leak test records for electrochemical detectors will also be examined.

Assessment of the likelihood of residual radioactivity migration

The RSO and his associate inspected the impacted area on 6/7/2013 and 7/26/2013 and found no visual evidence of inventoried or waste radioactive materials left behind. The RSO is not aware of any use of volatile radioactive compounds within the impacted area, thus the only pathways for migration are through the disposal sink and the tracking of spilled radioactivity via feet and/or hands of workers moving out of the impacted area. As is previously mentioned, the likelihood of migration to the environment through the plumbing system is low. The scoping survey will thus focus on collecting data to support or refute the presence of spilled radioactivity on surfaces that workers contacted, the shelves used for storage, and the disposal sink basin. Leak tests for sealed sources will also be reviewed.

Additional potential radiation sites related to the site being investigated.

The impacted area is unrelated to any other potential radiation sites.

Table 1: CTDPHL Limits for Radioactive Material Activity

<u>5a. Radioactive Material</u>	<u>5b. Chemical and/or Physical Form</u>	<u>5c. Maximum Activity</u>
A. Hydrogen 3	A. Any	A. 5 millicuries
B. Any byproduct material with Atomic Numbers 3 through 83	B. Any; (also including environmental samples from areas undergoing site radiological evaluation and remediation)	B. 1 millicurie per radionuclide and 1 Curie total
C. Any byproduct material with Atomic Numbers 84 through 103	C. Any; (also including environmental samples from areas undergoing site radiological evaluation and remediation)	C. 10 microcuries per radionuclide and 100 microcuries total
D. Any source material	D. Environmental samples from areas undergoing site radiological evaluation and remediation	D. Not to exceed quantities specified in 10 CFR 30.35(d) and 40.36(b) for establishing financial assurances and a decommissioning plan
E. Any Special Nuclear Material	E. Any, [exemption requested per 10 CFR 70.17]; Calibration or reference sources, per 10 CFR 70.19 (a)(1)	E. Not to exceed 5 microcuries per radionuclide and 50 microcuries total

Table 2: Isotopes and their Activities in the CTDPHL (July 2013)

Nuclide	Inventory (μCi)
Am-241	7.42E-01
Am-243	5.30E-03
Ba-133	1.96E-03
C-14	6.31E-02
Cd-109	1.25E+01
Co-57	6.98E-02
Co-60	1.73E+00
Cr-51	2.58E-01
Cs-134	9.77E-04
Cs-137	4.22E+01
Eu-155	3.27E-01
H-3	9.82E-01
I-131	1.16E-23
Ir-192	3.18E-11
Na-22	2.60E+00
Po-210	4.31E-03
Pu-239	2.09E-03
Pu-242	5.10E-03
Ra-226	1.21E-03

Nuclide	Inventory (μCi)
Ra-228	2.68E-07
Ru-106	2.20E-04
Sb-125	3.28E-03
Se-75	8.83E-07
Sn-113	1.93E-01
Sr-85	1.44E-01
Sr-89	2.63E-08
Sr-90	5.73E-01
Te-123m	5.27E-02
Th-230	5.15E-02
Tl-204	3.08E+01
U-232	9.73E-03
U-234	6.51E-03
U-235	3.00E-04
U-238	6.61E-03
Y-88	3.89E-01
Zn-65	3.39E-01
SUM	9.41E+01

Figure 1: Schematic of Impacted Areas, Second Floor, 10 Clinton St., Hartford CT

