UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
2100 RENAISSANCE BOULEVARD, SUITE 100
KING OF PRUSSIA, PENNSYLVANIA 19406-2713

July 24, 2013

Docket No. 030-10568 License No. 07-16199-01
Control No. 581038

Kevin Churchwell, M.D.
Chief Executive Officer
Alfred I. duPont Hospital for Children
PO Box 269
Wilmington, DE 19899

SUBJECT: ALFRED I. DUPONT HOSPITAL FOR CHILDREN, REQUEST FOR ADDITIONAL INFORMATION CONCERNING APPLICATION FOR RENEWAL OF LICENSE, CONTROL NO. 581038

Dear Dr. Churchwell:

This is in reference to your letter dated May 29, 2013 requesting to renew Nuclear Regulatory Commission License No. 07-16199-01. In order to continue our review, we need the following additional information:

1. As part of the renewal, you requested the release for unrestricted use of all areas formerly used for licensed activities in the Administration and Research Building at 1600 Rockland Road, and for this building to be removed from the license. However, the survey results provided for this facility to not meet our current requirements for release for unrestricted use as described in 10 CFR 20.1402 and the guidance in NUREG-1757, "Consolidated Decommissioning Guidance," (NUREG-1757). The regulation requires that residual radioactivity that is distinguishable from background does not exceed a dose of 25 millirem per year. The guidance describes how to demonstrate that facilities meet the regulatory limit. This guidance may be found at the link http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1757/. In particular, you are likely to be able to use the "Simple Approaches for Conducting Final Radiological Surveys" (Simple Approaches) described in NUREG-1757, Volume 2, Appendix B. Specifically, the following items need to be addressed in the results of the surveys provided:

    a. Measurements of total residual radioactivity should be performed, using an instrument that is capable of detecting residual radioactive at about 10 percent of the derived concentration guideline level (DCGL) selected. Such surveys are usually done using an instrument in scaler mode (not in ratemeter mode) with an appropriate detector. The survey results provided with your renewal application contained only results of removable contamination surveys. Please provide results of surveys for total residual activity in the rooms where licensed materials were used in the Research and Administration Building.

b. Survey results should also include a scan survey of most of the surfaces in the areas of the facilities where licensed materials were used, in order to identify if any small areas of elevated radiation are present. The survey results provided with your renewal application contained only results of removable contamination surveys. Please provide results of scan surveys of the rooms where licensed materials were used in the Research and Administration Building.

c. The results of the removable contamination surveys provided did not contain sufficient information for many of the rooms surveyed. Removable contamination surveys are performed to demonstrate that removable contamination does not exceed 10% of the total residual contamination.

    i. Some rooms did not have the minimum number of survey locations required by the Simple Approaches survey procedure, and the number of survey points was not based on the statistical calculations described elsewhere in NUREG-1757.

    ii. Most results were provided only in counts per minute (cpm), without the counting efficiency being provided or the area that was wiped being desingated. Some results did have blank samples and standard sample results which could be used to calculate the results in disintegrations per minute (dpm) from which activity and dose could be calculated. However, neither the activity nor the dose calculations were done and there is not sufficient information to determine the activity per unit area.

    iii. Survey results in several rooms were from 2007, others from 2009 and later. In other rooms, survey results over multiple years were provided. It is not clear when the last use of radioactive materials was performed in each of the rooms, to ensure that no new contamination may have occurred since the last survey provided.

    Please review the NUREG-1757 Simple Approaches procedure to determine if additional removable surveys are required. Provide results of removable contamination surveys in units of "dpm/100 cm^2" or activity in microcuries [or other acceptable unit of activity] per unit area. Provide additional surveys of any room in which use of licensed materials continued at a date later than the surveys provided.

d. The NRC has a list of screening values for most common radionuclides that are acceptable to meet the release criteria. A table containing common screening values can be found in NUREG-1757, Volume 1, Appendix B. A more complete list of acceptable screening values can be found Table 5.18 of NUREG/CR-5512 "Residual Radioactive Contamination from Decommissioning, Parameter Analysis, Draft Report for Comment, October 1999." Please note that cobalt-57, with a half-life of 270 days, must be considered if it was used in unsealed form. The screening value for the long-lived radionuclides currently listed on your license are:

Tritium	120,000,000 dpm per 100 cm2
carbon 14	3,700,000 dpm/100 cm2
calcium 45	2,810,000 dpm/100 cm2
cobalt 57	211,000 dpm/100 cm2

Please note that, for mulitple radionuclides, the unity rule must be used. Alternately, you may use the most restrictive screening value as a single DCGL for your facilities. Confirm that you will use the NRC screening values, or propose alternate DCGLs that will meet the 10 CFR 20.1402 criteria for release for unrestricted use.

2. You requested that calcium 45 be removed from the license. Confirm if calcium 45 was ever used at the Life Sciences Center at 1600 Rockland Road, or at Rockland 1 Center, 1701 Rockland Road. If so, survey results are required for those areas where calcium 45 were used.

3. Cobalt 57 was listed as having been used in the past at your facilities. Confirm if this radionuclide needs to be included in your current license, as well as any other accelerator-produced radionuclides that came under the NRC's jurisdiction as a result of the Energy Policy Act of 2005.

4. Confirm that you will maintain records important for decommissioning for the Research and Administration building, that will be required to be submitted to the NRC at the time your license is terminated, pursuant to 10 CFR 30.345(g) and30.36(k)(4).

Current NRC regulations and guidance are included on the NRC's website at www.nrc.gov; select **Nuclear Materials; Medical, Academic, and Industrial Uses of Nuclear Material;** then **Regulations, Guidance, and Communications.** You may also obtain these documents by contacting the Government Printing Office (GPO) toll-free at 1-866-512-1800. The GPO is open from 7:00 a.m. to 6:30 p.m. EST, Monday through Friday (except Federal holidays).

We will continue our review upon receipt of this information. Please reply to my attention at the Region I Office and refer to Mail Control No. 581038. If you have any technical questions regarding this deficiency letter, please call me at (610) 337-5040.

In order to continue prompt review of your application, we request that you submit your response to this letter within 30 calendar days from the date of this letter.

Sincerely,

Original signed by Elizabeth Ullrich

Betsy Ullrich
Senior Health Physicist
Commercial and R&D Branch
Division of Nuclear Materials Safety

cc:
G.Hobson, PhD., Radiation Safety Officer

DOCUMENT NAME: G:\WordDocs\Current\Lic Def Letter\L07-16199-01.581038.doc

SUNSI Review Complete: EUllrich

After declaring this document "An Official Agency Record" it **will** be released to the Public.

To receive a copy of this document, indicate in the box: "**C**" = Copy w/o attach/encl "**E**" = Copy w/ attach/encl "**N**" = No copy

OFFICE	DNMS/RI	N	DNMS/RI		DNMS/RI			
NAME	EUllrich ***/BU/***							
DATE	7/31/13							

OFFICIAL RECORD COPY