UNITED STATES DEPARTMENT OF COMMERCE
National Institute of Standards and Technology
(formerly National Bureau of Standards)
Gaithersburg, Maryland 20899

February 5, 1990

Leland C. Rouse, Chief
Fuel Cycle Safety Branch
Division of Industrial and
Medical Nuclear Safety, NMSS
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

USNRC License No. SNM-362
Docket No. 70-398

Dear Mr. Rouse:

We request amendment to our license, No. SNM-362, regarding the location and uses of materials. Our Materials License Document, dated May 30, 1984, contains references to alpha-chemistry operations conducted in Room A344, Building 222, and storage of plutonium and uranium standard reference materials in Room B118, Building 222. These operations have been phased out and are no longer conducted. The two rooms have been thoroughly surveyed and are free of significant activity, either removeable or fixed. Reports of the final survey results are included with this letter.

We request that these two rooms be decommissioned and declared available for general use for NIST projects that would not necessarily involve radioactivities. The applicable portions of the Materials License Document that would be affected are also enclosed for your review.

If you have further questions concerning this request, please contact Mr. T. Hobbs or Mr. D. Eagleson of the NIST Health Physics group, at 301-975-5800, (FTS) 879-5800.

Sincerely,

LE Pevey

L. E. Pevey, Chief
Occupational Health and Safety Division
(Materials License Manager)

enclosures

CC: J. Roth, Project Engineer
Effluents Radiation Protection Section
FRSSB, DRSS
U. S. Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia, PA 19406

delete: LPDR

NF04

TABLE 1.1-2, cont'd.

Nuclide	Physical/Chemical Form	Activity (Ci or as noted)
Co-60	irradiators	56000
Cs-137	irradiators	7000
any byproduct material	any form	not to exceed 4 curies for each nuclide of half-life less than 30 days and 1 curie for any other nuclide, and 4000 curies total, except as follows: H-3, 2000 C-14, 5 Co-60, 5 Kr-85, 35 Mo-99, 20 Tc-99, 20 Xe-133, 20 Cs-137, 20 Au-198, 300 Am-241, 0.025 Am-243, 0.025 Cm-242, 0.025 Cm-244, 0.025 Cf-252, 0.025
any byproduct material produced by NIST Reactor irradiation	any form	1100
irradiated fuel	four pellets, for storage only	0.21 grams U-235

1.5 Locations Where Materials Are Used

Major material uses are in Buildings 221, ~~222~~, 235, 245, and the Radioactive Waste Annex to Building 235. Other operations are conducted in locations reviewed and approved by Health Physics, subject to review by the Radiation Safety Committee.

The following operational approvals normally exist for major uses of radioactive materials: Building 221 contains the mass spectrometry laboratories, Rooms B33 and B25. ~~Building 222 contains Room B118, the vault-type storage room, and Room A344, the alpha chemistry laboratory, and other laboratories where tracer and labeling operations and other processes using similar very small quantities of activities and nuclides are conducted.~~ In Building 235, radiochemistry is conducted in Rooms B119 through B154. A variety of operations, such as sealed source use, radiochemistry, and source and instrument calibrations, are performed in Building 245. Rooms B131-B133 are used for source receiving and storage; Rooms B141-145 are for sealed source calibrations; Rooms B44-B53, B146-B157, C11/13/15, and E103/105/106 are used for radiochemistry; while Rooms B05-B25 and B013-B043 are used for sealed source operations. Radioactive waste receiving, packaging, and delivery to disposal agents is conducted in the Annex to Building 235.

9.4 Maps, Buildings, and Site Information

Figure 3 is a site plan of NIST, showing building locations, names, and numbers. Figure 4 shows Building 221, where mass spectrometry facilities are located in rooms A30, B25, and B33 of the basement level. ~~Figure 5 shows Building 222, with the vault-type storage room in B118 of the first floor; and the chemistry lab in room A344 on the third floor.~~ Figure 6 shows Building 235 with chemistry labs and a warm shop in the B-wing, and the Radioactive Waste Annex. Areas not included in this license are indicated with crosshatched shading. Figures 7a and 7b show Building 245, with a variety of chemistry laboratories, irradiator facilities, most of the sealed source storage and use facilities, and miscellaneous other radioactivity projects.

9.5 License History

Table II.9-2 shows a chronological ordering of licensing history at NIST for radioactive materials. This history tracks licenses to the most recent renewal. In some cases, e.g., for 08-00566-05, the byproduct material license, a full history would extend to more than twenty years with many amendments and renewals. In 1980 a Materials License Manager was named to bear responsibility for licensing of radioactive materials.

TABLE II.9-2

NIST MATERIALS LICENSING SUMMARY

Year	License	Action (identifier)
1983	08-00566-05	Class I irradiator request
1982	all	Radiation Safety Committee
	09-00566-05	change in limits (byproducts)
	all	personal dosimetry technique
1981	SNM-362	filter process (SNM)
	SNM-362	change in limits
	08-00566-10	renewal (teletherapy)
1980	SMB-405	license manager named (source)
1979	SNM-362	renewal
	08-00566-05	change in limits
1978	SMB-405	renewal
	08-00566-12	renewal (irradiator)
1977	08-00566-05	renewal

10.1 Layout

The major radiation facilities under the materials license at NIST are located in Building 245. Figure 8 shows a cross-sectional view of the Cs-137 Category II irradiator unit in Room B017. Figure 9 is a cross-sectional view of the other style of Category II irradiator used; Room B034 contains one of these units with Co-60, while Room B036 contains two, one of Co-60 and one of Cs-137, mounted so that either can be positioned over the catcher pit for use. Figure 10 shows a cross-section of the Category III irradiator located in Room F101.

~~Figure 11 shows Room B118 in Building 222, where SNM is stored. Figure 12 shows Room A344 in Building 222;~~ Figure 13 shows the mass spectrometry complex in Building 221. ~~The last two are~~ *This is* typical of the chemistry laboratory facilities provided at NIST for radioactive materials work. Attachments show laboratory instructions for using certain sources and other information, such as source type for the irradiators.

10.2 Utilities, Including Emergency Power

Electrical power is provided to NIST by the Potomac Electric Power Company, using a site-resident substation. Each building is in turn supplied from that substation. No processes are permitted that require permanent application of utility protection services. Fail-safe mechanisms are built into equipment such as automatic shutter closing for teletherapy-type devices so that loss of power cannot cause unsafe radiological conditions.

10.3 Heating, Ventilation, and Air Conditioning

Steam and chilled water are generated in Building 302 and distributed to the various buildings on site with underground conduits. These are combined in varying portions for heating and air conditioning. Filtered air is supplied for each building and laboratory spaces are maintained at negative pressure relative to corridors and office spaces. Exhausts from radioactivity hoods are equipped with velocity-controlled automatic dampers to insure positive air flows through the hoods. High-efficiency particulate filter systems are maintained so that no leakage paths can exist, so that magnahelic or equivalent pressure-drop gauges show no more than four times the clean or fresh reading, and so that hood face velocities are maintained at 100 linear feet per minute as the average of at least six readings over the open area of the hood face. Any degradation in these limits causes review, by the Air Conditioning and Refrigeration Shop of the Plant Division for pressure-drop and by Health Physics for other measurements, to determine remedial action. In some instances, too great an air flow can also be detrimental and must be corrected.