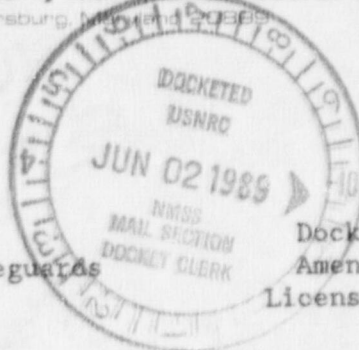
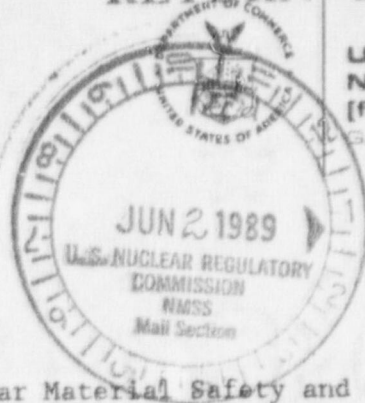


UNITED STATES DEPARTMENT OF COMMERCE
National Institute of Standards and Technology
(formerly National Bureau of Standards)

Gaithersburg, Maryland 20899

May 25, 1989



Director
Office of Nuclear Material Safety and Safeguards
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Docket No. 70-398
Amendment Request
License No. SNM-362

U. S. Nuclear Regulatory Commission
Region I
Nuclear Material Section B
475 Allendale Road
King of Prussia, PA 19406

Gentlemen:

Our license, number SNM-362, authorizes possession of 56,000 curies of Co-60 in irradiators. The Materials License Document we submitted in the application for the license described the specific quantities of Co-60 that would be used for specific categories of irradiator types. On May 23 and May 24, Mr. Thomas Hobbs of the N.I.S.T. Health Physics group spoke to Mr. Soong of NMSS/IMSB about changing the document to correspond with the license.

We desire to upgrade the irradiator facilities at the National Institute of Standards and Technology. The upgrade will involve no quantity nor summation of quantities of radioactive material in excess of the limit given in the license, but will exceed the quantities given in the submittal document for the specific irradiator categories. Therefore, we are requesting approval of page changes for the Materials License Document to effect the upgrade. The changes incorporate an overall quantity limit rather than a detail of quantities for specific irradiators.

There will be no operational change nor will there be a change in radiation safety practices. The only changes will cause the document to agree with the license that was issued.

In the pages enclosed, deleted material is struck out, while new material is in underscored italics. The affected pages are I-1-3 and I-5-2. In addition to the pages involved in irradiator descriptions for which we are requested change approval, we are enclosing for your information a change of page II-12-3. This changed page describes the current personnel dosimetry practice at N.I.S.T.

Should you have questions about this matter, please contact Mr. Thomas Hobbs at 301-975-5800, FTS 879-5800. Thank you for your attention.

Sincerely,

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

FEE EXEMPT

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TABLE I.1-2, cont'd.

<u>Nuclide</u>	<u>Physical/Chemical Form</u>	<u>Activity (Ci or as noted)</u>
Ge-60	Category-I-irradiators	33000
Ge-60	Category-II-irradiators	12000
Gs-137	Category-II-irradiators	7000
Ge-60	Category-III-irradiators	11000
<u>Co-60</u>	<u>irradiators</u>	<u>56000</u>
<u>Cs-137</u>	<u>irradiators</u>	<u>7000</u>
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 NBS 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;

TABLE I.5-1

PLUTONIUM SRM PROTOTYPE TEST DATA
(units of microcuries or % of initial activity)

test	sample identification number				
	4905-8	4905-48	4905-77	4905-96	4905-105
initial act.	0.3850	0.4171	0.4884	0.7347	0.5152
dry wipe loss	0.0013	0.0013	0.0014	0.0007	0.0005
%	0.33	0.31	0.29	0.10	0.10
wet wipe loss	0.0009	0.0024	0.0020	0.0044	0.0013
%	0.33	0.57	0.41	0.60	0.25
H ₂ O soak loss	0.0009	0.0029	0.0022	0.0038	0.0029
%	0.23	0.70	0.45	0.52	0.56
dry wipe loss	0.0008	0.0005	0.0007	0.0014	0.0009
%	0.21	0.12	0.14	0.19	0.17
final act.	0.3811	0.4100	0.4821	0.7244	0.5096

5.2 Irradiators, Categories I, II, and III

Health Physics maintains a list of each irradiator of each category's designation. ~~The maximum activity for any irradiator is that activity given in Table I-1-2.~~ For each irradiator, the listing includes location of the unit, isotope, number of curies and number of sources for the unit, and the manufacturer and model number. Should any proposed irradiator or irradiator sources not have been evaluated previously according to criteria of the NRC, sufficient information is submitted to NRC for evaluation before the proposal is approved by Health Physics. Instructions for the use of each irradiator unit are written and are reviewed and approved by Health Physics. A copy of the instructions is made available for each person using or having responsibility for the use of that unit. Sealed sources of licensed material in Category I, II, or III irradiators may not be opened or removed from their respective source holders by NIST under this license.

5.3 Radioactive Material Shipping Packages

Procurement, maintenance, repair, and use of shipping containers for Type B shipments of radioactive materials are conducted according to a quality assurance program as required by NRC. All other shipping activity requirements that are included in 10CFR71, Appendix E, i.e., design, fabrication, assembly, testing, and modification, are satisfied by obtaining certifications from package suppliers that these activities were conducted in accordance with an NRC-approved quality assurance program. Other shipping requirements, e.g., Type A package approvals, are conducted in accordance with appropriate regulations.

12.3 Personnel Monitoring

Health Physics maintains a primary personnel dosimetry program that employs film, thermoluminescent dosimeters (TLD), or other devices such as direct-reading pocket dosimeters. Health Physics assures that any device used in the primary personnel dosimetry program meets quality assurance requirements equivalent to the dosimetry national laboratory accreditation program (NVLAP), either by performing suitable tests and checks on the devices or by requiring suppliers and processors to certify to quality assurance acceptability. Any worker who could be exposed to 25% or more of the regulated radiation limits is registered in the primary program upon approval of the applicable work proposal. Figure 16, Request for Personal Radiation Monitoring Services, is used for dosimetry determinations and assignments. Such a registration causes the review of the applicant's work environment to assess potential for the worker to be listed as a "radiation worker". Usually, a radiation worker is assigned one device, or for special circumstances, such as those with mixed-field radiations for which one device may not adequately measure the dose, more than one device. Those radiation workers who may be exposed in different work environments for which the radiation doses are to be separated, such as work with californium neutron sources and with reactor-generated radiations, may be issued one set of personnel monitors for one work environment and a second set for the other work environment. In some instances, Health Physics may determine that a more immediate indication of exposure is necessary and issue personnel devices, such as direct-reading pocket dosimeters, that are not maintained according to a full quality assurance program but are checked to demonstrate a response to radiation. Primary personnel dosimeters are evaluated at least quarterly and the records reviewed for radiological safety control and for ALARA purposes. Primary personnel dosimeters may be film, supplied by the Lexington Signal Depot, or TLD, supplied by either the Lexington Signal Depot or the Naval Medical Command.

Some workers, for whom registration as radiation workers is determined not to be necessary, but who could enter controlled areas, may be issued supplementary personnel dosimetry, such as film, TLD, or pocket dosimeters, at Health Physics discretion. Such supplementary dosimetry would be subject to internal supplementary quality assurance but need not be submitted to a program equivalent to the dosimetry NVLAP. Results from these devices would help to establish and support the provisions for personnel selections for the primary dosimetry program and would also help evaluate radiation work for ALARA purposes.