

## MATERIALS LICENSE

Amendment No. 22

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 36, 39, 40, and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations, and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

## OFFICIAL RECORD COPY

Licensee

In accordance with the letter dated  
August 6, 1996,3. License Number 06-00183-06 is amended in  
its entirety to read as follows:

1. Yale University

Radiation Safety Section

2. 135 College Street

New Haven, Connecticut 06510-2411

4. Expiration Date March 31, 2003

5. Docket or  
Reference No. 030-068866. Byproduct, Source, and/or  
Special Nuclear Material7. Chemical and/or Physical  
Form8. Maximum Amount that Licensee  
May Possess at Any One Time  
Under This License

A. Cobalt 60

A. Sealed sources  
(Brookhaven National  
Laboratory Tubular)

A. 1,500 curies

B. Cesium 137

B. Sealed sources (AECL  
Model ORNL-RAMCO-50 or  
ISO-1000)

B. 600 curies

C. Cesium 137

C. Sealed sources (J. L.  
Shepherd Model 6810)

C. 15,000 curies

9. Authorized use

- A. For use in a Brookhaven Custom Irradiator for the irradiation of biological material for experimental purposes.
- B. For use in an AECL Gammacell Model 1000 Blood Irradiator for the irradiation of biological material.
- C. For use in a J. L. Shepherd Mark I Series dual source irradiator for biological research.

## CONDITIONS

- 10. Licensed material for Item A may be used only at the licensee's facilities at Yale University, Sloan Physics Laboratory, 217 Prospect Street, New Haven, Connecticut. Licensed material for Item B may be used only at the licensee's facilities at the Laboratory for Surgery, Obstetrics, and Gynecology Building, Room S-04, 375 Congress Avenue, New Haven, Connecticut. Licensed material in Item C may be used only at the licensee's facilities at William Wirt Winchester Building, 44 Davenport Avenue, New Haven, Connecticut.
- 11. A. Licensed material shall be used by, or under the supervision of, individuals designated in writing by Yale University Radiation Safety Committee, William C. Summers, M.D., Chairperson. The licensee shall maintain records of individuals designated as users for three years after the last use of licensed material by the individual.

B. The Radiation Safety Officer for this license is Agnes Barlow, M.S., CHP.

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PDR ADDCK 03006886  
C PDR

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**MATERIALS LICENSE  
SUPPLEMENTARY SHEET**

License Number

06-00183-06

Docket or Reference Number

030-06886

Amendment No. 22

(Continued)

**CONDITIONS**

12. Sealed sources containing licensed material shall not be opened or sources removed from source holders by the licensee.
13. A. Sealed sources and detector cells containing licensed material shall be tested for leakage and/or contamination at intervals not to exceed six months or at such other intervals as are specified by the certificate of registration referred to in 10 CFR 32.210, not to exceed three years.
- B. Notwithstanding Paragraph A of this Condition, sealed sources designed to emit alpha particles shall be tested for leakage and/or contamination at intervals not to exceed three months.
- C. In the absence of a certificate from a transferor indicating that a leak test has been made within six months prior to the transfer, a sealed source or detector cell received from another person shall not be put into use until tested.
- D. Each sealed source fabricated by the licensee shall be inspected and tested for construction defects, leakage, and contamination prior to any use or transfer as a sealed source.
- E. Sealed sources and detector cells need not be leak tested if:
- (i) they contain only hydrogen-3; or
  - (ii) they contain only a radioactive gas; or
  - (iii) the half-life of the isotope is 30 days or less; or
  - (iv) they contain not more than 100 microcuries of beta and/or gamma emitting material or not more than 10 microcuries of alpha emitting material; or
  - (v) they are not designed to emit alpha particles, are in storage, and are not being used. However, when they are removed from storage for use or transfer to another person, and have not been tested within the required leak test interval, they shall be tested before use or transfer. No sealed source or detector cell shall be stored for a period of more than 10 years without being tested for leakage and/or contamination.

MATERIALS LICENSE  
SUPPLEMENTARY SHEET

License Number

06-00183-06

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030-06886

Amendment No. 22

(13. continued)

## CONDITIONS

- F. The test shall be capable of detecting the presence of 0.005 microcurie of radioactive material on the test sample. If the test reveals the presence of 0.005 microcurie or more of removable contamination, a report shall be filed with the U.S. Nuclear Regulatory Commission and the source or detector cell shall be removed immediately from service and decontaminated, repaired, or disposed of in accordance with Commission regulations. The report shall be filed within five days of the date the leak test result is known with the U.S. Nuclear Regulatory Commission, Region I, ATTN: Chief, Nuclear Materials Safety Branch, 475 Allendale Road, King of Prussia, Pennsylvania 19406. The report shall specify the source or detector cell involved, the test results, and corrective action taken. Records of leak test results shall be kept in units of microcuries and shall be maintained for inspection by the Commission. Records may be disposed of following Commission inspection.
- G. The licensee is authorized to collect leak test samples for analysis by the licensee. Alternatively, tests for leakage and/or contamination may be performed by persons specifically licensed by the Commission or an Agreement State to perform such services.
14. The licensee shall not perform repairs or alterations of the irradiators involving removal of shielding or access to the licensed material. Removal, replacement, and disposal of sealed sources in the irradiator shall be performed by persons specifically licensed by the Commission or an Agreement State to perform such services.
15. For each J. L. Shepherd and Associates, Mark I Cesium-137 Irradiator installed and used, the licensee shall:
- A. permit the use of the irradiator only when a calibrated and operable radiation survey meter or room monitor is available; and
  - B. permit the irradiator door to be opened only after the operator has checked visual indicators to verify that the source has returned to its safe storage position; and
  - C. have room monitors installed that will:
    - (i) operate at all times when the irradiator is in use; and
    - (ii) activate a visible and audible alarm when radiation exceeds 2 millirems per hour; and
    - (iii) detect any radiation leaking from the irradiator door; and
    - (iv) be visible to the irradiator user when he is next to the irradiator; or

MATERIALS LICENSE  
SUPPLEMENTARY SHEET

License Number

06-00183-06

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030-06886

Amendment No. 22

(15. continued)

## CONDITIONS

- D. if a room monitor is not installed, have available a calibrated and operable survey meter which will be used to:
- (i) determine the radiation level at the irradiation door when the door is closed; and
  - (ii) check for any increase in radiation levels each time the irradiator door is opened.
- E. immediately stop the use of the irradiator and notify the Commission by telephone as described in 10 CFR 20.403(d) if abnormal levels of radiation or any malfunction of the irradiator is detected;
- F. not repair or authorize repairs of the irradiator except by the manufacturer or other persons specifically authorized by the Commission or an Agreement State to perform such services.
16. The licensee shall conduct a physical inventory every six months to account for all sealed sources and devices containing licensed material received and possessed under the license. Records of inventories shall be maintained for five years from the date of each inventory, and shall include the quantities and kinds of byproduct material, manufacturer name and model numbers, location of sources and/or devices, and the date of the inventory.
17. Except as specifically provided otherwise in this license, the licensee shall conduct its program in accordance with the statements, representations, and procedures contained in the documents, including any enclosures, listed below. The Nuclear Regulatory Commission's regulations shall govern unless the statements, representations and procedures in the licensee's application and correspondence are more restrictive than the regulations.
- A. Application dated February 13, 1981
  - B. Letter dated November 2, 1987
  - C. Letter dated April 8, 1990
  - D. Application dated January 3, 1991
  - E. Letter dated March 29, 1993
  - F. Letter dated September 15, 1993
  - G. Letter dated November 2, 1993
  - H. Letter dated December 12, 1994

Date SEP 24 1996

For the U.S. Nuclear Regulatory Commission

Original Signed By:

Sheri Ann Arredondo

By

Nuclear Materials Safety Branch  
Region I

King of Prussia, Pennsylvania 19406



SEP 24 1996

Agnes Barlow, CHP  
Radiation Safety Officer  
Yale University  
Radiation Safety Section  
135 College Street  
New Haven, Connecticut 06510-2411

Dear Ms. Barlow:

This refers to your license amendment requests. Enclosed with this letter are the amended licenses. Please note that as part of these amendments, in accordance with 10 CFR 30.36, effective February 15, 1996, the expiration date of your licenses have been extended by a period of five years. Your new expiration dates are stated in Item 4 of the licenses.

Please review the enclosed documents carefully and be sure that you understand and fully implement all the conditions incorporated into the amended license. If there are any errors or questions, please notify the U.S. Nuclear Regulatory Commission, Region I Office, Licensing Assistance Team, (610) 337-5093 or 5239, so that we can provide appropriate corrections and answers.

Thank you for your cooperation.

Sincerely,

**Original Signed By:**

Sheri A. Arredondo  
Division of Nuclear Materials Safety

License Nos. 06-00183-03; 06-00183-06; SNM-52  
Docket Nos. 030-00582; 030-06886; 070-00053  
Control Nos. 123544; 123543; 123545

Enclosures:  
Amendment Nos. 66; 22; 14

DOCUMENT NAME: R:\WPS\MLTR\L0600183.03

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				
NAME	Arredondo						
DATE	08/09/96		08/ /96		08/ /96		08/ /96

OFFICIAL RECORD COPY **ML 10**

# Yale University

Office of Environmental Health and Safety  
Environmental Health  
Environmental Services  
Occupational Health and Safety  
Radiation Safety

Campus address:  
135 College Street  
New Haven, Connecticut 06510-2411  
Telephone: 203 785-3550  
Fax: 203 785-7588

August 6, 1996

Francis M. Costello  
U.S. Nuclear Regulatory Commission  
475 Allendale Road  
King of Prussia, PA 19406-1415

030-06886

Subject: Licenses 06-00183-06, 06-00183-03, SNM-52

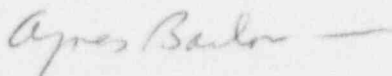
Dear Mr. Costello:

As we indicated in our correspondence dated August 15, 1995, Dr. William Summers was on sabbatical for a period of one year. Please be advised that with the Radiation Safety Committee meeting scheduled for mid September, 1996, Dr. Summers will be returning as Chairman of the Radiation Safety Committee.

Your assistance in this matter is most appreciated. If you require any further information, please contact me at (203) 737-2142.

Thank you.

Sincerely,



Agnes Barlow, CHP  
RSO, Radiation Safety Section

OFFICIAL RECORD COPY

ML 10

123543

AUG - 8 1996

BETWEEN:

LICENSE FEE MANAGEMENT BRANCH, ARM  
AND  
REGIONAL LICENSING SECTIONS

(FOR LFMS USE)  
INFORMATION FROM LTS

PROGRAM CODE: 03510  
STATUS CODE: 0  
FEE CATEGORY: EX 3E  
EXP. DATE: 20030331  
FEE COMMENTS: 170.11(A)(4)  
DECOM FIN ASSUR REQD: N

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LICENSE FEE TRANSMITTAL

A. REGION *I*

1. APPLICATION ATTACHED  
APPLICANT/LICENSEE: YALE UNIVERSITY  
RECEIVED DATE: 960808  
DOCKET NO: 3006886  
CONTROL NO.: 123543  
LICENSE NO.: 06-00183-06  
ACTION TYPE: AMENDMENT

2. FEE ATTACHED  
AMOUNT: -----  
CHECK NO.: -----

3. COMMENTS

Ref. 123544/123545

SIGNED  
DATE

*Mr. A. Perkins*  
8/12/96

B. LICENSE FEE MANAGEMENT BRANCH (CHECK WHEN MILESTONE 03 IS ENTERED)

1. FEE CATEGORY AND AMOUNT: *EX 3E*

**FEE EXEMPT**

2. CORRECT FEE PAID. APPLICATION MAY BE PROCESSED FOR:  
AMENDMENT -----  
RENEWAL -----  
LICENSE -----

3. OTHER -----

SIGNED  
DATE

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RECEIVED BY LFDCB	
Date	8/14/96
By	Aug 10 <i>I (90)</i>
By	BA
Date Completed	8/14/96

(Also ref.  
123544 + 123545)