NRC FORM 374
(10-99)

U.S. NUCLEAR REGULATORY COMMISSION

MATERIALS LICENSE

Amendment No. 85

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, 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.

Licensee

1. E. R. Squibb and Sons, Inc.

2. One Squibb Drive
P. O. Box 191
New Brunswick, New Jersey 08903-0191

In accordance with letter dated August 5, 1992,

3. License number 29-00139-02 is amended in its entirety to read as follows:

4. Expiration date April 30, 1997

5. Docket or Reference No. 030-05222

6. Byproduct, source and/or special nuclear material	7. Chemical and/or physical form	8. Maximum amount that licensee may possess at any one time under this license
A. Any byproduct material with Atomic Nos. 1-83 inclusive, except Strontium 90	A. Any	A. 5 curies per radionuclide and 1000 curies total
B. Iodine 131	B. Any	B. 150 curies
C. Molybdenum 99/Technetium 99m	C. Any	C. 500 curies
D. Any byproduct material with Atomic Nos. 1-83 inclusive, except Strontium 90	D. Any	D. 200 millicuries per radionuclide and 6 curies total
E. Hydrogen 3	E. Any	E. 5 curies
F. Carbon 14	F. Any	F. 4 curies
G. Phosphorus 33	G. Any	G. 1 curie
H. Sulfur 35	H. Any	H. 2 curies
I. Iodine 125	I. Any	I. 500 millicuries
J. Iodine 131	J. Any	J. 500 millicuries
K. Any byproduct with Atomic Nos. 1 through 83 inclusive, except Strontium 90	K. Any	K. Not to exceed 10 millicuries per radionuclide and 1 curie total
L. Hydrogen 3	L. Any	L. 50 millicuries
M. Hydrogen 3	M. Any	M. 40 millicuries
N. Carbon 14	N. Any	N. 40 millicuries
O. Phosphorus 32	O. Any	O. 100 millicuries
P. Phosphorus 33	P. Any	P. 200 millicuries
Q. Sulfur 35	Q. Any	Q. 300 millicuries
R. Iodine 125	R. Any	R. 20 millicuries
S. Nickel 63	S. Plated sources in detector cells	S. Not to exceed 15 millicuries per source and 750 millicuries total

E/20

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License number 29-00139-02

Docket or Reference number 030-05222

Amendment No. 85

9. Authorized use:

A., B., and C.
(1) Research and development as defined in 10 CFR 30.4.
(2) For possession use and processing incident to the manufacture of radiochemicals and radiopharmaceuticals.
(3) For storage prior to distribution of manufactured radiochemicals and radiopharmaceuticals.
(4) For packaging and distribution of manufactured radiochemicals and radiopharmaceuticals to persons authorized to receive the licensed material pursuant to the term and conditions of a specific license issued by the Nuclear Regulatory Commission or an Agreement State.

D. through S. Research and development as defined in 10 CFR 30.4.

CONDITIONS

10. A. Licensed material in Items 6.A., 6.B., 6.C. and 6.S. may only be used at licensee's facilities at One Squibb Drive, New Brunswick, New Jersey.

B. Licensed material in Items 6.D. through 6.H. and 6.S. may only be used at licensee's facilities at the Convatec facility at 200 Headquarters Drive, Skillman, New Jersey.

C. Licensed material in Items 6.D. through 6.J., and 6.S. may only be used at Route 206 and Provinceline Road, Lawrenceville, New Jersey.

D. Licensed material in Items 6.K., 6.L., and 6.S., may only be used at licensee's facilities, Princeton House, 905 Herrontown Road, Princeton, New Jersey.

E Licensed material in Items 6.M. through 6.S., may be used only at the licensee's facilities at 675 College Road East, Princeton Forrestal Center, Plainsboro, New Jersey.

11. A. Licensed material shall be used by, or under the supervision of, individuals designated by the licensee's Radiation Safety Committee.

B. The Radiation Safety Officer for this license is Daniel K. Balkunow.

12. This license does not authorized commercial distribution of licensed material to persons generally licensed pursuant to 10 CFR 31 or to persons exempt from licensing pursuant to 10 CFR 30.18.

13. The licensee shall not use licensed material in or on human beings or in field applications where activity is released except as provided otherwise by specific condition of this license.

14. Experimental animals administered licensed materials or their products shall not be used for human consumption.

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License number 29-00139-02

Docket or Reference number 030-05222

Amendment No. 85

(Continued) CONDITIONS

15. A. Sealed sources and detector cells shall be tested for leakage and/or contamination at intervals not to exceed 6 months or at such other intervals as are specified by the certificate of registration referred to in 10 CFR 32.210, not to exceed 3 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 3 months.

C. In the absence of a certificate from a transferor indicating that a 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 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.

F. The test shall be capable of detecting the presence of 0.005 microcurie of radioactive material on the test sample. Records of leak test results shall be kept in units of microcuries and shall be maintained for inspection by the Commission. 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 shall be removed from service and decontaminated, repaired, or disposed of in accordance with Commission regulations. The report shall be filed within 5 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 involved, the test results, and corrective action taken.

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License number 29-00139-02

Docket or Reference number 030-05222

Amendment No. 85

(15. Continued) CONDITIONS

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.

16. In lieu of using the conventional radiation caution colors (magenta or purple on yellow background) as provided in 10 CFR 20.203(a)(1), the licensee is hereby authorized to label detector cells and cell baths, containing licensed material and used in gas chromatography devices, with conspicuously etched or stamped radiation caution symbols.

17. Detector cells containing a titanium tritide foil or a scandium tritride foil shall only be used in conjunction with a properly operating temperature control mechanism which prevents foil temperatures from exceeding that specified by the manufacturer.

18. The licensee shall conduct a physical inventory every 6 months to account for all sources and/or devices received and possessed under the license. Records of inventories shall be maintained for 5 years from the date of each inventory.

19. The licensee shall not acquire licensed material in a sealed source or in a device that contains a sealed source unless the source or device has been registered with the Nuclear Regulatory Commission under 10 CFR 32.210 or with an Agreement State.

20. The licensee may transport licensed material in accordance with the provisions of 10 CFR 71, "Packaging and Transportation of Radioactive Material."

21. The licensee shall maintain and execute the response measure of his Radiological Emergency Contingency Plan submitted to the Commission on March 28, 1990. The licensee shall also maintain procedures as necessary to implement the plan. The licensee shall make no change in his Radiological Emergency Contingency Plan that would decrease the response effectiveness of the plan without prior Commission approval as evidenced by license amendment. The licensee may make changes to his Radiological Emergency Contingency Plan without prior Commission approval if the changes do not decrease the response effectiveness of the plan, and shall maintain records of changes that are made to the plan without prior approval for period of two years from the date of the changes and shall furnish the Chief, Nuclear Materials Safety Branch, Division of Radiation Safety and Safeguards, U.S. Nuclear Regulatory Commission, Region 1, 475 Allendale Road, King of Prussia, Pennsylvania 19406, a report containing a description of each change within six months after the change is made.

22. The licensee is authorized to hold radioactive material with a physical half-life of less than 65 days and sulfur-35, scandium-46, strontium-85, and tin-113 for decay-in-storage before disposal in ordinary trash provided:

A. Radioactive waste to be disposed of in this manner shall be held for decay a minimum of 10 half-lives.

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License number 29-00139-02
Docket or Reference number 030-05222
Amendment No. 85

(22. Continued) CONDITIONS

B. Before disposal as normal waste, radioactive waste shall be surveyed to determine that its radioactivity cannot be distinguished from background. All radiation labels shall be removed or obliterated.

23. The licensee shall not store licensed material contained in waste for more than two (2) years from the date the waste is put into storage or November 1, 1992, which ever is later. The licensee shall maintain records which indicate the date that licensed material contained in waste is put into storage. This condition does not apply to licensed material intended for disposal by decay-in-storage pursuant to 10 CFR 35.92 or other conditions of this license.

24. 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 28, 1989
B. Letter dated June 16, 1989
C. Letter dated October 4, 1989
D. Radiological Contingency Plan dated March 28, 1990
E. Letter dated May 17, 1990
F. Letter dated May 24, 1990
G. Letter dated July 24, 1990
H. Letter dated April 15, 1991
I. Letter dated November 25, 1991
J. Letter dated December 11, 1990
K. Letter dated March 23, 1992
L. Letter dated May 8, 1992
M. Letter dated August 5, 1992

For the U.S. Nuclear Regulatory Commission
Original Signed By:
Elizabeth Ullrich

Date [illegible] 1992

By

Nuclear Materials Safety Branch
Region I
King of Prussia, Pennsylvania 19406

OCT 1 6 1992

License No. 29-00139-02
Docket No. 030-05222
Control No. 116972

E. R. Squibb & Sons, Inc.
ATTN: Daniel K. Balkunow
Radiation Safety Officer
One Squibb Drive
P.O. Box 191
New Brunswick, New Jersey 08903-0191

Dear Mr. Balkunow:

Please find enclosed an amendment to your NRC Material License.

Please review the enclosed document carefully and be sure that you understand all conditions. If there are any errors or questions, please notify the Region I Material Licensing Section, (215) 337-5093, so that we can provide appropriate corrections and answers.

Your license has been amended to limit the time that you may store radioactive waste. Due to the possibility that licensees may be denied access to burial sites, licensees who do not have approved waste storage plans are being prohibited from storing radioactive waste for more than two (2) years. This storage time limitation should be sufficient to support normal operations. If you desire to have this condition removed from your license and be permitted to store waste for a longer time period, you should submit a request to amend your license containing the information contained in NRC Information Notice No. 90-09.

Please be advised that you must conduct your program involving licensed radioactive materials in accordance with the conditions of your NRC license, representations made in your license application, and NRC regulations. In particular, please note the items in the enclosed, "Requirements for Materials Licensees."

Since serious consequences to employees and the public can result from failure to comply with NRC requirements, the NRC expects licensees to pay meticulous attention to detail and to achieve the high standard of compliance which the NRC expects of its licensees.

You will be periodically inspected by NRC. A fee may be charged for inspections in accordance with 10 CFR Part 170. Failure to conduct your program safely and in accordance with NRC regulations, license conditions, and representations made in your

license application and supplemental correspondence with NRC will result in prompt and vigorous enforcement action against you. This could include issuance of a notice of violation, or in case of serious violations, an imposition of a civil penalty or an order suspending, modifying or revoking your license as specified in the General Policy and Procedures for NRC Enforcement Actions, 10 CFR Part 2, Appendix C.

We wish you success in operating a safe and effective licensed program.

Sincerely,

Original Signed By:
Elizabeth Ullrich

Steven L. Baggett, Chief
Research, Development and
Decommissioning Section
Division of Radiation Safety
and Safeguards

Enclosures:
1. Amendment No. 85
2. Requirements for Materials Licensees

DRSS:RI	DRSS:RI
Arredondo/cmm	Baggett
10/ /92	10/14/92

NRC FORM 216 (4-76) NRCM 0240

U.S. NUCLEAR REGULATORY COMMISSION

TELEPHONE OR VERBAL CONVERSATION RECORD

DATE [redacted]

TIME [redacted] ☐ A.M. ☐ P.M.

☐ INCOMING CALL ☐ OUTGOING CALL ☐ VISIT

PERSON CALLING	OFFICE/ADDRESS	PHONE NUMBER / EXTENSION
[redacted]	[redacted]	[redacted]
PERSON CALLED	OFFICE/ADDRESS	PHONE NUMBER / EXTENSION
[redacted]	[redacted]	[redacted]

CONVERSATION

SUBJECT [redacted]

SUMMARY

I-131 500 mCi

I-125 500 mCi

Lawrenceville need these possess limit

use: R&D only

Waste storage up to 2 years.

Will submit Waste storage plan

at later time.

REFERRED TO: [redacted]

☐ ADVISE ME OF ACTION TAKEN

ACTION REQUESTED [redacted]

INITIALS [redacted]

DATE [redacted]

ACTION TAKEN [redacted]

INITIALS [redacted]

DATE [redacted]

OFFICIAL RECORD COPY ML 10

Bristol-Myers Squibb Company
Pharmaceutical Group Technical Operations
One Squibb Drive P.O Box 191 New Brunswick, NJ 08903-0191 201 519-2000

030-05222

August 5, 1992

Ms. E. Ullrich
Nuclear Material Safety Section B
Division of Radiation Safety and Safeguards
U.S. Nuclear Regulatory Commission
Region I
Allendale Road
King of Prussia, PA 19406

Log Aug 92
Remitter Bristol-Myers Squibb Co.
Check No. 269865
Amount $250 - Refunded $20
Fee Category 3A
Type of Fee Amd
Date Check Rec'd 8/11/92
Date Completed
By: A Brown

RE: LICENSE AMENDMENT
LICENSE #29-00139-02

Dear Ms. Ullrich:

This is a request to amend the byproduct material license (#29-00139-02) of E. R. Squibb & Sons, Inc., a wholly-owned subsidiary of the Bristol-Myers Squibb Company, to include the following items:

A. Radioiodinations - Lawrenceville

Currently no unbound I^{131} or I^{125} can be processed on the Bristol-Myers Squibb Lawrenceville site. Due to the consolidation and realignment of R&D personnel in the state of New Jersey, Bristol-Myers Squibb will, upon commission approval, perform radioiodinations at its Lawrenceville site.

Three radioiodination laboratories have been constructed and will be used for the processing of volatile iodine. Listed below is a description of these facilities:

- Facility Description

  - The radioiodination laboratories will be negative to the surrounding area with respect to air flow.

  - The face velocity of the glove boxes will be ≥ 100 FPM and exhaust air flow will be measured on a monthly basis as per our license activity.

  - Air exhaust duct work will be fabricated of Type 304 stainless steel.

116972
AUG 11 1992

OFFICIAL RECORD COPY ML 10

- All room and glove box air will be exhausted through 300× pleated panel filters of 35% ASHRE efficiency followed by 99.97% HEPA and finally through a series of three charcoal absorbers with a minimum of 1" bed. The absorber cells will be constructed of Type 304 stainless steel.

- Before released to the environment via the stack, air exhausts will be isokinetically sampled and monitored to ensure compliance with 10CFR20.106.

- All filter banks and vacuum pumps will be provided with 100% stand-by units (redundant).

- Fan and vacuum pumps will be provided with uninterruptible electrical power supply.

- Radiolodinations will not exceed 15 mCi of I^{125}/I^{131} per procedure.

- The three radiolodination laboratories are located in H Building, Room No. 4613 and K Building, Room Nos. 3622 and 4319.

- Each of the three laboratories will be provided with air sampling devices that will be located where they would sample near the potential source of airborne radionuclides.

- Air sampling devices will monitor the radioactive air stream before and after each filter train to determine their overall efficiency.

B. Ancillary Support Areas - Radioactive Waste Storage

To support the radiolodination activities in Lawrenceville, a major renovation of the radioactive waste storage area is under construction. A brief outlined description of the facility is listed below:

- Facility Description

  - The renovated radioactive waste storage is approximately 24 × 44 feet enclosed area built of masonry and fire rated wall board.

- Within the enclosure are two custom designed ventilated hoods; one to ventilate the processing of radioactive laboratory waste collection pails and another to ventilate radioactive waste consolidation drums.

- All room and hood air is exhausted through a filter train that consists of a rough filter, 99.97% HEPA and 2 each activated charcoal filters with 1" minimum bed. They will be constructed of type 304 stainless steel.

- The waste storage area will be negative to the surrounding space to preclude any migration of radioactive effluents to these areas.

- Prior to being released to the environment, via a stack, air exhausts will be isokinetically sampled and monitored to ensure compliance with 10CFR20.106.

- Multiple air sampling devices will be strategically placed within the confines of the waste area and will be located near any potential source of airborne radionuclides.

- Filter assembly will be constructed of Type 304 stainless steel.

- Air sampling devices will monitor, on a periodic basis, the radioactive air stream before and after each filter train to determine their overall efficiency.

C. Bioassay Program

As described in Bristol-Myers Squibb's licensing activities (letter to the commission dated May 24, 1990), "Workers who use greater than one millicurie of I-131 or I-125 in research and development are required to assay their thyroid for potential uptake."

D. Site Possession Limit - I^{131}

To support proposed radiolodination activities, Bristol-Myers Squibb would like to establish a maximum of 500 mCi of I^{131} that it may possess at any one time, under its license at the Lawrenceville, New Jersey facility. This material would be in any form and will be used for R&D purposes as defined in Section 30.4 (q) of 10CFR30.

E. Radiation Safety Committee

Please amend the Bristol-Myers Squibb radioactive materials license to include H. William Strauss, M.D., as a member of the Radiation Safety Committee. For your file, enclosed is a copy of Dr. Strauss's "Curriculum Vitae".

All activities involving the use of radioactive materials will be conducted in accordance with E. R. Squibb & Sons, Inc. overall radiation safety program as described in its NRC license.

Included is Bristol-Myers Squibb Company check #269865 for $250.00 to cover the cost of processing the amendment.

Sincerely,

Daniel K. Balkunow
Radiation Safety Officer

DKB:bl

Enclosures (2)

(1) Curriculum Vitae - H. William Strauss, M.D.
(2) B-MS Check #269865, $250.00 for amendment fee

Howe-Lewis International

Palo Alto•New York•London•Hong Kong•Sydney

525 University Avenue, Suite 825
Palo Alto, California 94301

(415)324-4430
FAX(415)323-9326

CURRICULUM VITAE

Name: H. William Strauss, M.D.

Address: (b)(6)

Date of Birth: (b)(6)

Place of Birth: (b)(6)

Education:

(b)(6)

Yeshiva College (No Degree)
State University of New York
Downstate Medical Center

Postdoctoral Training:

Internships and Residencies:

1965-1966 Intern in Straight Medicine, State University of New York, Downstate Medical Center, Brooklyn, NY

1966-1967 Jr. Assistant Resident in Medicine, State University of New York, Downstate Medical Center, Brooklyn, NY

1967-1968 Assistant Resident in Medicine, Bellevue Hospital, New York Division, New York, NY

Fellowships:

1968-1970 Fellow, Nuclear Medicine, The Johns Hopkins Hospital, Baltimore, MD

Licensure and Certification

1967 Maryland License
1965 New York License
1966 Pennsylvania License
1970 California License
1976 Massachusetts License
1972, 1989 American Board of Nuclear Medicine - #01342

Academic Appointments:

1972-1975 Assistant Professor of Medicine, Johns Hopkins University School of Medicine

1972-1975 Assistant Professor of Environmental Health, Johns Hopkins University School of Hygiene and Public Health

1975-1976 Associate Professor of Radiology
Johns Hopkins University School of Medicine

1975-1976	Associate Professor of Environmental Health, Johns Hopkins University School of Hygiene and Public Health
1977-	Adjunct Clinical Professor in Nuclear Medicine, Massachusetts College of Pharmacy
1976-1982	Associate Professor of Radiology at the Massachusetts General Hospital, Harvard Medical School
1982-	Professor of Radiology at the Massachusetts General Hospital, Harvard Medical School

Hospital Appointments:

1975-1976	Associate Professor in Radiology, Division of Nuclear Medicine, Johns Hopkins University School of Medicine
1975-1976	Associate Professor in Environmental Health, Division of Radiation Health, Johns Hopkins University School of Hygiene and Public Health
1976-1979	Associate Radiologist, Department of Radiology, Division of Nuclear Medicine, Massachusetts General Hospital
1979-	Radiologist, Department of Radiology, Division of Nuclear Medicine, Massachusetts General Hospital
1981-	Courtesy Staff, Nuclear Medicine Department, Mount Auburn Hospital

Other Professional Positions and Major Visiting Appointments:

1970-1972	Co-Director, Division of Nuclear Medicine, David Grant Medical Center, Travis Air Force Base, California

Awards and Honors

1973	Casimir Funk Award - Association of Air Force Physicians
1975	Second Annual Wilhelmina S. Scott Memorial Lecturer Lancaster, PA
1975	New Horizons' Lecturer of the Radiological Society of North America
1979	Dr. William Beaumont Award in Medicine American Medical Association
1980	Canadian Heart Foundation Lecturer
1980	First Annual George V. Taplin Memorial Lecturer, Joint Northern and Southern California Chapters of the Society of Nuclear Medicine
1982	Herrman L. Blumgart M.D. Pioneer Award, NE Chapter of the Society of Nuclear Medicine
1986	Distinguished Johns Hopkins Nuclear Medicine Alumnus Award
1987	6th Annual Philip M. Johnson Memorial Lecture

	New York, NY
1987	Sarabhai Memorial Oration - Indian Society of Nuclear Medicine, India

Major Committee Assignments:

National and Regional:

1979-1987	Advisory Committee, Federal Drug Administration, Bethesda, MD
1988-	Medical Expert Advisory Committee on Disciplinary Matters, Board of Registration in Medicine

Hospital:

1976	Staff Committee, Department of Radiology, Massachusetts General Hospital
1977	Isotope Committee, Massachusetts General Hospital
1977	Education Committee, Department of Radiology, Massachusetts General Hospital
1977	Subcommittee on Nuclear Medicine and Education Committee, Department of Radiology, Massachusetts General Hospital
1980-1982	Research Committee, Massachusetts General Hospital
1984-	Research Committee, Massachusetts General Hospital

Editorial Boards

1979-84	Editorial Board, Circulation
1980-	Editorial Board, American Journal of Cardiology
1981-	Editorial Board, Journal of Nuclear Medicine
1980-85	Editorial Board, Journal of American College of Cardiology

Memberships, Offices and Committee Assignments in Professional Societies:

1965	New York Academy of Science
1966	Society of Nuclear Medicine
1969	American Federation for Clinical Research
1972	American Heart Association
1975	American College of Nuclear Physicians
1975	Consultant, Program Committee, American Heart Association
1976	New England Chapter, Society of Nuclear Medicine
1977-1978	Curriculum Subcommittee of the Standing Committee on Education and Training
1977	Instrumentation Council, Society of Nuclear Medicine

1977	Program and Continuing Education Committee, Society of Nuclear Medicine
1977-1979	Local Arrangements Chairman, NE Chapter, Society of Nuclear Medicine
1979	Program Chairman, NE Chapter, Society of Nuclear Medicine
1978	Committee of Radiologic Oncologic Studies, Subcommittee ear Medicine
1979	Program Chairman, NE Chapter, Society of Nuclear Medicine
1978	Committee of Radiologic Oncologic Studies, Subcommittee on Nuclear Medicine Imaging
1978	Syllabus Committee, Society of Nuclear Medicine
1978	Scientific Exhibits Committee, Society of Nuclear Medicine
1978	American College of Radiology, ACR III Syllabus Committee
1979	Association of University Radiologists
1979	Academic Council, Society of Nuclelar Medicine
1979	Competence and Certification Committee, Society of Nuclear Medicine
1979	Education and Training Committee, Society of Nuclear Medicine
1979	Massachusetts Medical Society
1980	Committee on Scientific Affairs, Massachusetts Medical Society
1980	Councilor, Massachusetts Medical Society
1980	Fellow, American College of Cardiology
1980	Board of Trustees, Society of Nuclear Medicine
1981	American Society for Clinical Investigation
1983	Society of Thoracic Radiology
1984	Fellow, American College of Nuclear Physicians
1987	American Society for Clinical Investigation Emeritus Member

Major Research Interests:

The application of Nuclear Medicine to the study of pathophysiology.

Grant Support

1985-1991	NHLBI, Heart Imaging With Single Photon Imaging Agents PI: H. William Strauss, M.D.
1982-	Mallinckrodt, Inc. Research Myocardial Imaging Agents PI: H. William Strauss, M.D.
1984-	Cambridge Research Lab Development of Radiolabeled Antibodies for the Imaging of Infectious Disease PI's: H. William Strauss, M.D., and Robert Rubin, M.D.
1985-	Capintec, Inc. The Vest PI: H. William Strauss, M.D.

ORIGINAL ARTICLES

1. Strauss HW, Smith RB, Polemeni P, Schenker AC, Schenker VJ, and Stuckey JH: Plasma serotonin levels in stored human blood. Angiology, 1967; 18:535.

2. Caggiano VR, Schnitzler W, Strauss HW, Baker RK, Carter AC, Josepheson AS and Wallach S: Zinc deficiency in a patient with retarded growth hypogonadism. Hypogammaglobulinemia and chronic infection. Amer J Med Sci 1969; 305:257.

3. Strauss HW, Hurley PJ, Rhodes BA and Wagner HN Jr: Quantification of right to left transpulmonary shunts in man. J Lab Clin Med 1969; 14:597.

4. Strauss HW, Natarajan TK, Sziklas JJ, Poulose KP, Fukishima T and Wagner HN Jr: Computer assistance in the interpretation and quantification of lung scans. Radiology 1970; 97:277.

5. Strauss HW, Hurley PJ and Wagner HN Jr: Advantages of 99mTc-pertechnetate for thyroid scanning in patients with decreased radioiodine uptake. Radiology 1970; 97:307.

6. Hurley PJ, Strauss HW and Wagner HN Jr: Radionuclide angiocardiography in cyanotic congenital heart disease. John Hopkins Med J 1970; 127:46.

7. James AE, Strauss HW, Fischer K, Wheeless CR and Longo R: Placental imaging with 113mIn transferrin and 99mTc-serum albumin. Obst Gyn 1971;37:602.

8. Dujovne CA, Strauss HW: Changes in liver and spleen scans of patients during treatment with two hypolipidemic drugs. Radiology 1971; 37:602.

9. James AE, Conway JJ, Chang CH, Cooper M, White RI and Strauss HW: The fissure sign: Its multple causes. Amer J Roentgenol 1971; 61:492.

10. Strauss HW, Zaret BL, Hurley PJ, Natarajan TK, Pitt B: A scintiphotographic method for measuring left ventricular ejection fraction in man without cardiac catheterization. Amer J Card 1971; 28:575.

11. Hurley PJ, Strauss HW, Pavoni P, Langan JK and Wagner HN: The scintillation camera with pinhole collimator in thyroid imaging. Radiology 1971; 101:133-138.

12. Zaret BL, Strauss HW, Hurley PJ, Natarajan TK, Pitt B: A non-invasive scintiphotographic method for detecting regional ventricular dysfunction in man. N Engl J Med 1971; 284:1165.

13. Moses DC, James AE, Strauss HW, Wagner HN Jr: Regional blood flow estimation in the diagnosis of cerebrovascular disease. J Nucl Med 1972; 13:135.

14. Strauss HW, James AE, Hurley PJ, DeLand FH, Moses DC, Wagner HN: Nuclear cerebral angiography: Usefulness in the differential diagnosis of cerebrovascular disease and tumor. Arch Intern Med 1973; 131:211.

15. Zaret BL,Strauss HW, Martin ND, Wells HP, Flamm MD: Noninvasive regional myocardial perfusion with radioactive potassium: Study of patients at rest with exercise during angina pectoris. N Engl J Med 1973; 288:809-812.

16. Strauss HW, Zaret BL, Martin ND, Wells HP, Flamm MD: Noninvasive evaluation of regional myocardial perfusion with potassium-43: Technique in patients with exercise induced transient myocardial ischemia. Radiology 1973; 108:85.

17. Zaret BL, Stenson RL, Martin ND, Strauss HW, Wells HP, McGowan RL, Flamm MD: Potassium-43 myocardial perfusion scanning for the noninvasive evaluation of patients with false-positive exercise test. Circulation 1973; 48:1234.

18. Wagner HN Jr, Strauss HW: A new approach to coronary heart disease. Circulation 1973; 48:229 (Editorial).

19. Zaret BL, Martin ND, McGowan RL, Strauss HW, Wells HP, Flamm MD: Rest and exercise potassium-43 myocardial perfusion imaging for the noninvasive evaluation of aortocoronary bypass surgery. Circulation 1974; 49:668.

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PATENTS

1. A Bifocal Diverging Collimator.
   Inventors: J.W. Leask and H.W. Strauss
   Issued: February 10, 1981.

2. Method and Apparatus for Radiolabeling Red Blood Cells.
   Inventors: H.W. Strauss, R.J. Callahan and J.W. Froelich
   Issued: February 8, 1983. Patent No. 4,372,294.

3. Labeled Phosphonic Acid Compositions for Investigations of In Vivo Deposits of Calcium.
   Inventors: F.P. Castronovo, H.W. Strauss, M.S. Potsaid.
   Issued: May 7, 1985. Patent No. 4,515,766.

4. Ambulatory Ventricular Function Monitor.
   Investors: H.W. Strauss, R.H. Moore, and N.M. Alpert.
   Issued: January 6, 1987,
   Patent No. 4,633,,881.

5. Organ Infarct Imaging with Technetium Labeled Glucarate
   Investigators: H.J. Berger, B.A. Khaw, K.Y. Pak, H.W. Strauss
   Issued: August 28, 1990
   Patent No. 4,952,393

NRC Form 240A
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VOUCHER COVER SHEET

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
1	B	R	I	S	T	O	L	-	M	Y	E	R	S		S	Q	U	I	B	B		C	O	.	
2	P	H	A	R	M	A	C	E	U	T	I	C	A	L		G	R	O	U	P					
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4	P	R	I	N	C	E	T	O	N		N	J		0	8	5	4	3	-	4	5	0	0		
5																									
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8	C	K		N	O		2	6	9	8	6	5		F	E	E		C	A	T		3	A		

ACCOUNT NO: AA305 AMD CD NO: _____

FEE CATEGORY: 3A CONTROL NO: 116972

DATE RECEIVED: 8/17/92

CHECK AMOUNT: $250

AMOUNT RETAINED: $230

AMOUNT REFUNDED: $20

COMMENTS: _____

31X6875

GOVERNMENT CODE: Y N

DOCUMENT NUMBER	
TRANSACTION CODE	AMOUNT
B&R NUMBER	
FIN	
FEE RETAINED CODE 300	FEE PAID CODE 410
DISCOUNT (CODE 000) TAKEN	DISCOUNT (CODE 415) LOST
AMOUNT PAID $20.00	
	FINAL Y N

SIGNED: S. Kimberly AA

DATE: 8/19/92

BETWEEN:

LICENSE FEE MANAGEMENT BRANCH, ARM
AND
REGIONAL LICENSING SECTIONS

(FOR LFMS USE)
INFORMATION FROM LTS

PROGRAM CODE: 03211
STATUS CODE: 0
FEE CATEGORY: 3A
EXP. DATE: 19970430
FEE COMMENTS: _____
DECOM FIN ASSUR REQD: Y

LICENSE FEE TRANSMITTAL

A. REGION I

1. APPLICATION ATTACHED
APPLICANT/LICENSEE: E. R. SQUIBB & SONS, INC.
RECEIVED DATE: 920811
DOCKET NO: 3005222
CONTROL NO.: 116972
LICENSE NO.: 29-00139-03
ACTION TYPE: AMENDMENT

2. FEE ATTACHED
AMOUNT: $250.00
CHECK NO.: 269865

3. COMMENTS

SIGNED Lisa A. Larkins
DATE 8/11/92

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

1. FEE CATEGORY AND AMOUNT: 3A $220

2. CORRECT FEE PAID, APPLICATION MAY BE PROCESSED FOR:
AMENDMENT ✓
RENEWAL _____
LICENSE _____

3. OTHER _____
_____

SIGNED _____
DATE 8/12/92