

L+L-20839  
030-21249

NRC FORM 313M (9-81) 10 CFR 35	U.S. NUCLEAR REGULATORY COMMISSION <b>APPLICATION FOR MATERIALS LICENSE – MEDICAL</b>	Approved by OMB 3150-0041 02201
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**INSTRUCTIONS** – Complete Items 1 through 26 if this is an initial application or an application for renewal of a license. Use supplemental sheets where necessary. Item 26 must be completed on all applications and signed. Retain one copy. Submit original and one copy of entire application to: Director, Office of Nuclear Materials Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Upon approval of this application, the applicant will receive a Materials License. An NRC Materials License is issued in accordance with the general requirements contained in Title 10, Code of Federal Regulations, Part 30, and the Licensee is subject to Title 10, Code of Federal Regulations, Parts 19, 20 and 35 and the license fee provision of Title 10, Code of Federal Regulations, Part 170. The license fee category should be stated in Item 26 and the appropriate fee enclosed.

1.a. NAME AND MAILING ADDRESS OF APPLICANT (institution, firm, clinic, physician, etc.) INCLUDE ZIP CODE Constance G. Alfano, M.D. 110 Warren Ave. Ho-Ho-Kus, N.J. 07423  TELEPHONE NO.: AREA CODE (201) 444-4622	1.b. STREET ADDRESS(ES) AT WHICH RADIOACTIVE MATERIAL WILL BE USED (If different from 1.a.) INCLUDE ZIP CODE  same
2. PERSON TO CONTACT REGARDING THIS APPLICATION  Gerald A. Bruno, Ph.D.  TELEPHONE NO.: AREA CODE (201) 891-0270	3. THIS IS AN APPLICATION FOR: (Check appropriate item) a. <input checked="" type="checkbox"/> NEW LICENSE b. <input type="checkbox"/> AMENDMENT TO LICENSE NO. _____ c. <input type="checkbox"/> RENEWAL OF LICENSE NO. _____
4. INDIVIDUAL USERS (Name individuals who will use or directly supervise use of radioactive material. Complete Supplements A and B for each individual.)  Constance G. Alfano, M.D.	5. RADIATION SAFETY OFFICER (RSO) (Name of person designated as radiation safety officer. If other than individual user, complete resume of training and experience as in Supplement A.)  Gerald A. Bruno, Ph.D.

**6.a. RADIOACTIVE MATERIAL FOR MEDICAL USE**

RADIOACTIVE MATERIAL LISTED IN:	ITEMS DESIRED "X"	MAXIMUM POSSESSION LIMITS (In millicuries)	ADDITIONAL ITEMS:	MARK ITEMS DESIRED "X"	MAXIMUM POSSESSION LIMITS (In millicuries)
10 CFR 31.11 FOR IN VITRO STUDIES			IODINE-131 AS IODIDE FOR TREATMENT OF HYPERTHYROIDISM		
10 CFR 35.100, SCHEDULE A, GROUP I		AS NEEDED	PHOSPHORUS-32 AS SOLUBLE PHOSPHATE FOR TREATMENT OF POLYCYTHEMIA VERA, LEUKEMIA AND BONE METASTASES		
10 CFR 35.100, SCHEDULE A, GROUP II		AS NEEDED	PHOSPHORUS-32 AS COLLOIDAL CHROMIC PHOSPHATE FOR INTRACAVITARY TREATMENT OF MALIGNANT EFFUSIONS.		
10 CFR 35.100, SCHEDULE A, GROUP III			GOLD-198 AS COLLOID FOR INTRACAVITARY TREATMENT OF MALIGNANT EFFUSIONS.		
10 CFR 35.100, SCHEDULE A, GROUP IV		AS NEEDED	IODINE-131 AS IODIDE FOR TREATMENT OF THYROID CARCINOMA		
10 CFR 35.100, SCHEDULE A, GROUP V		AS NEEDED	XENON-133 AS GAS OR GAS IN SALINE FOR BLOOD FLOW STUDIES AND PULMONARY FUNCTION STUDIES.		
10 CFR 35.100, SCHEDULE A, GROUP VI					

**6.b. RADIOACTIVE MATERIAL FOR USES NOT LISTED IN ITEM 6.a.** (Sealed sources up to 3 mCi used for calibration and reference standards are authorized under Section 35.14(d), 10 CFR Part 35, and NEED NOT BE LISTED.)

ELEMENT AND MASS NUMBER	CHEMICAL AND/OR PHYSICAL FORM	MAXIMUM NUMBER OF MILLICURIES OF EACH FORM	DESCRIBE PURPOSE OF USE
I-125	Sealed source AECL-C324	300 mCi	For use in Nuclear Data Model ND-1100 Bone Density Scanner  License Fee Information on Next Page 4/22/85 ta

8507030625 850607  
REG1 LIC30  
29-20839-01

PDR

# INFORMATION REQUIRED FOR ITEMS 7 THROUGH 23

For Items 7 through 23, check the appropriate box(es) and submit a detailed description of all the requested information. Begin each item on a separate sheet. Identify the item number and the date of the application in the lower right corner of each page. If you indicate that an appendix to the medical licensing guide will be followed, do not submit the pages, but specify the revision number and date of the referenced guide: Regulatory Guide 10.8, Rev. 1 Date: Oct 1980

7. MEDICAL ISOTOPES COMMITTEE		15. GENERAL RULES FOR THE SAFE USE OF RADIOACTIVE MATERIAL (Check One)	
<input type="checkbox"/>	Names and Specialties Attached; and	<input type="checkbox"/>	Appendix G Rules Followed; or
<input type="checkbox"/>	Duties as in Appendix B; or _____ (Check One)	<input checked="" type="checkbox"/>	Equivalent Rules Attached
<input checked="" type="checkbox"/>	Equivalent Duties Attached	16. EMERGENCY PROCEDURES (Check One)	
8. TRAINING AND EXPERIENCE		<input type="checkbox"/>	Appendix H Procedures Followed; or
<input checked="" type="checkbox"/>	Supplements A & B Attached for Each Individual User; and	<input checked="" type="checkbox"/>	Equivalent Procedures Attached
<input checked="" type="checkbox"/>	Supplement A Attached for RSO.	17. AREA SURVEY PROCEDURES (Check One)	
9. INSTRUMENTATION (Check One)		<input type="checkbox"/>	Appendix I Procedures Followed; or
<input type="checkbox"/>	Appendix C Form Attached; or	<input checked="" type="checkbox"/>	Equivalent Procedures Attached
<input checked="" type="checkbox"/>	List by Name and Model Number	18. WASTE DISPOSAL (Check One)	
10. CALIBRATION OF INSTRUMENTS		<input type="checkbox"/>	Appendix J Form Attached; or
<input type="checkbox"/>	Appendix D Procedures Followed for Survey Instruments; or _____ (Check One)	<input checked="" type="checkbox"/>	Equivalent Information Attached
<input checked="" type="checkbox"/>	Equivalent Procedures Attached; and	19. THERAPEUTIC USE OF RADIOPHARMACEUTICALS (Check One)	
<input type="checkbox"/>	Appendix D Procedures Followed for Dose Calibrator; or _____ (Check One)	<input type="checkbox"/>	Appendix K Procedures Followed; or
<input type="checkbox"/>	Equivalent Procedures Attached	<input type="checkbox"/>	Equivalent Procedures Attached
11. FACILITIES AND EQUIPMENT		20. THERAPEUTIC USE OF SEALED SOURCES	
<input checked="" type="checkbox"/>	Description and Diagram Attached	<input type="checkbox"/>	Detailed Information Attached; and
12. PERSONNEL TRAINING PROGRAM		<input type="checkbox"/>	Appendix L Procedures Followed; or _____ (Check One)
<input checked="" type="checkbox"/>	Description of Training Attached	<input type="checkbox"/>	Equivalent Procedures Attached
13. PROCEDURES FOR ORDERING AND RECEIVING RADIOACTIVE MATERIAL		21. PROCEDURES AND PRECAUTIONS FOR USE OF RADIOACTIVE GASES (e.g., Xenon - 133)	
<input checked="" type="checkbox"/>	Detailed Information Attached	<input type="checkbox"/>	Detailed Information Attached
14. PROCEDURES FOR SAFELY OPENING PACKAGES CONTAINING RADIOACTIVE MATERIALS (Check One)		22. PROCEDURES AND PRECAUTIONS FOR USE OF RADIOACTIVE MATERIAL IN ANIMALS	
<input checked="" type="checkbox"/>	Appendix F Procedures Followed; or	<input type="checkbox"/>	Detailed Information Attached
<input type="checkbox"/>	Equivalent Procedures Attached	23. PROCEDURES AND PRECAUTIONS FOR USE OF RADIOACTIVE MATERIAL SPECIFIED IN ITEM 6.b	
<input type="checkbox"/>		<input type="checkbox"/>	Detailed Information Attached

## 24. PERSONNEL MONITORING DEVICES

TYPE (Check appropriate box)		SUPPLIER	EXCHANGE FREQUENCY
a. WHOLE BODY	FILM	not applicable	
	TLD		
	OTHER (Specify)		
b. FINGER	FILM		
	TLD		
	OTHER (Specify)		
c. WRIST	FILM		
	TLD		
	OTHER (Specify)		

d. OTHER (Specify)

## 25. FOR PRIVATE PRACTICE APPLICANTS ONLY

a. HOSPITAL AGREEING TO ACCEPT PATIENTS CONTAINING RADIOACTIVE MATERIAL

NAME OF HOSPITAL

b. ATTACH A COPY OF THE AGREEMENT LETTER  
SIGNED BY THE HOSPITAL ADMINISTRATOR.

MAILING ADDRESS

c. WHEN REQUESTING THERAPY PROCEDURES,  
ATTACH A COPY OF RADIATION SAFETY PRECAU-  
TIONS TO BE TAKEN AND LIST AVAILABLE  
RADIATION DETECTION INSTRUMENTS.

CITY

STATE

ZIP CODE

## 26. CERTIFICATE

(This item must be completed by applicant)

The applicant and any official executing this certificate on behalf of the applicant named in Item 1a certify that this application is prepared in conformity with Title 10, Code of Federal Regulations, Parts 30 and 35, and that all information contained herein, including any supplements attached hereto, is true and correct to the best of our knowledge and belief.

a. LICENSE FEE REQUIRED  
(See Section 170.31, 10 CFR 170)

b. APPLICANT OR CERTIFYING OFFICIAL (Signature)

(1) NAME (Type of Print)

Constance G. Alfano, M.D.

(1) LICENSE FEE CATEGORY:

7C

(2) TITLE

Physician

(2) LICENSE FEE ENCLOSED: \$ 580

c. DATE

April 22, 1985

## PRIVACY ACT STATEMENT

Pursuant to 5 U.S.C. 552a(e)(3), enacted into law by section 3 of the Privacy Act of 1974 (Public Law 93-579), the following statement is furnished to individuals who supply information to the Nuclear Regulatory Commission on NRC Form 313M. This information is maintained in a system of records designated as NRC-3 and described at 40 Federal Register 45334 (October 1, 1975).

1. **AUTHORITY** Sections 81 and 161(b) of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2111 and 2201(b)).
2. **PRINCIPAL PURPOSE(S)** The information is evaluated by the NRC staff pursuant to the criteria set forth in 10 CFR Parts 30-36 to determine whether the application meets the requirements of the Atomic Energy Act of 1954, as amended, and the Commission's regulations, for the issuance of a radioactive material license or amendment thereof.
3. **ROUTINE USES** The information may be used: (a) to provide records to State health departments for their information and use; and (b) to provide information to Federal, State, and local health officials and other persons in the event of incident or exposure, for their information, investigation, and protection of the public health and safety. The information may also be disclosed to appropriate Federal, State, and local agencies in the event that the information indicates a violation or potential violation of law and in the course of an administrative or judicial proceeding. In addition, this information may be transferred to an appropriate Federal, State, or local agency to the extent relevant and necessary for a NRC decision or to an appropriate Federal agency to the extent relevant and necessary for that agency's decision about you. A copy of the license issued will routinely be placed in the NRC's Public Document Room, 1717 H Street, N.W., Washington, D.C.
4. **WHETHER DISCLOSURE IS MANDATORY OR VOLUNTARY AND EFFECT ON INDIVIDUAL OF NOT PROVIDING INFORMATION** Disclosure of the requested information is voluntary. If the requested information is not furnished, however, the application for radioactive material license, or amendment thereof, will not be processed.
5. **SYSTEM MANAGER(S) AND ADDRESS** Director, Division of Fuel Cycle and Material Safety, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

TRAINING AND EXPERIENCE  
AUTHORIZED USER OR RADIATION SAFETY OFFICER

1. NAME OF AUTHORIZED USER OR RADIATION SAFETY OFFICER

Constance G. Alfano, M.D.

2. STATE OR TERRITORY IN  
WHICH LICENSED TO  
PRACTICE MEDICINE  
New Jersey

## 3. CERTIFICATION

SPECIALTY BOARD  
ACATEGORY  
BMONTH AND YEAR CERTIFIED  
C

## 4. TRAINING RECEIVED IN BASIC RADIOISOTOPE HANDLING TECHNIQUES

FIELD OF TRAINING A	LOCATION AND DATE(S) OF TRAINING B	TYPE AND LENGTH OF TRAINING	
		LECTURE/ LABORATORY COURSES (Hours) C	SUPERVISED LABORATORY EXPERIENCE (Hours) D
a. RADIATION PHYSICS AND INSTRUMENTATION	Ho-Ho-Kus, NJ, conducted by F.X. Masse, CHP 4/85	3	----
b. RADIATION PROTECTION	Ho-Ho-Kus, NJ, conducted by F.X. Masse, CHP 4/85	2	----
c. MATHEMATICS PERTAINING TO THE USE AND MEASUREMENT OF RADIOACTIVITY	-----	----	----
d. RADIATION BIOLOGY	Ho-Ho-Kus, NJ, conducted by F.X. Masse, CHP 4/85	3	----
e. RADIOPHARMACEUTICAL CHEMISTRY	-----	----	----

## 5. EXPERIENCE WITH RADIATION, (Actual use of Radioisotopes or Equivalent Experience)

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE





TRAINING AND EXPERIENCE  
AUTHORIZED USER OR RADIATION SAFETY OFFICER

1. NAME OF AUTHORIZED USER OR RADIATION SAFETY OFFICER <b>Gerald A. Bruno, Ph.D. (RSO)</b>		2. STATE OR TERRITORY IN WHICH LICENSED TO PRACTICE MEDICINE <b>n/a</b>		
3. CERTIFICATION				
SPECIALTY BOARD <b>A</b>	CATEGORY <b>B</b>	MONTH AND YEAR CERTIFIED <b>C</b>		
4. TRAINING RECEIVED IN BASIC RADIOISOTOPE HANDLING TECHNIQUES				
FIELD OF TRAINING <b>A</b>	LOCATION AND DATE (S) OF TRAINING <b>B</b>	TYPE AND LENGTH OF TRAINING		
		LECTURE/ LABORATORY COURSES (Hours) <b>C</b>	SUPERVISED LABORATORY EXPERIENCE (Hours) <b>D</b>	
a. RADIATION PHYSICS AND INSTRUMENTATION	Purdue University 1958 - 1961	> 100	> 100	
b. RADIATION PROTECTION	Purdue University 1958 - 1961	> 100	> 100	
c. MATHEMATICS PERTAINING TO THE USE AND MEASUREMENT OF RADIOACTIVITY	Purdue University 1958 - 1961	> 100	> 100	
d. RADIATION BIOLOGY	Purdue University 1958 - 1961	> 100	> 100	
e. RADIOPHARMACEUTICAL CHEMISTRY	Purdue University 1958 - 1961	> 100	> 100	
5. EXPERIENCE WITH RADIATION. (Actual use of Radioisotopes or Equivalent Experience)				
ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
Atomic # 3 - 83	100 mCi 1000 Ci	Purdue University E.R. Squibb & Sons	1958 - 1961 1964 - 1978	Lab Expts Radiopharm. R&D and Production

Item 7. Medical Isotope Committee

Not applicable for this application.

Item 8. Training and Experience

Dr. Alfano has undergone an 8-hr training session conducted by F.X. Masse, CHP, our health physics consultant (resume attached). The training session included three hours of basic radiation physics and instrumentation, three hours of radiobiology, and two hours of radiation protection. In addition, personnel from Nuclear Data have demonstrated the use of the Model ND-1100, including the procedure for changing the source.

Dr. Bruno, RSO, is a trained nuclear specialist with more than 20 years of experience in the safe handling of radioactive materials (resume attached). Dr. Bruno has attended several Nuclear Data instrument demonstrations and has actual experience with the source changing procedure (certificate attached).

Item 9. Instrumentation

The Model ND-1100 is a completely self-contained unit with an automatic shutter and beam catcher. Once the source is properly installed, safe operation is automatically assured. The source installation will be performed by Dr. Bruno, who will provide an initial survey using a Ludlum Model 3 survey meter equipped with a 44-3 scintillation probe. No further surveys will be necessary.

Item 10. Calibration of Instruments

Calibration of the survey meter will be performed by Mr. Masse in accordance with the procedure covered in his NRC license # 20-17148-01.

Item 11. Facilities and Equipment

Since the Model ND-1100 is a completely self-contained unit which provides integral shielding to assure the safety of both the operator and all related personnel, no special facilities or equipment is necessary. The unit will be housed in a lockable area that is secured against unauthorized access when not attended by the authorized users. See attached diagram.

Item 7 through Item 11

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#### Item 12. Personnel Training Program

The training program for Dr. Alfano and Dr. Bruno is described in Item 8 above. No other personnel training is necessary for this application.

#### Item 13. Procedures for Ordering and Receiving Radioactive Materials

Dr. Bruno will be responsible for the twice yearly initiation of the purchase of a replacement source. During normal working hours, Dr. Alfano will receive the shipment and have it locked in a cabinet in the room in which the bone density scanner is located until Dr. Bruno is available to check out the package and install the source. No deliveries are possible during off hours. The installation of the new source and removal of the spent source will be accomplished by Dr. Bruno within one day of receipt of the new source. The spent source will be returned to AECL for disposal.

#### Item 14. Appendix F procedures followed

#### Item 15. General Rules for the Safe Use of Radioactive Material

The general rules for the safe use of radioactive material source, once installed, are the general operating rules for the bone density scanner. Since the shutter operation is automatic, and since the primary beam is totally captured in the inherent design of the device, no further precautions are warranted in routine operation. The special handling requirements and precautions during source changes will be attended directly by Dr. Bruno, a trained nuclear specialist, who will perform all such changes. When a new source is received, it will be leak-tested by wipe-testing the nearest accessible surface of the source container during the removal/installation operation. The new source is housed in a lead container with open hole collimator when received. While wearing gloves and being careful to avoid exposure from the open collimator, the collimator face of the source housing will be wiped over a piece of filter paper affixed to the benchtop. The wipe paper will then be field-analyzed with a Ludlum Model 3 survey meter equipped with a 44-3 scintillation probe, capable of detecting less than one nanocurie of removed activity. Final analysis will take place in Mr. Masse's laboratory using a Canberra Multi-channel analyzer and a 3x3 NaI scintillation detector. A formal report of the procedure will be kept on file in Dr. Alfano's office.

Installation of the source into the Bone Density Scanner will follow wipe testing in which field analysis indicates no problem with the source. Taking care to avoid exposure from the open collimator, the source housing on the scanner will be

Item 12 through Item 15

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Item 15. continued

disassembled and the spent source pushed out of the source container into a waiting lead container.. The new source will be slid into the source container with tongs and the rotatable front of the container installed such that the new source is shielded and the source housing on the scanner is reassembled. The enclosed diagram of the source container with expanded detail of the collimated source will help to illustrate the procedure.

Item 16. Emergency Procedures

Since the device is fully self-contained and shielded in the "off" mode, the only emergency procedure required is a posting to notify Dr. Bruno and Dr. Alfano whenever a malfunction in the apparatus occurs, and the requirement that the unit be conspicuously tagged with an out-of-order notice until its operation is again cleared by Dr. Bruno. Instructions outlining these requirements will be posted on the machine.

Item 17. Area Survey Procedures

The only survey procedure required for this installation is the initial survey performed as part of the new source installation. A complete survey of the equipment and surrounding area with the source in both the "on" and the "off" mode will be conducted by Dr. Bruno at initial installation and at each source change. This data will be permanently logged.

Item 18. Waste Disposal

As indicated above, the spent source will be returned to AECL for ultimate disposal.

## Curriculum Vitae

Gerald A. Bruno, Ph.D

Date of Birth: September 19, 1935

Place of Birth: Red Bank, N.J.

### EDUCATION

Purdue University, Lafayette, Ind. - B.S. Pharmacy - 1958

Purdue University, Lafayette, Ind. - M.S. Pharm. Chem. - 1960

Purdue University, Lafayette, Ind. - Ph.D. Bionucleonics - 1961

### PROFESSIONAL ACTIVITIES

Director, Diagnostics R&D, E.R. Squibb & Sons 1964 - 1978

V.P. R&D, Searle Diagnostics 1978 - 1979

Executive Vice President Operations, Natl. Med Care 1979 - 1985

President, Osteo-Scan Affiliates 1985 -

### Radioisotope Experience

1958 - 1961 : Graduate level courses in radioisotope techniques, radiation protection & radiobiology. Teaching assistant in charge of radioisotope dispensing laboratory. Ph.D. thesis on Beta and Gamma scintillation spectrometry.

1961 : Research chemist working with sealed sources in food processing industry.

1961 - 1963 : Nuclear Medical Science Officer, US Army, working on inspection of Army radiation facilities for compliance with AEC regulations. Inspected isotope labs, X-ray facilities and nuclear reactors.

1963- 1964 : Taught graduate level program in Bionucleonics and served as RSO for South Dakota State University.

1964 - 1978 : Directed radiopharmaceutical research program for Squibb and served as Chairman of the Isotope Committee.

### Other Experience

1962 : Completed U.S. Radiological Health course on "Reactor Safety and Hazards Evaluation" (1½ weeks)

1975 - 1977 : Served as Chairman of Committee on Radiopharmaceuticals, Atomic Industrial Forum.

1977 - 1978 : Served as President of Radiopharmaceutical Science Council, Society of Nuclear Medicine.

Appendix to:  
Item 8.

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**Nuclear Data Inc**

Instrumentation Division

Golf and Meacham Roads • Schaumburg, Illinois 60196

Telephone (312) 884-3600 • Cable: NUDATA • Telex 687-1441



## CERTIFICATE OF TRAINING

This is to certify that Gerry Bruno, Ph.D., has successfully completed training on the ND1100. Topics covered in this training included:

1. Safe and proper use of the ND1100.
2. Demonstrations of the exposure areas and dose levels related to the operation of the ND1100.
3. Explanation of the theory and principals of bone densitometry studies.
4. Explanation of the I-125 source structure, and a demonstration of the source exchange procedure on the ND1100.
5. Using a dummy source, the participant performed a source exchange on the ND1100.
6. Radiation protection methods related to the ND1100.
7. Operating procedures for the ND1100 using Nuclear Data's standard phantom.

This training session lasted four hours, and was completed on March 8, 1985, at Nuclear Data, Inc., Schaumburg, Illinois.

Instructor: Mitchell K. Greenwald, Radiation Safety Officer

Signature: *Mitchell K. Greenwald*

Date: 3/14/85

License Number: NRC 12-21503-01

Appendix to:  
Item 8.

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## CURRICULUM VITAE

FRANCIS X. MASSE

Date of Birth: December 5, 1933

Place of Birth: Woburn, Massachusetts

### EDUCATION

Northeastern University, Boston, Massachusetts 1956

Bachelor of Science, Physics and Mathematics

Certified by the American Board of Health Physics 1962

### PROFESSIONAL ACTIVITIES

#### Primary Employment

Institute Radiation Protection Officer and Director of Radiation Protection Programs, Massachusetts Institute of Technology	1981-
Radiation Protection Officer, MIT Bates Linear Accelerator	1971-
Associate Radiation Protection Officer, Massachusetts Institute of Technology	1959-1971
Radiation Safety Officer, Tufts, New England Medical Center	1956-

#### Government Affairs and Standards Activities

Nuclear Incidents Advisor, Massachusetts Department of Public Health	1964-
Member, Massachusetts Department of Public Health, Division Medical Care, Advisory Committee on Nuclear Medicine	1971-1972
Member, American National Standards Institute Subcommittee N42.2; Chairman	1974- 1983-
Chairman, ANSI Subcommittee N42.2.2 on Dose Calibrator Ionization Chambers	1975-
Member, Ad Hoc Committee on Low Level Rad Waste, Massachusetts Advisory Council on Radiation Protection	1979-1980
Member and Vice Chairman, NELRAD (New England Low-Level Rad Waste Consortium) NELRAD President and Board Chairman	1981-1983 1983-
Member, Governors Ad Hoc Advisory Task Group on Low-Level Rad Waste Facility Siting in Massachusetts	1983-

#### Other Professional Activities

Consultant in Health Physics to approximately 40 hospitals,  
universities, or industrial firms

Author of nine published papers and sixteen additional  
papers presented at professional society meetings

Appendix to:  
Item 8.  
4/22/85

PROFESSIONAL SOCIETIES

Member, Health Physics Society (HPS)	1959-
Member, New England Chapter Health Physics Society	1960-
Executive Board Member	1963-1969
President	1967-1968
Charter Member, American Association of Physicists in Medicine (AAPM)	1960-
Member, New England Chapter AAPM	1960-
Chairman	1967-1968
Member, Society of Nuclear Medicine	1968-
Member, Nuclear Medicine Standards Joint Committee of the New England Chapter Society of Nuclear Medicine and the New England Radiological Physics Organization; Co-chairman	1970-1975 1973-1975
General Chairman, HPS 14th Midyear Symposium	1978-1980
Chairman, HPS Symposium Committee	1981-1983
Member, AAPM Committee on Radiation Protection	1980-
Member, HPS Board of Directors	1983-
Member, HPS Committee on Scientific and Public Issues	1983-
Member, HPS <u>Ad Hoc</u> Committee on 10CFR20 and EPA Occupational Exposure Guidance Review; Chairman	1983- 1984-

BUSINESS ACTIVITIES

North Cambridge Co-Operative Bank, Director	1963-
Finance Committee Member	1967-
Finance Committee Chairman	1972-
First Vice President	1982-
President and Co-Founder, Bio-Nuclear Measurements Inc.	1968-
President and Co-Founder, F.X. Masse Associates Inc.	1974-
President and Co-Founder, Medical Imaging Corporation	1976-1979



outside

Bone Density  
Scanning Room

Exam  
Room

Top Floor Office  
Dr.'s Offices Below

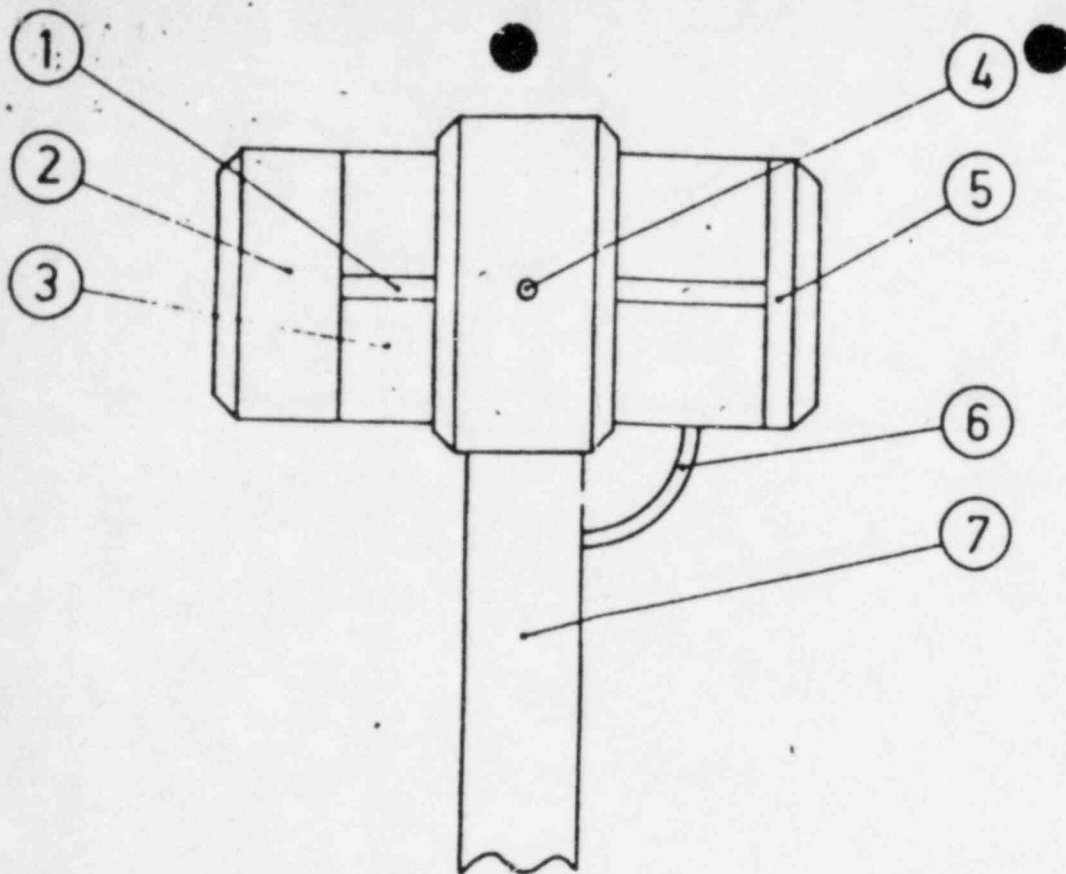
outside

Hall

Dr.'s Office

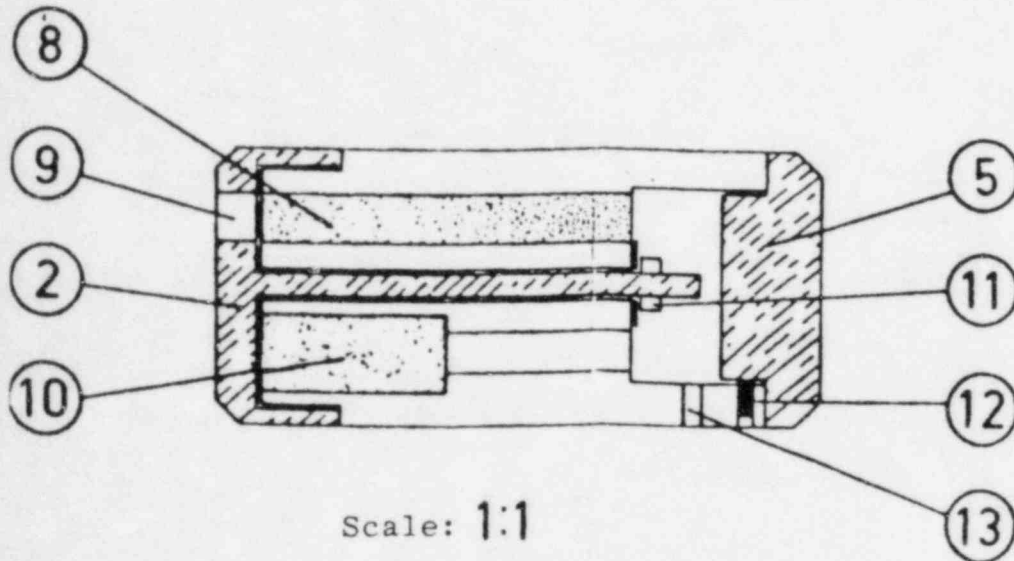
Approx. Scale 1" equals 30"

Appendix to:  
Item 11.  
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#### SOURCE - CONTAINER

- 1) Slot for adjustment
- 2) Rotatable front
- 3) Source-container
- 4) Adjustment screw
- 5) Lid
- 6) Cable from inductive switch
- 7) Axle
- 8) Inductive switch
- 9) Hole in rotatable front
- 10) Lead collimator
- 11) Nut and washer
- 12) Screw for lid
- 13) Hole for cable



#### LEAD COLLIMATOR

- 14) Source  $\varnothing$  3 mm x 10 mm
- 15) Screw
- 16) Foam

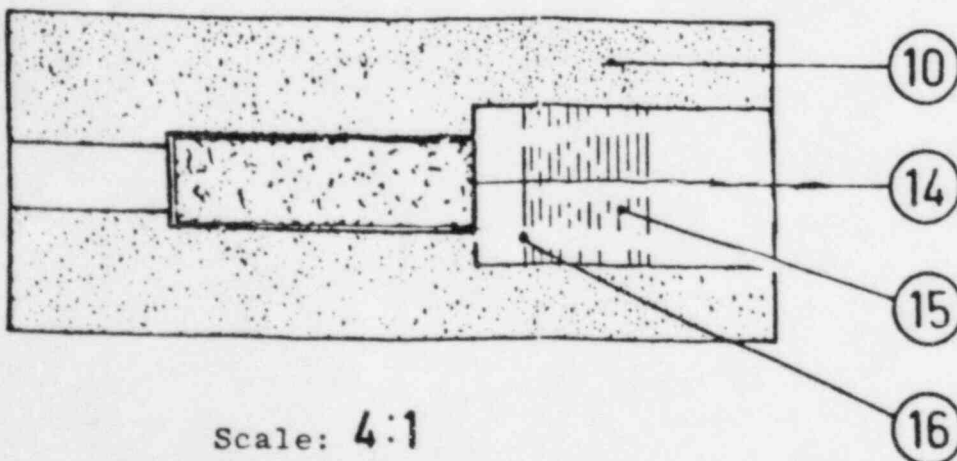


Figure #1

Appendix to:  
Item 15.  
4/22/85

BETWEEN: William O. Miller, Chief  
License Fee Management Branch  
Office of Administration

John E. Glenn, Chief  
Nuclear Materials Section B  
Division of Engineering and  
Technical Programs

LICENSE FEE TRANSMITTAL

A. REGION I

1. APPLICATION ATTACHED

Applicant/Licensee: Constance G. Alfano, M.D.

Application Dated: 4/22/85

Control No.: 03714

License No.: New

2. FEE ATTACHED

Amount: \$580.00

Check No.: 1029

3. COMMENTS

Signed Brenda Platchek

Date 4/25/85

B. LICENSE FEE MANAGEMENT BRANCH

1. Fee Category and Amount: 7C \$580

2. Correct Fee Paid. Application may be processed for:

Amendment                     

Renewal                     

License ✓                    

Signed Frances Brown

Date 4/30/85

49 5/3/85

"SECTION COPY"

BERGEN CONSULTING GROUP

P.O. BOX 52

CLOSTER, N.J. 07624

1029

55 216/212

APRIL 19 1985

PAY  
TO THE  
ORDER OF

U.S. NUCLEAR REGULATORY COMMISSION

\$ 580.00

Five hundred eighty and 00/100

DOLLARS



United Jersey Bank

400 Livingston St., Norwood, N.J. 07648

FOR

James P. Padden  
H. A. Brown

⑆021202162⑆

115⑈01395 4⑈