

## MATERIALS LICENSE

Amendment No. 10

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 March 24, 1997,	
1. LIFECHEM INCORPORATED		3. License Number 29-18399-01 is amended in its entirety to read as follows:	
2. 8 King Road Rockleigh, New Jersey 07647		4. Expiration Date	December 31, 2001
		5. Docket or Reference No.	030-15009
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. Iodine 125	A. Prepackaged Kits	A. 19 millicuries	
9. Authorized use			
A. <u>In vitro</u> laboratory testing.			

## CONDITIONS

10. Licensed material shall be used only at licensee's facilities located at 8 King Road, Rockleigh, New Jersey.
11. A. Licensed material shall be used by, or under the supervision of Linda Kruger or Betty Lim.  
B. Radiation Safety Officer for this license is Betty Lim.
12. Licensed material shall not be used in or on human beings.
13. The licensee is authorized to transport licensed material in accordance with the provisions of 10 CFR 71, "Packaging and Transportation of Radioactive Material."
14. The licensee is authorized to hold radioactive material with a physical half-life of less than 65 days for decay-in-storage before disposal in ordinary trash, provided:
  - A. Waste to be disposed of in this manner shall be held for decay a minimum of ten half-lives.
  - B. Before disposal as ordinary trash, the waste shall be surveyed at the container surface with the appropriate survey instrument set on its most sensitive scale and with no interposed shielding to determine that its radioactivity cannot be distinguished from background. All radiation labels shall be removed or obliterated.



MATERIALS LICENSE  
SUPPLEMENTARY SHEET

License Number

29-18399-01

Docket or Reference Number

030-15009

Amendment No. 10

- C. A record of each such disposal permitted under this License Condition shall be retained for three years. The record must include the date of disposal, the date on which the byproduct material was placed in storage, the radionuclides disposed, the survey instrument used, the background dose rate, the dose rate measured at the surface of each waste container, and the name of the individual who performed the disposal.
15. 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 June 28, 1989
  - B. Letter dated February 6, 1991
  - C. Letter dated June 19, 1991
  - D. Letter dated September 12, 1991
  - E. Letter dated January 28, 1994
  - F. Letter dated March 2, 1995

MAY 27 1997

Date \_\_\_\_\_

For the U.S. Nuclear Regulatory Commission

**ORIGINAL SIGNED BY:****JOHN D. KINNEMAN**

By \_\_\_\_\_

Nuclear Materials Safety Branch  
Region 1

King of Prussia, Pennsylvania 19406

MAY 27 1997

Anthony Sbaratta  
Director  
Quality Systems and Regulatory Affairs  
LIFECHEM INCORPORATED  
8 King Road  
Rockleigh, NJ 07647

Dear Mr. Sbaratta:

This refers to your license amendment request dated March 24, 1997. Enclosed with this letter is the amended license.

Please review the enclosed document 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:**  
**JOHN D. KINNEMAN**

John D. Kinneman, Chief  
Nuclear Materials Safety Branch 2  
Division of Nuclear Materials Safety

License No. 20-18399-01  
Docket No. 030-15009  
Control No. 124402

Enclosure:  
Amendment No. 10

DOCUMENT NAME: R:\WPS\MLTR\L2918399.01

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	<input checked="" type="checkbox"/> N	DNMS/RI	<input checked="" type="checkbox"/> M			
NAME	SLodhi		JKinneman				
DATE	05/20/97		05/31/97		05/ /97		05/ /97

OFFICIAL RECORD COPY

ML 10



MS 16  
Q-2

May 15, 1997

Dr. Sattar Lodhi, Health Physicist  
Medical Inspection Station  
Division of Radiation Safety  
and Safeguards  
US Nuclear Regulatory Commission  
Region 1  
475 Allendale Road  
King of Prussia, PA 19406-1415

Re: License No. 29-18399-01  
Docket No. 030-15009  
Mail Control No. 124402

Dear Dr. Lodhi:

Enclosed for your consideration is the academic, work experience and training documentation for Betty Lim.

I request she be approved and be included under the CONDITIONS section to read:

11.A. Licensed material shall be used by, or under the supervision of,  
Linda Kruger or Betty Lim.

B. Radiation Safety Officer for this license is Betty Lim.

Thank you for the understanding and patience you have extended in this matter.

Sincerely,

A. Sbaratta, Director  
Quality Systems and Regulatory Affairs

OFFICIAL RECORD COPY


ML 10

AS/sd/word:lodhi

Dedication makes the difference

124402

East Coast Lab: 8 King Road, Rockleigh, New Jersey 07647 • 800-205-5005 • Fax: 201-768-6423  
West Coast Lab: 6416 Varrel Avenue, Woodland Hills, California 91367 • 800-626-4334 • Fax: 818-340-0682

An affiliate of  Fresenius Medical Care - North America  
<http://www.lifechem.com>

MAY 19 1997





## EQUIVALENCY REPORT

P.O. Box 66940  
Los Angeles, CA 90066, U.S.A.  
Tel. 310•390•6276  
FAX 310•397•7686

April 1, 1997

TO WHOM IT MAY CONCERN:

RE: Betty Cheng-Imm Lim  
IERF #90-1916/mz

On the basis of credentials on file with this Service, we certify that Betty Cheng-Imm Lim, who has submitted records under the name of Lim Cheng Imm, has completed studies (1963-68) at St. Gegrege's Girls' School, located in Georgetown, Malaysia, earning the School Certificate, validated by eight Ordinary Level passes on the General Certificate of Education examination, administered by the University of Cambridge Local Examinations Syndicate.

These studies are considered equivalent to graduation from a regionally accredited senior high school in the United States.

Ms. Lim completed additional studies (1969-71) and (1973-74) at the University of Malaya, Faculty of Medicine, located at Kuala Lumpur, Malaysia, earning the Ordinary Certificate (1971) and the Advanced Certificate (1974).

These studies are considered equivalent in level and purpose to the Bachelor of Science in Medical Laboratory Technology, awarded by regionally accredited colleges and universities in the United States.

**EQUIVALENCY SUMMARY:** It is the judgment of the International Education Research Foundation, Inc. that Betty Cheng-Imm Lim has the U.S. equivalent of senior high school graduation and the Bachelor of Science in Medical Laboratory Technology.

*This evaluation is valid only if received by the agency or institution in a sealed envelope, or directly from the International Education Research Foundation, Inc., Credentials Evaluation Service.*

*No part of this report can be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy.*



NOTHING FOLLOWS

International Education Research Foundation, Inc.  
Credentials Evaluation Service



## Raritan Bay Medical Center

530 New Brunswick Avenue, Perth Amboy, New Jersey 08861 • (908) 442-3700

February 3, 1997

Mr. Chinu Jani  
Director of Operations  
Lifechem Laboratory Services  
8 King Road  
Rockleigh, New Jersey 07647

Dear Mr. Jani:

Ms. Betty Lim has been employed in the clinical chemistry laboratory at Raritan Bay Medical Center since September 1990, and served as our clinical chemistry supervisor from November 1993 until November 1996.

Our clinical chemistry laboratory performs a variety of *in-vitro* and *in-vivo* radioisotopic tests on blood and urine. While she was clinical chemistry supervisor, Ms. Lim was responsible for all of the routine operations related to radioisotopes in the clinical chemistry laboratory, including receipt and handling of radioisotopes; radiation safety; calibration and monitoring of the gamma counter; use of the survey meter; personnel monitoring; and regulatory compliance. She demonstrated proficiency in all of these areas, as evidenced by excellent results of proficiency testing and onsite inspections by the College of American Pathologists, the NJ State Department of Health, and the Nuclear Regulatory Commission.

Sincerely,

Leonard K. Dunikoski, Ph.D.  
Director, Clinical Chemistry

**Perth Amboy Division**  
530 New Brunswick Avenue  
Perth Amboy, New Jersey 08861  
(908) 442-3700

**Old Bridge Division**  
One Hospital Plaza  
Old Bridge, New Jersey 08857  
(908) 360-1000

Medical Products Division

EMPLOYEE NAME <i>Betty Lim</i>	EXT. <i>5043</i>	LOCATION <i>LifeChem</i>	DEPARTMENT <i>Serology</i>	COST CENTER <i>3250</i>
DATE LEAVE <i>5/4/97</i>	ESTIMATED TRIP COSTS			ACCOMPANYING NMC PERSONNEL
DATE RETURN <i>5/12/97</i>	Travel	Lodging	Other *	TOTAL
TICKETS NEEDED	<i>419-</i>	<i>425</i>	<i>2635</i>	<i>3482</i>

ITINERARY

DATE <i>5/4/97</i>	FROM CITY <i>Newark</i>	TO CITY <i>Madison WI</i>	DEPART AT: <i>4:15</i> AM <i>2:15</i> PM	ARRIVE BY: <i>5:40</i> AM <i>7:40</i> PM	RENTAL CAR REQUIRED <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
	FACILITY/LOCATION VISITING <i>Madison Conference + Governor's Club Hotel</i>		PURPOSE <i>Radiation Safety Officer Course</i>		HOTEL REQUIRED <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
	DATE <i>5/4/97</i>	FROM CITY <i>Madison WI</i>	TO CITY <i>Newark</i>	DEPART AT: <i>4:40</i> AM <i>2:30</i> PM	ARRIVE BY: <i>7:37</i> AM <i>7:37</i> PM	RENTAL CAR REQUIRED <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
	FACILITY/LOCATION VISITING <i>Individual Visiting</i>		PURPOSE		HOTEL REQUIRED <input type="checkbox"/> Yes <input type="checkbox"/> No	
	DATE <i>5/12/97</i>	FROM CITY	TO CITY	DEPART AT: AM PM	ARRIVE BY: AM PM	RENTAL CAR REQUIRED <input type="checkbox"/> Yes <input type="checkbox"/> No
FACILITY/LOCATION VISITING		PURPOSE		HOTEL REQUIRED <input type="checkbox"/> Yes <input type="checkbox"/> No		
Individual Visiting				<input type="checkbox"/> Yes <input type="checkbox"/> No		
DATE	FROM CITY	TO CITY	DEPART AT: AM PM	ARRIVE BY: AM PM	RENTAL CAR REQUIRED <input type="checkbox"/> Yes <input type="checkbox"/> No	
FACILITY/LOCATION VISITING		PURPOSE		HOTEL REQUIRED <input type="checkbox"/> Yes <input type="checkbox"/> No		
Individual Visiting				<input type="checkbox"/> Yes <input type="checkbox"/> No		
DATE	FROM CITY	TO CITY	DEPART AT: AM PM	ARRIVE BY: AM PM	RENTAL CAR REQUIRED <input type="checkbox"/> Yes <input type="checkbox"/> No	
FACILITY/LOCATION VISITING		PURPOSE		HOTEL REQUIRED <input type="checkbox"/> Yes <input type="checkbox"/> No		
Individual Visiting				<input type="checkbox"/> Yes <input type="checkbox"/> No		

Type Of Advance <input type="checkbox"/> Temporary <input type="checkbox"/> None	\$ Amount Required	Reason	Advance Received By	Date
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REMARKS <i>Registration P.O.#5407108 #1295.00</i> <i>Hotel guaranteed on Lim's Visa</i> <i>Flight is on the Corp. Charge acct.</i> <i>Stopover - Chicago</i>	OTHER DETAIL	AMOUNT
	Meals/Entertainment	<i>180.00</i>
	Rental Car/Parking	<i>42</i>
	Tolls/Buses/Cabs	<i>3.00</i>
	Other	<i>12.95</i>
	TOTAL	<i>2635</i>

Employee Signature <i>Betty Lim</i>	Date	Approval <i>S. Pope</i>	Approval <i>W. B. White</i>	Corporate Approval
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OS  
AL  
RE  
MEDICAL PRODUCTS DIVISION

THIS NUMBER MUST APPEAR ON INVOICES, B/L, BUNDLES,  
CASES, PACKING LISTS & CORRESPONDENCE

FMC TEXAS  
6620 South 33rd St.  
McAllen, TX 78503

OTHER \_\_\_\_\_

SHIP TO LifeChem Laboratory

ADDRESS 8 King Road

ATTN:

ATTN: Betty Lim

DATE REQUESTED 4/8/97

BUDGET CODE 8160-839-3250

QTY	U/M	DESCRIPTION Including Part Number Where Applicable	UNIT PRICE	EXTENDED PRICE
		Radiation Safety Officer Course for Betty Lim		1295.00
		SUB TOTAL		1295.00

x Confirming	PO to Engelhardt & Assoc	Date 04/09/97	Total Estimated Cost	\$ 1,295.00
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SPECIAL INSTRUCTIONS:

et. *Stewart*

Chinu Jani

Robert Seibert

LIFECHEM ACCEPTS DELIVERIES 8:30AM TO 3:30PM MONDAY THRU FRIDAY



# Certificate of Completion

awarded to

*Betty Lim*

for participation in

Radiation Safety Officer Course  
May 5-9, 1997 - Madison, WI  
presented by Engelhardt & Associates, Inc.

*Susan J. Engelhardt*  
Susan J. Engelhardt, M.S.

*Ralph Grunewald*  
Ralph Grunewald, Ph.D.

*Dee Kaiser*  
Dee Ann Kaiser, M.S.

*Judith Grunewald*  
Judith Grunewald, R.N., M.S.

## LIST OF NRC AND AGREEMENT STATES

### Agreement States

Alabama  
Arizona  
Arkansas  
California  
Colorado  
Florida  
Georgia  
Illinois  
Iowa  
Kansas  
Kentucky  
Louisiana  
Maine  
Maryland  
Massachusetts  
Mississippi  
Nebraska  
Nevada  
New Hampshire  
New Mexico  
New York  
North Carolina  
North Dakota  
Oregon  
Rhode Island  
South Carolina  
Tennessee  
Texas  
Utah  
Washington

### NRC States

Alaska  
Connecticut  
Delaware  
District of Columbia  
Hawaii  
Idaho  
Indiana  
Michigan  
Minnesota  
Missouri  
Montana  
→ New Jersey  
Ohio  
Oklahoma  
Pennsylvania  
South Dakota  
Vermont  
Virginia  
West Virginia  
Wisconsin  
Wyoming



# Radiation Safety Officer Course

May 5-9, 1997

Madison, Wisconsin

Mon. 5/5/97	Description	Objectives	Trainer(s)
07:30 - 08:00 am	Continental Breakfast	Not Applicable (NA)	
08:00 - 08:10	Course Objectives/Overview	Understand course objectives. Meet trainers.	Bob Kaiser
08:10 - 08:40	TAPE ① How Radiation is Used • Medical uses • Industrial uses • Academic uses	Licensee Types Regulatory Aspects Know common uses of radiation in industry, research & medicine.	Sue Engelhardt
08:40 - 09:00	Regulatory Agencies • Who regulates what • Where regulatory standards come from • NRC vs. Agreement States • Other agencies (e.g., OSHA, FDA, EPA, DOT)	Understand how the regulations are developed. Know the difference between Agreement vs. Non-Agreement states. Know the relationship between the NRC and other agencies.	Sue
09:00 - 09:10	Break	NA	
09:10 - 09:50	Basic Math Review • Scientific notation • Exponentials • Logarithms • Counting Statistics	Know how to use exponents, logarithms, and scientific notation in mathematical calculations. Know basic counting statistics for radioactive decay.	Dee Kaiser
09:50 - 10:00	Introduction to Radiation Physics	Overview of next topic.	Sue
10:00 - 11:30 (10 min break)	Radiation Physics "Basic Physics" • Types of radiation TAPE 1A • Interactions with matter 1B • Half-life TAPE 2A • Radioactivity units TAPE 2B	Know the various types and characteristics of radiation (e.g., alpha, beta, gamma) and their interactions in matter. Understand half-life, Ci, & Bq.	Ralph Grunewald
11:30 - 12:45 pm	Lunch	NA	
12:45 - 02:50 (10 min break)	Radiation Physics (continued)	See above	Ralph
02:50 - 03:00	Break	NA	
03:00 - 04:00	Group Sessions	See handouts	All

Tues. 5/6/97	Description	Objectives	Trainer(s)
07:30 - 08:00 am	Continental Breakfast	NA	
08:00 - 10:00 (10 min break)	Radiation Detection Equipment <i>(manual: "Radiation measurements")</i> • Types of equipment <i>Tape 3A 0-350</i> • Appropriate uses <i>350-180</i> • Demonstration of equipment • Self-reading dosimeters	Understand how to select and operate equipment for the different types of radiation. Understand the basic design principles of various detectors.	Ralph
10:00 - 10:10	Break	NA	
10:10 - 11:15	Group Sessions	See handouts	All
11:15 - 12:30 pm	Lunch	NA	
12:30 - 01:20	Radiation Dosimetry <i>Tape 3B 185-340</i> • Exposure and dose units <i>(manual: "Units")</i> • Types of dosimeters; how they work • NRC dose limits <i>Tape 4A 0-290</i> • Dose calculations	Understand radiation exposure and dose units (e.g., rad, rem, R, RBE, LET, QF). Know NRC dose limits. Know how to calculate dose from a point source.	Sue
01:20 - 01:30	Break	NA	
01:30 - 2:20	Radiation Protection • Time, distance, shielding • Rules for protection from radiation (including apparel) • Posting requirements • ALARA	Know methods used for radiation protection (e.g., time, distance, shielding, contamination control). Know how to apply inverse square law. Know what ALARA is and how to implement.	Dee
02:20 - 02:30	Break	NA	
02:30 - 03:00	Sources of Radiation Exposure <i>Tape 4B</i> • Naturally occurring <i>(manual "Unit 2")</i> • Medical <i>6-142</i> • Occupational • Life style	Understand typical levels of radiation exposure from common sources. Understand perceived vs. real risk	Sue
03:00 - 04:00	Group Sessions	See handouts	All

Wed. 5/7/97	Description	Objectives	Trainer(s)
07:30 - 08:00 am	Continental Breakfast	NA	
08:00 - 09:00	Radiation Biology <i>Dee 5</i> <ul style="list-style-type: none"> <li>Cellular, tissue, and systemic effects</li> <li>Delayed effects, early somatic effects</li> <li>Acute radiation syndrome</li> <li>Hormesis, threshold vs. non-threshold</li> </ul>	Understand the biological effects of radiation and the dose levels where these effects occur.	Sue
09:00 - 09:10	Break	NA	
09:10 - 10:00	Risk vs. benefit	Understand perceived vs. real risk.	Sue
10:00 - 10:10	Break	NA	
10:10 - 11:30	Radiation Safety Programs <i>TAPE 5</i> <ul style="list-style-type: none"> <li>Written programs</li> <li>Key elements (e.g., RSO/RSC, facility design, PPE, procedures, records, audits)</li> <li>Recordkeeping requirements</li> <li>Annual reviews</li> </ul>	Know key elements of a radiation safety program. Know how to develop an effective program.	Dee
11:30 - 12:45 pm	Lunch	NA	
12:45 - 01:30	Responsibilities for Radiation Safety <i>activity</i> <ul style="list-style-type: none"> <li>Who is responsible</li> <li>Legal issues</li> </ul>	Understand the various responsibilities for radiation safety.	Sue
01:30 - 01:40	Break	NA	
01:40 - 02:20	Transportation <i>handout</i> <ul style="list-style-type: none"> <li>Regulatory requirements (NRC, DOT, IATA)</li> <li>Shipper's responsibilities</li> </ul>	Know regulatory requirements for transporting radioactive materials. Know shipper's responsibilities.	Dee
02:20 - 02:50	Radioactive Waste Management <i>"Rad Waste"</i> <ul style="list-style-type: none"> <li>Types of waste</li> <li>Disposal options</li> <li>Transfer vs. Storage</li> </ul>	Know radioactive waste disposal regulations and options (e.g., sewer, DIS). Understand waste transfer and storage requirements (e.g., facility needs).	Sue
02:50 - 03:00	Break	NA	
03:00 - 04:00	Group Sessions	See handouts	All

Thur. 5/8/97	Description	Objectives	Trainer(s)
07:30 - 08:00 am	Continental Breakfast	NA	
08:00 - 08:50	NRC Regulations <i>Rev 7</i> <ul style="list-style-type: none"> <li>• Parts 30 - 35 (types of licenses)</li> <li>• Special requirements (gauges and licenses)</li> </ul>	Understand general vs. specific license. Know which NRC regulations pertain to the different licenses (gauge, medical, etc.).	Sue
08:50 - 09:00	Break	NA	
09:00 - 09:50	NRC Regulations (continued) <ul style="list-style-type: none"> <li>• Parts 19 and 20 <i>Rev 7</i></li> </ul>	Know critical provisions of these worker information and protection standards.	Sue
09:50 - 10:00	Break	NA	
10:00 - 11:15	Emergencies <ul style="list-style-type: none"> <li>• Types of emergencies (gauge, medical, academic)</li> <li>• Procedures</li> <li>• Source leakage, loss</li> <li>• Emergency personnel as responders</li> <li>• Performance based training</li> <li>• Interactions with the public, media, and employees</li> </ul>	Understand the RSO's role in planning for and preventing accidents. Know how to develop an emergency plan.	Judy Grunewald
11:15 - 12:30 pm	Lunch	NA	
12:30 - 01:00	Laboratory Preparation	Prepare for laboratory activities.	Sue
01:00 - 04:00	Laboratory Workstations <ul style="list-style-type: none"> <li>• Radioactive decay measurement</li> <li>• Sealed source leak test, meter calibration, and scatter radiation measurements</li> <li>• Facility and personnel surveys, wipe tests, and decontamination</li> <li>• Solid scintillator and Geiger counter - background, standard, and sample analyses; efficiency and minimum detectable activity determinations</li> </ul>	See handouts	All
(10 min break)			



Fri. 5/9/97	Description	Objectives	Trainer(s)
07:30 - 08:00 am	Continental Breakfast <i>"Reg Aspects"</i>	NA	
08:00 - 08:50	Writing a License <ul style="list-style-type: none"> <li>• New, renewal, &amp; amendment applications</li> <li>• NRC Form 313 or equivalent for Agreement states</li> <li>• Content</li> <li>• Fees</li> </ul>	Understand the do's and don'ts when writing a license. Know what references are available for assistance (e.g., NRC Regulatory Guides).	Sue
08:50 - 09:00	Break	NA	
09:00 - 10:20	Reportable Incidents <i>"Reg Aspects"</i> <ul style="list-style-type: none"> <li>• When to/not to report an incident</li> <li>• Interactions with the public and media</li> </ul>	Know NRC requirements for reporting incidents and misadministrations (medical). Understand the NRC's media notification criteria. Know key aspects of communicating with the public & media.	All
10:20 - 10:30	Break <i>"Reg. Aspects"</i>	NA	
10:30 - 11:30	NRC/State Inspections <ul style="list-style-type: none"> <li>• How to prepare</li> <li>• How to deal with inspectors</li> <li>• What to do if your inspection is going badly</li> <li>• What to do if called for an enforcement conference</li> </ul>	Understand the inspection process. Know how to prepare for and respond to enforcement activities.	All
11:30 - 12:30	Lunch	NA	
12:30 - 12:50	Interactions with the Public and Media <ul style="list-style-type: none"> <li>• Discussion of media contacts and public information on the sensitive issue of radiation</li> </ul>	Understand the NRC's media notification criteria. Know key aspects of conducting interviews with the public and media.	Sue
12:50 - 01:50	Examination	Complete exam and score 85% or better.	All
01:50 - 02:00	Wrap-up		



## May 5-9, 1997 Radiation Safety Officer Course Performance Objectives for the Medical Group

These performance objectives are tailored to the participants' needs. Each session is 1 hour or longer.

### Day One: Afternoon Session

- Understand the regulatory structure for various types of radiation and radioactive materials commonly used in medicine.
- Know alpha, beta, and gamma decay processes and interactions with matter.
- Discuss basic counting statistics - distributions of a single count, standard deviation, and minimum detectable count.
- Know how to convert between various radioactivity units (Ci, Bq, dpm, dps, cpm).
- Calculate radioactive decay both forward and backward in time.
- Calculate attenuation of radiation.

### Day Two: Morning Session

- Know various types of detectors for beta and gamma radiation (e.g., GM, LEG, HEG), and how to select appropriate detectors (e.g., for dose surveys vs. contamination surveys).
- Know how to perform function tests (hands-on) and understand calibration requirements for survey meters commonly used in medical settings.
- Understand regulatory requirements and NRC licensing process for medical uses.

### Day Two: Afternoon Session

- Know NRC dose limits and personnel dosimetry requirements - who needs dosimeters, when, why, etc.
- Understand practical radiation protection measures (e.g., use of time, distance, shielding, contamination control) and ALARA strategies for medical settings.
- Know how to conduct wipe tests and leak tests for removable contamination.
- Know NRC required radiation warning signs, labels, postings, etc. needed in experimental settings.
- Calculate dose from a point source.

### Day Three: Afternoon Session

- Discuss personnel bioassays for radioactive materials commonly used in medicine.
- Discuss radiation risk vs. benefit issues.
- Discuss patient release after nuclear medicine procedures vs. non-release of radioactivity from the research setting.
- Discuss RSO responsibilities and the critical components of a radiation safety program in a medical facility.
- Discuss Quality Management Program requirements.
- Discuss effective auditing techniques.
- Discuss NRC requirements for training (frequency, content, etc.). 2
- Know how to receive/ship a radioactive package (e.g., for Nuclear Medicine).
- Discuss radioactive waste management and setting up a decay in storage procedure.

### Day Four: Laboratory Workstations

- Measure radioactive decay and calculate half-life. Complete worksheet and discuss findings.
- Measure scatter radiation around a sealed source, and observe meter calibration and sealed source leak test procedures. Complete worksheet and discuss findings/observations.
- Survey personnel and work area for radioactive contamination and discuss response procedures. Complete worksheet and discuss findings/observations.
- Count background, standard, and sample (wipe/leak test) using a Geiger counter and a solid scintillator. Calculate efficiency, minimum detectable activity, and sample activity. Complete worksheet and discuss findings.

## May 5-9, 1997 Radiation Safety Officer Course Performance Objectives for the Research Group

These performance objectives are tailored to the participants' needs. Each session is 1 hour or longer.

### Day One: Afternoon Session

- Understand the regulatory structure for various types of radiation and radioactive materials commonly used in research.
- Know alpha, beta, and gamma decay processes and interactions with matter.
- Discuss basic counting statistics - distributions of a single count, standard deviation, and minimum detectable count.
- Know how to convert between various radioactivity units (Ci, Bq, dpm, dps, cpm).
- Calculate radioactive decay.
- Calculate attenuation of radiation.

### Day Two: Morning Session

- Know various types of detectors for beta and gamma radiation (e.g., LSC, GM, LEG), and how to select appropriate equipment (e.g., for exposure rate monitoring vs. radioanalyses).
- Know how to perform function tests (hands-on) and understand calibration requirements for survey meters commonly used in research facilities.
- Understand regulatory requirements and NRC licensing process for research related use.

### Day Two: Afternoon Session

- Know NRC dose limits and personnel dosimetry requirements - who needs dosimeters, when, why, etc.
- Understand practical radiation protection measures (e.g., use of time, distance, shielding, contamination control) and ALARA strategies for research settings.
- Know how to conduct wipe tests and leak tests for removable contamination.
- Know NRC required radiation warning signs, labels, postings, etc. needed in experimental settings.
- Calculate dose from a point source.

### Day Three: Afternoon Session

- Discuss personnel bioassays for radioactive materials commonly used in research.
- Discuss radiation risk vs. benefit issues.
- Discuss RSO responsibilities and the critical components of a radiation safety program in a research facility.
- Discuss effective auditing techniques.
- Understand NRC requirements for training (frequency, content, etc.).
- Know how to receive/ship a radioactive package.
- Discuss radioactive waste minimization, management, and disposal (including decay in storage) for radioactive materials commonly used in research.

### Day Four: Laboratory Workstations

- Measure radioactive decay and calculate half-life. Complete worksheet and discuss findings.
- Measure scatter radiation around a sealed source, and observe meter calibration and sealed source leak test procedures. Complete worksheet and discuss findings/observations.
- Survey personnel and work area for radioactive contamination and discuss response procedures. Complete worksheet and discuss findings/observations.
- Count background, standard, and sample (wipe/leak test) using a Geiger counter and a solid scintillator. Calculate efficiency, minimum detectable activity, and sample activity. Complete worksheet and discuss findings.



## May 5-9, 1997 Radiation Safety Officer Course Performance Objectives for the Gauge Group

These performance objectives are tailored to the participants' needs. Each session is 1 hour or longer.

### Day One: Afternoon Session

- Understand physics and interactions of radiation with matter as it pertains to common radionuclides used in gauges.
- View slides on specific operation of many types of gauges (to understand common types of gauges and how they work).
- Know general characteristics of source capsule configuration and shutter designs.
- Discuss basic counting statistics - distributions of a single count, standard deviation, and minimum detectable count.
- Know how to convert between various radioactivity units (Ci, Bq, dpm, dps, cpm).
- Calculate radioactive decay.

### Day Two: Morning Session

- Know the various types and uses of survey meters.
- Demonstration of gauge types/uses.
- Know what you can and cannot do with gauges with regards to maintenance and repair.
- Get hands-on experience with opening and closing shutters (both cylinder and flat swing type).
- Discuss device registrations and general/specific licenses for gauges.

### Day Two: Afternoon Session

- Know ALARA strategies for mills/gauges.
- Demonstration of time, distance, and shielding principles.
- Determine what signs are needed in experimental settings.
- Understand badge requirements - who needs them, why, etc.
- Calculate dose from a point source.

### Day Three: Afternoon Session

- Observe proper lockout/tagout demonstration and then lockout/tagout a gauge (hands-on).
- Understand survey procedures - exposure rate monitoring, leak tests, and wipe tests.
- Do leak tests.
- Take hands-on radiation measurements with a Geiger counter and an ionization chamber around sources to observe how radiation is shielded, collimated, and scattered.
- Take radiation measurements of a source through various shielding materials to observe attenuation.
- Take radiation measurements of a source at various distances to understand the inverse square law.
- Understand responsibilities of the RSO for the radiation safety program.
- Discussion of emergency preparedness and response.

### Day Four: Laboratory Workstations

- Measure radioactive decay and calculate half-life. Complete worksheet and discuss findings.
- Measure scatter radiation around a sealed source, and observe meter calibration and sealed source leak test procedures. Complete worksheet and discuss findings/observations.
- Survey personnel and work area for radioactive contamination and discuss response procedures. Complete worksheet and discuss findings/observations.
- Count background, standard, and sample (wipe/leak test) using a Geiger counter and a solid scintillator. Calculate efficiency, minimum detectable activity, and sample activity. Complete worksheet and discuss findings.



# Appendix I

## Units of Radioactivity

1 Curie(Ci) =  $2.2 \times 10^{12}$  DPM =  $3.7 \times 10^{10}$  DPS = 37 gigabecquerels(GBq)

1 gigabecquerel(GBq) =  $1 \times 10^9$  DPS =  $6 \times 10^{10}$  DPM = 27 millicuries(mCi)

## Units of Exposure

1 Roentgen(R) =  $2.58 \times 10^{-4}$  Coulombs(C) per kilogram(kg)

Conversion Table for Radioactivity	
Curie Units nCi uCi mCi	Becquerel Units dBq kBq MBq
0.1	3.7
0.25	9.25
0.5	18.5
0.75	27.75
1	37
2	74
3	111
5	185
7	259
10	370

Density of Common Materials					
Material	Density Range (g/cm <sup>3</sup> )	Normal Density (g/cm <sup>3</sup> )	Material	Density Range (g/cm <sup>3</sup> )	Normal Density (g/cm <sup>3</sup> )
Air		0.0012929	Lucite		1.19
Aluminum		2.7	Polyethylene		0.92
Bone	1.7-2.0		Pressed Wood		0.19
Brick	1.4-2.3		Steel		7.8
Concrete (ordinary)	2.2-2.4		Water (tissue)		1.00
Earth	1.5-1.9	1.7	Wood: Oak	0.6-0.9	
Glass (common)	2.4-2.8		White pine	0.35-0.5	
Lead		11.35	Yellow pine	0.37-0.6	

## Appendix II

Atomic Number	Radio-nuclide	10 CFR 20 Appendix C Activity in $\mu\text{Ci}$	Major Radiations Energies (MeV) % Abundance		Half Life	mR/hr @ 1 meter /mCi	HVL mm Lead
1	$^3\text{H}$	1,000	$B^-$	0.0186	12.6y	-	-
6	$^{14}\text{C}$	1,000	$B^-$	0.156	5730y	-	-
11	$^{22}\text{Na}$	10	$B^+$ $\gamma$ $B^-$	0.545 0.511(180%) 1.275(100%)	2.6y	1.18	-
15	$^{32}\text{P}$	10	$B^-$	1.710	14.3d	-	6.2(lucite)
15	$^{33}\text{P}$	100	$B^-$	0.251	25.3d	-	-
16	$^{35}\text{S}$	100	$B^-$	0.167	88d	-	-
20	$^{45}\text{Ca}$	100	$B^-$	0.252	163d	-	-
21	$^{46}\text{Sc}$	100	$B^-$ $\gamma$ $\gamma$	0.357 0.889(100%) 1.120(100%)	84.2d	1.09	10.00
24	$^{51}\text{Cr}$	1,000	EC $\gamma$	0.320(9%)	27.8d	0.016	2.00
26	$^{59}\text{Fe}$	10	$B^-$ $\gamma$ $\gamma$	0.475 1.095(56%) 1.292(44%)	45.6d	0.62	11.0
27	$^{57}\text{Co}$	100	$\gamma$ $\gamma$	0.122(87%) 0.136(11%)	270d	0.093	0.20
27	$^{58}\text{Co}$	100	$B^+$ $\gamma$	0.474 max Fe x-rays, 0.511(30%), 0.810(99%), 0.865(1.4%), 1.67 (0.6%)	71d	0.55	
27	$^{60}\text{Co}$	1	$B^-$ $\gamma$ $\gamma$	0.314 1.173(100%) 1.330(100%)	5.26y	1.32	12.0
31	$^{67}\text{Ga}$	1,000	$\gamma$ $\gamma$ $\gamma$ $\gamma$	0.093(40%) 0.184(24%) 0.296(22%) 0.388(7%)	77.9h	0.11	0.70
37	$^{86}\text{Rb}$	100	$B^-$ $B^-$ $\gamma$	1.774(91%) 0.698(9%) 1.078(9%)	18.65d	0.05	9.00
38	$^{89}\text{Sr}$	10	$B^-$	0.1489	50.55d	-	
41	$^{95}\text{Nb}$	100	$B^-$ $\gamma$	0.160 0.765(100%)	35d	0.42	5.80

Atomic Number	Radio-nuclide	10 CFR 20 Appendix C Activity in $\mu$ Ci	Major Radiations Energies (MeV) % Abundance		Half Life	mR/hr @1 meter /mCi	HVL mm Lead
42	$^{99}\text{Mo}$	100	$B^-$ $\gamma$ $\gamma$ $\gamma$	1.230 0.181(7%) 0.740(12%) 0.780(40%)	66.7h	0.18	6.20
43	$^{99m}\text{Tc}$	1,000	$\gamma$	0.140(90%)	6.04h	0.07	0.3
44	$^{103}\text{Ru}$	100	$B^-$ $\gamma$ $\gamma$	0.210 0.497(88%) 0.610(6%)	39.5d	0.33	5.20
48	$^{109}\text{Cd}$	1	$\gamma$	0.088	453d	0.29	0.08
49	$^{111}\text{In}$	100	$\gamma$ $\gamma$	0.173(89%) 0.247(94%)	2.83d	0.033	1.00
49	$^{113m}\text{In}$	1,000	$\gamma$	0.393(64%)	104m	0.17	0.30
50	$^{113}\text{Sn}$	100	$\gamma$	0.255(1.8%) daughter radiation from Sn-113	115d	0.17	2.60
53	$^{123}\text{I}$	100	$\gamma$	0.159(83%)	13.3h	0.015	0.50
53	$^{125}\text{I}$	1	EC $\gamma$ $\gamma$	0.02x-rays (90%) 0.035(7%)	60d	0.07	0.05
53	$^{131}\text{I}$	1	$B^-$ $B^-$ $\gamma$ $\gamma$	0.33(7%) 0.6(89%) 0.364(82%) 0.637(7.2%)	8.05d	0.22	3.00
54	$^{127}\text{Xe}$	1,000	$\gamma$ $\gamma$ $\gamma$	0.172(22%) 0.203(65%) 0.375(20%)	36.4d	0.232	3.30
54	$^{133}\text{Xe}$	1,000	$B^-$ $\gamma$	0.346 0.081(37%)	5.3d	0.052	0.40
55	$^{137}\text{Cs}$	10	$B^-$ $B^-$ $\gamma$	1.176(7%) 0.514(93%) 0.662(85%)	30y	0.332	6.00
58	$^{141}\text{Ce}$	100	$\gamma$ $B^-$ $B^-$	0.434(70%) 0.581(30%) 0.145(48%)	32.5d	0.035	0.28

Atomic Number	Radio-nuclide	10 CFR 20 Appendix C Activity in $\mu\text{Ci}$	Major Radiations Energies (MeV) % Abundance		Half Life	mR/hr @1meter /mCi	HVL mm Lead
64	$^{153}\text{Gd}$	10	EC $\gamma$ $\gamma$ $\gamma$	0.041-0.048 Eu x-rays(110%) 0.097(30%) 0.103(20%)	242d	0.165	0.12
Atomic Number	Radio-nuclide	10 CFR 20 Appendix C Activity in $\mu\text{Ci}$	Major Radiations Energies (MeV) % Abundance		Half Life	mR/hr @1meter /mCi	HVL mm Lead
77	$^{192}\text{Ir}$	1	$\beta^-$ $\gamma$ $\gamma$ $\gamma$ $\gamma$	0.670 0.296(29%) 0.308(30%) 0.317(81%) 0.468(49%)	74.2d	0.5	6.00
79	$^{198}\text{Au}$	100	$\beta^-$ $\gamma$	0.962 0.412(95%)	2.7d	0.232	3.30
81	$^{201}\text{Tl}$	1,000	$\gamma$	0.167(85) Hg x-rays 0.068-0.080(95%)	74h	0.044	0.2

### Appendix III

Radionuclide	$A_1(\text{Ci})$	$A_2(\text{Ci})$	Specific Activity (Ci/g)
$^{32}\text{P}$	30	30	2.9E5
$^{57}\text{Co}$	90	90	8.5E3
$^{67}\text{Ga}$	100	100	6.0E5
$^{89}\text{Sr}$	100	10	2.9E4
$^{99}\text{Mo}$	100	20	4.7E5
$^{99\text{m}}\text{Tc}$	100	100	5.2E6
$^{103}\text{Pd}$	1000	700	7.5E4
$^{123}\text{I}$	50	50	1.9E6
$^{125}\text{I}$	1000	70	1.7E4
$^{131}\text{I}$	40	10	1.2E5
$^{133}\text{Xe}$	1000	1000	1.9E5
$^{137}\text{Cs}$	30	10	9.8E0
$^{192}\text{Ir}$	20	10	9.1E3
$^{201}\text{Tl}$	200	200	2.2E5

DNMS TELEPHONE CONVERSATION RECORD

**Person Called:** Anthony Sbaratta, Manager

**Phone No.:** (800) 205 5005/5875

**Person Calling:** Sattar Lodhi

**Date:** 4/17/97

**Facility Name:** LifeChem  
Rockleigh, NJ

**Time:** 1:30 p.m.

**License No.** 29-18399-01

**Docket No.** 030-15009

---

**Subject:** Additional Information

---

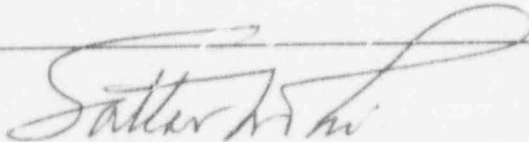
**Summary:** I called Mr. Sbaratta again to remind him that he had not submitted the documentation that was requested earlier to name Mr. Sherman Paper as the RSO. He stated that they have sent an other user (Betty Lim) for radiation safety training, and she would complete this training in May, and would like to name her as the authorized user and RSO.

He will send the documentation about her training as soon as she completes the training.

---

**Action Required/Taken:** Document/wait for response

**Signature:**



Mail Control No. 124402

---

OFFICIAL WORD COPY

ML 10

DNMS TELEPHONE CONVERSATION RECORD

**Person Called:** Anthony Sbaratta, Manager      **Phone No.:** (800) 205 5005/5875

**Person Calling:** Sattar Lodhi      **Date:** 4/1/97

**Facility Name:** LifeChem      **Time:** 9:00 a.m.  
Rockleigh, NJ

**License No.** 29-18399-01      **Docket No.** 030-15009

---

**Subject:** Additional Information

---

**Summary:** I called Mr. Sbaratta again to ask if Mr. Sherman Paper has had any experience of using radioisotopes. He stated that Mr. Paper was the RSO at SmithKline Beecham facility in Owings Mill, MD., but he does not think he has had any experience of using radioisotopes. I informed him that based on his experience as the RSO he may be approved to be the RSO at their facility, but to be an authorized user, an individual must have some hands-on experience of using radioisotopes. He stated that he will find out the details from Mr. Paper and call me back.

4-2-97: Because he was the RSO of a facility in MD, I requested Craig Gordon if he could get a confirmation from the State of MD. Craig informed me later that SmithKlein Beecham did not have a materials license at Owings Mills, but that they were registered users (general license ?), and that Mr. Paper was the Director of that facility.

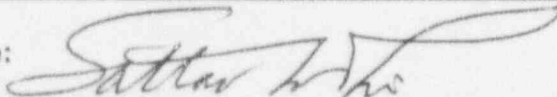
I called back Mr. Sbaratta to relay this information and he promised to call me with details.

---

**Action Required/Taken:** Document/wait for response

---

**Signature:**



Mail Control No. 124402

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DNMS TELEPHONE CONVERSATION RECORD

Person Called:	Anthony Sbaratta, Director	Phone No.: (800) 205 5005/5875
Person Calling:	Sattar Lodhi	Date: 3-31-97
Facility Name:	LifeChem, Inc Rockleigh, NJ	Time: 9:30 a.m.
License No.	29-18399-01	Docket No. 030-15009

---

**Subject:** Amendment to change the RSO and AU

---

**Summary:** I called Mr. Sbaratta to request the following information:

1. Whether Mr. Sherman Paper has had any experience of using radioisotopes
2. Confirm that Mr. Paper was listed on the Maryland State License of SmithKline Beecham.

He was not available but I called him again on 4-1-97, and he stated that:

He has not used radioisotopes but has directed the labs and personnel that use radioisotopes in his capacity as the director of labs; and

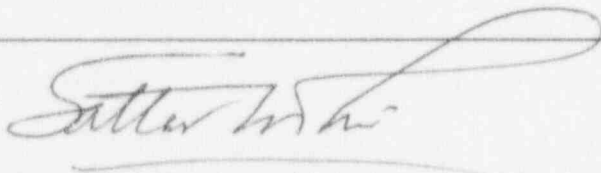
He was RSO at one of the sites (Field Stations) of SmithKline Beecham, but is not sure if he was listed on the State License. He will inquire from Mr. Paper and call back.

---

**Action Required/Taken:** Document/wait for response

---

**Signature:**



Mail Control No. 124402

---



March 24, 1997

030-15009

Dr. Sattar Lodhi, Health Physicist  
Medical Inspection Station  
Division of Radiation Safety  
and Safeguards  
US Nuclear Regulatory Commission  
Region 1  
475 Allendale Road  
King of Prussia, PA 19406-1415

Re: License No. 29-18399-01  
Docket No. 030-15009

Dear Dr. Lodhi:

The following information is submitted in support of a request to amend our Material License to reflect the following changes under the CONDITIONS section:

- 11. A. Licensed material shall be used by, or under the supervision of,  
Linda Kruger or Sherman B. Paper
- B. Radiation Safety Officer for this license is Sherman Paper.

An amendment fee of \$300 has been forwarded to Ms. Brenda Brown of your License Fee and Debt Collection branch under separate cover. If additional information is required, please contact me at 201-767-7070, extension 5875.

Sincerely,

A. Sbaratta, Director  
Quality Systems and Regulatory Affairs


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MAR 26 1997

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124402  
MAR 24 1997  
FAX RECD

## MATERIALS LICENSE

Amendment No. 09

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.

Licensee	In accordance with the letter dated September 16, 1996,	
1. LIFECEM INCORPORATED	3. License Number 29-18399-01 is amended in its entirety to read as follows:	
2. 8 King Road Rockleigh, New Jersey 07647	4. Expiration Date December 31, 2001	
	5. Docket or Reference No. 030-15009	
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. Iodine 125	A. Prepackaged Kits	A. 19 millicuries
9. Authorized use		
A. <u>In vitro</u> laboratory testing.		

## CONDITIONS

10. Licensed material shall be used only at licensee's facilities located at 8 King Road, Rockleigh, New Jersey.
11. A. Licensed material shall be used by, or under the supervision of Robyn Spyckaboer, or Linda Kruger.  
B. Radiation Safety Officer for this license is Robyn Spyckaboer.
12. Licensed material shall not be used in or on human beings.
13. The licensee is authorized to transport licensed material in accordance with the provisions of 10 CFR 71, "Packaging and Transportation of Radioactive Material."
14. The licensee is authorized to hold radioactive material with a physical half-life of less than 65 days for decay-in-storage before disposal in ordinary trash, provided:
  - A. Waste to be disposed of in this manner shall be held for decay a minimum of ten half-lives.
  - B. Before disposal as ordinary trash, the waste shall be surveyed at the container surface with the appropriate survey instrument set on its most sensitive scale and with no interposed shielding to determine that its radioactivity cannot be distinguished from background. All radiation labels shall be removed or obliterated.

MATERIALS LICENSE  
SUPPLEMENTARY SHEET

License Number

29-18399-01

Docket or Reference Number

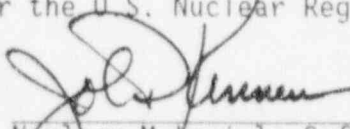
030-15009

Amendment No. 09

- C. A record of each such disposal permitted under this License Condition shall be retained for three years. The record must include the date of disposal, the date on which the byproduct material was placed in storage, the radionuclides disposed, the survey instrument used, the background dose rate, the dose rate measured at the surface of each waste container, and the name of the individual who performed the disposal.
15. 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 June 28, 1989
  - B. Letter dated February 6, 1991
  - C. Letter dated June 19, 1991
  - D. Letter dated September 12, 1991
  - E. Letter dated January 28, 1994
  - F. Letter dated March 2, 1995

For the U.S. Nuclear Regulatory Commission

By

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

Date

NOV 22 1996

**Sherman B. Paper**

(201) 767-7070 (ext 5737) (Office)

---

**SUMMARY:**

Accomplished and service driven Laboratory Administrator with over 10 years of diversified activities with a nationally prominent reference laboratory. Particular expertise in:

- Leadership as Technical Director
- Strategic and Financial Planning and Control
- Vendor Relations, Contracting and Management
- Remote Site and Facilities Management
- Quality Assurance/Quality Control and Regulatory Affairs
- Phlebotomy Management

**PROFESSIONAL EXPERIENCE:**

**LIFECHEM LABORATORY SERVICES, Rockleigh, NJ (1996 - Present)**

Ten (10) direct reports with a staff of 170. Budget - \$18MM.

- CLIA/NJ inspection
- Lobotix
- OT/FTE
- Managed Job Performance Reviews and merit increase to Budget

**SMITHKLINE BEECHMAN CLINICAL LABORATORIES, Owings Mills, MD (1987 - 1995)**

**Remote Site Manager 1994 - 1995**

Managed Off-site functions at 30 locations and four stat laboratories. Directed all functions of stat laboratories. Negotiated and oversaw all leases and contracts. Budget responsibilities of \$7MM and staff of 70. Accomplishments included:

- Restructured largest STAT Laboratory to save 15% in FTE expenses while maintaining all service levels.
- Increased remote site presence by negotiating three new, company owned locations.
- Implemented new system to target contract renewals



## **Sherman B. Paper**

Page 2

### **Supportive Service Manager 1993 - 1994**

Managed Patient Service Centers (23 locations), oversaw all facilities management, safety, Quality Assurance and regulatory affairs. Staff of 30. Accomplishments included:

- Initiated quarterly phlebotomy meetings to allow face-to-face, two-way communication for wide spread geographical area.
- Negotiated single source contract phlebotomy group for 20% cost savings over prior year's expense.

### **Technical Director 1987 - 1993**

Managed technical operation interfacing with clients, overseeing facilities management, purchasing, safety, Quality Assurance and MIS. Budget responsibilities of \$6MM with staff of 65. Accomplishments included:

- Designed model 40,000 square foot facility to house new laboratory.
- Headed project management team for newly designed facility and brought it in under budget by 5% and one week ahead of schedule.
- Organized facility for it's initial College of American Pathologists (CAP) inspections.
- Developed consulting program of "Physician Office Laboratory."

PHYSICIAN SERVICES LABORATORY, (Brought out by SBCL)

### **Executive Vice President 1987 - 1988**

Managed all aspects of \$3MM operation to include technical sales, billing and collection, and all other support services. Staff of 75. Accomplishments included:

- Increased collections by 30% in first six months.
- Decreased operating expenses by 20% in first six months.
- Developed and implemented transition from private ownership (PSL) to integration with SmithKline Beecham.

**Sherman B. Paper**

Page 3

MARYLAND MEDICAL LABORATORIES, Baltimore, MD (1985-1987)

**Corporate Quality Assurance 1986 - 1987**

Staff position to oversee quality control and licensure for all technical departments.

Accomplishments included:

- Developed computer based file manager system to maintain corporate QA data.
- Performed pre-CAP (College of American Pathologists) inspections.
- Developed computer based system for MSDS (Material Safety Data Sheets) safety files.

**Operations Supervisor - Serology/Immunology 1985 - 1986**

Integrated technical components and administrative activities for staff for 15 people. Handled staffing and scheduling while performing bench functions.

BIO-SCIENCE LABORATORIES (1975 - 1985)

Progressive leadership positions at three geographic locations. Company sponsored reallocations from Maryland to South Florida and South Florida to New York. Sales experience for 1½ years during expansion of lab services from hospital market to include the private physician market.

SOUTH BALTIMORE GENERAL HOSPITAL, Baltimore, MD (1973 - 1975)

**Medical Technologist**

Worked emergency laboratory of 500 bed hospital. Duties included chemistry, hematology, microbiology, blood bank, and blood gas analyses on all shifts.

**Sherman B. Paper**

Page 4

**EDUCATION:**

M.S., Human Genetics, Minor Immunology, Catholic University, Washington, D.C.  
B.A., Biology, Minor Chemistry, Western Maryland College, Westminster, MD

**MILITARY**

Maryland Army National Guard, E6 SSG N.C.O.I.C. Laboratory, Honorable Discharge

**AFFILIATIONS/MEMBERSHIPS:**

Member AACC (American Association of Clinical Chemists)  
CLMA (Clinical Laboratory Managers Association)

**LICENSURE:**

State of Florida Supervisors License - Chemistry and Serology  
State of Florida Analyst License for Blood Alcohol's  
New York City Supervisors License - Multi-discipline  
Breath Alcohol Technician (DOT)  
Breath Alcohol Trainer (DOT)

**Sherman B. Paper**

Page 5

C.V. Addendum

While functioning as the technical director (1987-1993) at SmithKline Beecham Clinical Laboratories, I was the Radiation Safety Officer. As RSO, I was responsible for overseeing all aspects of our Radiation Safety programs to comply with NRC and Maryland Radiological requirements. This included but was not limited to:

- Receiving and opening Rad packages
- Inventory records
- Emergency spill procedures
- Periodic radiation surveys
- Periodic checks of survey instruments
- Decay in storage
- Disposal
- Training
- Maintenance of applicable records

# Western Maryland College

To all to whom these presents shall come Greetings

*Be it known that*

**Sherman Bruce Paper**

*having completed the Course of Study prescribed in this College is admitted  
to the degree of Bachelor of Arts  
and is entitled to the Rights, Privileges and Immunities thereto pertaining  
here or elsewhere*

*Given at Westminster in the State of Maryland this fourth  
day of June in the year of our Lord One Thousand Nine  
Hundred and Seventy-two.*

*Witness the Seal of the College and the Signatures hereunto affixed*

*Jewell Euser*  
President

*William Robbins Ridington*  
Secretary of the Faculty





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THE SCHOOL OF ARTS AND SCIENCES

WITH THE APPROVAL OF THE ACADEMIC SENATE  
HAS CONFERRED UPON

SHERMAN BRUCE PAPER

THE DEGREE OF

MASTER OF SCIENCE

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GIVEN UNDER THE SEAL OF THE UNIVERSITY, BY VIRTUE OF THE  
AUTHORITY VESTED IN THE BOARD OF TRUSTEES BY THE CONGRESS  
OF THE UNITED STATES, AT WASHINGTON IN THE DISTRICT OF COLUMBIA  
THIS TWENTY-EIGHTH DAY OF FEBRUARY, NINETEEN HUNDRED AND SEVENTY-EIGHT.



*Clarence C. Walton*  
PRESIDENT

*Richard W. Galilee*  
CHAIRMAN OF BOARD OF TRUSTEES

*Joseph C. Michalowsky*  
REGISTRAR

(FOR LFMS USE)  
INFORMATION FROM LTS

```

: PROGRAM CODE: 02410
: STATUS CODE: 0
: FEE CATEGORY: 3P
: EXP. DATE: 20011231
: FEE COMMENTS: -----
: DECOM FIN ASSUR REQD: N

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## A. REGION

AMOUNT: \_\_\_\_\_  
CHECK NO.: \_\_\_\_\_

SIGNED  
DATE

1. FEE CATEGORY AND AMOUNT: 3P A500

3. OTHER \_\_\_\_\_

SIGNED  
DATE

Log APC 6  
 Receiver NATIONAL MEDICAL CARE  
 Check No. 101841  
 Amount 53.00  
 Fax Category 3P  
 42 AND  
 Rec'd 4/18/97  
 Date Completed BA

197 MAR 31 AM 7:45